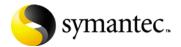# Veritas Storage Foundation™ Release Notes

Solaris

5.0

symantec.

Veritas Storage Foundation Release Notes

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Solaris is a trademark of Sun Microsystems, Inc.

Licensing and registration

Veritas Storage Foundation is a licensed product. See the *Veritas Storage Foundation Installation Guide* for license installation instructions.

Technical support

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

Contents

Appendix A   Third-party Legal Notices

Veritas Storage Foundation Release Notes

This document provides release information about the products in the Veritas Storage Foundation 5.0 Solaris (SPARC Platform) product line:

■   Veritas Storage Foundation (Basic, Standard, Standard HA, Enterprise, and Enterprise HA)

■   Veritas Storage Foundation *for Oracle* (Standard, Enterprise, and HA Editions)

■   Veritas Storage Foundation *for DB2* (Standard, Enterprise, and HA Editions)

■   Veritas Storage Foundation *for Sybase* (Standard, Enterprise, and HA Editions)

■   Veritas Volume Manager (VxVM)

■   Veritas File System (VxFS)

Note: Veritas Storage Foundation QuickStart is not available in this release.

Each of these products is activated by a single license key. You must obtain a license key before installing the product.

See the *Veritas Storage Foundation Installation Guide*.

Note: For the latest information on updates, patches, and known issues regarding this release, see the following TechNote on the Symantec Technical Support website:
http://support.veritas.com/docs/281987
The hardware compatibility list (HCL) is available at:
http://support.veritas.com/docs/283161
The hardware TechNote is available at:
http://support.veritas.com/docs/283282

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

This document does not contain release information for Veritas Volume Replicator (VVR) or Veritas Cluster Server (VCS).

See the *Veritas Volume Replicator Release Notes*.

See the *Veritas Cluster Server Release Notes*.

Storage Foundation product suites

The following table lists the Veritas products and optionally licensed features available with each Storage Foundation product suite.

Storage Foundation Version	Products and Features
Storage Foundation Basic	Veritas Volume Manager Veritas File System
Storage Foundation Standard	Veritas Volume Manager Veritas File System **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation Standard HA	Veritas Volume Manager Veritas File System Veritas Cluster Server **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation Enterprise	Veritas Volume Manager Veritas File System **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation Enterprise HA	Veritas Volume Manager Veritas File System Veritas Cluster Server **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation for Oracle Standard	Veritas Storage Foundation for Oracle Veritas Volume Manager Veritas File System Veritas Quick I/O Option Veritas Extension for Oracle Disk Manager Option

Storage Foundation Version	Products and Features
Storage Foundation for Oracle Enterprise	Veritas Storage Foundation for Oracle Veritas Volume Manager Veritas File System Veritas Quick I/O Option Veritas Extension for Oracle Disk Manager Option Veritas Storage Checkpoint Option Veritas Storage Mapping Option **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation for Oracle Enterprise HA	Veritas Storage Foundation for Oracle Veritas Volume Manager Veritas File System Veritas Cluster Server Veritas Quick I/O Option Veritas Extension for Oracle Disk Manager Option Veritas Storage Checkpoint Option Veritas Storage Mapping Option **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation for DB2 Standard	Veritas Volume Manager Veritas Storage Foundation for DB2 Veritas File System Veritas Quick I/O Option
Storage Foundation for DB2 Enterprise	Veritas Storage Foundation for DB2 Veritas Volume Manager Veritas File System Veritas Quick I/O Option Veritas Storage Checkpoint Option Veritas Storage Mapping Option **Optionally licensed features:** Veritas Volume Replicator Option

Storage Foundation Version	Products and Features
Storage Foundation for DB2 Enterprise HA	Veritas Storage Foundation for DB2 Veritas Volume Manager Veritas File System Veritas Cluster Server Veritas Quick I/O Option Veritas Storage Checkpoint Option Veritas Storage Mapping Option **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation for Sybase Standard	Veritas Storage Foundation for Sybase Veritas Volume Manager Veritas File System Veritas Quick I/O Option
Storage Foundation for Sybase Enterprise	Veritas Storage Foundation for Sybase Veritas Volume Manager Veritas File System Veritas Quick I/O Option Veritas FastResync Option **Optionally licensed features:** Veritas Volume Replicator Option
Storage Foundation for Sybase Enterprise HA	Veritas Storage Foundation for Sybase Veritas Volume Manager Veritas File System Veritas Cluster Server Veritas Quick I/O Option Veritas FastResync Option **Optionally licensed features:** Veritas Volume Replicator Option

Product and feature descriptions

Veritas Volume Manager

Veritas Volume Manager is a storage management tool that removes the physical limitations of disk storage so that you can configure, share, manage, and optimize storage I/O performance online without interrupting data availability. VxVM also provides easy-to-use, online storage management tools to reduce planned and unplanned downtime.

VxVM 5.0 licenses

The following table shows the levels of licensing in Veritas Volume Manager 5.0 above the Basic license, 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, Intelligent Storage Provisioning, FastResync with Instant Snapshots, Storage Expert, Device discovery Layer, multipath DMP, and VEA.
Add-on Licenses	Features that augment the Full VxVM license.

Note: You need a Full VxVM license to make effective use of Add-on licenses to VxVM.

To see the license features that are enabled in VxVM 5.0, enter the command:
```
# vxdctl license
```

Cross-platform data sharing licensing

The ability to import a cross-platform data sharing (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.

An example of a CDS enabling license (output by the `vxlicrep` command) is:

```
License Key                        = XXXX-XXXX-XXXX-XXXX-XXXX-XXXX
Product Name                       = Veritas Storage Foundation
Standard
License Type                       = DEMO_EXTENSION
OEM ID                             = 4095
Demo End Date                      = Fri Mar 18 00:00:00 2005
                                        (21.5 days from now).
Editions Product                   = YES

Features :=
VxVM#Veritas Volume Manager        = Enabled
CPU Count#Veritas Volume Manager   = Not Restricted
VXFS#Veritas File System           = Enabled
CPU Count#Veritas File System      = Not Restricted
QLOG#Veritas File System           = Enabled
PGR#Veritas Volume Manager         = Enabled
Veritas Foundation Suite           = Enabled

SPC Lite#Veritas SANPoint Control  = Enabled
Storage Expert#Veritas Volume Manager = Enabled
Platform                           = un-used
Version                            = un-used

Product Name                       = Veritas Volume Manager
License Type                       = DEMO
Demo End Date                      =

Features :=
Dynamic Lun Expansion              = Enabled
Hardware assisted copy             = Enabled
Cross-platform Data Sharing        = Enabled
PGR                                = Enabled
PGR_TRAINING                       = Enabled
VVS_CONFIG                         = Enabled
[...]
```

Photon licensing

VxVM automatically generates a Photon license when it detects an A5k array. In addition, VxVM 5.0 allows you to remove your Photon device for servicing for up to two weeks. To do this, when the current license is due to expire, VxVM automatically removes the old license, and re-issues a new Photon license with another two-week expiration date.

You can now remove your Photon device for servicing, without affecting other operations.

If you perform a license query during this time, you may see information displayed as follows:

```
License Key =
XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XX
Product Name = Veritas Volume Manager
License Type = DEMO_NODE_LOCK
OEM ID = 4090
Demo End Date = Fri Aug 30 01:00:00 2002 <=====
EXPIRATION DATE
(13.6 days from now).
Node Lock Type = (Hostid and Architecture ID)
Features :=
PHOTON                              = Enabled
CPU Count                           = Not Restricted
```

Note: This message does not mean that your Photon array feature license will soon expire permanently. You will *not* lose the VxVM features associated with the license in 13.6 days time.

Veritas File System

Veritas File System provides high performance and online management capabilities to facilitate the creation and maintenance of file systems. File systems are a collection of directories organized into a structure that enable you to locate and store files.

The primary purposes of a file system are to:

■   Provide shared access to data storage.

■   Provide structured access to data.

■   Control access to data.

■   Provide a common, portable application interface.

■   Enable the manageability of data storage.

Veritas Storage Foundation for Databases

Veritas Storage Foundation *for Oracle*, Veritas Storage Foundation *for DB2*, and Veritas Storage Foundation *for Sybase* combine the strengths of the core Veritas products with database-specific enhancements to offer unrivaled performance, availability, and manageability for databases. The database feature options are as follows.

Veritas FlashSnap option

The Veritas FlashSnap option, when applied to databases, lets you create, resynchronize, and reverse resynchronize volume snapshots for databases. The snapshots can be used on a second host. Also, database administrators can perform these tasks without root privileges.

This option is available with the Enterprise versions of Veritas Storage Foundation *for Oracle* and Veritas Storage Foundation *for DB2*.

Veritas Quick I/O option

Veritas Quick I/O is a Veritas File System feature that improves the throughput for databases built on Veritas File Systems. Quick I/O delivers raw device performance to databases run on VxFS, providing the administrative advantages of using file systems without performance penalties. Veritas Cached Quick I/O further enhances database performance by leveraging large system memory to selectively buffer the frequently accessed data.

This option is available with both the Standard and Enterprise versions of Veritas Storage Foundation *for Oracle*, Veritas Storage Foundation *for DB2*, and Veritas Storage Foundation *for Sybase*.

Veritas Extension for Oracle Disk Manager option

Veritas Extension for Oracle Disk Manager is a custom storage interface designed specifically for Oracle9*i* and 10g. Oracle Disk Manager improves the performance and manageability of system bandwidth through an improved API that contains advanced kernel support for file I/O.

This option is available with both the Standard and Enterprise versions of Veritas Storage Foundation *for Oracle*.

Veritas Storage Checkpoint option

Veritas Storage Checkpoint technology lets you create a point-in-time image of a file system. Storage Checkpoints are treated like any other VxFS file system and can be created, mounted, unmounted, and removed.

This option is available with the Enterprise versions of Veritas Storage Foundation *for Oracle* and Veritas Storage Foundation *for DB2*.

Veritas Storage Mapping option

Storage Mapping lets you map datafiles to physical devices and display storage object I/O statistics. Both storage object I/O statistics and the storage structure can be displayed for a specific file.

This option is available with the Enterprise versions of Veritas Storage Foundation *for Oracle* and Veritas Storage Foundation *for DB2*.

In addition, with Veritas Storage Foundation *for Oracle*, mapping information showing which tablespaces reside on which physical disks can be obtained for a specified database.

Veritas Volume Replicator

Veritas Volume Replicator is data-replication software designed to contribute to an effective disaster recovery plan by maintaining an exact or consistent copy of application data at one or more remote locations.

Veritas Cluster Server

Veritas Cluster Server provides an open systems clustering solution that eliminates both planned and unplanned downtime, facilitates server consolidation and failover, and effectively manages a wide range of applications in heterogeneous environments.

New features

The following new features have been incorporated into Veritas Storage Foundation, Veritas Volume Manager, Veritas File System, Veritas Storage Foundation *for Oracle*, Veritas Storage Foundation *for DB2*, and Veritas Storage Foundation *for Sybase*.

Note: For information about new features in VVR, see the *Veritas Volume Replicator Release Notes*. For information about new features in VCS, see the *Veritas Cluster Server Release Notes*.

Veritas Volume Manager

This release of Veritas Volume Manager includes the following new features and enhancements.

Default private region size

The default size of the private region has been increased from 1 MB to 32 MB.

Note: You do not need to change the private region size of existing disk groups to the new default value.

Changed behavior of disk group import

In previous releases, the `vxdg import` command could not import a disk group if some disks in the disk group were unusable or inaccessible. In such cases, the `-f` option had to be specified to forcibly import the disk group. With this release, a disk group can be imported successfully if all the disks are accessible that were visible when the disk group was last imported successfully. As using the `-f` option to forcibly import an incomplete disk group counts as a successful import, the disk group can subsequently be imported without specifying this option. The changed behavior applies to both private and cluster-shared disk groups.

Faster startup time

The time taken to start the Veritas Volume Manager configuration daemon, `vxconfigd`, to discover new devices, to initialize dynamic multipathing, and to import disk groups has been significantly reduced.

Faster cluster node joins

The time that nodes take to join a cluster has been reduced by allowing concurrent joins. This feature applies to Veritas Cluster Server (VCS) and to Sun Cluster environments.

Remote Mirror — robust campus cluster support

The Remote Mirror feature retains the current usage model for campus cluster support (also known as stretch cluster) where a disk group can span storage from multiple sites. Existing utilities such as `vxdg` and `vxdisk` have been enhanced to achieve data set completeness, and to maintain site consistency. The preferred read policy for mirrors has been extended so that read requests are serviced locally if possible. A mechanism is also provided to deal with disk group inconsistencies between storage at different sites (serial split-brain scenario) and to perform fire-drill testing of site failure and recovery. In this release, up to three sites are supported in a Remote Mirror configuration.

Support for 32 cluster nodes

The clustering functionality of VxVM supports up to 32 nodes. Symantec has tested and qualified clustered volume configurations of up to 16 nodes at product release time. Support can be contacted for its approval and recommendations on clustered volume deployments larger than 16 nodes, based on the application workload. For the latest information on clustered volume support, see the following TechNote:

http//support.veritas.com/docs/282024

SCSI 3 PR enhancement in clusters

The keys for disabled paths are removed so that node joins are not obstructed. In addition, the time taken to register keys has been reduced.

File-level SmartSync

The SmartSync feature of VxVM has been extended to support Oracle Resilvering of files in Veritas File System.

Enhancements to DMP

There are a number of enhancements to the Dynamic Multipathing (DMP) feature:

■   Faster failure detection and recovery by DMP

DMP has been enhanced to allow the `vxdmpadm` command to be used to adjust the I/O error recovery and I/O throttling mechanisms on individual paths.

■   Changing DMP tunables
The values of most DMP tunables can now be set by using the `vxdmpadm settune` command.

■   Retry period for Persistent Group Reservation (PGR)
The maximum time period for which DMP retries the SCSI-3 Persistent Reserve operation with A/P arrays can now be tuned by using the `dmp_retry_timeout` parameter with the `vxdmpadm` command. The default value is 120 seconds, which is twice the value of the SCSI I/O timeout. This parameter has no direct effect on I/O processing by DMP.
Disabling a switch port can trigger a fabric reconfiguration, which can take time to stabilize. During this period, attempting to register PGR keys through the secondary path to an array may fail with an error condition, such as unit attention or device reset, or the return of vendor-specific sense data. The retry period allows a fabric reconfiguration, which is usually a transient condition, to not be seen as an error by DMP.
To display the current value of `dmp_retry_timeout`, type:

    # **vxdmpadm gettune dmp_retry_timeout**
To change the value of `dmp_retry_timeout`, type:

    # **vxdmpadm settune dmp_retry_timeout=*value***
Do not set the value of the retry period too high. This can delay the failover process, and result in I/O sluggishness or suppression of I/O activity during the retry period.
This parameter is not documented in the *Veritas Volume Manager Administrator's Guide* or in the `vxdmpadm`(1M) manual page.

Linked break-off snapshot volumes

A new variant of the third-mirror break-off snapshot type are linked break-off snapshot volumes, which use the `vxsnap addmir` command to link a specially prepared volume with the data volume. The volume that is used for the snapshot is prepared in the same way as for full-sized instant snapshots. However, unlike full-sized instant snapshots, this volume can be set up in a different disk group from the data volume. This makes linked break-off snapshots especially suitable for off-host processing applications where you may want to create the snapshot on storage with different characteristics from that used for the data volumes.

If you change the size of volume, any snapshots that are currently linked are also resized in the same operation.

Volume tags

Volumes may now be tagged with an arbitrary tag name and optional tag value. Multiple tags can be associated with a single volume. Such tags are used by features such as Remote Mirror (also known as campus cluster) and Dynamic Storage Tiering (DST).

Disk tags

Disks may now be tagged with an arbitrary tag name and optional tag value. Multiple tags can be associated with a single disk. Such tags are used by features such as Remote Mirror, Intelligent Storage Provisioning (ISP) and importing cloned disks.

Data migration

The `vxassist`, `vxevac` and `vxsd` commands have been enhanced to allow data to be migrated at the volume, disk or subdisk level respectively. Once the data migration is in the tentative state, it can either be committed or cancelled.

Raw I/O access to volume components of a volume set

A mechanism is provided to allow access to the raw device nodes of the component volumes of a volume set. This is intended to allow the component volumes to be backed up and restored individually.

Maximum number of component volumes in a volume set

The maximum number of component volumes in a volume set has been increased to 2048.

Importing cloned disks

Disks that have been duplicated outside the VxVM environment (usually using specialized hardware) are referred to as *cloned disks*. The `vxdisk` and `vxdg` commands have been enhanced to allow such cloned disks to be identified, tagged and more easily managed. For example, a subset of the disks in a disk group that are similarly tagged can be imported together in a single operation.

ISP enhancements

The following enhancements have been made to the Intelligent Storage Provisioning (ISP) feature:

- The `vxassist` command may be used instead of the `vxvoladm` command to create ISP volumes as well as non-ISP volumes. Any `vxassist` specification attributes are converted into equivalent ISP rules.

- Creation of a large number of volumes in a single operation, and retrieval of information have been speeded up.

- Annotation of storage devices may now be performed by assigning tags and optional tag values to disks and LUNs.

- The `vxassist printrules` or `vxvoladm printrules` commands may be used to display the raw set of ISP rules that were used to allocate storage to a volume.

- A specified number of volumes with a given intent can be created at the same time.

- Additional information retrieval commands are provided to support queries such as:
    - Given a template, return all template sets that refer to that template.
    - Given a template, list all the templates on which the specified template is dependent.

- The linked break-off snapshot volume feature allows ISP feature to support fast resynchronization (FastResync) with snapshot operations such as refresh and restore.

- Migration between non-ISP and ISP volumes.

- The ISP intent version number has been increased to 30.

Veritas File System

This release of Veritas File System includes the following new features.

Dynamic Storage Tiering

Dynamic Storage Tiering (DST) allows administrators of multi-volume VxFS file systems to manage the placement of files on individual volumes in a volume set by defining placement policies that control both initial file location and the circumstances under which existing files are relocated.

Improved availability

Improved availability allows you to mount a multi-volume file system even if the component data-only volume is missing or becomes unavailable. Any I/O error on a data-only volume will not affect access to non-data-only volumes. In addition, all VxFS operations that do not access the missing data-only volume will function normally. This helps guarantee the availability of some volumes even when other volumes within the file system are not available.

File-to-volume and volume-to-file mapping in multi-volume file system support

This release provides two new commands to support this feature:

fsmap	This command reports the volume location of all data or indirect extents associated with a file in a multi-volume file system, and verifies that DST policies are working as requested.
fsvmap	This command determines which data file is resident on a given volume for a multi-volume file system. This command recovers only the affected files when an unprotected volume is permanently lost.

2K volumes in a volume set

The limit of number of volumes allowed in a volume set is now 2048, increased from 256.

File placement policy administration

The fsppadm command administers the file placement policies of the DST feature, and replaces the functionality of the fsrpadm, fsmove, and fssweep commands.

See the fsppadm(1M) manual page.

Pattern-based allocation policies

Pattern tables can be assigned to directories or file systems. A pattern table contains patterns against which a file's name and creating process' UID and GID are matched as a file is created in a specified directory. The first successful match is used to set the allocation policies of the file.

Load balancing

An allocation policy with the balance allocation order can be defined and assigned to files that must have their allocations distributed at random between a set of specified volumes. The effect is that the distribution of extents between the volumes is mostly equal if none of the volumes are full or disabled.

Concurrent I/O mount option

The `mount` command now supports the `-o cio` option, which specifies that the file system be mounted for concurrent reads and writes. I/O on files in this file system behave as if they were accessed while the `VX_CONCURRENT` cache advisory was set on the files.

See the `mount_vxfs`(1M) manual page.

vxfsconvert utility

There are some conversion issues with the `vxfsconvert` utility. Converting a file system may result in an `ENOSPC` error. Symantec recommends upgrading to the 5.0RP1 patch before using `vxfsconvert`.

File system reorganization prevention

Some applications may require preventing extent and log reorganization. Such applications can disable file system reorganization using the `fsadm` command by creating the `/etc/fs/vxfs/vxfs_noreorg_config` file.

See the `fsadm_vxfs`(1M) manual page.

Veritas Storage Foundation for Databases

Veritas Storage Foundation for Oracle

This release of Veritas Storage Foundation *for Oracle* includes the following new features and enhancements.

Support for 10gR2

This release of Veritas Storage Foundation *for Oracle* offers support for Oracle 10gR2.

Database Dynamic Storage Tiering

Veritas Database Dynamic Storage Tiering (DBDST) enables you to manage your data so that less-frequently used data can be moved to slower, less expensive disks, allowing frequently-accessed data to be stored on the faster disks for quicker retrieval.

Improved task scheduler

The GUI for the task scheduler has been improved to permit more flexibility in scheduling tasks.

Modify clone initialization parameters

Clones can be created and started with modified initialization parameters to let clones use system resources in a different way than the primary database (for example, if the clone resides on a secondary host with different resources, or if it should use less resources if residing on the same host).

Enhanced deep mapping

Deep mapping has been enhanced to differentiate between EMC STD and BCV mirrors for EMC arrays. Use the `vxstorage_stats` command.

Table level mapping

A table name now can be used as input to the `dbed_analyzer` command (with a new `-o` option) to list the disk in which the table resides and the space it occupies on each disk.

Oracle Resilvering support

Veritas Extension for Oracle Disk Manager supports Oracle Resilvering. With Oracle Resilvering, the storage layer receives information from the Oracle database as to which regions or blocks of a mirrored datafile to resync after a system crash.

Enhanced CLI commands

The following Veritas Storage Foundation *for Oracle* CLI commands have been enhanced:

Command Name	Description
`dbed_clonedb`	New `-p` *pfile_modification_file* option has been added to specify modified initialization parameters (contained in *pfile_modification_file*) for the clone.
`dbed_vmclonedb`	New `-p` *pfile_modification_file* option has been added to specify modified initialization parameters (contained in *pfile_modification_file*) for the clone.
`dbed_analyzer`	New option `-o mode=table [ -f` *file* `| -t` *table* `]` lists the disk on which the specified table resides and how much space it consumes.

Veritas Storage Foundation for DB2

This release of Veritas Storage Foundation *for DB2* includes the following new features and enhancements.

Support for DB2 9.1

This release of Veritas Storage Foundation *for DB2* offers support for DB2 9.1.

Database Dynamic Storage Tiering

Veritas Database Dynamic Storage Tiering (DBDST) enables you to manage your data so that less-frequently used data can be moved to slower, less expensive disks, allowing frequently-accessed data to be stored on the faster disks for quicker retrieval.

GUI-based task scheduler

A task scheduler has been added to the GUI to enable easy and flexible automatic creation of storage checkpoints or snapshots, clones of them, and resynchronization of the clones to the database.

Enhanced deep mapping

Deep mapping has been enhanced to differentiate between EMC STD and BCV mirrors for EMC arrays. Use the `vxstorage_stats` command.

New CLI commands

The following Veritas Storage Foundation *for DB2* commands and corresponding manual pages have been added:

Command Name	Description
`edgetmsg2`	Manages message log files.
	This command is not available through the GUI.

Veritas Storage Foundation for Sybase

This release of Veritas Storage Foundation *for Sybase* includes the following new features and enhancements.

Support for 15.0

This release of Veritas Storage Foundation *for Sybase* offers support for Sybase ASE 15.0.

Concurrent I/O

Veritas Concurrent I/O improves the performance of regular files on a VxFS file system without the need for extending namespaces and presenting the files as devices. This simplifies administrative tasks and allows relational databases, which do not have a sequential read/write requirement, to access files concurrently. To use CIO, add `cio` to the `mount` command or into the `vfstab` entry.

System requirements

Solaris operating system requirements

The Veritas Storage Foundation 5.0 product line operates on the following Solaris operating systems:

Solaris 8 (SPARC Platform 32-bit and 64-bit)

Solaris 9 (SPARC Platform 32-bit and 64-bit)

Solaris 10 (SPARC Platform 64-bit)

Storage Foundation verifies that the target system is running a required version of the Solaris operating system. Storage Foundation installation will fail if the product discovers an incorrect Solaris version.

Solaris patch requirements

Solaris patches for Veritas Volume Manager

Some required system patches may already be present in your operating system. You should check to see if your system already contains the patches needed. Use the command `showrev -p` to display the patches included on your system. For more information, see the `showrev`(1M) manual page.

If the patches shown in the required list are not already installed, go to the SunSolve website to download them. You need to install the appropriate patches and then reboot.

DISCLAIMER: Patch version and information is determined at the time of product release. For the most current patch version and information, please contact your vendor.

Operating system	Sun patch number or package name	Notes
Solaris 9	`SUNWscpu` package	The `SUNWscpu` package should be shipped as part of the OS; however, if you do not have this package, it is available from the SunSolve website.
		`SUNWscpu` is a package and should be installed using `pkgadd`.

Operating system	Sun patch number or package name	Notes
Solaris 8	SUNWsan package (see your vendor to obtain) SUNWscpu package 111413-06 (or later)	Regardless of whether you have an A5x00 drive connected, you must install these A5x00 patches for VxVM to function. You need to install the SUNWsan package and Sun Patch 109529 before installing Sun Patch 111413. You can then install VxVM. This order is important. **Note:** To get the SUNWsan package, go to the SunSolve website. You must be a registered user, and it is free. SUNWsan and SUNWscpu are packages and should be installed using pkgadd.
	108528-29 (or later)	Patch 108528-29 requires patches 112396-02 (or later), 108987-09 (or later), 111293-01 (or later), 111310-01 (or later), and 111111-03 (or later). These patches must be installed in the order listed.
	108993-18 (or later)	

DMP coexistence with Alternate Pathing

Coexistence of DMP with Sun's Alternate Pathing (AP) driver is no longer supported. You must remove the AP driver before installing or upgrading the Veritas Storage Foundation 5.0 software. This note applies only if you are using Solaris Operating System 8.

A5x00 devices

Whether or not you have A5x00 devices connected to your system, you must add the Solaris patches, shown in the table in "Solaris patches for Veritas Volume Manager" on page 26, to this release of VxVM. If you have A5x00 devices attached to your system, you need this patch to use them; if you don't have A5x00 devices attached to your system, VxVM uses the patches to discover whether such devices exist.

Claiming devices in the SENA category

The A5x00 disk arrays are claimed by DMP under the SENA category only if the required libraries are present on the system at the time of VxVM installation.

The libraries are present by default on Solaris 8 and 9. No patch installation is necessary on these operating systems.

Solaris patches for Veritas Enterprise Administrator

It is recommended that you install Sun Solaris Package `SUNWi1of` if you plan to use the Veritas Enterprise Administrator client. `SUNWi1of` is a package required by JRE 1.4. The package contains fonts that are needed to support various locales. For more information, see the Sun Microsystems Java website.

Note: The name of the Sun package should contain the number one ("1"), not the letter l, after the lower case "i."

Solaris patches for Veritas File System

You must install the following patches for Veritas File System before installing Veritas Storage Foundation 5.0 for Oracle:

Operating System	Solaris Patch Number	Notes
Solaris 8	108528-14 (or later)	Patch 108528-14 requires patches 112396-02 (or later), 108987-09 (or later), 111293-04 (or later), 111310-01 (or later), and 111111-03 (or later). These patches must be installed in the order listed.
	108901-04	You must install Patch 108528-14 before installing Patch 108901-04.

Do not use Solaris 8 patch 110934-10 or Solaris 9 patch 113713-01

Solaris 8 patch 110934-10 and Solaris 9 patch 113713-01 prevent the installation of VCS, VxVM, and GLM patches.

By using the `showrev -p` command, you can display the currently installed patches and their levels. For example, to check for patch 110934-10, enter:

```
# showrev -p | grep 110934
```

If you have patch 110934-10 (Solaris 8) or patch 113713-01 (Solaris 9) installed, you must either upgrade or remove it using the `patchrm` command:

```
# patchrm 110934-10
```

If the patch cannot be removed from the system, you will receive the following error message:

```
Patch 110934-10 was installed without backing up the original
files. It cannot be backed out.
```

If you have this problem with Solaris 8 patch 110934-10, refer to TechNote 252441 at http://support.veritas.com/docs/252441.htm.

If you have this problem with Solaris 9 patch 113713-01, rename the space file as follows:

```
# mv /var/sadm/pkg/VRTSvxvm/install/space \
/var/sadm/pkg/VRTSvxvm/install/space.org
```

After you remove the patch, you can replace it with the latest patch, using the patchadd command, that has been verified by Veritas.

The following patch levels have been verified:

■ 110934-14 (Solaris 8)

■ 113713-11 (Solaris 9)

To install the latest revision of a patch, use the patchadd command as follows:

```
# patchadd 110934-14
```

For Solaris 8, you can use patch 110934-08 or lower if you choose not to upgrade to patch 110934-14. You can successfully install the Veritas packages without either patch.

The latest status of patches 110934-10 and 113713-01 for use with specific Veritas products is available at http://support.veritas.com.

Do not use patch 112964-07

When using Veritas Storage Foundation for Databases, do not use Solaris patch 112964-07, otherwise commands and scripts are unable to create *temp* files under /tmp. If you have 112964-07 installed, upgrade this patch to 112964-08 or higher.

Oracle required patch

Mandatory patch required for Oracle Bug 4130116

If you are running Oracle versions 9.2.0.6 or 9.2.0.7, you must apply the Oracle patch for Oracle Bug 4130116. Contact Oracle to obtain this patch, and for details on how to apply it.

Veritas patches

If you install Veritas Storage Foundation using the installation script, patches are added for you. However, if you choose to install the product using pkgadd, you need to manually add the patches after installing.

You must have superuser (root) privileges to load the Veritas software.

To install Veritas patches manually

1   Make sure the same media disc you used to install Veritas Storage Foundation is in your DVD drive and mounted.

2   Copy all the patches from the storage_foundation/patches directory to the desired directory on your system.

    ```
    # cd /working_directory
    # cp /cdrom/cdrom0/storage_foundation/patches/* .
    ```

3   Decompress and then extract the patches.

    ```
    # /cdrom/cdrom0/storage_foundation/scripts \
    /install/gunzip *.gz
    # tar xvf patch_id1.tar
    ```

    Repeat the tar command above for each patch archive.

4   Install the patches individually using the patchadd command.

    ```
    # patchadd patch_number
    ```

    It is recommended that you install all the patches.

5   Use the showrev command to verify patch installation.

    ```
    # showrev -p | grep patch_number
    ```

Veritas Volume Manager and Veritas Enterprise Administrator patches

Please refer to the patches directory for information about the patches included in this release. You can find the patches directory at the same level as the pkgs and scripts directories on your software disc:

    /cdrom/cdrom0/volume_manager/patches

Symantec highly recommends that you install all of the patches in this location on your system.

Software limitations

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

Veritas File System software limitations

Quick I/O, ODM, mount -o cio, and the VX_CONCURRENT advisory are mutually exclusive

The VX_CONCURRENT advisory cannot be set on a file that is actively open by Quick I/O or ODM. A file that has the VX_CONCURRENT advisory set may not be concurrently opened by Quick I/O or ODM. Quick I/O and ODM access are not allowed for any files on a file system that is mounted with the -o cio mount option.

Unsupported non-global zone features

The following features are unsupported with non-global zones:

- Admin ioctls
- Administration commands
- Veritas Storage Migrator (VSM)
- Virtual File System (VFS)/Veritas Mapping Service (VxMS)
- Quick I/O and CQIO
- Storage Foundation Cluster File System (SFCFS)

Enabling ODM access

The following must be performed to enable ODM access from a non-global zone:

1   Install a license in a global zone by exporting the `/etc/vx/licenses/lic` directory to the non-global zone as an lofs. This is done by adding the following resource to a zone's configuration in addition to other resources in the zone:

```
# zonecfg -z zone1
add fs
set dir=/etc/vx/licenses/lic
set special=/etc/vx/licenses/lic
set type=lofs
end
```

2   Create an `odm` subdirectory under the `zonepath/non-global_zone/dev` directory. The `zonepath` for a given zone can be obtained using the `zonecfg` command.

3   Mount the `/dev/odm` directory in the non-global zone.

```
# mount -F odm /dev/odm /dev/odm
```

Note: The ODM is not automatically mounted after the zone is booted. Use the above command to mount the ODM after the zone is booted.

Mounting a VxFS file system in the non-global zone

To mount a VxFS file system in the non-global zone, add the fs resource type to the non-global zone:

```
# zonecfg -z zone1
add fs
set dir=/mnt1
set special=/mnt1
set type=lofs
end
```

The value of *dir* is a directory in the non-global zone, while the value of *special* is a directory in the global zone to be mounted in the non-global zone.

Accessing a file for concurrent I/O

A process can read from or write to a file concurrently with other processes. This implies that a process in a non-global zone can access the file concurrently with other processes in the non-global or global zone. An application must perform the following functions:

```
fd=open(filename, oflag)
ioctl(fd, VX_SETCACHE, VX_CONCURRENT)
write(fd, buff, numofbytes)
```

Veritas Storage Foundation for Databases software limitations

Oracle, DB2, and Sybase software limitations

No support for non-global zones

The Standard, Standard HA, Enterprise, and Enterprise HA versions of Veritas Storage Foundation *for Oracle*, Veritas Storage Foundation *for DB2*, and Veritas Storage Foundation *for Sybase* do not support non-global zones. [268530]

No support for Intelligent Storage Provisioning

The Standard, Standard HA, Enterprise, and Enterprise HA versions of Veritas Storage Foundation *for Oracle*, Veritas Storage Foundation *for DB2*, and Veritas Storage Foundation *for Sybase* do not support Intelligent Storage Provisioning (ISP).

Disk layouts Version 5 and earlier do not display Storage Checkpoint quotas in the GUI

In Veritas Storage Foundation *for Oracle* and Veritas Storage Foundation *for DB2*, VxFS disk layouts Version 5 and earlier do not display Storage Checkpoint quotas in the GUI. [34432 and 34433]

If you attempt to retrieve quota information for a Storage Checkpoint in Version 5 or earlier using the GUI, a message similar to the following displays:

```
    DBED4646:ERROR: Unknown error code -30391108 (getquota) for
DBED
    46464....
```

Veritas Storage Foundation for Oracle software limitations

DBDST limitations with non-English filenames and placement class names

DBDST does not work on non-English database filenames or non-English placement class names, due to limitations in VxFS Dynamic Storage Tiering and VxVM volume tags. VxFS Dynamic Storage Tiering does not support placement of non-English filenames. The VxVM volume tag feature does not support non-English volume tag names. [599164]

Differing locales produces unintelligible characters in GUI

The GUI does not support Oracle users having a different locale than the superuser's locale. The GUI will display unintelligible characters if the SFDB repository server starts with a locale that is different from the Oracle user locale (client). [605487]

Some features stop working after a GCO failover

Some Storage Foundation for Oracle features do not work correctly after a Global Cluster (GCO) Failover. In 5.0, the Storage Foundation for Database (SFDB) repository and tools do not manage virtual hostnames correctly in a Global Cluster environment. The SFDB repository does not correctly adjust to the secondary host after the failover.

Features like Storage Checkpoint, Database FlashSnap, the scheduler, and Database Dynamic Storage Tiering (DBDST) will not function as normal after a failover. However, features such as Oracle Disk Manager (ODM), Quick I/O, and Concurrent I/O (CIO) will continue to work after a failover. This issue will be fixed after the next release. [563603]

RAC installation limitations

Installing Veritas Storage Foundation *for Oracle* on top of Veritas Storage Foundation *for Oracle* RAC is not supported. [563808]

Storage Checkpoint limitations

- You cannot create a clone database using a mounted Storage Checkpoint. [32726]

- You must run the `dbed_update` command after upgrading to Veritas Storage Foundation 5.0 *for Oracle* from a previous release. This will allow you to roll back to a Storage Checkpoint that was created prior to this release. [86431]

- If you create an Oracle instance using the `spfile` option, you must run the `dbed_update` command before you can successfully perform any Storage Checkpoint or Database FlashSnap functions.

Veritas Enterprise Administrator limitations

- Veritas Enterprise Administrator (VEA) does not display tablespace information when the `v$table` column names are changed using the SQL*Plus profile facility. [34446]

- VEA may display system fonts incorrectly. On a Japanese desktop, VEA may incorrectly display system fonts. Japanese characters may not be properly displayed when you select the non-default font for the VEA GUI.

- There can be problems displaying deep mapping topology in PC-based UNIX emulators like Exceed. Use the Windows VEA client instead of running the UNIX VEA client via emulators.

Database FlashSnap limitations

■ The Database FlashSnap feature does not support RAID-5 volumes. [34570]

■ When cloning a database using Database FlashSnap, the Oracle database must have at least one mandatory archive destination, otherwise `dbed_vmchecksnap` results in this error message:

```
SFORA dbed_vmchecksnap ERROR V-81-5677 Could not find a
mandatory, primary and valid archive destination for
database PROD.
Please review the LOG_ARCHIVE_DEST_n parameters and check
v$archive_dest.
```

This example shows how to establish a mandatory archive destination using SQL*Plus:

```
alter system set log_archive_dest_1 =
'LOCATION=/ora_mnt/oracle/oradata/PROD/archivelogs
MANDATORY [REOPEN]' [scope=both];
```

For more information about Oracle parameters for archiving redo logs, see your Oracle documentation. [270905]

■ After running `dbed_vmsnap -o reverse_resync_commit`, your primary database is started using a pfile. If your original primary database used an spfile, you need to shut down the database and restart it using the spfile. Then, run `dbed_update` to update the repository.

Oracle Disk Manager limitations

■ If you want to run Oracle 10g on a non-global zone and use Oracle Disk Manager, the Oracle version should be 10.1.0.3 or higher. To enable Oracle Disk Manager file access from non-global zones with Veritas File System, follow the procedure in "Enabling ODM access" on page 32.

■ Because Oracle Disk Manager uses the Quick I/O driver to perform asynchronous I/O, do not turn off the Quick I/O mount option, which is the default.

■ Using Oracle Disk Manager with Cached Quick I/O enabled is not supported and could cause your system to panic [34281]. To avoid a system panic, ensure the following:

 ■ If you are using Oracle Disk Manager, do not enable Cached Quick I/O on your file system.

 ■ If you are converting from Quick I/O to Oracle Disk Manager, make sure you disable Cached Quick I/O.

Veritas Storage Foundation for DB2 software limitations

DBDST limitations with non-English filenames and placement class names

DBDST does not work on non-English database filenames or non-English placement class names, due to limitations in VxFS Dynamic Storage Tiering and VxVM volume tags. VxFS Dynamic Storage Tiering does not support placement of non-English filenames. The VxVM volume tag feature does not support non-English volume tag names. [599164]

Some features stop working after a GCO failover

Some Storage Foundation for DB2 features do not work correctly after a Global Cluster (GCO) Failover. In 5.0, the Storage Foundation for Database (SFDB) repository and tools do not manage virtual hostnames correctly in a Global Cluster environment. The SFDB repository does not correctly adjust to the secondary host after the failover.

Features like Storage Checkpoint, Database FlashSnap, the scheduler, and Database Dynamic Storage Tiering (DBDST) will not function as normal after a failover. However, features such as Oracle Disk Manager (ODM), Quick I/O, and Concurrent I/O (CIO) will continue to work after a failover. This issue will be fixed after the next release. [563603]

Veritas Enterprise Administrator may display system fonts incorrectly

On a Japanese desktop, VEA may incorrectly display system fonts. Japanese characters may not be properly displayed when you select the non-default font for the VEA GUI.

Command line interface limitations

The following commands do not support multipartition databases (SMP):

- db2ed_clonedb
- db2ed_mon
- db2ed_vmchecksnap
- db2ed_vmclonedb
- db2ed_vxdba

- The following scripts can be run at the partition level, but not in db2_all. These scripts use mkqio as the input/output filename, so the file will be overwritten by multiple partitions:

  - qio_getdbfiles
    For example: export DB2NODE=1; export DB2DATABASE=mydb3;qio_getdbfiles;

■   `qio_convertdbfiles`

For example: `export DB2NODE=1; export DB2DATABASE=mydb3;qio_convertdbfiles;`

Disabled monitoring agent

In this release of Veritas Storage Foundation, the monitoring agent is disabled for multiple partition databases in the GUI.

Veritas Enterprise Administrator server must be restarted after configuring a multiple partition

After configuring a multiple partition, you must stop, then restart the VEA server.

Database cloning limitation

If you clone a database and mount it, ensure that the directory where the mount point resides is owned by the instance owner of the cloned database.

If the directory where the mount point resides is not owned by the instance owner, an error message is displayed when you attempt to remove and unmount the cloned database.

For example:

```
$ db2ed_clonedb -I inst01 -S prod -T clone -c \
Checkpoint_1105997700  -m /mnt
```

where `/mnt` is created by root and the owner has been changed to `inst01`.

When you attempt to remove and unmount the clone database, you will get the following error message:

```
$ db2ed_clonedb -T clone -o umount -d
rm: Unable to remove directory /mnt Permission denied
```

This error message does not affect the functionality of `db2ed_clonedb`. The clone database has been removed and unmounted even when you receive this error message.

To avoid this error, create a directory under `/` as root and change the owner of the directory to the instance owner. Then, specify a mount point under the newly created directory. For example, instead of using the mount point `/mnt` as in the above example, specify a mount point under `/mnt`, such as `/mnt/clone`:

```
$ db2ed_clonedb -I inst01 -S prod -T clone -c \
Checkpoint_1105997700  -m /mnt/clone
```

Note: If your mount point is under the directory `/tmp`, you will not encounter this problem. [285139]

Avoid using UNIX VEA via PC-based UNIX emulators

There can be problems displaying deep mapping topology in PC-based UNIX emulators like Exceed. Use the Windows VEA client instead of running the UNIX VEA client via emulators.

CLI database state changes are delayed in GUI

If you use the command line to start or stop the database, the state change is not immediately shown in the GUI. This delay can take up to 60 minutes.

Workaround: Start or stop the database from the GUI, or do a manual rescan from the GUI after starting or stopping with CLI. [604685]

No longer supported

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

- With Veritas Storage Foundation 4.1, Solaris 2.7 is no longer supported.

- With Veritas Storage Foundation 4.1, Oracle 8*i* is no longer supported. Any references to Oracle 8*i* in the *Veritas Storage Foundation for Oracle Administrator's Guide* should be disregarded.

- Veritas Storage Foundation 4.1 was the last release to support Oracle Disk Manager for raw devices.

- Veritas Storage Foundation 4.1 was the last release to support the text-based VxDBA menu interface.

- Veritas Storage Foundation 4.0 was the last release to support the Veritas Space Capacity Planning utility for Storage Checkpoints in the GUI. The 4.1 release supports the Veritas Space Capacity Planning utility with the CLI only.

- Veritas Storage Foundation 4.0 was the last release to support scheduling Storage Checkpoint creation.

- VxFS disk layout versions prior to Version 4 cannot be mounted. Use the `vxfsconvert` command to convert them to a disk layout version that can be mounted. See the *Upgrading VxFS Disk Layout Versions* section in the *Veritas Storage Foundation Installation Guide* for more information.

- VxFS disk layout Version 4 and 5 will no longer be supported in the next major release.

- Veritas Storage Foundation 4.1 was the last release to support the VxFS QuickLog feature.

- In Veritas Storage Foundation 4.1 *for Oracle*, snapshot plexes created by the `vxassist` command are not supported. A combination of snapshot plexes created by `vxassist` and `vxsnap` is also not supported.

- The `seconly` mount option might not be supported in the next release of Veritas Storage Foundation.

- Coexistence of DMP with Sun's Alternate Pathing (AP) driver is no longer supported by VxVM.

- The use of the `upgrade_start` and `upgrade_finish` scripts to upgrade VxVM will not be supported in the next major release.

- Veritas FlashSnap Agent for Symmetrix (VxFAS) will no longer be supported in the next major release.

- Quick I/O and Cached Quick I/O will no longer be supported in the next major release.

- Arrays can no longer be configured through the GUI. Instead, configure arrays with the `vaildiag` CLI tool. For complete details, see the *Veritas Array Integration Layer Array Configuration Guide*.

Fixed issues

Veritas Volume Manager fixed issues

The following issues have been fixed in this release of VxVM.

Incident	Description
140947	I/O policy settings were not persistent between reboots.
229538	Multiple enclosures of the same type generated unexpected enclosure-based names.
272263	Changing a disk's I/O policy could hang `vxconfigd`.
272309	Incomplete records in `/etc/vx/disk.info` could cause `vxconfigd` to dump core.
272626	The checksum of a RAID-5 volume and its snapshot did not agree under some circumstances.
272891	`vxnotify` did not receive events relating to the change of controller states in DMP.
273314	Setting DRL on a volume in the SYNC state could cause the volume to be recovered incorrectly.
273850	A system could not be booted from an encapsulated root disk in a DMX 1000 array.
310784, Sun Bug ID 6230678	Encapsulating a boot file system that spanned two disks produced an error message.
311530, Sun Bug ID 6230031	Renaming an enclosure with a longer name caused `vxconfigd` to dump core.
506139	If the naming scheme was changed, the default arguments to `vxconfigd` were not preserved.

Veritas File System fixed issues

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

Incident	Description
498024	`vxsvc` dumped core after upgrading disk layout Version 4 to Version 6.
498031	`qioadmin` file settings were not persistent after a reboot.
506593	`df` reported incorrect information on an unmounted block device.

Incident	Description
526434	`vxrepquota` was missing a space between hardlimit and timeleft values.
526436	`open()` with O_CREAT and a long file name returned the `EIO` error.
568260	`vx_isnfs()` would sometimes cause a panic.
586928	`fcntl()` had poor performance in a clustered file system.

Veritas Storage Foundation for Databases fixed issues

Veritas Storage Foundation for Oracle fixed issues

The following issues have been fixed in this release of Veritas Storage
Foundation for Oracle:

Incident	Description
269029	An ODM warning message is no longer produced if ODM is not enabled in Oracle home during a rescan.
534417	Previously, in some localized environments you could not use the VEA GUI. This has been fixed.
546921	Non-root users (such as Database Administrators) can now start the `vxdbd` process.
566275	The `dbed_vmclonedb -o restartdb` command now properly restarts the database.

Veritas Storage Foundation for DB2 fixed issues

The following are fixed issues in this release of Veritas Storage Foundation for
DB2:

Incident	Description
566043	Reverse resynchronization (`dbed_vmsnap -o reverse_resync_begin`) no longer fails in an HA environment.
564175	Remove Clone Database GUI menu item now works.

Veritas Storage Foundation for Sybase fixed issues

The following are fixed issues in this release of Veritas Storage Foundation for Sybase:

Incident	Description
545985	The `qio_getdbfiles -d` command now properly lists information for specified database.

Known issues

Veritas Storage Foundation known issues

License package not completely removed from non-global zones

Some files from the Veritas licensing package (VRTSvlic) may not be removed from a non-global zone that was created after VRTSvlic was originally installed. An error message is displayed if all files are not removed. If the error was encountered, after the package removal process ends, run the following command from the global zone to remove any remaining VRTSvlic files:

    # **rm -rf *zonepath*/root/var/sadm/pkg/VRTSvlic**

If you are upgrading a product, and non-global zones are configured, instead of selecting the installer upgrade procedure (or running the script from the command line), perform the upgrade in steps: Uninstall the product, uninstall the infrastructure packages (uninstallinfr script), then reinstall the product.

Permissions on the /etc directory change during product installation

Because of a Solaris bug in the pkgadd command, the permissions on the /etc directory may change during the installation of Symantec product packages. Check after an installation procedure to see if this occurred. Use the chmod command to reset the permissions.

DBMS security issue

The Symantec Shared DBMS feature creates the following configuration files:

- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases.conf

- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases1.conf

- /etc/vxdbms/VERITAS_DBMS3_hostname/conf/registration.dat

These configuration files are created or modified by vxdbms_start_db.pl, vxdbms_start-server.pl, and vxdbms_register.pl respectively.

The files are writable by everyone if the file mode creation mask is insufficiently restrictive. Symantec strongly recommends that you restrict the default file mode creation permissions (using the umask command) for root and administrator accounts to avoid a potential security issue. Specifically, change the group|world write and execute permissions in the default umask. At its least

restrictive, the default umask for root should be 022. Symantec recommends setting to 077.

Veritas Volume Manager known issues

See the following sections for information about known problems and issues in this release of VxVM.

Installation and upgrade issues

ASL support for Sun StorEdge T3 and T3+ arrays

This release does not include the `libvxpurple.so` array support library (ASL) to support Sun StorEdge T3 and T3+ arrays. Any existing version of the `libvxpurple.so` ASL is removed when VxVM is upgraded to 5.0. Any T3 and T3+ arrays must be configured in autotrespass mode, and treated as JBODs of type A/P. An ASL to support Sun StorEdge T3 and T3+ arrays will be provided in the 5.0 Maintenance Pack 1 release.

If an array is of type A/A-A, A/P or A/PF, and a suitable ASL is not available, the array must be claimed as an JBOD of type A/P. This is to prevent path delays and I/O failures arising. As JBODs are assumed to be type A/A by default, and neither T3 nor T3+ arrays are of this type, you must create appropriate JBOD entries for such arrays.

To configure a Sun StorEdge T3 or T3+ array as a JBOD of type A/P

1   Stop all applications, such as databases, from accessing VxVM volumes that are configured on the array, and unmount all VxFS file systems and checkpoints that are configured on the array.

2   Configure the T3 or T3+ array in autotrespass mode.

3   Add the array as a JBOD of type A/P:
    ```
    # vxddladm addjbod vid=SUN pid=T300 policy=ap
    ```

4   If you have not already done so, upgrade the Storage Foundation or VxVM software to 5.0. Device discovery will be performed during the upgrade, and the array will be claimed as an A/P JBOD.
    If you have already upgraded your system to 5.0, run the following command to perform device discovery:
    ```
    # vxdctl enable
    ```

5   Verify that the array has been added with the policy set to `APdisk`:
    ```
    # vxddladm listjbod
    VID   PID     Opcode Page Code Page Offset SNO length Policy
    ============================================================
    SUN   T300    18     -1        36          12         APdisk
    ```

6   Check that the correct devices are listed for the array:

```
# vxdisk list
DEVICE      TYPE         DISK    GROUP    STATUS
APdisk_0    auto:cdsdisk -       -        online invalid
APdisk_1    auto:cdsdisk -       -        online invalid
APdisk_2    auto:cdsdisk -       -        online invalid
...
```

Error messages seen during live upgrade

When running the vxlufinish script to upgrade VxVM, you may see error messages similar to the following.

```
ld.so.1: vxparms: fatal: libc.so.1: version `SUNW_1.22' not
found (required by file vxparms)
ld.so.1: vxparms: fatal: libc.so.1: open failed: No such file or
directory
VxVM vxparms ERROR V-5-1-0 IPC failure
```

Such messages are harmless and can be ignored.

Initializing disks previously under VxVM control

If you are planning to initialize disks, check to see if any of the disks were previously under VxVM control. If so, and if they were used on the same host system, the disk groups they represent are imported automatically during the installation process if the proper removal procedures were *not* followed. An attempt during installation to initialize or encapsulate disks that were previously under VxVM control fails. After installation, if you no longer want to use those disk groups, use the destroy option of the vxdg command to remove those disk groups. Alternately, you can use vxdiskunsetup to remove the disks from VxVM control. Be aware that these options can result in data loss if used incorrectly.

Recognizing simple disks from earlier releases

In earlier releases of VxVM, some users minimized the allocation of disks to the disk group, rootdg, by associating rootdg with a small disk partition that was characterized as a simple disk. This procedure would have been achieved by using the command, vxdctl add disk, which is no longer supported in VxVM 4.0 and later releases.

If you created one of these simple disks, you will need to carry out a procedure similar to the one described in the following example.

Assuming that the simple disk is defined to be on c1t21d0s7, you would see the following entry in /etc/vx/volboot:

```
disk c1t21d0s7 simple privoffset=1
```

After upgrading to VxVM 5.0, you must reboot the system. After rebooting, execute the command, `vxdisk list`, and you will see that `c1t21d0s7` is not listed. This is because `vxconfigd` now ignores disk entries in `/etc/vx/volboot`.

To retain access to data on a simple disk

1   Define a disk access record that will be created in `/etc/vx/darecs`

   `# vxdisk define c1t21d0s7 type=simple`

2   Request that `vxconfigd` should extract information from this disk:

   `# vxdctl enable`

3   Discover the name of the disk's disk group:

   `# vxprint -th`

4   Enable access to the disk's disk group; `rootdg` in this example:

   `# vxvol -g rootdg startall`

[137838]

Error messages output by the upgrade script

If a swap volume specified in `/etc/vfstab` is mirrored at the time that `upgrade_start` is run, the `upgrade_finish` script starts a resynchronization of the volume. This can cause a message similar to the following to be printed when the command to reboot the system is issued:

```
xvm:vxvol: tutil0 field for plex plex_name changed unexpectedly
```

This message can be ignored.

For a system on which the root file system is contained on a mirrored volume, the `upgrade_start` script can choose a mirror on a disk other than the normal boot disk to perform the upgrade. If this occurs, the reboot after running `upgrade_finish` can initially fail, claiming that the mirror on the boot disk is stale, as follows:

```
vxvm:vxconfigd: Error: System boot disk does not have a valid
rootvol plex.Please boot from one of the following disks:

disk: *diskname*Device: *device*
            ...
vxvm:vxconfigd:Error: System startup failed
The system is down.
```

Boot the system from one of the disks named. If the `eeprom` option `use-nvramrc?` is set to `true`, boot the system by specifying `vx-diskname`.

Interruption of an upgrade

If the installation software is interrupted on the local system during certain upgrade situations, Veritas Volume Manager configurations may be lost after a reboot. If this happens, the entire Veritas Volume Manager package must be reinstalled and a recover must be done manually by recreating the disks, disk groups, and volumes and restoring the data from backup. [13033]

"SIGHUP caught" message on the console

When running `vxinstall` on a system with a SENA array that is enabled with enclosure naming, you may see a message similar to the following:

```
newmac.veritas.com console login: Dec 31 00:00:00
syseventd[59]: SIGHUP caught
```

You can safely ignore this message. [Sun Bug ID 4955989, i138955]

Misleading alerts generated on a system with the VAIL package installed

An alert with the text message "`SymCLI command line tools are not installed properly`" will be generated in each of the following two cases when SYMCLI is either absent or not installed properly on the host on which a VAIL package is installed.

Case 1. When host comes up after a reboot and SYMCLI is either absent or not installed properly.

Case 2. When a rescan of Symmetrix provider is initiated and SYMCLI is either found to be absent or found to be not installed properly but SYMCLI installation was proper before rescan of Symmetrix provider was initiated.

In either of Case 1 or Case 2 one should ignore the alert message on the host on which VAIL package is installed if there is no EMC Symmetrix array being managed on that host. [Sun Bug ID 6211778, 297830]

Utility issues

No support for non-global zones

Veritas Volume Manager does not support non-global zones.

Global Device Naming

The Global Device Naming (GDN) option to the `vxddladm` command should only be used with the Storage Foundation Volume Server software. [608621]

Current naming scheme

There is no option in the `vxddladm` command to display the current naming scheme. The naming scheme that is in operation can be deduced from the output to the `vxdisk list` command. [611320]

Specifying an enclosure to the vxdmpadm getportids command

The `enclosure` attribute should be used to specify an enclosure name to the `vxdmpadm getportids` command, instead of the `enclr` attribute that is shown in the *Veritas Volume Manager Administrator's Guide* and the `vxdmpadm`(1M) manual page.

vxdiskadm displays error V-5-1-9764 when excluding devices

The `vxdiskadm` operation displays error V-5-1-9764 if a vendor and product ID combination are specified to exclude devices from multipathing. This error is harmless and can be ignored. The error is not seen if controller or device names are specified instead. [587435]

Disk group is disabled if private region sizes differ

A disk group is disabled if the `vxdg init` command is used to create it from a set of disks that have pre-existing private regions that differ in size. This may occur if the disks previously belonged to disk groups in older releases of VxVM.

The workaround is to reinitialize the disks before creating the disk group (for example, by using the `vxdisk -f init` command), or to use the `vxdg adddisk` command to add the disks to the disk group after it has been created. [592180]

Volume tags are lost after disk group split

If a disk group is split from a source disk group, volumes in the split-off disk group do not retain their volume tags. You must recreate the tags by using the `vxassist settag` command. [605743]

Maximum size of a VxVM volume

VxVM supports volume lengths up to 256TB. However, any 32-bit legacy applications that use system calls such as `seek`, `lseek`, `read` and `write` are limited to a maximum offset that is determined by the operating system. This value is usually 2^{31}-1 bytes (1 byte less than 2 terabytes).

Resizing volumes with detached remote plexes

If a volume in a Remote Mirror configuration has detached plexes at a remote site, you can use the following procedure to resize it:

1 Turn off the `allsites` attribute for the volume:

    # **vxvol -g *diskgroup* set allsites=off *volume***

2 Remove the detached plexes:

    # **vxassist -g *diskgroup* remove mirror *volume* \
      plexnames=*plex1,plex2,...***

3 Use the `vxresize` command to resize the volume.

When the remote site comes back up:

1   Replace the removed plexes using storage at the remote site:

    # **vxassist -g *diskgroup* mirror *volume* nmirror=*N* \
      site:*remote_site_name***

2   Turn on the allsites attribute for the volume:

    # **vxvol -g *diskgroup* set allsites=on *volume***

Shrinking a swap volume

vxassist has no built-in protection to prevent you from shrinking the swap
volume without first shrinking what the system sees as available swap space. If
it is necessary to shrink the swap volume, the operation must be done in single
user mode and the system must be rebooted immediately. Failing to take these
precautions can result in unknown system behavior or lock-up. [6154]

Adding a log and mirror to a volume

The vxassist command does not add a mirror and a log when processing a
command such as the following:

    # **vxassist mirror *volume* layout=log ...**

The mirror is added, but the log is silently omitted. To add a log and a mirror,
add them in two separate vxassist invocations, as follows:

    # **vxassist mirror *volume* ...**
    # **vxassist addlog *volume* ...**

[13488]

Replacement of the old_layout attribute

The old_layout attribute is no longer supported when the vxdisksetup
command is used to make a disk into a VxVM controlled disk. Use the noreserve
attribute instead. [121258]

Using vxvol and vxmend with layered volumes

The vxvol and vxmend commands do not handle layered volumes very well.
When vxmend is executed on the top level volume to change the state of a
volume, it is executed only on the top level volume; the change is not propagated
to the lower level volumes. As a result, the volume states can become
inconsistent and a subsequent vxvol init command might fail.

The vxvol command exhibits the same problem. When a vxvol init command
is executed on the top level volume, the change is not propagated to the volumes
corresponding to its subvolumes.

Workaround: When executing the vxvol or vxmend command on a layered
volume, first issue the command to the lower level volumes in a bottom-up
fashion; then execute the command on the top-level volume.

In this example, a volume, `vol`, has two subvolumes, `vol-L01` and `vol-L02`. The state of the volumes is first set to `empty`, and then the initialization commands are executed:

```
# vxmend -o force -g mydg fix empty vol
# vxmend -o force -g mydg fix empty vol-L01
# vxmend -o force -g mydg fix empty vol-L02
# vxvol -g mydg init zero vol
# vxvol -g mydg init zero vol-L01
# vxvol -g mydg init zero vol-L02
```

[134932]

Growing or shrinking layered volumes

Due to the current implementation of a resize of layered volumes, it is recommended that you do not grow or shrink layered volumes (for example; `stripe-mirror`, `concat-mirror`) while resynchronization is ongoing. Note that this limitation does not apply to ISP layered volumes.

Internally, VxVM converts the layout of layered volumes and updates the configuration database before it does the actual resize. This causes any ongoing operation, such as a resynchronization, to fail.

If the system reboots before the `grow` or `shrink` of a layered volume completes, the volume is left with an intermediate layout. In this case, you have to use `vxassist convert` to restore the volume to its original layout.

After a layered volume is resized, the volume names, the plex names and the subdisk names associated with the subvolumes, are changed.

Converting a multipathed disk

Under Solaris 10 when converting a multipathed disk that is smaller than 1TB from a VTOC label to an EFI label, you must issue a `format -e` command for each path. For example, if a node has two paths, `c1t2d0s2` and `c2tsd0s2`, you need to apply the `format -e` command to each of the two paths. [269566]

Startup script messages not seen on the console

With the introduction of SMF support in Solaris 10, startup script messages are no longer seen on the console.

These messages can be viewed (cat or vi) in SMF log files found at:

```
/var/svc/log
/etc/svc/volatile
```

The file names are based on the specific startup script:

```
#/var/svc/log: ls
system-vxvm-vxvm-startup2:default.log
system-vxvm-vxvm-sysboot:default.log
```

Also, other startup messages can be found in:

```
#/var/svc/log: ls
milestone-multi-user-server:default.log
milestone-multi-user:default.log
milestone-name-services:default.log
milestone-single-user:default.log

#/etc/svc/volatile

system-vxvm-vxvm-startup2:default.log
system-vxvm-vxvm-sysboot:default.log
```

[269949]

Bad disk block warning

When `vxio` detects a bad disk block on a disk, it will display a warning message indicating that an uncorrectable write error has been encountered. [272176]

Do not specify a long device name in the /etc/vx/disks.exclude file

It is recommended that you do not edit the `/etc/vx/disks.exclude` file directly. Some scripts like `vxdiskadm` fail with an error message if a long device name is specified in this file. You should instead use option 17 or 18 of the `vxdiskadm` command to suppress or unsuppress devices from VxVM's view. [Sun Bug ID 6228464, 311275]

Unable to boot system without bootdg link to the boot disk group

A system may fail to boot with the following errors:

```
ERROR: svc:/system/filesystem/root:default failed to mount /usr
(see 'svcs -x'for details)
[ system/filesystem/root:default failed fatally (see 'svcs -x'
for details) ]
Requesting System Maintenance Mode
(See /lib/svc/share/README for more information.)
Console login service(s) cannot run

Root password for system maintenance (control-d to bypass):
single-user privilege assigned to /dev/console.
Entering System Maintenance Mode

Feb 14 23:41:26 su: 'su root' succeeded for root on /dev/console
su: No shell /bin/ksh.  Trying fallback shell /sbin/sh.
-sh: /bin/i386: not found
-sh: /usr/sbin/quota: not found
-sh: /bin/cat: not found
-sh: /bin/mail: not found
-sh: -o: bad option(s)
```

One possible cause for the error that the symbolic link between `bootdg` and the boot disk group under `/dev/vx/dsk` or `/dev/vx/rdsk` is missing.

The workaround for this error is as follows:

1   Make sure that your system does not have a link under /dev/vx/dsk and
    /dev/vx/rdsk

    ```
    bootdg -> rootdg
    ```

2   Boot the system from cdrom or net.

3   Mount the / from CDROM. In this example cxtxdxs0 is the boot disk.

    ```
    # mount -F ufs -o nologging /dev/dsk/cxtxdxs0 /mnt
    ```

4   Create the link. This example assumes that the boot disk group is called
    rootdg:

    ```
    # cd /mnt/dev/vx/dsk
    # ln -s rootdg bootdg
    # cd /mnt/dev/vx/rdsk
    # ln -s rootdg bootdg
    # cd
    # umount /mnt
    # init 0
    ```

5   Reboot the system.

[Sun Bug ID 6230224]

Device issues

Stale device entries slow down VxVM

Under Solaris 10, stale device entries in the /dev/[r]dsk directories can cause
the VxVM configuration daemon, vxconfigd, to consume a large amount of CPU
time. Remove the stale entries by entering the following sequence of commands:

```
# devfsadm –C
# touch /reconfigure
# init 6
```

Newly added disks should be labeled

When new disks are added to a Solaris configuration, these disks should be
labeled before they are used with VxVM. VxVM can discover unlabeled disks, but
it cannot read their disk geometry, nor can it initialize them. A console message
similar to the following is displayed for each unlabeled disk:

```
WARNING: /pci@1e,600000/SUNW,qlc@3,1/fp@0,0/ssd@w22110002ac0002
66,0 (ssd18): Corrupt label; wrong magic number
```

When VxVM discovers unlabeled disks, the disk configuration information is
added to DMP. If DMP attempts to open the unlabeled device, the open fails, and
the paths are disabled. If the system is subsequently rebooted with the unlabeled
disks, DMP disabled path messages are also displayed for the unlabeled disks.

To prevent unnecessary delay occurring at boot time, it is recommended that you use the `format` command to label new disks before having VxVM discover and initialize them. [544797]

vxddladm addsupport command limitations

The `vxddladm addsupport` command could cause your system to hang when using a Sun SCSI Enclosure Service (SES) Driver. This situation can be caused by stale entries in `/dev/es`. A stale entry is a device link in `/dev/es`, for which no corresponding device is connected to the system.

In some circumstances, installing VxVM can cause a system to hang because the `vxddladm addsupport` command is also run.

If your system hangs, perform the following workaround:

1   Reboot the system.

2   Remove all entries, both stale and valid, from `/dev/es`.

3   Run the `devfsadm` command to recreate `/dev/es` with valid entries:

    # **devfsadm -C**

4   Reinstall the Veritas software.

[115323, 140441]

Disk controller firmware upgrades

For a workaround to Sun Bug ID 4164338, use the procedure described in ''Upgrading disk controller firmware'' in the ''Administering Dynamic Multipathing (DMP)'' chapter of the *Veritas Volume Manager Administrator's Guide*.

T3B firmware upgrade on Solaris 9

On Solaris 9 only, a T3B upgrade to firmware version 2.1 must follow the procedure below. Not using the procedure leads to disabled disk groups or an inability to mount file systems. (i95877)

1   Use the `umount` command to unmount related file systems

    # **umount *mount_point***

2   Stop all VxVM volumes:

    # **vxvol -g dg_name stopall**

3   Stop VxVM:

    # **vxdctl stop**

    # **vxiod -f set 0**

4   Upgrade the T3B firmware to version 2.1.

5   Start VxVM:
    ```
    # vxiod set 10
    # configd -m disable
    # vxdctl enable
    ```

6   Start the VxVM volumes:
    ```
    # vxvol -g dg_name start vol_name
    ```

7   Use the mount command to remount the file system, for example:
    ```
    # mount -F vxfs /h/filesys
    ```

Event source daemon dies

If the host-side switch port is disabled and enabled on a Brocade switch, the event source daemon (vxesd) dies if the latest Solaris patches for the SUNWfchba, SUNWfchbr and SUNWfchbx packages have not been applied to the system. For Solaris 8 or 9, SAN Foundation kit 4.4.7 or later is required. For Solaris 10, install the latest recommended Patch Cluster. [534392]

Hitachi arrays in Active/Active mode

When Hitachi DF400, DF500, HDS9200, HDS9500 or HDS9700 arrays are configured as Active/Active mode arrays, performance is degraded. The correct ASL must be installed that allows these arrays to be claimed as A/PG-type arrays. [73154]

Relayout of volumes on the root disk

Do not run the vxrelayout and vxassist commands to relayout a volume that is part of root disk. This action may corrupt the layout of the root disk so that you cannot boot from it. On an encapsulated root disk, a relayout can cause an upgrade to fail. [103991]

Failure to add a disk from a T3 array

On a T3 array, VxVM may display the following failure when trying to add a disk (typically from vxinstall or vxdisksetup):
```
vxvm:vxdisk: ERROR: Device XXXX: online failed
Device path not valid
```
This can happen in cases where the T3 disk was re-partitioned (or re-formatted) prior to one or more disks being added. [105173]

SFCFS with I/O fencing is not supported on HDS9200 arrays

If you attempt to boot a cluster with I/O fencing (PGR) enabled, HDS9200 disks will show up in error state on the slaves. This error does not appear if I/O fencing is disabled. [131926]

Disks in V480 and V880 internal disk enclosures

Fujitsu and Hitachi disks in V480 and V880 internal disk enclosures may not be automatically recognized as JBOD disks. This could potentially cause data corruption if multipathing is not configured correctly. After installing any Sun-qualified FC disks as FRU replacements, use the procedure described in "Adding Unsupported Disk Arrays to the DISKS Category" in the "Administering Disks" chapter of the *Veritas Volume Manager Administrator's Guide* to add each such disk to the JBOD category. It is important that both the vendor ID and product ID are specified for each such disk to avoid conflicts with similar disks in other arrays. For Fujitsu disks, the number of characters in the serial number must also be specified. [Sun Bug ID 4900508, i133579]

Encapsulation of disks with insufficient space for a private region

Disks with insufficient space for the allocation of an on-disk database copy cannot be encapsulated. The database requires at least the same space as is allocated for other disks in the same disk group. The default required size is 32MB. To work around this, relocate the data on the last partition of the disk to a volume on a different disk, and free the space by reducing the partition size to 0.

The space for the database must be allocated from the beginning or the end of the disk, with the exception of the root disk. The root disk can be encapsulated by carving out space from the swap partition if there is no space at the beginning or at the end of the disk. This is done by creating a subdisk for the private partition in the space obtained from the swap partition.

Workaround: The problem of insufficient space on a disk to store private VxVM information has no workaround. VxVM requires a small region of private storage for proper disk identification. The number of VxVM objects that can be configured in a disk group is almost directly proportional to the size of the private region. The default private region size is 32MB. If this size is overridden, it is recommended that it be made no smaller than 1MB.

Errors when using JNI cards

If the model number of your JNI card is one of FCE-1063, FCE2-1063, FCE-6410, FCE2-6410, or FCE2-6412, you may experience error messages of the form:

```
Oct 22 00:16:16 ds13un jnic: [ID 847178 kern.notice] jnic1: Memory
port parity error detected
Oct 22 00:16:16 ds13un jnic: [ID 229844 kern.notice] jnic1: Link
Down
Oct 22 00:16:16 ds13un jnic: [ID 744007 kern.notice] jnic1: Target0:
Port
0000EF (WWN 500060E802778702:500060E802778702) offline.
Oct 22 00:16:18 ds13un jnic: [ID 709123 kern.notice] jnic1: Link Up
Oct 22 00:16:18 ds13un jnic: [ID 236572 kern.notice] jnic1: Target0:
Port
0000EF (WWN 500060E802778702:500060E802778702) online.
Oct 22 00:16:18 ds13un jnic: [ID 229844 kern.notice] jni
Contact JNI support for more information.
```

Workaround: Add the following parameter to the JNI configuration file (`jnic.conf`):

```
FcEnableContextSwitch = 1;
```

Sun StorEdge Traffic Manager (SSTM)

The Sun StorEdge Traffic Manager (SSTM) boot support feature that is available through SAN 4.3 or later is not supported. Booting from fabric devices under SSTM or boot encapsulation of fabric devices under SSTM is also not supported. [Sun Bug ID 4912232, 4909641, 4912667].

Loss of disk space in 3510 arrays

If a 3510 array disk that is larger than 512GB is initialized to be a CDS disk, the value that is returned by a SCSI mode sense command for the number of sectors per track may be incorrect. This can cause the sector count to be miscalculated and some disk space to be lost. [272241]

Hitachi 9990 Genesis array

After installing the Storage Foundation software, errors such as the following may be displayed on the console.

```
d18b-root@[/usr/sbin>d18b-root@[/usr/sbin]>get_geometry_info_c
ommon: solaris disk label adj. failed for
/dev/vx/rdmp//GENESIS0_6 (err 22)get_geometry_info_common:
solaris disk label adj. failed for /dev/vx/rdmp//GENESIS0_6 (err
22)get_geometry_info_common: solaris disk label adj. failed for
/dev/vx/rdmp//GENESIS0_6 (err 22)get_geometry_info_common:
solaris disk label adj. failed for /dev/vx/rdmp//GENESIS0_6 (err
22)get_geometry_info_common: solaris disk label adj. failed for
/dev/vx/rdmp//GENESIS0_6 (err 22)get_geometry_info_common:
solaris disk label adj. failed for dev/vx/rdmp//GENESIS0_6 (err
22)
```

This failure has been observed on the Hitachi 9990 (Genesis) arrays where the disk geometry data is being handled incorrectly by `vxconfigd`, resulting in the indicated message during `vxdctl enable` or `vxconfigd` startup. This message does not affect VxVM's use of the array. [Sun Bug ID 6221005, 301931, 308975]

Error messages when IDE devices are discovered
When an internal Intelligent Drive Electronics (IDE) device is claimed, VxVM attempts to obtain geometry data for the device using SCSI commands, which results in error messages being displayed:

```
get_geometry_info_common: /dev/vx/rdmp//c0t0d0 fmt_page_code
failed. ret 0x19
```

These messages can be ignored as no data is lost, and VxVM claims the device correctly. [Sun Bug ID 6222054, 308336]

S-VOL devices on HDS with TrueCopy enabled
When using HDS with True Copy enabled, the primary devices (P-VOL) and their mirrors (S-VOL devices) are both seen in `vxdisk list` output. The P-VOL devices are available for import but the S-VOL devices are not available for import. Do not try to use S-VOL devices even though they appear in the `vxdisk list` output. [300979]

Hot-relocation issues

Impact of hot-relocation on performance
Except for `rootvol` and `swapvol`, the hot-relocation feature does not guarantee the same layout of data or performance after relocation. It is therefore possible that a single subdisk that existed before relocation may be split into two or more subdisks on separate disks after relocation (if there is not enough contiguous space on a single disk to accommodate that subdisk). [14894]

Disk information in notification messages
When a disk failure occurs, the hot-relocation feature notifies the system administrator of the failure and any relocation attempts through electronic mail messages. The messages typically include information about the device offset and disk access name affected by the failure. However, if a disk fails completely or a disk is turned off, the disk access name and device offset information is not included in the mail messages. This is because VxVM no longer has access to this information. [14895]

DMP issues

I/O is not restored on a path

If a path is re-enabled after a failback or a non-disruptive upgrade (NDU) operation, I/O may not be restored on that path. To unblock I/O on the path, run the `vxdisk scandisks` command. [617331]

DMP obtains incorrect serial numbers

DMP cannot obtain the correct serial number for a device if its LUN serial number contains a comma (,). This problem has been seen on EMC Symmetrix arrays with more than 8096 LUNs. [611333]

Disabling switch ports can cause I/O failures

Disabling the switch ports on the secondary paths to an A/P array can cause I/O failures on the primary path. This is because a fabric reconfiguration can take some time to stabilize depending on the complexity of the SAN fabric. Running the `vxdisk scandisks` command returns the primary paths to the enabled state. [607996]

Failure of mirroring with A/PF arrays

Mirroring a volume by using option 6 to the vxdiskadm command fails if the device discovery layer chooses a secondary path to a device in an A/PF array. There is no known workaround for this issue. [603164]

Event source daemon can dump core

Under rare circumstances, the event source daemon (`vxesd`) can produce a core dump. [593076]

Default I/O policy

The default I/O policy for Active/Active (A/A) arrays has been changed from `balanced` to `minimumq`. The default I/O policy for Asymmetric Active/Active (A/A-A) and Active/Passive (A/P) arrays has been changed from `singleactive` to `round-robin`.

Cluster functionality issues

Failure to detach a bad plex

If the cluster detach policy is set to global, and a non-mirrored volume experiences a disk media failure, the disk is not shown as failed and the volume is not disabled. However, I/O requests fail. [521182]

Node rejoin causes I/O failures with A/PF arrays

A cluster node should not be rejoined to a cluster if both the primary and secondary paths are enabled to an A/PF array, but all the other nodes are using only the secondary paths. This is because the joining node does not have any knowledge of the cluster configuration before the join takes place, and it attempts to use the primary path for I/O. As a result, the other cluster nodes can experience I/O failures and leave the cluster.

Workaround:

1   Before joining the node to the cluster, disconnect the cable that corresponds to the primary path between the node and the A/PF array.

2   Check that the node has joined the cluster by using the following command:

        # **vxclustadm nidmap**

    The output from this command should show an entry for the node.

3   Reconnect the cable that corresponds to the primary path between the node and the array.

4   Use the following command to trigger cluster-wide failback:

        # **vxdisk scandisks**

    All the nodes should now be using the primary path.

[579536]

Volume persists in SYNC state

If a node leaves the cluster while a plex is being attached to a volume, the volume can remain in the SYNC state indefinitely. To avoid this, after the plex attach completes, resynchronize the volume manually with the following command:

    # **vxvol -f resync** *volume*

[Sun Bug ID 4087612; 20448]

RAID-5 volumes

VxVM does not support RAID-5 volumes in cluster-shareable disk groups.

File systems supported in cluster-shareable disk groups

The use of file systems other than Veritas Storage Foundation Cluster File System (SFCFS) on volumes in cluster-shareable disk groups can cause system deadlocks.

Reliability of information about cluster-shareable disk groups

If the `vxconfigd` program is stopped on both the master and slave nodes and then restarted on the slaves first, VxVM output and VEA displays are not reliable until the `vxconfigd` program is started on the master and the slave is reconnected (which can take about 30 seconds). In particular, shared disk groups are marked `disabled` and no information about them is available during this time. The `vxconfigd` program must therefore be started on the master first.

Messages caused by open volume devices

When a node terminates from the cluster, open volume devices in shared disk groups on which I/O is not active are not removed until the volumes are closed. If this node later joins the cluster as the master while these volumes are still open, the presence of these volumes does not cause a problem. However, if the node tries to rejoin the cluster as a slave, this can fail with the following error message:

```
cannot assign minor #
```

This message is accompanied by the console message:

```
WARNING:minor number ### disk group group in use
```

Remote Mirror issues

Volume relayout

Volume relayout is not supported for site-confined volumes or for site-consistent volumes in this release. [528677]

Setting site consistency on a volume

The `vxvol` command cannot be used to set site consistency on a volume unless sites and site consistency have first been set up for the disk group. [530484]

Adding a remote mirror

Adding a remote mirror to a new site for a site-consistent volume does not also create a DRL log plex or a DCO plex at that site. The workaround is to use the `vxassist addlog` command to add a DRL log plex, or the `vxsnap` command to add a version 20 DCO plex at the specified site (`site=sitename`). [533208]

Replacing a failed disk

It is not possible to replace a failed disk while its site is detached. You must first reattach the site and recover the disk group by running these commands:

```
# vxdg -g diskgroup reattachsite sitename
# vxrecover -g diskgroup
```

The `vxdiskadm` command gives an error when replacing disk on which the `site` tag had been set. Before replacing such a failed disk, use the following commands to set the correct site name on the replacement disk:

```
# vxdisk -f init disk
# vxdisk settag disk site=sitename
```

[536853, 536881]

Reattaching a site

Reattaching a site when the disks are in the serial-split brain condition gives an error message similar to the following if the `-o overridessb` option is not specified:

```
VxVM vxdg ERROR V-5-1-10127 disassociating sitename: Record not
in disk group
```

Use the following commands to reattach the site and recover the disk group:

```
# vxdg -g diskgroup -o overridessb reattachsite sitename
# vxrecover -g diskgroup
```

[540351]

Site records are not propagated during disk group split, move or join

Split, join and move operations fail on a source disk group that has any site-confined volumes. This is because site records cannot be propagated to a target disk group during such operations.

One of the following messages is displayed as a result of a failed disk group split, join or move operation:

```
There are volume(s) with allsites flag which do not have a plex
on site sitename. Use -f flag to move all such the volumes
turning off allsites flag on them.
```

```
The volume(s) with allsites flags are being moved to the target
disk group that doesn't have any site records. Use -f flag to
add all such volumes turning off allsites flag on them.
```

The suggested workaround is to ensure that `allsites=off` is set on all the volumes that are being moved between disk groups:

1   Run the following command on each of the volumes that is being moved split or joined to find out if `allsites=on` is set on any of them.

```
# vxprint -g diskgroup -F %allsites volume
```

2   Run the following command on each of the volumes with `allsites=on` set that you found in the previous step.

```
# vxvol -g diskgroup set allsites=off volume
```

3   Proceed with the disk group split, join or move operation.

[563524]

Restoring site records

The `vxmake` command can be used to recreate a disk group configuration, but not to restore site records. After restoring a disk group configuration, use the following command to recreate the site records manually:

    # **vxdg -g *diskgroup* addsite *site***

[584200]

Snapshot and snapback issues

Using snapshots as root disks

It is recommended that you do not use snapshots of the root volume as a bootable volume. A snapshot can be taken to preserve the data of the root volume, but the snapshot will not be bootable. The data from the snapshot would have to be restored to the original root volume before the system could be booted with the preserved data.

Warning message when taking a snapshot of an SFCFS file system

When taking a snapshot of an SFCFS file system, the following warning message might appear:

    vxio: WARNING: vxvm:vxio: Plex *plex* detached from volume *vol*

Workaround: No action is required. This behavior is normal and is *not* the result of an error condition.

File system check of a snapshot

Normally, a file system would have no work to do when a snapshot is taken. However, if a CFS file system is not mounted, it is likely that the `fsck` of the snapshot will take longer than is usually necessary, depending on the I/O activity at the time of the snapshot.

Workaround: When taking a snapshot of a CFS file system, you should ensure that at least one of the volumes defined in the command line is mounted on the CVM master.

Mount operation can cause inconsistencies in snapshots

Inconsistencies can arise in point-in-time copies if a snapshot administration operation is performed on a volume while a file system in the volume is being mounted.

Space-optimized snapshot creation fails

Using the `vxsnap make` command to create a space-optimized snapshot of a volume can fail if a large amount of I/O is active on the volume. The following error is displayed:

```
VxVM vxassist ERROR V-5-1-10127 getting associations of subdisk
subdisk: Record not in disk group
```

The command succeeds if I/O is suspended while the snapshot is created. [606613]

Cache volumes in volume sets

Do not add cache volumes (used by space-optimized instant snapshots) to volume sets. This causes data corruption and system panics.

[614061, 614787]

Intelligent Storage Provisioning issues

Creating application volumes

To create application volumes successfully, the appropriate licenses must be present on your system. For example, you need a full Veritas Volume Manager license to use the instant snapshot feature. Vendors of disk arrays may also provide capabilities that require special licenses for certain features of their hardware. [Sun Bug ID 4948093, i137185]

Number of columns in a RAID-5 ISP volume

If an ISP volume is created with the RAID-5 capability, the parameters `ncols` and `nmaxcols` refer only to the number of data columns, and do not include the parity column. For this reason, the number of columns that are created in such a volume is always one more than the number specified. [Sun Bug ID 4976891]

Miscellaneous issues

Disks with write-back caches

Disk drives configured to use a write-back cache, or disk arrays configured with 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.

Auto-import of disk groups

If a disk that failed while a disk group was imported returns to life after the group has been deported, the disk group is auto-imported the next time the system boots. This contradicts the normal rule that only disk groups that are (non-temporarily) imported at the time of a crash are auto-imported.

If it is important that a disk group *not* be auto-imported when the system is rebooted, the disk group should be imported temporarily when the intention is to deport the disk group (for example, in HA configurations). Use the `-t` flag to `vxdg import`. [13741]

Volumes not started following a reboot

During very fast boots on a system with many volumes, `vxconfigd` may not be able to auto-import all of the disk groups by the time `vxrecover -s` is run to start the volumes. As a result, some volumes may not be started when an application starts after reboot.

Workaround: Check the state of the volumes before starting the application, or place a sleep (`sleep` *sec*) before the last invocation of `vxrecover`. [14450]

Forcibly starting a volume

The `vxrecover` command starts a volume only if it has at least one plex that is in the ACTIVE or CLEAN state and is not marked STALE, IOFAIL, REMOVED, or NODAREC. If such a plex is not found, VxVM assumes that the volume no longer contains valid up-to-date data, so the volume is not started automatically. A plex can be marked STALE or IOFAIL as a result of a disk failure or an I/O failure. In such cases, to force the volume to start, use the following command:

    # **vxvol -f start** *volume*

However, try to determine what caused the problem before you run this command. It is likely that the volume contents need to be restored from backup, and it is also possible that the disk needs to be replaced. [14915]

Failure of memory allocation

On machines with very small amounts of memory (32 megabytes or less), under heavy I/O stress conditions against high memory usage volumes (such as RAID-5 volumes), a situation occurs where the system can no longer allocate pages of physical memory.

Using long device paths with Sun Online:Backup

The Sun Online:Backup™ facility does not accept the long device path names for volumes. A limitation of Online: Backup is that it does not accept device paths longer than 24 characters.

Workaround: Use symbolic links to the longer `/dev/vx/dsk/`*volname* paths from a shorter path name.

Messages about Veritas Volume Replicator licenses

The following messages may get displayed on the console during a system reboot or during VxVM initialization when you are running `vxinstall`:

```
No VVR license installed on the system; vradmind not started
No VVR license installed on the system; in.vxrsyncd not started
```

These messages are informational only, and can be safely ignored if you are not a Veritas Volume Replicator user.

Solaris Issues

Dynamic Tracing Function Boundary Tracing probes

Dynamic Tracing (DTrace) Function Boundary Tracing (FBT) probes are not supported with the `vxio` driver. This is because of a limitation in Solaris 10 that such probes cannot handle modules with a text size larger than 2MB. The following error message is generated on the console as a result of using DTrace FBT probes with the `vxio` driver:

```
fbt: WARNING: couldn't allocate FBT table for module vxio
```

These messages are harmless, and can be safely ignored.

Number of inodes required in the root file system

The default maximum number of inodes in a UFS file system depends on the size of the file system. Once a UFS file system has been created, you cannot change the number of inodes without re-creating the file system. On a system with a large number of LUNs, the root file system can run out of inodes. This causes errors to be seen both from the operating system and from Veritas Volume Manager. As a general rule, the number of inodes thatDMP creates for every LUN is 16 times the number of separate paths to the device. For example, 8,000 LUNs connected over 2 paths would require 256,000 additional inodes. [538039]

Compatibility of kernel drivers

The versions of the kernel drivers for VxVM are incompatible with some versions of the Solaris operating system. Multiple kernel modules are installed and properly maintained by the installation and upgrade software. It is possible for a mismatch to occur (for example, if the administrator moves the kernel driver files). If a mismatch occurs, the VxVM kernel prints a warning message on the console similar to the following message:

```
WARNING: vxio: incompatible kernel version (5.X), expecting 5.X
```

If this message is displayed, the system must be booted for recovery (as explained in the *Veritas Volume Manager Troubleshooting Guide*) and the correct kernel modules installed. To install the correct kernel module versions, `cd` to the `kernel/drv` directory of the mounted root file system. To list the VxVM kernel modules, use the following command:

```
# ls -l vxio* vxspec* vxdmp*
```

The release-specific versions of the kernel modules are stored as
module.OS_release, where *OS* and *release* are the result of running the
uname -s and uname -r commands on the system, respectively.

For example, on a misconfigured system running Solaris 2.6, the listing for
vxio* may be similar to the following:

```
-rw-r--r-- 1 root other 1682424 ... vxio
-rw-r--r-- 1 root sys   1647664 ... vxio.SunOS_5.7
-rw-r--r-- 1 root sys   1661340 ... vxio.SunOS_5.8
-rw-r--r-- 1 root sys   1682424 ... vxio.SunOS_5.9
```

The size of the vxio kernel module that is in use matches the vxio.SunOS_5.8
version. To correct the problem, copy the SunOS_5.6 versions to the in-use
module name:

```
# cp vxio.SunOS_5.6 vxio
```

Finally reboot the system. [13312]

Encapsulation of swap partitions

During encapsulation, VxVM does not consider a partition to be a swap partition
unless its partition tag (as shown by prtvtoc) is swap or 3. Any partition used
as a swap partition but not tagged as such is encapsulated as a file system. In the
vfstab file, a note is made that the partition has been encapsulated, but the
vfstab entry *is not* translated, and thus, the partition is not added as a swap
area as part of the boot process. All partitions that are to be used as swap devices
must be marked with the swap tag to be properly encapsulated. [13388]

Protection of block 0 on disks

Since the disk label is stored in block 0 of the disk, block 0 must not be used (that
is, no application should write any information in block 0). Special protection
has been built into VxVM to protect block 0 from being overwritten.

Definition of disk slice 2

On Solaris, slice 2 of a non-EFI disk is the full disk by default. When finding
connected disks, VxVM checks slice 2 of a disk. Slice 2 on a disk must always be
defined as the full disk slice with a tag of 0x05.

Messages caused by long swap volume names

If multiple swap partitions are encapsulated on your disks, VxVM names them
as swapvol, swapvol1, swapvol2, and so on. When the system is rebooted, the
following error message is displayed:

```
/dev/vx/dsk/swapvol2 : Overlapping swap files are not allowed
```

However, the swap devices are correctly added with no ill effects on the system.
To avoid seeing this message, shorten the names of swap volumes (other than
swapvol) from swapvol*n* to swap*n*.

Veritas Enterprise Administrator issues

Note: Refer to the *Veritas Storage Foundation Installation Guide* for information on how to set up and start the VEA server and client.

Controller states

Controller states may be reported as ''Not Healthy'' when they are actually healthy, and ''Healthy'' when they are actually not healthy. [599060]

Remote Mirror (campus cluster)

There is no option to create site-based snapshots. [541104]

Action pull-down menu items

No Action pull-down menu items exist for the Layout View, the Disk View or the Volume View. [596284]

Java exception error in the Statistics View

A Java exception error occurs in the Statistics View. [618146]

Out of bounds exception error

When connecting to the central host, an ''OutOfBoundException'' error occurs. [616661]

Volume tags not displayed

On Microsoft Windows systems, existing volume tags are not displayed when adding a new volume tag. [602953]

Cache volumes shown as available for volume sets

The volume set creation wizard shows cache volumes in the ''Available Volumes'' list. Cache volumes should not be listed as available. Including cache volumes in volume sets can cause data corruption and system panics. [614761]

Storage Agent dumps core if there are many LUNs

Configurations with more than 10240 LUNs can cause the Storage Agent to dump core in the directory `/var/vx/isis`. [584092]

Workaround

1   Rename the Device Discovery Layer (DDL) library file:

      # **mv /opt/VRTSddlpr/lib/ddl.so /opt/VRTSddlpr/lib/ddl.so.orig**

   This prevents the DDL provider from loading, but has the effect of making enclosure, path and controller objects no longer available in the VEA client GUI.

2   Restart the Storage Agent:

      # **/opt/VRTSobc/pal33/bin/vxpal -a StorageAgent**

Maximum alert log and task log file sizes

The default maximum size for each of the alert and task log files is 1953K. The maximum configurable size is 99999999K. Before increasing the maximum file size, ensure there is sufficient space available. Performance is not an issue with very large file size. [578688]

Disk group creation failure with a duplicate disk ID

VEA fails to create a disk group that contains a duplicate disk ID, and gives no other options.
[Sun Bug ID 4923820]

Printing errors from VEA on Windows 2000 Service Pack 2

When a user tries to print the volume layout view from VEA, the print is not clear.

Workaround: Upgrade the printer device driver to 0.3.1282.1 and install Service Pack 3. Upgrade to the latest version of VEA and print again. [286476]

Veritas Volume Manager Web GUI issues

Managing a Solaris X64 platform host

It is not possible to use the Web GUI to manage a Solaris X64 host that is running under Veritas Storage Foundation 4.1. [615554]

Creating a file system on a disabled volume

Creating a file system on a disabled volume returns both success and failure messages. In fact, the operation fails. [565072]

Maximum size of a volume

The maximum size of a volume is shown as a rounded-down integer number of gigabytes. If the maximum size is less than 1GB, the maximum size is shown as 0GB. [573897]

Creating a volume without an existing disk group

Attempting to create a volume without an existing disk group produces the following misleading error:

```
Info V-46-1-300 No Volume available to create a file system
```

[574410]

Disabling paths to SENA storage arrays

Disabling a path to a SENA storage array produces the following dialog:

```
pathname is the last path to its root disk. Are you sure you want
to disable it?
Press Next to continue with this operation or press Cancel to
exit this operation.
```

The message is erroneous, and it is safe to continue the operation. [575262]

Failures when importing disk groups

Messages about failures to import disk groups are not displayed by the Web GUI. [596648]

Failures when creating ISP volumes

Messages about failures to create ISP volumes are not displayed by the Web GUI. [601157]

All Active Alerts View

The All Active Alerts View does not display correct information. [601167]

Deleting an active cache volume

Attempting to delete an active cache volume fails with an error message that is incomplete. [615395]

Corrupted import disk group dialog

If some objects are not present, the import disk group dialog may be displayed as blank or may show the text `<!--td align="center" height="287" valign="midd"`. For example, this can occur when attempting to import a disk group from a host that is being rebooted. [607096]

Initializing a disk

At least one object must be selected in the GUI before proceeding to initialize a disk. [607026]

Veritas Storage Foundation Basic soft limitation messages
Messages about exceeding the Storage Foundation Basic soft limitations are not displayed by the Web GUI. [619039]

Create disk group wizard
The create disk group wizard shows internal disks as being available for the creation of shared disk groups. [574717]

Object not found error on creating a volume set
An ''object not found error'' may be displayed when a volume set is created. [615960]

Java exception when deleting a volume
Deleting a volume that has just been deleted produces a Java exception. This can happen if you do not wait for the Web page to be refreshed after the first delete operation. [608573]

Message when forcibly removing a volume from a volume set
Forcibly removing a volume from a volume set displays a message that recommends that the **force** option be selected. [605468]

Java exception when removing a volume from a volume set
Removing a volume from a volume set returns an incorrect Java exception on success. [564455]

Error message when removing a disk from a disk group
Removing a disk from a disk group gives the incorrect error message ''no valid disk selected.'' [611894]

Disconnecting a disk produces a ghost entry
Ghost entries for disconnected disks in the All Disks View cannot be removed by using the GUI. A command such as `vxdg -g diskgroup rmdisk diskname` must be used instead. [576794]

Upgrading disk group versions

All disk groups have a version number associated with them. Each VxVM release supports a specific set of disk group versions and can import and perform tasks on disk groups with those versions. Some new features and tasks work only on disk groups with the current disk group version, so you need to upgrade existing disk groups before you can perform the tasks. The following table summarizes the disk group versions that correspond to each VxVM release from 2.0 forward:

VxVM Release	Cluster Protocol Versions	Disk Group Version	Supported Disk Group Versions
2.0	n/a	20	20
2.2	n/a	30	30
2.3	n/a	40	40
2.5	n/a	50	50
3.0	n/a	60	20-40, 60
3.1	n/a	70	20-70
3.1.1	10, 20	80	20-80
3.2	30	90	20-90
3.5	40	90	20-90
4.0	50	110	20-110
4.1	60	120	20-120
5.0	70	140	20-140

If you want to take advantage of the new features in this release, you must upgrade the *Veritas Cluster Volume Manager* (CVM) protocol Version (70), and upgrade to the latest disk group version (140).

Use the following command to find the version of a disk group:

```
# vxdg list diskgroup
```

You can also determine the version by using the vxprint(1M) command with the -l option.

To upgrade a disk group to Version 140, use the following command:

```
# vxdg upgrade diskgroup
```

For shared disk groups, the latest disk group version is only supported by the latest cluster protocol version. To see the current cluster protocol version, type:

```
# vxdctl support
```

To upgrade the protocol version for the entire cluster, enter the following command on the master node:

```
# vxdctl upgrade
```

See the "Administering Cluster Functionality" chapter of the *Veritas Volume Manager Administrator's Guide*.

Available controllers not shown

The Scan Disks By Controller View does not list the available controllers. [566619]

Warning messages about exceeding SF Basic limitations are not propogated to Web GUI

When the SF Basic limitations are exceeded, the warning message regarding this is sent to the task log, not to the GUI. This only occurs if a volume is successfully created. [619039]

Veritas File System known issues

The following issues were reported for this release of Veritas File System.

API for manipulating disk quotas

VxFS now implements the quota Application Program Interface (API) documented in the Solaris quotactl(7I) manual page. Users who have written their own quota tools based on the Q_QUOTACTL ioctl can now use those tools on VxFS file systems. However, you cannot administer VxFS file system quotas using the Q_QUOTACTL ioctl from a client which mounts VxFS over NFS. This capability will not be available until a modification to the RPC quota daemon (enabling quotas on file systems other than UFS) is implemented on the Solaris operating system.

Stack size change

When installed on Solaris 8, Solaris 9, and Solaris 10, VxFS changes the default stack size to 24K for 64-bit systems. In 32-bit mode, VxFS can operate with a stack size of 16K. The stack size is designated in the Solaris configuration file /etc/system.

Storage Checkpoints do not operate with hierarchical storage management 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 incompatible with some hierarchical storage management applications

VxFS 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://support.veritas.com/docs/258566.htm

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

The ustat command returns an error for VxFS file systems larger than one terabyte

The ustat command returns an EOVERFLOW error for VxFS files 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 information regarding disk layout in the *Veritas File System Administrator's Guide*.

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. The largefiles option is enabled by default on VxFS 4.1. In previous VxFS releases, nolargefiles was the default mount option.

Ioctls are not supported on the File Change Log file

Ioctls are not supported on the File Change Log file. Therefore, running commands such as fsapadm, setext, fiostat, and fsmap on the FCL file is not supported since these commands use an internal ioctl to implement their functionality.

Large file systems should be mounted only on systems with sufficient memory

When a file system is mounted, VxFS keeps certain data structures in the kernel. As the size of the file system increases, the amount of data structures stored by VxFS also increases. The file system typically keeps approximately 128 bytes per allocation unit (32,768 file system blocks). This translates to a usage of 512K per 1 TB for an 8K block size file system (4 MB per 1 TB for a 1K block size file system). Therefore, large file systems must be mounted only on systems that have sufficient memory. The memory requirements for mounting large file systems are shown in the tables below.

Table 1-1   Memory Usage for a File System With a 1K Block Size

File System Size	128 GB	1 TB	8 TB	64 TB	256 TB
Memory Usage	1 MB	4 MB	32 MB	N/A	N/A

Table 1-2   Memory Usage for a File System With a 2K Block Size

File System Size	128 GB	1 TB	8 TB	64 TB	256 TB
Memory Usage	512K	2 MB	16 MB	128 MB	N/A

Table 1-3   Memory Usage for a File System With a 4K Block Size

File System Size	128 GB	1 TB	8 TB	64 TB	256 TB
Memory Usage	256K	1 MB	8 MB	64 MB	N/A

Table 1-4   Memory Usage for a File System With an 8K Block Size

File System Size	128 GB	1 TB	8 TB	64 TB	256 TB
Memory Usage	128K	512K	4 MB	32 MB	128 MB

While performing a full `fsck`, the system keeps certain data structures in the core for validating the space usage and inode usage. The space needed depends on the number of inodes and the number of blocks in the file system. The `fsck` command needs approximately 16 MB per 1 TB for an 8K block size file system (128 MB per 1 TB for a 1K block size file system) and 32 MB per million inodes. Sufficient memory and swap space should be configured on the system before running a full `fsck` on a large file-enabled system. If the system is booted through a 32-bit kernel, a full `fsck` of file systems that have a large number of blocks or large number of inodes may fail, as the total address space available for a 32-bit process is limited.

A replay `fsck` does not need a significant amount of memory and does not have these issues.

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 Storage Foundation 4.1 for Oracle Database Administrator's Guide* for more information.

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.

fscdstask validate error with ja_JP.UTF-8-encoded file names

The `fscdstask validate` command returns an error when files on the specified mount point have names with the `jp_JP.UTF-8` encoding, but the locale has been changed to `ja_JP.eucJP` or `ja_JP.PCK`. The error is as follows:

    xargs: Input file is corrupt. : Incorrect byte order

Files should be created with the same locale encoding as the file system on which they reside.

Non-standard command behavior when using Access Control Lists

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.

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. On files with ACLs, use the setfacl command to manipulate permissions. On Solaris 9, the ls command displays these permissions the same way on UFS and VxFS.

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

100% full file system cannot be resized

In some circumstances, the fsadm and fsvoladm commands 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. This problem can also occur if the file system is very busy. Free up space or reduce activity on the file system and try the resize again.

JumpStart Enterprise Toolkit not supported

The JumpStart Enterprise Toolkit is not supported in this release, but will be supported in the next release.

DTrace warnings may display on first boot after installation

On the Solaris 10 operating system, DTrace warnings may display when the system is booted for the first time after VxFS is installed. The warnings are similar to the following:

```
Configuring devices.
Hostname: MyHost.MyCompany.com
WARNING: couldn't allocate SDT table for module vxfs
.
.
.
WARNING: couldn't allocate SDT table for module vxfs
WARNING: couldn't allocate FBT table for module vxfs
Loading smf(5) service descriptions: 2/2
```

These warnings indicate that the SDT and FBT DTrace probes may not be available for the `vxfs` module until the next reboot. The `vxfs` module will still load and work correctly.

These warnings do not display on subsequent reboots.

Veritas File System Web GUI online help known issues

The following known issues were reported for this release:

- For the **Mount Storage Checkpoint** operation, you must select an existing Storage Checkpoint from the drop-down list. You cannot manually enter a Storage Checkpoint name.

- The **Creating a new file system on a volume set** task can only be performed on VxFS file systems.

- For the **Remount Storage Checkpoint** operation, the **More info** link on the second wizard page does not function properly for cluster file systems.

- For the **Unmount Storage Checkpoint** operation, the **More info** link on the second wizard page does not function properly for cluster file systems.

fsck may terminate when applied to unclean file systems from Veritas File System 4.0 or 4.1

Due to an incompatibility in the VxFS `fsck` utility between the 5.0 and 4.0 and 4.1 releases, `fsck` may terminate during intent log replay if run on older file systems. This only affects file systems that were previously running under VxFS 4.0 or 4.1 that are CVM-shared volumes or multi-volume file systems, and that were not cleanly unmounted prior to use in VxFS 5.0.

If you encounter this situation, perform a full `fsck` to bring the file system to a consistent, clean state that is ready to be mounted.

See the `fsck_vxfs`(1M) manual page.

fcl_keeptime cannot be set to the default value after being modified to a non-default value

After the value for *fcl_keeptime* has been modified to a non-default value through the vxtunefs command, you cannot reset the value back to the default value of 0.

Issue with full volume 0 on a multi-volume file system

Certain file system metadata that is only in the file system must be allocated from volume 0. If volume 0 is full, operations such as upgrading the file system's disk layout version and creating a Storage Checkpoint can fail. These operations can be retried after freeing space on volume 0.

Veritas Storage Foundation for Databases known issues

Veritas Storage Foundation for Oracle known issues

The following are known issues in this release of Veritas Storage Foundation for Oracle:

ORAMAP-FMON sometimes does not start

ORAMAP-FMON might not start in Oracle 10gR2. To work around this issue, add the following entry to init.ora and try to start the ORAMAP:
_filemap_dir=$ORACLE_HOME/rdbms/filemap

Spaces in container path names

This release does not support spaces in container path names. [31604]

Tuning parameters lost by reverse resynchronization

After running Database FlashSnap reverse resynchronization commands, special tuning parameters such as CQIO and vxtunefs on the primary database will be lost. They will need to be reset manually. [41898]

Internet Explorer security setting required for VEA Web GUI

The security setting in the Internet Explorer browser must be set to medium or lower in order for VEA Web GUI run properly. [223589]

Removing a snapplan

If a snapplan is in a state where dbed_vmchecksnap -o remove will not remove it, you can remove it by first forcing a snapshot and then resyncing. After this, use dbed_vmchecksnap -o remove to remove the snapplan entry from the repository. [276354]

Snapplans with the same name

If two snapplans are created with the same name but different paths, the error message `snapplan already exists` is displayed. [287057]

Column heading in dbed_analyzer output not localized

The column heading TBSNAME in the output for the `dbed_analyzer` command is not localized. If you are running in an environment other than English, note that TBSNAME means "Tablespace Name." [301174]

Size of checkpoint object in the GUI

The checkpoint object in the GUI does not show the correct size (in blocks) for the checkpoint. This size is not updated even after rescanning checkpoints in the GUI. [412038]

Misaligned headings from dbed_analyzer

The following table headings produced by `dbed_analyzer` are not aligned with the data shown below them: DATAFILE, DEVICE, SIZE(sectors), and TBSNAME. This can lead to data being aligned under the wrong heading.

Also, if there is a Japanese tablespace and the tablespace name exceeds nine characters, then the data line for the DEVICE column will be shifted about five characters. [421816]

Japanese tablespace names with dbed_analyzer

In the Japanese version of VERITAS Storage Foundation for Oracle, if an invalid Japanese language tablespace name is given as input to the `dbed_analyzer` command (with option `-t`), the resulting error message (ERROR V-81-5908) includes only the first character of the invalid Japanese tablespace name instead of its entire name. [424436]

Incorrect NLS setting in Japanese version when starting a database via the GUI

In the Japanese version of VERITAS Storage Foundation for Oracle, if the NLS setting is incorrect, when trying to start a database via the GUI, an error window displays the message "Can't find the error message" and the GUI does not show the database information. [430072]

Misaligned Storage Rollback database information in Japanese version

In the Japanese version of VERITAS Storage Foundation *for Oracle*, database information under the Storage Rollback Administration menu is misaligned. [497035]

Starting checkpoint policies from the GUI

Checkpoint policies cannot be started from the GUI. [506088]

Removing the SFDB repository database does not remove .odbc.ini

Removing the SFDB respository database using the `sfua_db_config -o dropdb` command does not also remove the `/etc/vx/vxdbed/.odbc.ini` file. [534163, 611943]

Workaround: After running `sfua_db_config -o dropdb`, you can manually remove `.odbc.ini` with the `rm` command:
```
rm /etc/vx/vxdbed/.odbc.ini
```

Cannot create an Oracle 10gR1 database on raw devices with ODM

An Oracle 10gR1 database cannot be created through ODM on a raw device, producing error message similar to the following:
```
ORA-00200: controlfile could not be created
```
After disabling ODM on the raw device, the database can be successfully created. This is caused by an Oracle bug. For detailed workaround procedures, refer to the following TechNote on the Symantec Technical Support website:
http:support.veritas.com/docs/540461.htm
[540461]

Unmounted checkpoint clone database reappears in the Java GUI

An unmounted checkpoint clone database reappears in the Java GUI tree after rescanning. [567342]

Cloning a instant checkpoint of a database using OMF controlfiles

If an instant checkpoint is created for a database that use Oracle Managed Files (OMF) controlfiles, creating a clone with the `dbed_clonedb` command will fail with following message:
```
SFORA dbed_clonedb ERROR V-81-7052 OMF data or redo files are not
supported for Instant Checkpoint clones.
```

Workaround: Either use offline or online checkpoints, or convert OMF controlfiles to ones having non-OMF names. [570250]

Recommendations for log file sizes

The default value for the maximum file size in Alert log and Task log is 1953 Kb each. Although these can be increased to a maximum of 8 digits (99999999), this maximum is not practical and could possibly cause problems. Make sure there is sufficient space available for the maximum log file sizes you set, and that the setting you use does not adversely affect performance. [578688]

SFDB commands may fail due to differing locales

If SFDB commands are executed with a locale that differs from the locale in use when the SFDB server was started, the commands may fail with the following message:
```
([Sybase][ODBC Driver][Adaptive Server Anywhere]Syntax error ).
```

Workaround: Execute the following commands to correct this issue.

```
/opt/VRTSdbcom/bin/sfua_db_config -o stopserver
/opt/VRTSdbcom/bin/sfua_db_config -o startserver
/opt/VRTSdbcom/bin/sfua_db_config -o startdb
```

[582069]

Help button in a GUI wizard produces error message

Clicking the **Help** button on a GUI wizard produces the following error message:

```
Error V-39-53246-8 Get EntryPoint failed. Please check the manifest
related information
```

Workaround: Press **OK** and ignore the error. [582416]

sfua_db_config does not check if repository disk is local or shared

The `sfua_db_config` command does not check if the disk being used for the repository is a local disk or a shared disk in the case of an HA configuration. [583158]

GUI does not show correct mount point information for read/write checkpoints

The GUI does not show the mount pount information correctly if the user mounts a read/write checkpoint again. [584044]

Archive log destination when creating an online checkpoint

Creating an online checkpoint for a database that has only `DB_RECOVERY_FILE_DEST` set as an archive log destination causes a warning message to be printed from the checkpoint creation command. The message states that a clone cannot be created from this checkpoint. If `dbed_clonedb` is subsequently run using this checkpoint, database recovery will fail with an Oracle error.

Workaround: To successfully create a clone of a database from an online checkpoint, define a mandatory archive log destination that is not `DB_RECOVERY_FILE_DEST`. [589288]

Previous VRTSdbms3 installation can cause reinstallation to fail

Removing `VRTSdbms3` may leave behind `/opt/VRTSdbms2/bin32/servername` or `/opt/VRTSdbms3` which can cause a new installation of `VRTSdbms3` to fail.

Workaround: Manually remove `/opt/VRTSdbms3` (if it remains from a previous installation of `VRTSdbms3` package) before starting a new installation of a `VRTSdbms3` instance. [597257]

Storage Checkpoints not supported with Database FlashSnap clones

Storage Checkpoint operations are currently not supported for databases cloned with Database FlashSnap. [600431]

VEA client crashes with Japanese UTF-8 input on Solaris 10 CDE desktop.

When the VEA client is running with the `ja_JP.UTF-8` locale on a Solaris 10 CDE desktop, changing to Japanese input several times may cause the VEA client to crash with the following Java error.

```
An unexpected error has been detected by HotSpot Virtual Machine:
SIGSEGV (0xb) at pc=0xf882d840, pid=xxxxx, tid=xx

Problematic frame:
C [xiiimp.so.2+0x1d840]
```

This is a Solaris issue with JRE1.5.

Workaround: To avoid this problem when using a CDE desktop with the `ja_JP.UTF-8` locale, from the CDE workspace menu, select either ATOK16 or Wnn6 for the Japanese input method, and log in again to the CDE session.[601693]

DBDST class names limited to 29 characters

The `dbdst_admin -o rmclass` command fails when attempting to remove a class name of 30 characters or more. The maximum class name length is 29 characters. [601746]

Must run dbed_update before starting an Oracle database from the GUI

The tablespace folder is empty when starting the Oracle database from the GUI without running `dbed_update` from the command line. Rescanning from the GUI does not solve this issue.

Workaround: Run `dbed_update` from the command line before starting an Oracle database from the GUI. [604849]

Datafile statistic wizard lacks warning messages

In the datafile statistic wizard, if there are no statistics for datafile, an empty table in shown instead of warning message confirming that no statistics are available.

Also, in the datafile statistic wizard, if a user does not select a statistic, the wizard should show a warning message and not go to next page. Otherwise, the next page will throw exception. [604858]

In RAC, must run dbed_vmchecksnap on VCS master node

For an SF Oracle RAC database, the `dbed_vmchecksnap` command must be run on the Veritas Cluster Server master node. Also, only online snapshots are supported, which means the database instance should be up and running on the master node where validation is performed. [605330]

Repository server does not handle the ja_JP.PCK locale correctly

The repository database server does not handle the `ja_JP.PCK` locale correctly.

Workaround: The following commands must be performed if the operating system locale is `ja_JP.PCK`.

When starting the repository database server in `ja_JP.PCK` locale, execute these commands:

```
/opt/VRTSdbcom/bin/sfua_db_config -o stopserver
export ASLANG=JA
export ASCHARSET=sjis
/opt/VRTSdbcom/bin/sfua_db_config -o startserver
```

When executing SFDB commands in the `ja_JP.PCK` locale, append `CharSet=sjis` to the `/etc/vx/vxdbed/.odbc.ini` file. [605583, 608774]

Note: The `CharSet` parameter must be removed from the `/etc/vx/vxdbed/.odbc.ini` file if SFDB commands are to be executed with a locale other than ja_JP.PCK.

VEA GUI "view" menu uses a duplicate "V" hotkey

In the VEA GUI main window, the toolbar uses the same hotkey of "v" for both `View` and `View Mapping` commands. [605776]

Effect of Storage Checkpoint commands delayed in SFDB GUI

Repository changes resulting from executing SFDB Storage Checkpoint CLIs will not be reflected immediately in the SFDB GUI. The affected CLIs are `dbed_update`, `vxckpt_create`, `vxckpt_mount`, `vxckpt_umount`, and `vxckpt_remove`.

Workaround: Manually refresh from the SFDB GUI or wait for 30 minutes because the SFDB provider will automatically rescan every 30 minutes. [606994]

Error V-40-49408-54 from Web GUI

Web GUI requests sometimes produce the error message
`Error V-40-49408-54`.

Workaround: In the `/etc/vx/isis/Registry` file, insert a forward slash '/' after the `etc` and the trailing filename for the `InterfaceFormFILE` and `SecurityFormFILE` entries:
```
"InterfaceFormFILE" = "/opt/VRTSdbcom/etc/interfaceform.xml";
"SecurityFormFILE" = "/opt/VRTSdbcom/etc/securityform.xml";
```
Then restart the DBEDAgent. [607084, 610519]

Disappearing Next button in GUI prevents creating a scheduled task

When trying to schedule a start up clone database task from the GUI, after all the clone database information is entered in the Start Up Snapshot database page, the **Next** button is disabled. The user cannot continue to finish creating the scheduled task. [607618]

A help directory remains after removing VRTSdbed

Removing the `VRTSdbed` 5.0 package leaves behind the directory `/opt/VRTSdbed/usr/lib/vxvm/voladm.d/help`.

Workaround: After removing the `VRTSdbed` 5.0 package, remove this directory using:
```
rmdir /opt/VRTSdbed/usr/lib/vxvm/voladm.d/help
```
[608435]

Same GUI shortcut keys are used for multiple commands

The `Rescan` and `Property` in the popup-menu have the same short cut key 'R'. Also, the `Create checkpoint` and `Retain this checkpoint...` commands in the Create Shortcut Wizard have the same short cut key 't'. [608667]

Web GUI statistic scheduler skips first statistic collection

The Web GUI statistic scheduler uses the client timestamp instead of the server timestamp. This causes the first statistic collection to be skipped. For example, suppose the system time is 14:00 and the client time is 13:45. If the user wants to have three samples taken starting at 13:45, with 30 minutes between each sample, only two samples will be shown: one at 14:15 and another at 14:45. [608697]

Cannot Refresh View Statistics wizard in Firefox browser

When using the Web GUI with the Mozilla Firefox browser, the Refresh command in the View Statistics wizard does not work. [608697]

Using dbed_vmsnap with a non-existant snapplan

If you specify with `dbed_vmsnap` a snapplan that does not exist, you might see the following error:

```
SFORA dbed_vmsnap ERROR V-81-6518 Could not find snapplan
'snap_plan' in repository.
/opt/VRTSdbed/bin/dbed_vmsnap[21]: test: argument expected.
```

Workaround: Correct the name of the snapplan to be one that exists and re-run the `dbed_vmsnap` command. [609684]

Change file permission for admin.properties when changing port number

If you change the communication port number in `/etc/vx/vxdbed/admin.properties`, you must change the permission of this file to 444 by using the following command:

```
chmod 444 /etc/vx/vxdbed/admin.properties
```

[610437]

Upgrading to 5.0 repository may fail

After upgrading to SFDB 5.0 from a previous release's repository, running `dbed_update` may fail with the following error message:

```
[Sybase][ODBC Driver][Adaptive Server Anywhere]Index
'UniqueSnapshotTablespace' for table 'SnapshotTablespace' would not
be unique (23000).
SFORA dbed_update ERROR V-81-3048 Could not upgrade repository.
```

The error indicates that the list of tablespaces cannot be saved for a Storage Checkpoint created prior to 5.0 when upgrading to the 5.0 SFDB repository. These Storage Checkpoints will be displayed (using `dbed_ckptdisplay`) as incomplete. However, The Storage Checkpoint can still be used to mount, rollback, and clone the database as normal.

Workaround: Remove the pre-5.0 text-based repository after running `dbed_update`. The text-based repository is located at `/etc/vx/vxdba/$ORACLE_SID`. [611154]

sfua_db_config creates two /tmp directories

The `sfua_db_config` command creates an extra `/tmp` directory because the first `/tmp` directory name actually contains a trailing carriage-return -- that is, `/tmp<CR>`. This produces confusing output, in which it seems like there are two `/tmp` directories.

Workaround: Remove the `/tmp` whose name contains the trailing carriage-return character. [611944]

sfua_db_config -o startdb does not confirm repository database started

The `sfua_db_config -o startdb` command does not print a message to indicate whether the SFDB repository database was successfully started or not.

Workaround: Check for the success or failure by subsequently running:

`sfua_db_config -o dbstatus`

[613681]

Files remain after removing VRTSdbed

Removing the `VRTSdbed` package doesn't remove the following files:

```
/opt/VRTSdbed/usr/lib/vxvm/voladm.d/help/plan.create.help
/opt/VRTSdbed/usr/lib/vxvm/voladm.d/help/plan.display.help
/opt/VRTSdbed/usr/lib/vxvm/voladm.d/help/plan.main.help
```

Workaround: Manually remove these files with the `rm` command after removing the `VRTSdbed` package. [608352]

Symbolic links to Quick I/O files cause errors

If a database contains a symbolic link to Quick I/O files, Oracle 10g produces the following error:

`ORA-27094: raw volume can not be used`

To avoid this error, do not use symbolic links to Quick I/O files.

This issue applies to Oracle version 10.1.0.2. It has been reported to Oracle and will be fixed in a future Oracle release. [614508]

Do not install option 3 (SF Oracle RAC) without proper HA license or setup

When installing Storage Foundation for Oracle, if you do not have the proper HA license or setup, do not choose option 3 (Storage Foundation for Oracle RAC packages) when installing with the Veritas product installer.

This does not cause the installation to fail, but doing this causes VCS/GAB error messages to be written to the system log files, which can be confusing. [614685]

Statistic tasks via Web GUI is unsupported when connecting to a 4.1 host

Running statistic tasks from the Web GUI is not supported when connecting to a 4.1 host. If you try to run "Create Statistic Task", you will receive the following error message:

```
Error V-40-49408-42 - An interface with the unique identifier
specified does not exist for this object.
```

[615819]

had must be running before unconfiguring SFDB repository

To use `sfua_db_config` to unconfigure the SFDB repository in a VCS environment, make sure the `had` process is running on the system where `sfua_db_config -o unconfig_cluster` is run.

If the `had` process is not running on that system, `sfua_db_config` will not remove the repository VCS service group `Sfua_Base`. [616387]

Must manually install VRTScsocw package

The VRTScsocw package is missing whenever installing Veritas Storage foundation for Oracle HA using option 1 (Required Veritas Storage Foundation for Oracle packages) or option 2 (All Veritas Storage Foundation for Oracle packages). To use the configuration wizard to set up the Oracle agent, this package must be installed manually from the dvd1 image mount point at:

`cluster_server_agents/oracle_agent/pkgs`

Note: Whenever uninstalling this product, in some cases this package may not be removed by the product uninstaller. In this case, the package must be removed manually.

[622316]

Veritas Storage Foundation for DB2 known issues

The following are known issues in this release of Veritas Storage Foundation for DB2:

Cannot restore if tablespace is converted from Quick I/O to regular file after backup

If you convert a tablespace from a Quick I/O file to a regular file after backing up the database, you will not be able to restore the tablespace from that backup. For example, if you take a backup of a database that has a DMS tablespace with Quick I/O files as containers, and later convert the Quick I/O files to regular files, restoring the database from that backup will fail.

Workaround: Use the `qio_recreate` command to re-create the necessary Quick I/O files before you restore the database. [25272]

Spaces in container path names

This release does not support spaces in container path names. [31604]

Internet Explorer security setting required for VEA Web GUI

The security setting in the Internet Explorer browser must be set to medium or lower in order for VEA Web GUI run properly. [223589]

Removing a snapplan

If a snapplan is in a state where `dbed_vmchecksnap -o remove` will not remove it, you can remove it by first forcing a snapshot and then resyncing. After this, use `dbed_vmchecksnap -o remove` to remove the snapplan entry from the repository. [276354]

Snapplans with the same name
If two snapplans are created with the same name but different paths, the error message `snapplan already exists` is displayed. [287057]

DPF does not fully support localization
The DB2 Database Partition Feature (DPF) does not fully support localization. As a result, the command output for `db2ed_checkconfig_all`, `db2ed_saveconfig_all`, and `db2ed_ckptcreate_all` may display garbage characters in the Japanese locale. [303712]

Size of checkpoint object in the GUI
The checkpoint object in the GUI does not show the correct size (in blocks) for the checkpoint. This size is not updated even after rescanning checkpoints in the GUI. [412038]

Segmentation fault with offhost db2ed_vmclonedb -o umount
Executing an offhost `db2ed_vmclonedb` command with the `-o umount` option occasionally produces a Segmentation Fault message for both online_snapshot and offline modes. This message can be ignored. The cloning operation has successfully completed. [417505]

Starting checkpoint policies from the GUI
Checkpoint policies cannot be started from the GUI. [506088]

Removing the SFDB repository database does not remove .odbc.ini
Removing the SFDB respository database using the `sfua_db_config -o dropdb` command does not also remove the `/etc/vx/vxdbed/.odbc.ini` file. [534163, 611943]

Workaround: After running `sfua_db_config -o dropdb`, you can manually remove `.odbc.ini` with the `rm` command:
`rm /etc/vx/vxdbed/.odbc.ini`

Unmounted checkpoint clone database reappears in the Java GUI
An unmounted checkpoint clone database reappears in the Java GUI tree after rescanning. [567342]

Recommendations for log file sizes
The default value for the maximum file size in Alert log and Task log is 1953 Kb each. Although these can be increased to a maximum of 8 digits (99999999), this maximum is not practical and could possibly cause problems. Make sure there is sufficient space available for the maximum log file sizes you set, and that the setting you use does not adversely affect performance. [578688]

SFDB commands may fail due to differing locales

If SFDB commands are executed with a locale that differs from the locale in use when the SFDB server was started, the commands may fail with the following message:

```
([Sybase][ODBC Driver][Adaptive Server Anywhere]Syntax error ).
```

Workaround: Execute the following commands to correct this issue.

```
/opt/VRTSdbcom/bin/sfua_db_config -o stopserver
/opt/VRTSdbcom/bin/sfua_db_config -o startserver
/opt/VRTSdbcom/bin/sfua_db_config -o startdb
```

[582069]

GUI does not show correct mount point information for read/write checkpoints

The GUI does not show the mount point information correctly if the user mounts a read/write checkpoint again. [584044]

Previous VRTSdbms3 installation can cause reinstallation to fail

Removing `VRTSdbms3` may leave behind `/opt/VRTSdbms2/bin32/servername` or `/opt/VRTSdbms3` which can cause a new installation of `VRTSdbms3` to fail.

Workaround: Manually remove `/opt/VRTSdbms3` (if it remains from a previous installation of `VRTSdbms3` package) before starting a new installation of a `VRTSdbms3` instance. [597257]

Storage Checkpoints not supported with Database FlashSnap clones

Storage Checkpoint operations are currently not supported for databases cloned with Database FlashSnap. [600431]

db2ed_clonedb and db2ed_vmclonedb do not support automatic storage databases

The `db2ed_clonedb` and `db2ed_vmclonedb` commands do not support automatic storage databases. Using either command on an automatic storage database results in the following message:

```
DBT1037N: CONT_PATH entries cannot be specified for an automatic
storage table space
```

[600490]

VEA client crashes with Japanese UTF-8 input on Solaris 10 CDE desktop.

When the VEA client is running with the `ja_JP.UTF-8` locale on a Solaris 10 CDE desktop, changing to Japanese input several times may cause the VEA client to crash with the following Java error.

```
An unexpected error has been detected by HotSpot Virtual Machine:
SIGSEGV (0xb) at pc=0xf882d840, pid=xxxxx, tid=xx
```

```
Problematic frame:
C [xiiimp.so.2+0x1d840]
```

This is a Solaris issue with JRE1.5.

Workaround: To avoid this problem when using a CDE desktop with the `ja_JP.UTF-8` locale, from the CDE workspace menu, select either ATOK16 or Wnn6 for the Japanese input method, and log in again to the CDE session.[601693]

DBDST class names limited to 29 characters

The `dbdst_admin -o rmclass` command fails when attempting to remove a class name of 30 characters or more. The maximum class name length is 29 characters. [601746]

Cannot start database from GUI if database not in SFDB repository

If a DB2 database is not in the SFDB repository and a user tries to start the instance from the GUI, the database will not be displayed in the GUI.

Workaround: Run the `db2ed_update` command. [604853]

Datafile statistic wizard lacks warning messages

In the datafile statistic wizard, if there are no statistics for datafile, an empty table in shown instead of warning message confirming that no statistics are available.

Also, in the datafile statistic wizard, if a user does not select a statistic, the wizard should show a warning message and not go to next page. Otherwise, the next page will throw exception. [604858]

Repository server does not handle the ja_JP.PCK locale correctly

The repository database server does not handle the `ja_JP.PCK` locale correctly.

Workaround: The following commands must be performed if the operating system locale is `ja_JP.PCK`.

When starting the repository database server in `ja_JP.PCK` locale, execute these commands:
```
/opt/VRTSdbcom/bin/sfua_db_config -o stopserver
export ASLANG=JA
export ASCHARSET=sjis
/opt/VRTSdbcom/bin/sfua_db_config -o startserver
```

When executing SFDB commands in the `ja_JP.PCK` locale, append `CharSet=sjis` to the `/etc/vx/vxdbed/.odbc.ini` file. [605583, 608774]

Note: The `CharSet` parameter must be removed from the `/etc/vx/vxdbed/.odbc.ini` file if SFDB commands are to be executed with a locale other than `ja_JP.PCK`.

VEA GUI "view" menu uses a duplicate "V" hotkey
In the VEA GUI main window, the toolbar uses the same hotkey of "`v`" for both `View` and `View Mapping` commands. [605776]

Error V-40-49408-54 from Web GUI
Web GUI requests sometimes produce the error message `Error V-40-49408-54`.

Workaround: In the `/etc/vx/isis/Registry` file, insert a forward slash '/' after the `etc` and the trailing filename for the `InterfaceFormFILE` and `SecurityFormFILE` entries:
```
"InterfaceFormFILE" = "/opt/VRTSdbcom/etc/interfaceform.xml";
"SecurityFormFILE" = "/opt/VRTSdbcom/etc/securityform.xml";
```
Then restart the DBEDAgent. [607084, 610519]

DBDST output messages refer to SFORA instead of SFDB2
In some cases, DBDST commands produce output messages that contain references to Oracle (SFORA) and not DB2 (SFDB2). For example:
`dbdst_addvol`
```
SFORA dbdst_addvol ERROR V-81-4265 Usage:
```
[607890]

Same GUI shortcut keys are used for multiple commands
The `Rescan` and `Property` in the popup-menu have the same short cut key '`R`'. Also, the `Create checkpoint` and `Retain this checkpoint...` commands in the Create Shortcut Wizard have the same short cut key '`t`'. [608667]

Web GUI statistic scheduler skips first statistic collection
The Web GUI statistic scheduler uses the client timestamp instead of the server timestamp. This causes the first statistic collection to be skipped. For example, suppose the system time is 14:00 and the client time is 13:45. If the user wants to have three samples taken starting at 13:45, with 30 minutes between each sample, only two samples will be shown: one at 14:15 and another at 14:45. [608697]

Cannot Refresh View Statistics wizard in Firefox browser

When using the Web GUI with the Mozilla Firefox browser, the Refresh command in the View Statistics wizard does not work. [608697]

db2ed_ckptmount quits silently if checkpoint uses another checkpoint's mount prefix

If a checkpoint uses a mount prefix that was already used for another checkpoint, db2ed_ckptmount quits silently with return code 1.

Workaround: Explicitly check the db2ed_ckptmount return code. Also, check the output produced by db2ed_ckptdisplay. [610283]

Change file permission for admin.properties when changing port number

If you change the communication port number in /etc/vx/vxdbed/admin.properties, you must change the permission of this file to 444 by using the following command:

```
chmod 444 /etc/vx/vxdbed/admin.properties
```

[610437]

DBEDAgent fails to start as centralized managed host

The DBEDAgent fails to start if it is installed as a central managed host.

Workaround: In the /etc/vx/isis/Registry file, insert a forward slash '/' after the etc and the trailing filename for the InterfaceFormFILE and SecurityFormFILE entries:

```
"InterfaceFormFILE" = "/opt/VRTSdbcom/etc/interfaceform.xml";
"SecurityFormFILE" = "/opt/VRTSdbcom/etc/securityform.xml";
```

Then restart the DBEDAgent. [610783, 610519]

sfua_db_config creates two /tmp directories

The sfua_db_config command creates an extra /tmp directory because the first /tmp directory name actually contains a trailing carriage-return -- that is, /tmp<CR>. This produces confusing output, in which it seems like there are two /tmp directories.

Workaround: Remove the /tmp whose name contains the trailing carriage-return character. [611944]

db2ed_vmchecksnap grep error

The db2ed_vmchecksnap command sometimes shows the following grep error multiple times in its output:

```
grep: 0652-033 Cannot open -
```

[612220]

sfua_db_config -o startdb does not confirm repository database started

The `sfua_db_config -o startdb` command does not print a message to indicate whether the SFDB repository database was successfully started or not.

Workaround: Check for the success or failure by subsequently running:
`sfua_db_config -o dbstatus`
[613681]

Unmounting clone database and deleting checkpoint commands seem to hang

The `db2ed_clonedb -o umount` command sometimes seems to hang. When you check the process stack it is executing the command `db2ed_dbprocli`.

Also, when deleting an existing checkpoint, the `vxpal -a DBEDAgent` process starts taking up a lot of processing space and the CLI might appear to hang if you have been running a lot of checkpoint commands.

Workaround: For either issue, stop the `vxpal -a DBEDAgent` process by running the following commands as root:
```
/etc/init.d/vxpal.DBEDAgent stop
/etc/init.d/vxpal.DBEDAgent start
```
[614055, 614815]

Statistic tasks via Web GUI is unsupported when connecting to a 4.1 host

Running statistic tasks from the Web GUI is not supported when connecting to a 4.1 host. If you try to run "Create Statistic Task", you will receive the following error message:
```
Error V-40-49408-42 - An interface with the unique identifier specified does not exist for this object.
```
[615819]

had must be running before unconfiguring SFDB repository

To use `sfua_db_config` to unconfigure the SFDB repository in a VCS environment, make sure the `had` process is running on the system where `sfua_db_config -o unconfig_cluster` is run.

If the `had` process is not running on that system, `sfua_db_config` will not remove the repository VCS service group `Sfua_Base`. [616387]

Veritas Storage Foundation for Sybase known issues

The following are known issues in this release of Veritas Storage Foundation for Sybase.

Converting non-VxFS QIO files

If the `mkqio.dat` file contains any file that does not reside on a VxFS filesystem, the `qio_convertdbfiles -u` command will not convert any QIO files back to native files.

Workaround: Manually edit the `mkqio.dat` file and remove any non-VxFS file from the list. [413352]

Recommendations for log file sizes

The default value for the maximum file size in Alert log and Task log is 1953 Kb each. Although these can be increased to a maximum of 8 digits (99999999), this maximum is not practical and could possibly cause problems. Make sure there is sufficient space available for the maximum log file sizes you set, and that the setting you use does not adversely affect performance. [578688]

SFDB commands may fail due to differing locales

If SFDB commands are executed with a locale that differs from the locale in use when the SFDB server was started, the commands may fail with the following message:

```
([Sybase][ODBC Driver][Adaptive Server Anywhere]Syntax error ).
```

Workaround: Execute the following commands to correct this issue.

```
/opt/VRTSdbcom/bin/sfua_db_config -o stopserver
/opt/VRTSdbcom/bin/sfua_db_config -o startserver
/opt/VRTSdbcom/bin/sfua_db_config -o startdb
```

[582069]

VEA client crashes with Japanese UTF-8 input on Solaris 10 CDE desktop.

When the VEA client is running with the `ja_JP.UTF-8` locale on a Solaris 10 CDE desktop, changing to Japanese input several times may cause the VEA client to crash with the following Java error.

```
An unexpected error has been detected by HotSpot Virtual Machine:
SIGSEGV (0xb) at pc=0xf882d840, pid=xxxxx, tid=xx

Problematic frame:
C [xiiimp.so.2+0x1d840]
```

This is a Solaris issue with JRE1.5.

Workaround: To avoid this problem when using a CDE desktop with the `ja_JP.UTF-8` locale, from the CDE workspace menu, select either ATOK16 or Wnn6 for the Japanese input method, and log in again to the CDE session.[601693]

sfua_db_config -o startdb does not confirm repository database started

The `sfua_db_config -o startdb` command does not print a message to indicate whether the SFDB repository database was successfully started or not.

Workaround: Check for the success or failure by subsequently running:

`sfua_db_config -o dbstatus`

[613681]

had must be running before unconfiguring SFDB repository

To use `sfua_db_config` to unconfigure the SFDB repository in a VCS environment, make sure the `had` process is running on the system where `sfua_db_config -o unconfig_cluster` is run.

If the `had` process is not running on that system, `sfua_db_config` will not remove the repository VCS service group `Sfua_Base`. [616387]

Available documentation

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

Installing documentation and manual pages is optional.

Veritas documentation disc

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

All documentation is organized by product groups.

Release Notes and Installation Guides

Release notes and installation guides are not installed by any packages. Veritas recommends that you copy them from the software disc to the `/opt/VRTS/docs` directory on your system after product installation so that they are available for future reference.

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.

Installation guides in all versions of the Veritas Storage Foundation are located under the `storage_foundation/docs` directory of the Veritas Storage Foundation disc or the `cluster_server/docs` 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 Volume Replicator Release Notes* (`vvr_notes.pdf`)
- *Veritas Cluster Server Release Notes* (`vcs_notes.pdf`)

Veritas Storage Foundation guides

The following manuals, along with the online help, comprise the Veritas Storage Foundation documentation set:

Guide Title	Filename
Veritas Storage Foundation and High Availability Getting Started Guide	`getting_started.pdf`
Veritas Storage Foundation Release Notes (this document)	`sf_notes.pdf`
Veritas Storage Foundation Installation Guide	`sf_install.pdf`
Veritas Storage Foundation for Oracle Administrator's Guide	`sf_ora_admin.pdf`
Veritas Storage Foundation for DB2 Administrator's Guide	`sf_db2_admin.pdf`
Veritas Storage Foundation for Sybase Administrator's Guide	`sf_syb_admin.pdf`
Veritas Array Integration Layer Configuration Guide	`vail_config.pdf`

Guide Title	Filename
Veritas Volume Manager Administrator's Guide	`vxvm_admin.pdf`
Veritas Storage Foundation Intelligent Storage Provisioning Administrator's Guide	`sf_isp_admin.pdf`
Veritas Storage Foundation Intelligent Storage Provisioning Solutions Guide	`sf_isp_solutions.pdf`
Veritas Storage Foundation Cross-Platform Data Sharing Administrator's Guide	`sf_cds_admin.pdf`
Veritas Enterprise Administrator User's Guide	`veax6_users.pdf`
Veritas Volume Manager Troubleshooting Guide	`vxvm_tshoot.pdf`
Veritas FlashSnap Point-In-Time Copy Solutions Administrator's Guide	`flashsnap_admin.pdf`
Veritas File System Administrator's Guide	`vxfs_admin.pdf`
Veritas File System Programmer's Reference Guide	`vxfs_ref.pdf`

Note: In this release, some of the above documents have new PDF file names.

Veritas Storage Foundation for Databases Documentation Changes

The 5.0 release introduces two new guides for the GUI, the *Veritas Storage Foundation for Oracle Graphical User Interface Guide* and the *Veritas Storage Foundation for DB2 Graphical User Interface Guide*. They can be found in the Veritas Storage Foundation Documentation Set as the files `sf_ora_gui.pdf` and `sf_db2_gui.pdf`.

Veritas Cluster Server documentation

The following Veritas Cluster Server documentation is available with all Veritas Storage Foundation HA product suites:

Guide Title	Filename
Veritas Cluster Server Release Notes	`vcs_notes.pdf`
Veritas Cluster Server Installation Guide	`vcs_install.pdf`
Veritas Cluster Server User's Guide	`vcs_users.pdf`

Guide Title	Filename
Veritas Cluster Server Agent Developer's Guide	`vcs_agent_dev.pdf`
Veritas Cluster Server Bundled Agents Reference Guide	`vcs_bundled_agents.pdf`
Veritas Cluster Server SunFire 12K/15K Application Note	`vcs_appnote_f15k.pdf`
Veritas Cluster Server SunFire 6800 Application Note	`vcs_appnote_6800.pdf`
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Veritas Volume Replicator documentation

The following Veritas Volume Replicator documentation is available with the Veritas Volume Replicator option:

Guide Title	Filename
Veritas Volume Replicator Release Notes	`vvr_notes.pdf`
Veritas Volume Replicator Installation Guide	`vvr_install.pdf`
Veritas Volume Replicator Administrator's Guide	`vvr_admin.pdf`
Veritas Volume Replicator Planning and Tuning Guide	`vvr_planning.pdf`
Veritas Volume Replicator Web Console Administrator's Guide	`vvr_web_admin.pdf`
Veritas Volume Replicator Advisor User's Guide	`vvr_advisor_users.pdf`
Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide	`vvr_agents_config.pdf`

Manual pages

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

Installing documentation and manual pages is optional.

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ACE (The Adaptive Communication Environment)

TAO

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JavaTip87: Automate the Hourglass Cursor

Kyle Davis

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Version 2.1, February 1999

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Perl

Algorithm-Diff-1.1901

Archive-Tar-1.24

Compress-Zlib-1.41

Crypt-CBC-2.17

File-Spec-0.90

IO-String-1.06

IO-Tty-1.02

libnet-1.19

List-Compare-0.31

Log dispatch perl module

Logfile rotate perl module

Module-Build-0.2611

MIME-Base64-3.07

HTML-Tagset-3.10

HTML-Parser-3.50

Net-DNS-0.49

Net-DNS-SEC-0.12

Net-Netmask-1.9011

Net-Telnet-3.03

Params validate perl module

Proc-Background-1.08

Test-Plan-0.02

Test-Simple-0.60

Time-Date-1.16

Time zone info

URI-1.35

XML-Parser-2.34

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Sockets++ library

University of Texas

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Boris Fomitchev

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Sysdep.c

Sysdep.h

UUID.c

UUID.h