

VERITAS FlashSnap™ Agent *for Symmetrix 4.0*

Release Notes

Solaris

Disclaimer

The information contained in this publication is subject to change without notice. VERITAS Software Corporation makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. VERITAS Software Corporation shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

VERITAS Legal Notice

Copyright © 2000 - 2004 VERITAS Software Corporation. All rights reserved. VERITAS, the VERITAS Logo, and all other VERITAS product names and slogans are trademarks or registered trademarks of VERITAS Software Corporation. VERITAS FlashSnap and the VERITAS logo, Reg. U.S. Pat. & Tm. Off. Other product names and/or slogans mentioned herein may be trademarks or registered trademarks of their respective companies.

VERITAS Software Corporation
350 Ellis Street
Mountain View, CA 94043
USA
Phone 650-527-8000 Fax 650-527-2908
<http://www.veritas.com>

Third-Party Copyrights

STLport 4.5

STLport 4.5 Copyright © 1999-2000 Boris Fomitchev; Copyright © 1994 Hewlett-Packard Company; Copyright © 1996-1997 Silicon Graphics Computer Systems, Inc.; Copyright © 1997 Moscow Center for SPARC Technology. Full text of the License agreement is available at

<http://www.stlport.org/doc/license.html>

Data Encryption Standard (DES) Copyright

Copyright © 1990 Dennis Ferguson. All rights reserved.

Commercial use is permitted only if products that are derived from or include this software are made available for purchase and/or use in Canada. Otherwise, redistribution and use in source and binary forms are permitted.

Copyright 1985, 1986, 1987, 1988, 1990 by the Massachusetts Institute of Technology. All rights reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of M.I.T. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T. makes no representations about the suitability of this software for any purpose. It is provided as is without express or implied warranty.

Contents

New Features and Changes in VxFAS	2
Software Issues in VxFAS	8
VERITAS Licensing	8
Compatibility With Previous Versions of VxFAS	8
Compatibility With Other VERITAS Products	9
VERITAS FlashSnap Agent for Symmetrix Packages	10
VERITAS Installation Menu	10
Documentation	10
Displaying Documentation Online	11
Online Manual Pages	11
Getting Help	12
Unique Message Number	13
The vxtfexplorer.sh Diagnostic Program	13





VERITAS FlashSnap Agent *for Symmetrix*

Release Notes

This guide provides information on VERITAS FlashSnap Agent *for Symmetrix* (VxFAS) release 4.0. VxFAS is component feature of the VERITAS FlashSnap™ option to the VERITAS Volume Manager™ (VxVM).

The 4.0 release of VxFAS operates on the following Solaris operating systems:

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

Review this entire document before installing VxFAS. Topics include:

- ◆ [New Features and Changes in VxFAS](#)
- ◆ [Software Issues in VxFAS](#)
- ◆ [VERITAS Licensing](#)
- ◆ [Compatibility With Previous Versions of VxFAS](#)
- ◆ [Compatibility With Other VERITAS Products](#)
- ◆ [VERITAS FlashSnap Agent for Symmetrix Packages](#)
- ◆ [VERITAS Installation Menu](#)
- ◆ [Documentation](#)
- ◆ [Getting Help](#)



New Features and Changes in VxFAS

VxFAS Release 4.0 has the following new features and changes:

▼ Product Name Change

The VERITAS FlashSnap Agent *for Symmetrix* was formerly known as the VERITAS Utilities *for TimeFinder* (VxTF).

▼ Multiple BCV Support

Starting from microcode 5266 and SYMAPI 4.1, EMC Symmetrix Disk Arrays maintain track tables for up to 16 *Business Continuance Volume* (BCV) devices per Symmetrix standard (STD) device, with only one BCV mirrored at a time. This represents a change from the earlier versions of microcode where track information about only one BCV was maintained per STD device. VxFAS commands now deal with multiple BCV disk groups for setup, split, remirror and restore operations. This allows taking up to 16 snapshots (one at a time) of an STD disk group for which incremental mirror or restore operations are possible.

- ◆ Multiple BCV support is at the disk group level, not at the device level.
- ◆ VxFAS does not allow successive attaching of multiple BCVs with one STD device before doing the first mirror with the previously attached BCV.
- ◆ If an STD-BCV pair was attached, and no subsequent first mirror was done, a reattach of the same STD and different BCV fails.
- ◆ Using the file option, you can specify the pairs that show the explicit correspondence between the STD and BCV devices.
- ◆ For detaching a STD-BCV pair, the STD must be in the “split” state.
- ◆ The `vxsymsetup` command has a disk group reattach option for multiple BCV support.
- ◆ Only one BCV device at a time can be in the SYNCHED/RESTORED state for an STD device.



▼ New Commands and Options

All VxFAS 4.0 commands now follow the UNIX standard command syntax. All commands work at the disk group level. Device pair operations are supported only for the `attach` and `detach` options of the `vxsymsetup` command. New features in commands are described below.

▼ Specifying Multiple Pairs for `vxsymsetup`

Now there are various ways of specifying multiple STD-BCV pairs for `vxsymsetup` command to make the using the `attach/detach` options easier. These options are:

- ◆ Specifying disk groups (`-g STDdg:BCVdg`). Only one pair of disk groups is allowed.
- ◆ Specifying multiple pairs with a file name (`-o filename=filename`).
- ◆ Specifying multiple pairs of devices separated by a comma(,) with individual STD-BCV device names separated by colon(:).

In disk group attach operations, a pairing may not be found even if one exists because no backtracking is done when finding pairs.

▼ New `vxsymsetup` Command Options

`Reattach`. Reattaches one of the BCV disk groups that was previously attached, mirrored, and split with the STD disk group. This is to support rotating BCVs in a multiple BCV scenario.

`Detachall`. Detaches all the BCV devices from an STD device that were earlier attached or mirrored. Through disk group operations, all STD devices in the disk group can be detached from their multiple associated BCV devices.

▼ Specifying a BCV Disk Group in Control Commands

In control operation commands (`vxsymsplit`, `vxsymremir`, and `vxsymrestore`), you can now specify the name of a BCV disk group from the number of BCV disk groups attached to a single STD disk group using the new `-g Prldg:[Secdg]` option. This option lets you specify the name of the BCV disk group:

- ◆ To be created after a split (in `vxsymsplit`)
- ◆ To which to restore the STD disk group (in `vxsymrestore`)
- ◆ To be remirrored (in `vxsymmir`)



▼ **Instasplit**

Instasplit is a new feature in microcode 5x66 for split operations. Instasplit makes the split command return quickly while continuing the operation in the background.

The `vxsymsplit` command supports instasplit through the `-o type=instant` option.

The `vxsymmir/vxsymrestore` commands fail if the background split is in progress for any associated STD or BCV device on which the mirror/restore operation is executed.

The `vxsymquery` command reports status for a background instasplit in progress for a set of devices.

▼ **Removal of the config.txt Configuration File**

The `config.txt` file is no longer used. During the installation or upgrade process, the `config.txt` file is removed if it exists.

▼ **New Attachment Rules**

New attachment rules in VxFAS 4.0 are described below.

Control Operations Only on Disk Groups

Because all operations are now performed at the disk group level, there must be consistency within a disk group. Therefore VxFAS commands require that all the devices in an STD disk group have an attached BCV. If there is an STD device that does not have a BCV attached, the control operation is aborted and an error message is displayed. Control operations are carried out on the entire STD disk group, not on individual devices in the STD disk group.

Commands Operate Only on VxFAS-Generated Device Groups

VxFAS commands operate only on device groups created by VxFAS commands (`vxsymsetup attach`). Any device group created outside of VxFAS are not supported.

Support for Moving Devices

Moving a device from a device group to the required device group is done through user prompting and interaction. This is required during the attach operation if the device to be attached is in another device group.

Control Operations Strictly Validate Device Consistency in Disk Groups and Corresponding Device Groups

Control operations (`establish/split/restore`) are aborted if devices in the specified disk group do not belong to the device group.



▼ Bootdg Support

All control operations except restore are supported on the boot disk group. If the STD disk group is bootdg for a split operation, a BCV disk group is not created.

▼ Device Group Reconfiguration

After doing disk group split, join, or move operations on VxVM disk groups, if the disk group has valid VxFAS attachments, the corresponding device groups are reconfigured.

▼ Disk Group Split, Join, and Move Operations

Using VERITAS Volume Manager release 4.0, you can split an imported disk into two disk groups (`vxchg split`), join two imported disk groups into one disk group (`vxchg join`), or move specified objects together with their hierarchies from one imported disk group to another imported disk group (`vxchg move`). Disk group split, join, or move operations fail if any of the following validations fail:

- ◆ For the destination disk group `destdg`, if the corresponding device group `vxvm_destdg` already exists, the type (Regular, RDF1, or RDF2) of the device group must be compatible with the STD devices being added to the device group.
- ◆ For the destination disk group `destdg`, the STD devices being added to the device group `vxvm_destdg` (and those present in the device group if the device group already exists) must belong to the same Symmetrix array.
- ◆ For the destination disk group `destdg`, none of the STD devices being added to the device group `vxvm_destdg` (and those present in the device group if the device group already exists) can be in any of the following states:
 - Synchronized
 - Restored
 - Sync-in-progress
 - Restore-in-progress
- ◆ If any of the STD devices in the disk group `destdg` involved in the move operation is in `Split-before-sync` (or `Split-before-restored` state), none of the devices in the device group `vxvm_destdg` can be in `Split-before-restored` (or `Split-before-sync` state).



If all the above validations pass, the following reconfiguration takes place for the specified disk group `destdg`:

- ◆ The device group `vxvm_destdg` is created if it does not already exist
- ◆ The STD devices moved to the disk group `destdg` are added to the device group `vxvm_destdg`
- ◆ All the BCV devices attached to the STD devices are disassociated from their existing device group and are associated to the device group `vxvm_destdg`
- ◆ If the device group corresponding to the source disk group for the operation becomes empty, it is destroyed.

While the operation is in progress, the file `/etc/vx/emc.d/vxvmllog.txt` is used to log the operation. If the operation crashes, you can recover it using the `vxsymrecover -o cmd=vxdg` command after running the `vxdg recover` command. The following operations on the disk groups in the crashed operation cannot be performed until the recovery completes:

- ◆ Disk group import
- ◆ Disk group deport or destroy
- ◆ Addition of disks to the disk group
- ◆ Removal of disks from the disk group
- ◆ Associating a DA record to different DM record in the disk group
- ◆ Disk group split, join or move

Note The device group reconfigurations mentioned above are performed for split, join, and move operations on the STD disk groups only. If split, join, or move operations are performed on an STD disk group, similar operations must be performed on disk groups containing attached BCV disks. To make new device group configuration reflect in VEA server database, a `rescan` operation is required on the Symmetrix array containing that device group. See the *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide* for information on how to perform this operation.

In a high availability environment, reconfiguration of a disk group for which the `VxSymDevGrp` resource is configured requires changes to that cluster configuration. See the *VERITAS Cluster Server Agents for VERITAS FlashSnap Agent for Symmetrix Installation and Configuration Guide* for more information on changes to cluster environment that must be done after reconfiguring the `VxVM` disk group using any of the above operations.

▼ Disk Group Rename Operation

If a VxVM disk group is renamed (using the `-n` option for the `vxvg import` and `vxvg deport` commands), the corresponding device group is also renamed. For example, if the VxVM disk group `mydg` has valid VxFAS attachments and is renamed as `newdg`, the device group `vxvm_mydg` is renamed `vxvm_newdg`.

Note After renaming the disk group, its corresponding device group is renamed. To make the new name of the device group appear in the VEA server database, a `rescan` operation must be performed on the Symmetrix array containing that device group. See the *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide* for information on how to perform this operation.

In a high availability environment, after renaming a VxVM disk group, you must manually change the `DgName` attribute of the `VxSymDevGrp` type of resource corresponding to that VxVM disk group. See the *VERITAS Cluster Server Agents for VERITAS FlashSnap Agent for Symmetrix Installation and Configuration Guide* for more information on how to change the resource attribute.

▼ Policy Setting Support for EMC Rules for Volume Manager

EMC rules for Volume Manager (see the *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide*) are divided into *optional* and *mandatory* categories. Adding CKD, VCMDB (Volume Logix Database), DRV (Dynamic Reallocation), or GK (Gatekeeper) types of Symmetrix devices to a Volume Manager disk group is a mandatory configuration rule and is always checked. All the other configuration rules are optional and can be disabled.

The `vxsymrule` command can set the policy to check all rules or only the mandatory rules. The `vxsymrule` command also displays the current policy. The default policy is to check all the configuration rules. The rule checking policy can be set during the VxFAS installation and can be changed at any time.

Note The EMC rules for Volume Manager are not checked when the disk groups and volumes are created using the VxVM Allocator service.



Software Issues in VxFAS

▼ Restore Operation Fails With Internal Error “124_c10000f”

This error message occurs in rare instances when copying BCV data to a standard device (STD). To correct the problem, stop and restart VERITAS Enterprise Administrator (VEA) service and recover the operation from the VEA console, or run `vxsymrecover` from the command line. See the `vxsvc(1M)` manual page for information on starting and stopping VEA. See the *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide* for information on recovering from crashed operations.

VERITAS Licensing

VxFAS is a licensed product; you must obtain a license key before installing it. License keys valid for older versions of VxTF 2.x, 3.x and 4.x are not valid for VERITAS FlashSnap Agent for Symmetrix 4.0. For information on obtaining a license key, see the *VERITAS FlashSnap Agent for Symmetrix Installation Guide*.

Compatibility With Previous Versions of VxFAS

The VxFAS command line utilities are backward compatible with the VxTF release 3.x and VxTF release 4.0.

This release of VxFAS can reuse the VCS resource configuration created on VxTF 4.0. See the *VERITAS FlashSnap Agent for Symmetrix Installation Guide* for steps to upgrade from earlier versions of VxTF to this release of VxFAS.

Compatibility With Other VERITAS Products

▼ VxFAS and VERITAS SANPoint Control

VxFAS cannot interoperate with VERITAS SANPoint Control™; however, VxFAS does work with VERITAS SANPoint Control QuickStart.

▼ Installing VxFAS With VERITAS Storage Foundation *for Oracle* and VERITAS Storage Foundation *for Oracle RAC*

The VERITAS Storage Foundation™ *for Oracle* and VERITAS Storage Foundation™ *for Oracle RAC* install the `VRTSvail` package. `VRTSvail` provides the performance statistics and deep mapping features for Symmetrix and other storage arrays. VxFAS is not compatible with this package, so you must remove `VRTSvail` before installing and using VxFAS. When `VRTSvail` is removed and VxFAS is installed, these features are available only for Symmetrix arrays.

If you are operating in a mixed or EMC Symmetrix-only storage environment and you want to use VxFAS functionality, follow the procedure below to remove the `VRTSvail` package and install VxFAS.

Note VxFAS requires the Symmetrix command line interface (SYMCLI) and EMC Solutions Enabler kit V5.1 or above. If you have an older version of SYMCLI, first upgrade SYMCLI software.

1. Stop the VERITAS Enterprise Administrator service:

```
# /etc/init.d/isisd stop
```

2. Uninstall the `VRTSvail` package:

```
# pkgrm VRTSvail
```

Follow the instructions displayed on the screen.

3. Install VxFAS software as described in the section “Installing VxFAS Using the `pkgadd` Command” in *VERITAS FlashSnap Agent for Symmetrix Installation Guide*.
4. Restart the VERITAS Enterprise Administrator service:

```
# /etc/init.d/isisd start
```



VERITAS FlashSnap Agent for Symmetrix Packages

There are multiple software discs in the VERITAS product distribution. The contents of each disc is shown on the label. The VERITAS FlashSnap Agent for Symmetrix is part of the Storage Foundation product. The following VxFAS packages are in the `storage_foundation/pkgs` directory:

- ◆ `VRTSfas`—VERITAS FlashSnap Agent for Symmetrix and manual pages.
- ◆ `VRTSfasag`—VERITAS Cluster Server Agents for VERITAS FlashSnap Agent for Symmetrix.
- ◆ `VRTSfasdc`—VERITAS FlashSnap Agent for Symmetrix documentation

`VRTSfas` is the required VxFAS binary package.

`VRTSfasag` is the optional add-on package of VxFAS for VCS if you want the HA functionality for VxFAS operations.

`VRTSfasdc` is the optional documentation package.

VERITAS Installation Menu

VERITAS products distributed by VERITAS have an automated installation and licensing procedure that lets you install packages using an Installation Menu, or invoke installation scripts from the command line. Alternatively, you can install VxFAS using the `pkgadd` command. See the *VERITAS FlashSnap Agent for Symmetrix Installation Guide* for instructions on how to install the VxFAS packages.

Documentation

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

- ◆ *VERITAS FlashSnap Agent for Symmetrix Installation Guide*
- ◆ *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide*
- ◆ *VERITAS Cluster Server Agents for VERITAS FlashSnap Agent for Symmetrix Installation and Configuration Guide*

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



Displaying Documentation Online

The VERITAS FlashSnap Agent for *Symmetrix* guides are provided on the VERITAS Documentation disc as PDF files and in HTML-based format. The *VERITAS FlashSnap Agent for Symmetrix Installation Guide* is provided on the VERITAS software product disc under the `storage_foundation/docs` directory as a PDF file. To view or print PDF documents, you need the Adobe Acrobat Reader. The following three documents comprise the VxFAS documentation set:

- ◆ *VERITAS FlashSnap Agent for Symmetrix Installation Guide*
After installing the `VRTSfasdc` package, you can access this guide in the following location: `/opt/VRTSfasdc/vxfas_ig.pdf`.
- ◆ *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide*
After installing the `VRTSfasdc` package, you can access this guide in the following location: `/opt/VRTSfasdc/vxfas_ag.pdf`.
- ◆ *VERITAS Cluster Server Agents for VERITAS FlashSnap Agent for Symmetrix Installation and Configuration Guide*
After installing the `VRTSfasdc` package, you can access this guide in the following location: `/opt/VRTSfasdc/vxfas_vcsagent_icg.pdf`.

See the *VERITAS FlashSnap Agent for Symmetrix Installation Guide* for `VRTSfasdc` package installation instructions.

Online Manual Pages

This release includes the online manual pages in the `VRTSfas` package (see the *VERITAS FlashSnap Agent for Symmetrix Administrator's Guide* for a complete list of VxFAS manual pages).

The online manual pages are installed in the appropriate directories under `/opt/VRTS/man` (add this to your `MANPATH` environment variable), but this does not automatically update the `windex` database. To ensure that new VxFAS manual pages display correctly, update the `windex` database after installing `VRTSfas`. See the `catman(1M)` manual page for more information.



Getting Help

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

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

For license information:

- ◆ Phone: 1-650-527-0300
- ◆ Email: license@veritas.com
- ◆ Fax: 1-650-527-0952

For software updates:

- ◆ Email: swupdate@veritas.com

For information on purchasing VERITAS products:

- ◆ Phone: 1-800-327-2232
- ◆ Email: sales.mail@veritas.com

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

<http://www.veritas.com>

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

<http://support.veritas.com>



Unique Message Number

If you encounter a product error message, record the unique message number preceding the text of the message. When contacting VERITAS Technical Support, either by telephone or by visiting the VERITAS Technical Support website, be sure to provide the relevant message number. VERITAS Technical Support will use this message number to quickly determine if there are TechNotes or other information available for you.

A unique message number is an alpha-numeric string beginning with the letter “V”. For example, in the message number:

```
V-5-732-8018 At least one disk must be specified
```

the “V” indicates that this is a VERITAS product error message. The text of the error message follows the unique message number.

The vxtfexplorer.sh Diagnostic Program

1. The program is installed in the `/etc/vx/emc.d/bin` directory. To use this script:

a. Always run this program in a newly created sub-directory:

```
# mkdir /tmp/problem123
# cd /tmp/problem123
```

b. Enter the following command:

```
# /etc/vx/emc.d/bin/vxtfexplorer
```

2. You typically run this script three times to collect data for analysis:

- ◆ On the primary node before any VxFAS command is run
- ◆ On the secondary node just after the primary node crashes
- ◆ On the secondary node after the failover completes, that is, after a service group is either ONLINE or OFFLINE



3. If no failover is involved, run the script twice on the same node: once before and once after the failing command.
4. Use the file upload facility of your Web browser, or the FTP program, to transfer the `vxtfexplorer.sh` output files to the VERITAS Customer Support anonymous FTP site:

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

5. Telephone VERITAS Customer Support at the number listed under “[Getting Help](#)” on page 12. Tell them that you have run `vxtfexplorer.sh` and provide the name of the file that you transferred to the FTP site.

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

