Read This First

VERITAS

Veritas Storage Foundation™ and High Availability Solutions 4.1 Maintenance Pack 4 Rolling Patch 3

Introduction

This document provides release information about the products in the Veritas Storage Foundation and High Availability Solutions 4.1 Maintenance Pack 4 (MP4) Rolling Patch 3 (RP3) Linux release. The RP3 adds kernel support for SUSE Linux Enterprise Server 10 (SLES 10) with Service Pack 2 (SP2) and fixes a number of customer-reported issues in Storage Foundation.

System requirements

This section provide system requirements for the Veritas Storage Foundation and High Availability Solutions 4.1 MP4 RP3 release.

◆ Operating system requirements

◆ About updates on supported operating systems

Operating system requirements

The Veritas Storage Foundation and High Availability Solutions 4.1 MP4 RP3 release operates on the architectures and operating systems given below.

◆ Red Hat Enterprise Linux 4 (RHEL 4) with Update 1 (2.6.9-11 kernel), or later, on a 32-bit (x86) system, AMD Opteron or Intel Xeon EM64T (x86_64) system, or IA64 (Intel) system.

◆ Red Hat Enterprise Linux 5 (RHEL 5) (2.6.18-8 kernel) or later on a 32-bit (x86) system, AMD Opteron or Intel Xeon EM64T (x86_64) system, or IA64 (Intel) system.

◆ SUSE Linux Enterprise Server 9 (SLES 9) with SP1 (2.6.5-7.139 kernel or later), or SP2 (2.6.5-7.195 kernel or later), or SP3 (2.6.5-7.244 kernel or later), or SP4 (2.6.5-7.308 kernel or later) on a 32-bit (x86) system, AMD Opteron or Intel Xeon EM64T (x86_64) system, or IA64 (Intel) system.

◆ SUSE Linux Enterprise Server 10 (SLES 10) (2.6.16.21-0.8 kernel or later), or SLES 10 SP1 (2.6.16.46-0.12 kernel or later), or SLES 10 SP2 (2.6.16.60-0.21 kernel or later) on a 32-bit (x86) system, AMD Opteron or Intel Xeon EM64T (x86_64) system, or IA64 (Intel) system.

Note Storage Foundation for DB2 does not support RHEL 5 and SLES 10.

Note Storage Foundation for Oracle RAC (SF Oracle RAC) does not support the following operating systems:
- RHEL 5
- SLES 9 on x86 (32-bit) architecture
- SLES 10
- IA64 (Intel) architecture

Warning Storage Foundation supports SUSE Linux Enterprise Server 9 Service Pack 4 with this Rolling Patch release. However, customers running EMC PowerPath should not upgrade to SUSE Linux Enterprise Server 9 Service Pack 4 until it is officially supported by EMC. You can monitor Symantec's Hardware Compatibility List (HCL) for Veritas Storage Foundation and High Availability Solutions 4.1 MP4 at http://seer.entsupport.symantec.com/docs/289200.htm. Alternatively, you can submit a Request for Product Qualification (RPQ) to EMC.

About updates on supported operating systems

In addition to the platforms mentioned in this document, Veritas products will also operate on subsequent kernel and patch releases provided the operating systems maintain kernel application binary interface (ABI) compatibility.

Information about the latest supported Red Hat erratas and updates and SUSE service packs is available in the following TechNote. Read this TechNote *before* installing any Veritas™ product.

http://entsupport.symantec.com/docs/277033

For further details, depending on the product for which you want to install this Rolling Patch, refer to one of the following Release Notes documents for 4.1 MP4:

◆ *Veritas Cluster Server Release Notes*

◆ *Veritas Storage Foundation Release Notes*

◆ *Veritas Storage Foundation Cluster File System Release Notes*

◆ *Veritas Storage Foundation for Oracle RAC Release Notes*

Note SF Oracle RAC 4.1 does not support Oracle 9i Release 2.

Storage Foundation and High Availability fixed issues

This section provides information on the following:

◆ Cluster Server fixed issues

◆ Volume Manager fixed issues

◆ File System fixed issues

◆ Storage Foundation for Oracle RAC fixed issues

Cluster Server fixed issues

The following Veritas Cluster Server (VCS) incidents have been fixed in this release:

Incident	Fix Description
1299078	Introduced a check point for the agent framework to capture the stdout or the stderr messages from the entry points.
1234268	Fixed a corner case in offline and clean entry points that prevented service groups configured with a resource of type IPMultiNIC from failing back.
1211541	Revamped the mechanism to load vxfen module to support new operating system kernel updates.
1211445	Revamped the mechanism to load diskres module to support new operating system kernel updates.
1211385	Revamped the mechanism to load llt/gab modules to support new operating system kernel updates.
1187580	VCS now retains the value that you defined for the ActionTimeout attribute even after VCS or the agent restarts.
1150769	Authenticated non-root users can now run ha commands when the local system is in the LEAVING or the EXITING state.
1104213	VCS no longer freezes a service group when the service group is in the TRANSITIONING state.

Incident	Fix Description
1083698	Fixed the transient permission denied error that appeared when a service group configured with a resource of type NFS/Share was switched.
1023246	Fixed the "Stale NFS file handle" error that occurred when the NFS clients accessed the exported file system after a service group with NFS resource failed over.

Volume Manager fixed issues

The following Veritas Volume Manager (VxVM) incidents have been fixed in this release:

Incident	Description
1140398	Disk group import fails after the `vxdctl enable` command is run.
1183235	The `vxdisk scandisk` command and the `vxconfigd` command fail with an error message as `ddl_get_dynamic_attr: Could not do stat on path /dev/c1d0`.
1210268	Resizing fails on a file system that is less than or equal to 4TB.
1220329	When two DMP paths are enabled and a disk group is imported or deported, SCSI errors are seen in the messages file.
1316951	The `vxdg free` command displays erroneous information.
1363429	Taking a snapshot of a replicated volume group (RVG) with more than 250 volumes fails with an `Out of memory` error.
1363432	VxVM hot relocation (`vxrelocd`) fails when a layered volume disk failure is encountered in a replicated volume group (RVG).
1363436	The `vxconfigbackup -p` command on a disk group results in a zero-length `binconfig` file.
1363454	Memory leaks occur in the VxVM plugin of VxMS.
1363455	`Operation requires transaction` errors occur in VVR environments with medium to large configuration sizes.
1363461	Incoming messages limit of 128 messages results in performance degradation in Veritas Volume Replicator (VVR).
1363464	The `vxsnap prepare` command fails with a kernel error during configuration update.
1363465	System panic when one of the mirrored volume plexes went down due to LUN access failure.
1363467	A Cluster File System (CFS) node crashes when cables are pulled out from an array.
1363468	System panics in dmp_get_iocount().
1363471	The system crashes during a `vxsnap` operation and the `vxsnap print` command shows 95% valid for the original volume.
1363473	System panics after the storage replicator log (SRL) overflows into data change map (DCM) protection.
1363474	After a system crash or a system restart, a node fails to join back into a Cluster Volume Manager (CVM) cluster.
1363542	`tmp` files should be removed in scripts before they are used.

Incident	Description
1372961	The `vxdmpadm enable` command enables excluded paths that are listed in the `/etc/vx/vxvm.exclude` file.
1375538	A thread should start NIO after it is created rather than waiting for all replicas to have NIO's created.
1375703	The `vxplex` command dumps core during `vxassist addlog`.
1375739	The `vxcache` command does not delete the oldest snaps when the cache hits the highwater mark (HWM).
1375764	The `vxdg join` command hangs and fails.
1375780	Licensing information errors.
1378970	The `vxdg flush` command on a slave node in a Cluster Volume Manager (CVM) cluster disables the disk group.
1378976	The `vxddladm` command dumps core.
1378995	`vxconfigd` dumps core while starting a cluster.
1379064	After recovery of mirrored volumes having FMR3 Dirty Region Logging (DRL) in a cluster, subsequent node joins fail with a recovery in progress error.
1382560	Performance degradation in snapshot backups.
1387723	The root disk cannot be encapsulated if the extended partition is on sd3.
1394404	Kernel array policy modules (APM) are not installed after Red Hat Enterprise Linux kernel upgrade, if the `/usr` directory is on a separate partition.
1399146	`vxconfigd` segfaults and `vxio V-5-0-151` errors are displayed.
1399149	While increasing the size of a volume, `VxVM vxassist ERROR V-5-1-10128 Cannot assign minor number` error message is displayed.
1399155	All VxVM commands hang.
1399159	When there are no mirrors to read, `VOL_READ_MIRRORS ioctl` fails with an error.
1399162	System panic when disabled paths are re-enabled using the `vxdctl enable` command.
1399171	System panic when memory is low.
1400329	System panic in `vol_oes_err_bcast()` due to a NULL volume object pointer dereference.
1400337	System panic after HBA cables are pulled out from the Cluster Volume Manager (CVM) master.
1400347	Performance degradation on VxFS file systems that are on mirror-concat VxVM volumes with DCO and DRL.
1400381	HP CCISS raid devices fail in the `vxvmconvert` command.
1401020	The `rpm -U VRTSvxvm-platform` command does not install the new kernel modules on a SLES 9 host.
1401700	The `vxvm-startup` script that starts the VxVM configuration daemon (`vxconfigd`) fails when `/usr` is not mounted.
1403261	Volume resync of volumes consisting of more than a single plex, fails after 2TB offset.

Incident	Description
1453752	The VxVM configuration daemon (vxconfigd) does not start after installing the patch `4.1MP4RP1eHF4_linux_vm_hotfix` for IBM SANVC.

File System fixed issues

The following Veritas File System (VxFS) incidents have been fixed in this release:

Incident	Description
1386424	The `odmstat -i N` command fails with invalid pointer error after two iterations.
1261237	The `backup database` command hangs for a DB2 9.5 database created on VxFS.
1382167	Changes required for compatibility with SLES10 SP2.
1386390	The system runs out of memory when CFS and clones are used together, along with a workload that indicates a lot of `vx_trunc_tran` activity is underway.
1268999	The `ls -l` command on CFS hangs while waiting for `vxglm:vxg_ilock_wait`.
1287271	The `full fsck` command results in a core dump.
1386314	Need to backout changes of 1099805 due to regression.
1386382	Null pointer panic occurs in `bcopy()` through `vx_populate_attrdata()`.
1386346	System panic occurs when overlay inodes are held during remount.
1287127	System panic occurs after a urandom device is opened on VxFS.
1386429	Performance degradation occurs when two processes simultaneously open or close files.
1386449	The system hangs while processing `VX_IERTRUNC extops` with checkpoints and reservations.
1386439	File systems that are marked for `full fsck` can be mounted.
1385299	CFS hangs while running `vx_ireuse`.
1386380	CFS hangs on a fragmented file system when allocating write VxFS threads are seen waiting on transaction requests from the CFS primary.
1386414	The default access control lists (ACL) are not inherited correctly on clustered file systems.
1253343	Cloning a database using an instant checkpoint results in a system panic.

Storage Foundation for DB2

The following Storage Foundation for DB2 incident has been fixed in this release:

Incident	Description
1423244	Erroneous messages are displayed while rolling back to a checkpoint.

Storage Foundation for Oracle RAC fixed issues

The following SF Oracle RAC incidents have been fixed in this release:

Incident	Description
1210799	Change vcsmm rc script to use new modload scheme.
1210800	Change lmx rc script to use new modload scheme.

Storage Foundation and High Availability known issues

This section provides information on the following:

◆ Cluster Server known issues

◆ Volume Manager known issues

◆ File System known issues

Cluster Server known issues

The following Cluster Server (VCS) issues are open for this release:

VCS does not support RHEL4 U7 due to ia32el package issues

The ia32el package has known issues with RHEL4 Update 7. So, VCS does not support RHEL4 U7 on IA systems. Refer to bugzilla id 143303 for more information.

Installation of VCS packages may throw scriptlet errors on IA systems that run RHEL4

The following scriptlet errors may occur during the installation of VCS package VRTSvcs-4.1.40.30-MP4RP3_RHEL4.ia64.rpm on IA systems that run RHEL4:

```
# rpm -Uvh VRTSvcs-4.1.40.30-MP4RP3_RHEL4.i686.rpm

%pre(VRTSvcs-4.1.40.30-MP4RP3_RHEL4.i686) scriptlet failed,
exit status 255

install: %pre scriptlet failed (2), skipping
VRTSvcs-4.1.40.30-MP4RP3_RHEL4
```

Workaround

Verify whether the sh binary exists in the path /emul/ia32-linux/bin. If the binary does not exist, create a soft link to the sh binary or copy the sh binary to the /emul/ia32-linux/bin path.

Cluster Manager (Java Console) may display an error while loading templates (1433844)

You can access the Template View in the Cluster Manager from the Tools > Templates menu. If you have Storage Foundation configured in a VCS cluster setup, the following error may occur while the Cluster Manager loads the templates.

```
VCS ERROR V-16-10-65 Could not load :-
/etc/VRTSvcs/Templates/DB2udbGroup.tf
```

Workaround

Ignore the error.

Volume Manager known issues

The following Volume Manager issues are open for this release:

Error messages during upgrade to VRTSvxvm

When you upgrade the VRTSvxvm package, if all the applications or processes that are accessing volumes or daemons are not cleanly shutdown, then you may see the following messages:

```
FATAL: Module vxspec is in use.

FATAL: Module vxio is in use.

FATAL: Module vxdmp is in use.
```

Workaround

After the upgrade, restart the system.

Cluster Volume Manager fails to start on a host with PowerPath running along with VxVM DMP (1444190)

When a host that has Powerpath running along with VxVM DMP is restarted, Cluster Volume Manager (CVM) may fail to start. This occurs due to a race condition during simultaneous execution of the Hardware Abstraction Layer (HAL) daemon and the Volume Manager configuration daemon (vxconfigd) on devices controlled by the EMC PowerPath driver.

Workaround

You need to disable the HAL daemon before you start CVM.

Run the following command to disable the HAL daemon:

```
# chkconfig --del haldaemon
```

After the HAL daemon is disabled, start CVM.

Support for MSA1500, EVA 8000, and DS6000K arrays

If you are using MSA1500, EVA 8000, or DS6000K arrays, read this TechNote before installing or upgrading to 4.1 MP4 RP3:

http://entsupport.symantec.com/docs/277033

File System known issues

The following File System issues are open for this release:

Performance degradation when Veritas NetBackup is used to backup VxFS snapshot file systems (1384247)

While using Veritas NetBackup to take a backup from a VxFS snapshot file system, some performance degradation has been observed.

Workaround

A hotfix will be made available for this issue. For availability, check the Late Breaking News TechNotes at the following location:

http://entsupport.symantec.com/docs/277033

File system shrink fails even when free space is available (1439489)

A file system shrink operation may fail even when free space is available in the file system. The shrink operation does not relocate extents associated with some metadata files like transaction log or inode list. If extents associated with such files are present beyond the requested file system size, then the shrink operation fails.

Workaround

There is no workaround for this issue.

Downloading the Rolling Patch 3 archive

The patches comprising the Rolling Patch 3 (RP3) release are available for download from the Veritas website. After downloading the RP3 file, use the `tar` command to uncompress and extract the archive.

Packages included in Rolling Patch 3

This section provides information on the following:

◆ Packages for Cluster Server

◆ Packages for Storage Foundation

◆ Packages for Storage Foundation for Oracle RAC

Packages for Cluster Server

The following packages are included in this rolling patch for Cluster Server (VCS) on Red Hat Enterprise Linux (RHEL):

Operating System	Arch.	Packages

Red Hat Enterprise Linux 4	x86	`VRTSgab-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	x86_64	`VRTSgab-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	IA64	`VRTSgab-4.1.40.30-MP4RP3_RHEL4.ia64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL4.ia64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL4.ia64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL4.ia64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL4.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

Operating System	Arch.	Packages

Red Hat Enterprise Linux 5	x86	`VRTSgab-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	x86_64	`VRTSgab-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	IA64	`VRTSgab-4.1.40.30-MP4RP3_RHEL5.ia64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_RHEL5.ia64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_RHEL5.ia64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_RHEL5.ia64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_RHEL5.i686.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

The following packages are included in this rolling patch for VCS on SUSE Linux Enterprise Server (SLES):

Operating System	Arch.	Packages

SUSE Linux Enterprise Server 9	x86	`VRTSgab-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	x86_64	`VRTSgab-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	IA64	`VRTSgab-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

Operating System	Arch.	Packages

SUSE Linux Enterprise Server 10	x86	`VRTSgab-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	x86_64	`VRTSgab-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

	IA64	`VRTSgab-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSvcsdr-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSllt-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSvxfen-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSvcs-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTScscm-4.4.40.30-MP4RP3_GENERIC.noarch.rpm`
		`VRTSvcsag-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`

Packages for Storage Foundation

The following packages are included in this rolling patch for Storage Foundation on Red Hat Enterprise Linux (RHEL):

Operating System	Arch.	Packages
Red Hat Enterprise Linux 4	x86	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSglm-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSgms-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSodm-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSodm-platform-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSdb2ed-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm
	x86_64	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm VRTSglm-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSgms-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSodm-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSodm-platform-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL4.x86_64.rpm VRTSdb2ed-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm
	IA64	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL4.ia64.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL4.ia64.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL4.ia64.rpm VRTSdb2ed-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm
Red Hat Enterprise Linux 5	x86	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL5.i686.rpm
	x86_64	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL5.x86_64.rpm
	IA64	VRTSvxfs-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxfs-platform-4.1.40.30-MP4RP3_RHEL5.ia64.rpm VRTSvxvm-common-4.1.40.30-MP4RP3_RHEL5.i686.rpm VRTSvxvm-platform-4.1.40.30-MP4RP3_RHEL5.ia64.rpm VRTSjre-1.4.2.18-18.i386.rpm VRTSlvmconv-4.1.40.30-MP4RP3_RHEL5.ia64.rpm

The following packages are included in this rolling patch for Storage Foundation on SUSE Linux Enterprise Server (SLES):

Operating System	Arch.	Packages

SUSE Linux Enterprise Server 9	x86	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES9.i586.rpm`

	x86_64	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSglm-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSgms-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSodm-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSodm-platform-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES9.x86_64.rpm`

	IA64	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES9.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES9.ia64.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES9.ia64.rpm`

SUSE Linux Enterprise Server 10	x86	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES10.i586.rpm`

	x86_64	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES10.x86_64.rpm`

	IA64	`VRTSvxfs-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxfs-platform-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSvxvm-common-4.1.40.30-MP4RP3_SLES10.i586.rpm`
		`VRTSvxvm-platform-4.1.40.30-MP4RP3_SLES10.ia64.rpm`
		`VRTSjre-1.4.2.18-18.i386.rpm`
		`VRTSlvmconv-4.1.40.30-MP4RP3_SLES10.ia64.rpm`

Packages for Storage Foundation for Oracle RAC

In addition to the VCS and Storage Foundation Rolling Patch 3 packages, the following packages are included in this rolling patch for SF Oracle RAC:

Operating System	Arch.	Packages
Red Hat Enterprise Linux 4	x86	`VRTSdbac-4.1.40.20-MP4RP2_RHEL4.i686.rpm`
	x86_64	`VRTSdbac-4.1.40.20-MP4RP2_RHEL4.x86_64.rpm`
SUSE Linux Enterprise Server 9	x86_64	`VRTSdbac-4.1.40.20-MP4RP2_SLES9.x86_64.rpm`

Installing the Storage Foundation and High Availability Solutions product for the first time

This section provides guidelines on installing Storage Foundation and High Availability Solutions product for the first time on a host, and installing Rolling Patch 3 (RP3).

- Installing Cluster Server and Rolling Patch 3
- Installing Storage Foundation or Storage Foundation Cluster File System and Rolling Patch 3
- Installing Storage Foundation for Oracle RAC and Rolling Patch 3

Installing Cluster Server and Rolling Patch 3

This section provides guidelines on installing Cluster Server (VCS) for the first time on a host, and installing Rolling Patch 3 (RP3).

- Installing on Red Hat Enterprise Linux 4
- Installing on Red Hat Enterprise Linux 5
- Installing on SUSE Linux Enterprise Server 9
- Installing on SUSE Linux Enterprise Server 10

Installing on Red Hat Enterprise Linux 4

To install Cluster Server and RP3 on RHEL 4:

1. Install Cluster Server 4.1 using the `-installonly` option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Installation Guide*.

2. Install Cluster Server 4.1 Maintenance Pack 4 (MP4).

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

3. Run the following command to change directory.

   `# cd /extractdir/cd1/rhel4_arch/cluster_server/rpms`

   where,

   - *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.
   - *arch* is either i586, or i686, or ia64, or x86_64.

4. Run the following command to upgrade to 4.1 MP4 RP3.

   `# rpm -Uvh *.rpm`

   See "Packages for Cluster Server" on page 11.

5. Configure Cluster Server 4.1 using the `-configure` option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Installation Guide*.

6. Restart the host.

Installing on Red Hat Enterprise Linux 5

To install Cluster Server and RP3 on RHEL 5:

1. Install Cluster Server 4.1 Maintenance Pack 4 (MP4) using the `-installonly` option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

2. Run the following command to change directory.

   `# cd /extractdir/cd4/rhel5_arch/cluster_server/rpms`

   where,

   ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

   ◆ *arch* is either i586, or i686, or ia64, or x86_64.

3. Run the following command to upgrade to 4.1 MP4 RP3.

   `# rpm -Uvh *.rpm`

   See "Packages for Cluster Server" on page 11.

4. Configure Cluster Server 4.1 MP4 using the `-configure` option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

5. Restart the host.

Installing on SUSE Linux Enterprise Server 9

To install Cluster Server and RP3 on SLES 9:

1. Install Cluster Server 4.1 using the `-installonly` option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Installation Guide*.

2. Install Cluster Server 4.1 Maintenance Pack 4 (MP4).

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

3. Run the following command to change directory.

   `# cd /extractdir/cd2/sles9_arch/cluster_server/rpms`

   where,

   ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

   ◆ *arch* is either i586, or i686, or ia64, or x86_64.

4. Run the following command to upgrade to 4.1 MP4 RP3.

   `# rpm -Uvh *.rpm`

See "Packages for Cluster Server" on page 11.

5. Configure Cluster Server 4.1 using the -configure option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

6. Restart the host.

Installing on SUSE Linux Enterprise Server 10

To install Cluster Server and RP3 on SLES 10:

1. Install Cluster Server 4.1 MP3 using the -installonly option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 3 Release Notes*.

2. Install Cluster Server 4.1 MP4.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 4 Release Notes*.

3. Run the following command to change directory.

   ```
   # cd /extractdir/cd3/sles10_arch/cluster_server/rpms
   ```

   where,

   ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

   ◆ *arch* is either i586, or i686, or ia64, or x86_64.

4. Run the following command to upgrade to 4.1 MP4 RP3.

   ```
   # rpm -Uvh *.rpm
   ```

   See "Packages for Cluster Server" on page 11.

5. Configure Cluster Server 4.1 MP3 using the -configure option.

   For further details, refer to the *VERITAS Cluster Server 4.1 Maintenance Pack 3 Release Notes*.

6. Restart the host.

Installing Storage Foundation or Storage Foundation Cluster File System and Rolling Patch 3

This section provides guidelines on installing Storage Foundation (SF) or Storage Foundation Cluster File System (SFCFS) for the first time on a host, and installing Rolling Patch 3 (RP3).

◆ Installing on Red Hat Enterprise Linux 4

◆ Installing on Red Hat Enterprise Linux 5

◆ Installing on SUSE Linux Enterprise Server 9

◆ Installing on SUSE Linux Enterprise Server 10

Installing on Red Hat Enterprise Linux 4

To install Storage Foundation or Storage Foundation Cluster File System and RP3 on RHEL 4:

1. Install Storage Foundation 4.1 or Storage Foundation Cluster File System 4.1 using the `-installonly` option.

   For further details, depending on the product that you want to install, refer to one of the following Installation Guide documents for 4.1:

   ◆ *VERITAS Storage Foundation 4.1 Installation Guide*

   ◆ *VERITAS Storage Foundation Cluster File System 4.1 Installation and Administration Guide*

2. Install Storage Foundation 4.1 Maintenance Pack 4 (MP4) or Storage Foundation Cluster File System 4.1 MP4.

   For further details, depending on the product that you want to install, refer to one of the following Release Notes documents for 4.1 MP4:

   ◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 4 Release Notes*

   ◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 4 Release Notes*

3. Run the following command to change directory.

   # `cd /extractdir/cd1/rhel4_arch/productname/rpms`

   where,

   ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

   ◆ *arch* is either i586, or i686, or ia64, or x86_64.

   ◆ *productname* is either **storage_foundation**, or **storage_foundation_cluster_file_system**, depending on the product you are installing.

4. Run one of the following commands to upgrade to 4.1 MP4 RP3.

   ◆ On Storage Foundation for DB2 hosts:

   Install all rpms except the `VRTSdb2ed-common` rpm.

   # `rpm -Uvh VRTS[!d]*.rpm`

   Install the `VRTSdb2ed-common` rpm.

   # `rpm -Uvh --noscripts VRTSdb2ed-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm`

   ◆ On Storage Foundation or Storage Foundation Cluster File System hosts:

   # `rpm -Uvh *.rpm`

   See "Packages for Storage Foundation" on page 14.

5. Configure Storage Foundation 4.1 or Storage Foundation Cluster File System 4.1 using the `-configure` option.

For further details, depending on the product that you want to configure, refer to one of the following Installation Guide documents for 4.1:

◆ *VERITAS Storage Foundation 4.1 Installation Guide*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Installation and Administration Guide*

6. Restart the host.

Installing on Red Hat Enterprise Linux 5

To install Storage Foundation or Storage Foundation Cluster File System and RP3 on RHEL 5:

1. Install Storage Foundation 4.1 Maintenance Pack 4 (MP4) or Storage Foundation Cluster File System 4.1 MP4 using the `-installonly` option.

For further details, depending on the product that you want to install, refer to one of the following Release Notes documents for 4.1 MP4:

◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 4 Release Notes*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 4 Release Notes*

2. Run the following command to change directory.

cd /*extractdir*/cd4/rhel5_*arch*/*productname*/rpms

where,

◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

◆ *arch* is either i586, or i686, or ia64, or x86_64.

◆ *productname* is either **storage_foundation**, or **storage_foundation_cluster_file_system**, depending on the product you are installing.

3. Run the following command to upgrade to 4.1 MP4 RP3.

rpm -Uvh *.rpm

See "Packages for Storage Foundation" on page 14.

4. Configure Storage Foundation 4.1 MP4 or Storage Foundation Cluster File System 4.1 MP4 using the `-configure` option.

For further details, depending on the product that you want to configure, refer to one of the following Release Notes documents for 4.1 MP4:

◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 4 Release Notes*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 4 Release Notes*

5. Restart the host.

Installing on SUSE Linux Enterprise Server 9

To install Storage Foundation or Storage Foundation Cluster File System and RP3 on SLES 9:

1. Install Storage Foundation 4.1 or Storage Foundation Cluster File System 4.1 using the `-installonly` option.

For further details, depending on the product that you want to install, refer to one of the following Installation Guide documents for 4.1:

◆ *VERITAS Storage Foundation 4.1 Installation Guide*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Installation and Administration Guide*

2. Install Storage Foundation 4.1 Maintenance Pack 4 (MP4) or Storage Foundation Cluster File System 4.1 MP4.

For further details, depending on the product that you want to install, refer to one of the following Release Notes documents for 4.1 MP4:

◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 4 Release Notes*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 4 Release Notes*

3. Run the following command to change directory.

`# `**`cd /`***`extractdir`***`/cd2/sles9_`***`arch`***`/`***`productname`***`/rpms`**

where,

◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

◆ *arch* is either i586, or i686, or ia64, or x86_64.

◆ *productname* is either **`storage_foundation`**, or **`storage_foundation_cluster_file_system`**, depending on the product you are installing.

4. Run the following command to upgrade to 4.1 MP4 RP3.

`# `**`rpm -Uvh *.rpm`**

See "Packages for Storage Foundation" on page 14.

5. Configure Storage Foundation 4.1 or Storage Foundation Cluster File System 4.1 using the `-configure` option.

For further details, depending on the product that you want to configure, refer to one of the following Installation Guide documents for 4.1:

◆ *VERITAS Storage Foundation 4.1 Installation Guide*

◆ *VERITAS Storage Foundation Cluster File System 4.1 Installation and Administration Guide*

6. Restart the host.

Installing on SUSE Linux Enterprise Server 10

To install Storage Foundation or Storage Foundation Cluster File System and RP3 on SLES 10:

1. Install Storage Foundation 4.1 Maintenance Pack 3 (MP3) or Storage Foundation Cluster File System 4.1 MP3 using the `-installonly` option.

   For further details, depending on the product that you want to install, refer to one of the following Release Notes documents for 4.1 MP3:

   ◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 3 Release Notes*

   ◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 3 Release Notes*

2. Install Storage Foundation 4.1 Maintenance Pack 4 (MP4) or Storage Foundation Cluster File System 4.1 MP4.

   For further details, depending on the product that you want to install, refer to one of the following Release Notes documents for 4.1 MP4:

   ◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 4 Release Notes*

   ◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 4 Release Notes*

3. Run the following command to change directory.

   # **cd /*extractdir*/cd3/sles10_*arch*/*productname*/rpms**

   where,

   ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

   ◆ *arch* is either i586, or i686, or ia64, or x86_64.

   ◆ *productname* is either **storage_foundation**, or **storage_foundation_cluster_file_system**, depending on the product you are installing.

4. Run the following command to upgrade to 4.1 MP4 RP3.

   # **rpm -Uvh *.rpm**

   See "Packages for Storage Foundation" on page 14.

5. Configure Storage Foundation 4.1 MP3 or Storage Foundation Cluster File System 4.1 MP3 using the `-configure` option.

   For further details, depending on the product that you want to configure, refer to one of the following Release Notes documents for 4.1 MP3:

   ◆ *VERITAS Storage Foundation 4.1 Maintenance Pack 3 Release Notes*

   ◆ *VERITAS Storage Foundation Cluster File System 4.1 Maintenance Pack 3 Release Notes*

6. Restart the host.

Installing Storage Foundation for Oracle RAC and Rolling Patch 3

This section provides guidelines on installing SF Oracle RAC for the first time on a host, and installing Rolling Patch 3 (RP3).

◆ Installing on Red Hat Enterprise Linux 4

◆ Installing on SUSE Linux Enterprise Server 9

Installing on Red Hat Enterprise Linux 4

To install SF Oracle RAC and Rolling Patch 3 on RHEL 4:

1. Install SF Oracle RAC 4.1 using the `-installonly` option.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Installation and Configuration Guide*.

2. Install SF Oracle RAC 4.1 Maintenance Pack 4.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Maintenance Pack 4 Release Notes*.

3. Run the following command to change directory.

`# cd /extractdir/cd1/rhel4_arch/storage_foundation_for_oracle_rac/rpms`

where,

◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

◆ *arch* is either i686, or x86_64.

4. Install the 4.1 MP4 RP3 packages by running the following commands as the superuser on each node.

`# rpm -Uvh *.rpm`

See "Packages for Storage Foundation for Oracle RAC" on page 15.

5. Configure SF Oracle RAC 4.1 using the `-configure` option.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Installation and Configuration Guide*.

6. Restart the host.

Installing on SUSE Linux Enterprise Server 9

To install SF Oracle RAC and Rolling Patch 3 on SLES 9:

1. Install SF Oracle RAC 4.1 using the `-installonly` option.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Installation and Configuration Guide*.

2. Install SF Oracle RAC 4.1 Maintenance Pack 4.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Maintenance Pack 4 Release Notes*.

3. Run the following command to change directory.

```
# cd /extractdir/cd2/sles9_x86_64/
   storage_foundation_for_oracle_rac/rpms
```

where, *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

4. Install the 4.1 MP4 RP3 packages by running the following commands as the superuser on each node.

```
# rpm -Uvh *.rpm
```

See "Packages for Storage Foundation for Oracle RAC" on page 15.

5. Configure SF Oracle RAC 4.1 using the -configure option.

For further details, refer to *VERITAS Storage Foundation for Oracle RAC 4.1 Installation and Configuration Guide*.

6. Restart the host.

Upgrading an existing Storage Foundation and High Availability host to Rolling Patch 3

This section provides information on upgrading an existing Storage Foundation and High Availability host to Rolling Patch 3 (RP3).

◆ Prerequisites for upgrading to Rolling Patch 3

◆ Upgrading to Rolling Patch 3

Prerequisites for upgrading to Rolling Patch 3

This section provides information on the prerequisites for upgrading to Rolling Patch 3 (RP3).

◆ Prerequisites for upgrading on Cluster Server

◆ Prerequisites for upgrading on Storage Foundation

◆ Prerequisites for upgrading on Storage Foundation for Oracle RAC

Prerequisites for upgrading on Cluster Server

You must have the following Cluster Server (VCS) product installed on the host before you upgrade to Rolling Patch 3 (RP3) for Veritas High Availability Solutions 4.1 Maintenance Pack 4 (MP4):

Operating system	VCS product
Red Hat Enterprise Linux 4	VCS 4.1 (or later)
Red Hat Enterprise Linux 5	VCS 4.1 MP4 (or later)
SUSE Linux Enterprise Server 9	VCS 4.1 (or later)
SUSE Linux Enterprise Server 10	VCS 4.1 MP3 (or later)

Prerequisites for upgrading on Storage Foundation

You must have the following Storage Foundation or Storage Foundation Cluster File System (SFCFS) product installed on the host before you upgrade to Rolling Patch 3 (RP3) for Veritas Storage Foundation and High Availability Solutions 4.1 Maintenance Pack 4 (MP4):

Operating system	Storage Foundation or SFCFS product
Red Hat Enterprise Linux 4	Storage Foundation 4.1 or SFCFS 4.1 (or later)
Red Hat Enterprise Linux 5	Storage Foundation 4.1 MP4 or SFCFS 4.1 MP4 (or later)
SUSE Linux Enterprise Server 9	Storage Foundation 4.1 or SFCFS 4.1 (or later)
SUSE Linux Enterprise Server 10	Storage Foundation 4.1 MP3 or SFCFS 4.1 MP3 (or later)

Prerequisites for upgrading on Storage Foundation for Oracle RAC

You must have the following SF Oracle RAC product installed on the host before you upgrade to Rolling Patch 3 (RP3) for Veritas Storage Foundation and High Availability Solutions 4.1 Maintenance Pack 4 (MP4):

Operating system	SF Oracle RAC product
Red Hat Enterprise Linux 4	SF Oracle RAC 4.1 Maintenance Pack 4 (MP4)
SUSE Linux Enterprise Server 9	SF Oracle RAC 4.1 Maintenance Pack 4 (MP4)

Upgrading to Rolling Patch 3

The following sections contain instructions for upgrading to Rolling Patch 3 (RP3):

◆ Upgrading to Rolling Patch 3 on a cluster

  Use the procedures in this section to upgrade to RP3 on a cluster that has VCS, SFCFS, or SF Oracle RAC installed.

◆ Upgrading to Rolling Patch 3 on a standalone system

  Use the procedure in this section to upgrade to RP3 on a system that has Storage Foundation installed.

Upgrading to Rolling Patch 3 on a cluster

An upgrade on a cluster requires stopping cluster failover functionality during the entire procedure. However, if you use SFCFS and Cluster Volume Manager (CVM), the SFCFS and CVM services remain available. The upgrade is performed in several stages:

◆ Freeze service group operations and stop VCS on the cluster.

◆ Select a group of one or more cluster nodes to upgrade, and leave a group of one or more nodes running.

◆ Take the first group offline and install the software patches.

◆ Bring the first group (with the newly installed patches) online to restart cluster failover services.

◆ Upgrade the nodes in the second group, and bring them online. The cluster is fully restored.

Depending on the clusters, you can use the following procedures to upgrade to RP3:

◆ Upgrading to Rolling Patch 3 on a Cluster Server cluster

◆ Upgrading to Rolling Patch 3 on a Storage Foundation Cluster File System cluster

◆ Upgrading to Rolling Patch 3 on a Storage Foundation for Oracle RAC cluster

Upgrading to Rolling Patch 3 on a Cluster Server cluster

You can use this procedure to upgrade to RP3 on an Cluster Server (VCS) cluster.

To upgrade to RP3 on a VCS cluster:

1. Log in as superuser.

2. Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.

3. Switch the service group to a node that is running.

   ```
   # hagrp -switch service_group -to nodename
   ```

4. Make the VCS configuration writable. On a node that you want to upgrade, type:

   ```
   # haconf -makerw
   ```

5. Freeze the HA service group operations. Enter the following command on each node if you selected a group of nodes to upgrade:

   ```
   # hasys -freeze -persistent nodename
   ```

6. Make the VCS configuration read-only:

   ```
   # haconf -dump -makero
   ```

7. Select the group of nodes that are to be upgraded first, and follow step 9 through step 21 for these nodes.

8. Close any instance of VCS GUI that is running on the node.

9. Stop VCS. Enter the following command on each node in the group that is upgraded:

   ```
   # hastop -local
   ```

10. Stop the VCS command server:

    ```
    # killall CmdServer
    ```

11. Stop cluster fencing, GAB, and LLT.

    ```
    # /etc/init.d/vxfen stop
    # /etc/init.d/gab stop
    # /etc/init.d/llt stop
    ```

12. If required, you can upgrade the nodes at this stage, and patch them to a supported kernel version.

    See "System requirements" on page 3.

13. Repeat step 9 through step 11, if the system reboots after upgrading the operating system. You need to perform this to stop the components started, if any, by the init scripts.

14. Run the following command to change directory.

    ```
    # cd /extractdir/cdno/dist_arch/cluster_server/rpms
    ```

    where,

    ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

- ◆ *cdno* is either cd1 (for RHEL 4), or cd2 (for SLES 9), or cd 3 (for SLES 10), or cd4 (for RHEL 5).

- ◆ *dist* is either rhel4, rhel5, or sles9, or sles10.

- ◆ *arch* is either i586, or i686, or ia64, or x86_64.

15. On each node, run the following command to upgrade to 4.1 MP4 RP3.

`rpm -Uvh *.rpm`

See "System requirements" on page 3.

See "Packages for Cluster Server" on page 11.

16. Shut down and reboot each of the upgraded nodes. After the nodes come up, application failover capability is available for that group.

17. Run the following commands to start VCS:

```
# /etc/init.d/llt start
# /etc/init.d/gab start
# /etc/init.d/vxfen start
# /etc/init.d/vcs start
```

18. Make the VCS configuration writable again from any node in the upgraded group:

`haconf -makerw`

19. Unfreeze the service group operations. Perform this task on each node if you had upgraded a group of nodes:

`hasys -unfreeze -persistent nodename`

20. Make the VCS configuration read-only:

`haconf -dump -makero`

21. Switch the service group to the original node:

`hagrp -switch service_group -to nodename`

22. Repeat step 9 through step 21 for the second group of nodes.

Upgrading to Rolling Patch 3 on a Storage Foundation Cluster File System cluster

You can use this procedure to upgrade to RP3 on a Storage Foundation Cluster File System (SFCFS) cluster.

To upgrade to RP3 on a SFCFS cluster:

1. Log in as superuser.

2. Verify that /opt/VRTS/bin is in your PATH so you can execute all product commands.

3. Switch the service group to a node that is running.

`hagrp -switch service_group -to nodename`

4. From any node in the cluster, make the VCS configuration writable:

```
# haconf -makerw
```

5. Enter the following command to freeze HA service group operations on each node:

```
# hasys -freeze -persistent nodename
```

6. Make the configuration read-only:

```
# haconf -dump -makero
```

7. Select the group of nodes that are to be upgraded first, and follow step 8 through step 35 for these nodes.

8. Stop VCS by entering the following command on each node in the group being upgraded:

```
# hastop -local
```

9. Stop the VCS command server:

```
# killall CmdServer
```

10. Unregister CFS from GAB.

```
# fsclustadm cfsdeinit
```

11. Stop cluster fencing, GAB, and LLT.

```
# /etc/init.d/vxfen stop
# /etc/init.d/gab stop
# /etc/init.d/llt stop
```

12. Check if each node's root disk is under VxVM control by running this command.

```
# df -v /
```

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

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

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

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

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

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

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

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

13. If required, you can upgrade the nodes at this stage, and patch them to a supported kernel version.

See "

14. On each node, use the following command to check if any Storage Checkpoints are mounted:

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

If any Storage Checkpoints are mounted, on each node in the cluster unmount all Storage Checkpoints.

```
# umount /checkpoint_name
```

15. On each node, use the following command to check if any VxFS file systems are mounted:

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

a. If any VxFS file systems are present, on each node in the cluster unmount all the VxFS file systems:

```
# umount /filesystem
```

b. On each node, verify that all file systems have been cleanly unmounted:

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

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

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

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

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

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

```
file system device busy
```

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

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

d. If an extended operation is pending, you must leave the file system mounted for a longer time to allow the operation to complete. Removing a very large fileset clone can take several hours.

e. Repeat the following command to verify that the unclean file system is now clean:

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

16. If you have created any Veritas Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps:

    a. Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.

    b. Use the `vxrvg stop` command to stop each RVG individually:

```
# vxrvg -g diskgroup stop rvg_name
```

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

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

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

17. Stop activity to all VxVM volumes.

For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.

18. On each node, stop all VxVM volumes by entering the following command for each disk group:

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

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

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

19. Check if the VEA service is running:

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

If the VEA service is running, stop it:

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

20. Run the following command to change directory.

```
# cd /extractdir/cdno/dist_arch/
    storage_foundation_cluster_file_system/rpms
```

where,

◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

◆ *cdno* is either cd1 (for RHEL 4), or cd2 (for SLES 9), or cd 3 (for SLES 10), or cd4 (for RHEL 5).

◆ *dist* is either rhel4, rhel5, or sles9, or sles10.

◆ *arch* is either i586, or i686, or ia64, or x86_64.

21. On each node, run the following command to upgrade to 4.1 MP4 RP3.

```
# rpm -Uvh *.rpm
```

See "System requirements" on page 3.

See "Packages for Storage Foundation" on page 14.

22. Shut down and reboot each of the upgraded nodes. After the nodes come back up, application failover capability is available for that group.

23. If you need to re-encapsulate and mirror the root disk on each of the nodes, follow the procedures in the "Administering Disks" chapter of the *Veritas Volume Manager Administrator's Guide.*

24. If necessary, reinstate any missing mount points in the /etc/fstab file on each node.

25. Run the following commands to start the SFCFS processes:

```
# /etc/init.d/llt start
# /etc/init.d/gab start
# /etc/init.d/vxfen start
# /etc/init.d/vcs start
```

26. Make the VCS configuration writable again from any node in the upgraded group:

```
# haconf -makerw
```

27. Enter the following command on each node in the upgraded group to unfreeze HA service group operations:

```
# hasys -unfreeze -persistent nodename
```

28. Make the configuration read-only:

```
# haconf -dump -makero
```

29. Switch the service group to the original node:

```
# hagrp -switch service_group -to nodename
```

30. Bring the CVM service group online on each node in the upgraded group:

```
# hagrp -online cvm -sys nodename
```

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

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

32. If you stopped any RVGs in , restart each RVG:

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

33. Remount all VxFS file systems on all nodes:

```
# mount /filesystem
```

34. Remount all Storage Checkpoints on all nodes:

```
# mount /checkpoint_name
```

35. Check if the VEA service was restarted:

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

If the VEA service is not running, restart it:

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

36. Repeat through for the second group of nodes.

Upgrading to Rolling Patch 3 on a Storage Foundation for Oracle RAC cluster

You can use this procedure to upgrade to RP3 on a SF Oracle RAC cluster.

To upgrade to RP3 on a SF Oracle RAC cluster:

1. Log in as superuser.

2. Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.

3. Switch the service group to a node that is running.

    # **hagrp -switch *service_group* -to *nodename***

4. From any node in the cluster, make the VCS configuration writable:

    # **haconf -makerw**

5. Enter the following command to freeze HA service group operations on each node:

    # **hasys -freeze -persistent *nodename***

6. Make the configuration read-only:

    # **haconf -dump -makero**

7. Select the group of nodes that are to be upgraded first, and follow through for these nodes.

8. Stop all Oracle resources and the database on all nodes if there are any.

If you use Oracle 10g, you must also stop CRS on all nodes:

a. If CRS is controlled by VCS:

As superuser, enter the following command on each node in the cluster.

    # **hares -offline cssd-resource -sys nodename**

b. If CRS is not controlled by VCS:

Use the following command on each node to stop CRS.

    # **/etc/init.d/init.crs stop**

On stopping CRS if any gsd relevant process remains alive, you must kill that process manually.

9. Stop VCS by entering the following command on each node in the group being upgraded:

    # **hastop -local**

10. Stop the VCS command server:

    # **killall CmdServer**

11. Stop VCSMM, LMX, ODM, and GMS if they are running.

```
# /etc/init.d/vcsmm stop
# /etc/init.d/lmx stop
# /etc/init.d/vxodm stop
# /etc/init.d/vxgms stop
```

12. Unregister CFS from GAB.

```
# fsclustadm cfsdeinit
```

13. Stop cluster fencing, GAB, and LLT.

```
# /etc/init.d/vxfen stop
# /etc/init.d/gab stop
# /etc/init.d/llt stop
```

14. Check if each node's root disk is under VxVM control by running this command.

```
# df -v /
```

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

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

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

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

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

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

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

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

15. If required, you can upgrade the nodes at this stage, and patch them to a supported kernel version.

  Note If you are upgrading an SF Oracle RAC cluster, you must upgrade the nodes at this stage to one of the operating system versions that this RP release supports.

  See "System requirements" on page 3.

16. On each node, use the following command to check if any VxFS file systems are mounted:

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

  c. If any VxFS file systems are present, on each node in the cluster unmount all the VxFS file systems:

```
# umount /filesystem
```

d. On each node, verify that all file systems have been cleanly unmounted:

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

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

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

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

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

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

```
file system device busy
```

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

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

f. If an extended operation is pending, you must leave the file system mounted for a longer time to allow the operation to complete. Removing a very large fileset clone can take several hours.

g. Repeat the following command to verify that the unclean file system is now clean:

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

17. Stop activity to all VxVM volumes.

For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.

18. On each node, stop all VxVM volumes by entering the following command for each disk group:

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

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

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

19. Check if the VEA service is running:

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

If the VEA service is running, stop it:

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

20. Run the following command to change directory.

```
# cd /extractdir/cdno/dist_arch/
  storage_foundation_for_oracle_rac/rpms
```

where,

♦ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

♦ *cdno* is either cd1 (for RHEL4), or cd2 (for SLES 9).

♦ *dist* is either rhel4, or sles9.

♦ *arch* is either i686, or x86_64.

21. On each node, run the following command to upgrade to 4.1 MP4 RP3.

```
# rpm -Uvh *.rpm
```

See "System requirements" on page 3.

See "Packages for Storage Foundation for Oracle RAC" on page 15.

22. Shut down and reboot each of the upgraded nodes. After the nodes come back up, application failover capability is available for that group.

23. If you need to re-encapsulate and mirror the root disk on each of the nodes, follow the procedures in the "Administering Disks" chapter of the *Veritas Volume Manager Administrator's Guide*.

24. If necessary, reinstate any missing mount points in the /etc/fstab file on each node.

25. Run the following commands to start the SF Oracle RAC processes:

```
# /etc/init.d/llt start
# /etc/init.d/gab start
# /etc/init.d/vxfen start
# /etc/init.d/vcsmm start
# /etc/init.d/lmx start
# /etc/init.d/vcs start
# /etc/init.d/vxodm start
# /etc/init.d/vxgms start
```

26. Make the VCS configuration writable again from any node in the upgraded group:

```
# haconf -makerw
```

27. Enter the following command on each node in the upgraded group to unfreeze HA service group operations:

```
# hasys -unfreeze -persistent nodename
```

28. Make the configuration read-only:

```
# haconf -dump -makero
```

29. Switch the service group to the original node:

```
# hagrp -switch service_group -to nodename
```

30. Bring the CVM service group online on each node in the upgraded group:

```
# hagrp -online cvm -sys nodename
```

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

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

32. If CRS is not controlled by VCS, use the following command on each node to start CRS.

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

33. Remount all VxFS file systems on all nodes:

```
# mount /filesystem
```

34. Check if the VEA service was restarted:

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

If the VEA service is not running, restart it:

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

35. Repeat step 8 through step 34 for the second group of nodes.

36. Relink Oracle's CRS and database libraries for SF Oracle RAC:

   a. Run:

```
/opt/VRTS/install/installsfrac -configure
```

   b. Choose the correct relinking option for your version of Oracle:

      ◆ Relink SF Oracle RAC for Oracle 9i (Only for RHEL4)

      ◆ Relink SF Oracle RAC for Oracle 10g Release 1

      ◆ Relink SF Oracle RAC for Oracle 10g Release 2

Upgrading to Rolling Patch 3 on a standalone system

You can use this procedure to upgrade to Rolling Patch (RP3) on a standalone system that runs Storage Foundation.

To upgrade to RP3 on a standalone system:

1. Log in as superuser.

2. Verify that /opt/VRTS/bin is in your PATH so you can execute all product commands.

3. Check if the root disk is under VxVM control by running this command:

```
# df -v /
```

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

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

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

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

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

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

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

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

4. If required, you can upgrade the system at this stage, and patch it to a supported
kernel version.

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

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

6. Unmount all Storage Checkpoints and file systems:

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

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

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

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

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

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

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

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

```
file system device busy
```

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

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

    b. If an extended operation is pending, you must leave the file system mounted
for a longer time to allow the operation to complete. Removing a very large
fileset clone can take several hours.

    c. Repeat step 7 to verify that the unclean file system is now clean.

8. If you have created any Veritas Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps:

a. Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.

b. Use the `vxrvg stop` command to stop each RVG individually:

```
# vxrvg -g diskgroup stop rvg_name
```

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

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

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

9. Stop activity to all VxVM volumes. For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.

10. Stop all VxVM volumes by entering the following command for each disk group:

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

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

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

11. Check if the VEA service is running:

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

If the VEA service is running, stop it:

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

12. Run the following command to change directory.

```
# cd /extractdir/cdno/dist_arch/storage_foundation/rpms
```

where,

◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.

◆ *cdno* is either cd1 (for RHEL 4), or cd2 (for SLES 9), or cd 3 (for SLES 10), or cd4 (for RHEL 5).

◆ *dist* is either rhel4, rhel5, or sles9, or sles10.

◆ *arch* is either i586, or i686, or ia64, or x86_64.

13. Run one of the following commands to upgrade to 4.1 MP4 RP3.

◆ On Storage Foundation for DB2 hosts on RHEL 4:

Install all rpms except the `VRTSdb2ed-common` rpm.

```
# rpm -Uvh VRTS[!d]*.rpm
```

Install the `VRTSdb2ed-common` rpm.

```
# rpm -Uvh --noscripts
    VRTSdb2ed-common-4.1.40.30-MP4RP3_RHEL4.i686.rpm
```

◆ On Storage Foundation hosts:

```
# rpm -Uvh *.rpm
```

See "System requirements" on page 3.

See "Packages for Storage Foundation" on page 14.

14. Shut down and reboot the system.

15. If necessary, reinstate any missing mount points in the /etc/fstab file.

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

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

17. If you stopped any RVGs in step 8, restart each RVG:

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

18. Remount all VxFS file systems and Storage Checkpoints:

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

19. Check if the VEA service was restarted:

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

If the VEA service is not running, restart it:

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

20. If you need to re-encapsulate and mirror the root disk, follow the procedures in the "Administering Disks" chapter of the *Veritas Volume Manager Administrator's Guide*.

Upgrading the operating system and upgrading to Rolling Patch 3

You can upgrade the operating system on a Storage Foundation host where you plan to upgrade to Rolling Patch 3 (RP3). The following upgrade paths are supported for RP3:

◆ Upgrading Red Hat Enterprise Linux 4 (RHEL 4) to any update from Update 1 to Update 7

◆ Upgrading Red Hat Enterprise Linux 5 (RHEL 5) to Update 1 or Update 2

◆ Upgrading SUSE Linux Enterprise Server 9 (SLES 9) to any service pack from Service Pack 1 to Service Pack 4

◆ Upgrading SUSE Linux Enterprise Server 10 (SLES 10) to Service Pack 1 or Service Pack 2

To upgrade to any RHEL 4 update or RHEL 5 Update 1, and upgrade to RP3 on a Storage Foundation host:

1. Stop Storage Foundation.

2. Upgrade to one of the following:

◆ Any RHEL 4 update from Update 1 to Update 7

◆ RHEL 5 Update 1

3. Upgrade to RP3.

See "

4. Start Storage Foundation.

To upgrade to RHEL 5 Update 2, or any SLES 9 service pack, or any SLES 10 service pack, and upgrade to RP3 on a Storage Foundation host:

1. Stop Storage Foundation.

2. Upgrade to one of the following:

- ◆ RHEL 5 Update 2
- ◆ Any SLES 9 service pack from Service Pack 1 to Service Pack 4
- ◆ SLES 10 Service Pack 1 or Service Pack 2

3. Stop the VCS command server:

```
# killall CmdServer
```

4. Run the following command to change directory.

```
# cd /extractdir/cdno/dist_arch/productname/rpms
```

where,

- ◆ *extractdir* is the directory path under which you extracted the downloaded RP3 archive file.
- ◆ *cdno* is either cd2 (for SLES 9), or cd 3 (for SLES 10), or cd4 (for RHEL 5).
- ◆ *dist* is either rhel5, or sles9, or sles10.
- ◆ *arch* is either i586, or i686, or ia64, or x86_64.
- ◆ *productname* is the name of the product you are upgrading to 4.1 MP4 RP3.

5. On each node, run the following command to upgrade to 4.1 MP4 RP3.

```
# rpm -Uvh *.rpm
```

See "

See "

6. Start Storage Foundation.

Verifying software versions

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

```
# rpm -qa | egrep VRTS
```

Removing the Rolling Patch 3 packages

Roll back of the Rolling Patch (RP3) packages to the release 4.1 MP4 version of the packages is not supported. It is recommended that you follow the steps in the following sections to remove all the installed Veritas packages, and then perform a complete reinstallation of the release 4.1 MP4 software.

◆ Removing the Rolling Patch 3 packages on Cluster Server

◆ Removing the Rolling Patch 3 packages on Storage Foundation or Storage Foundation Cluster File System

◆ Removing the Rolling Patch 3 packages on Storage Foundation for Oracle RAC

Removing the Rolling Patch 3 packages on Cluster Server

You can use the following procedure to uninstall the Rolling Patch 3 (RP3) packages on a Cluster Server (VCS) cluster.

To uninstall RP3 packages on VCS:

1. Log in as superuser.

2. Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.

3. Stop VCS along with all the resources. Then, stop the remaining resources manually:

   # **/etc/init.d/vcs stop**

4. Stop the VCS command server:

   # **killall CmdServer**

5. Uninstall VCS:

   # **cd /opt/VRTS/install**
   # **./uninstallvcs [-usersh]**

6. If vxfen was originally configured in enabled mode, type the following on all the nodes:

   # **rm /etc/vxfenmode**

7. Reboot all nodes.

After uninstalling the packages, refer to the *Veritas Cluster Server Release Notes* for 4.1 MP4 to reinstall the 4.1 MP4 software.

Removing the Rolling Patch 3 packages on Storage Foundation or Storage Foundation Cluster File System

You can use the following procedure to uninstall the Rolling Patch 3 (RP3) packages on Storage Foundation or Storage Foundation Cluster File System (SFCFS).

To uninstall RP3 packages on Storage Foundation or SFCFS:

1. Log in as superuser.

2. Verify that `/opt/VRTS/bin` is in your PATH so you can execute all product commands.

3. Unmount all Veritas File System (VxFS) or Cluster File System (CFS) file systems.

4. Stop VCS.

   # **hastop -all**

5. If cluster fencing was originally configured in enabled mode, type the following on all the nodes:

   # **rm /etc/vxfenmode**

6. Check if the root disk is under VxVM control by running this command:

   # **df -v /**

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

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

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

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

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

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

   # **/etc/vx/bin/vxunroot**

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

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

   # **df -T | grep vxfs**

8. Unmount all Storage Checkpoints and file systems:

   # **umount */checkpoint_name***
   # **umount */filesystem***

9. If you have created any Veritas Volume Replicator (VVR) replicated volume groups (RVGs) on your system, perform the following steps:

    a. Stop all applications that are involved in replication. For example, if a data volume contains a file system, unmount it.

    b. Use the `vxrvg stop` command to stop each RVG individually:

        `# vxrvg -g diskgroup stop rvg_name`

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

        `# vxrlink -g diskgroup status rlink_name`

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

10. Stop activity to all VxVM volumes. For example, stop any applications such as databases that access the volumes, and unmount any file systems that have been created on the volumes.

11. Stop all VxVM volumes by entering the following command for each disk group:

    `# vxvol -g diskgroup stopall`

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

    `# vxprint -Aht -e v_open`

12. Check if the VEA service is running:

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

    If the VEA service is running, stop it:

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

13. To shut down and remove the installed Veritas packages, use the appropriate product-specific uninstallation script in the `/opt/VRTS/install` directory. For example, to uninstall the Storage Foundation or Veritas Storage Foundation *for DB2* packages, use the following commands:

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

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

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

14. Uninstall all the remaining infrastructure VRTS rpms manually on each cluster node.

    `# ./uninstallinfr galaxy nebula`

After uninstalling the Veritas software, refer to the appropriate product's 4.1 MP4 Release Notes document to reinstall the 4.1 MP4 software.

Removing the Rolling Patch 3 packages on Storage Foundation for Oracle RAC

You can use the following procedure to uninstall the Rolling Patch 3 (RP3) packages on SF Oracle RAC systems.

To uninstall the RP3 packages on SF Oracle RAC:

1. Stop Oracle and CRS on each cluster node.

    ◆   If CRS is controlled by VCS, log in as superuser on any system in the cluster and enter the following command for each node in the cluster:

        # **/opt/VRTSvcs/bin/hares -offline cssd-resource -sys galaxy**

        Where galaxy is the name of the cluster node.

    ◆   If CRS is not controlled by VCS, use the following command on each node to stop CRS:

        # **/etc/init.d/init.crs stop**

2. Unencapsulate root disk if necessary.

    # **df /**

    The root disk is under VxVM control if /dev/vx/dsk/rootvol is listed as being mounted as the root (/) file system.

    # **vxplex -o rm dis mirrootvol-01 mirswapvol-01**
    # **/etc/vx/bin/vxunroot**

3. Unmount all vxfs mounts and all file systems on VxVM volumes.

4. Stop all volumes for each disk group.

    # **vxvol -g diskgroup stopall**

5. Stop VCS along with all the resources. Then stop remaining resources manually.

    # **hastop -all**

6. Back up current configuration files on each cluster node. Note that some of the files may not exist.

    # **mkdir -p /var/sfrac41mp4-config-save/etc/vx/vras**
    # **mkdir -p**
    /var/sfrac41mp4-config-save/etc/VRTSvcs/conf/config
    # **cp -p /etc/llttab /etc/llthosts /etc/gabtab /etc/vxfendg**
    /etc/vxfenmode
    /var/sfrac41mp4-config-save/etc/
    # **cp -p /etc/VRTSvcs/conf/config/main.cf**
    /var/sfrac41mp4-config-save/etc/VRTSvcs/conf/config/
    # **cp -p /etc/vx/vxddl.exclude /etc/vx/darecs**
    /etc/vx/disk.info /etc/vx/jbod.info /etc/vx/.aascsi3
    /etc/vx/.apscsi3 /etc/vx/volboot
    /etc/vx/array.info /etc/vx/ddl.support /etc/vx/disks.exclude
    /etc/vx/cntrls.exclude
    /etc/vx/enclr.exclude /etc/vx/.newnames /etc/vx/guid.state
    /etc/vx/vxvm_tunables

```
/etc/vx/vxdmp_tunables /etc/vx/vvrports
/var/sfrac41mp4-config-save/etc/vx
# cp -p /etc/vx/vras/.rdg /etc/vx/vras/vras_env
/var/sfrac41mp4-config-save/etc/vx/vras/
```

7. Uninstall SF Oracle RAC.

```
# cd /opt/VRTS/install
# ./uninstallsfrac galaxy nebula
```

8. Uninstall all the remaining infrastructure VRTS rpms manually on each cluster node.

```
# ./uninstallinfr galaxy nebula
```

After uninstalling the packages, refer to the S*torage Foundation for Oracle RAC Release Notes* for 4.1 MP4 to reinstall the 4.1 MP4 software. After reinstalling 4.1MP4 software, restore the configuration files from the backup created in step 6.

Getting Help

For technical assistance, visit http://www.symantec.com/business/support/assistance_care.jsp 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.

Trademarks

Copyright © 2008 VERITAS Software Corporation. All rights reserved. Symantec, the Symantec logo, Veritas, and Veritas Storage Foundation are trademarks or registered trademarks of Symantec Software Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

Symantec Corporation
20330 Steven Creek Blvd.
Cupertino, CA 95014