Veritas Storage Foundation™ and High Availability Solutions Read This First

Solaris

5.0 Maintenance Pack 3 Rolling Patch 1

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Storage Foundation and High Availability Solutions 5.0 Maintenance Pack 3 Rolling Pack 1

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The *Veritas Storage Foundation 5.0 Release Notes* can be viewed at the following URL:

For Solaris SPARC,

http://entsupport.symantec.com/docs/283886

For Solaris x64,

http://entsupport.symantec.com/docs/289317

The *Veritas Cluster Server 5.0 Release Notes* can be viewed at the following URL:

For Solaris SPARC,
http://entsupport.symantec.com/docs/283867

For Solaris x64,

http://entsupport.symantec.com/docs/289324

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Technical support

For technical assistance, visit http://www.symantec.com/enterprise/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.

Contents

Veritas Storage Foundation and High Availability Solutions Read This First

This document provides release information about the products in the Veritas Storage Foundation and High Availability 5.0 Maintenance Pack 3 (MP3) Rolling Patch 1 (RP1) Solaris release.

For the latest information on updates, patches, and known issues regarding this release, see the following TechNote on the Symantec Technical Support website:

For Solaris SPARC,

http://entsupport.symantec.com/docs/281987

For Solaris x64,

http://entsupport.symantec.com/docs/286955

Review this entire document before installing and upgrading your Veritas Storage Foundation and High Availability product.

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:

- *Veritas Cluster Server 5.0 MP3 Release Notes*
- *Veritas Storage Foundation 5.0 MP3 Release Notes*

Note: The Veritas Storage Foundation Cluster File System 5.0 MP3 Release Notes information is located in the *Veritas Storage Foundation 5.0 MP3 Release Notes*.

- *Veritas Storage Foundation for Oracle RAC 5.0 MP3 Release Notes*

System requirements

This section describes the system requirements for this release.

Supported operating systems

The 5.0 MP3 RP1 release operates on the architectures and operating systems shown below:

- Solaris 8 (SPARC Platform 32-bit and 64-bit)
- Solaris 9 (SPARC Platform 32-bit and 64-bit)
- Solaris 10 (SPARC and x64 Platform 64-bit)

DB2 support

This release supports DB2 9.5 FixPak 1, in addition to the DB2 database versions that are supported in the 5.0 MP3 release.

Oracle support

This release of Storage Foundation for Oracle offers support for Oracle 11.1.0.7 only for Solaris SPARC.

Storage Foundation High Availability fixed issues

The following sections describe the Veritas Storage Foundation High Availability (HA) issues that were fixed in this release.

Veritas Volume Manager fixed issues

Table 1-1 describes fixed issues in the Veritas Volume Manager 5.0 MP3 RP1 release.

Table 1-1 Veritas Volume Manager 5.0 MP3 RP1 fixed issues

Incident	Description
1444425	The `vxsnap prepare` manual page includes support for the `mirror=` attribute.
1443748	Fixed an issue in a clustered environment the recovery of volumes having DCO v20 taking lots of time with no I/O load.
1443679	Fixed an issue in FMR3, I/Os initiating DCO updates for clearing DRL async clear region may not wait for its completion.
1441003	Fixed a secondary panic due to double free of message with TCP protocol and 16 connection.
1435681	Fixed an issue with `vxesd` looping using 100% of one CPU.
1435470	Fixed an issue with cluster nodes panicking after installing 5.0 MP3.
1433120	Fixed an issue with after a reboot site read policy is not honored.
1425338	Fixed an issue with CVR fails to connect rlinks followed by `vxconfigd` hangs on secondary.
1424479	Fixed an issue with `vxdmpadm` dumped core when executing `vxdmpadm list dmpnode` command.
1421088	Fixed a secondary panic due to a corrupted `volsioq_start`.

Table 1-1 Veritas Volume Manager 5.0 MP3 RP1 fixed issues

Incident	Description
1416930	Fixed an issue with the `vxvm` daemon that comes online when the system is rebooted.
1414451	The `vxsnap` manual page includes `mirror=enclosure` parameter to avoid being mirrored on the same enclosure.
1413700	Fixed an issue with the wrong label on a device lead VxVM to calculate the wrong public region size.
1412784	Fixed an issue with the system hanging while creating volumes in the guest Ldom.
1410216	Fixed a secondary log error causing rlink disconnect after IBC unfreeze.
1409991	Fixed an issue with `vxclust` configuration caused the cluster to panic.
1409986	Fixed a segmentation fault on x64 system when running the `vxdmpadm list dmpnode all` command.
1402144	Fixed a system panic due to invalid pointer being passed to `bcopy()` by `volkio_to_kio_copy`.
1401188	Fixed a system panic after running the `vxdctl enable` or `vxconfigd -k` commands.
1397877	Enhanced the `vxresize` manual page to run from non-CVM master.
1397540	Fixed an issue with the `vxsnap restore` manual page is unable to properly freeze or thaw filesystems in a CVM environment.
1393570	Fixed a FC-Switch port failure resulting in the loss one of four paths.
1393030	Fixed an issue with the `vxdiskunsetup` manual page failing when the dmpnode is not the primary path.
1389511	Fixed issue that was unable not to force import diskgroup version 80 in VxVM 5.0.
1386980	Fixed a system panic in vol_putdisk() code.
1385996	Fixed a rootdisk with B0 subdisk rendering unbootable after its removed and replaced with itself.
1385126	Fixed an issue with VVR I/O hanging due to the wrong generation number assignment after recovery.
1382977	Fixed a system panic due to memory allocation.
1375354	Fixed an issue with vxcached never deletes old snaps when cache hits HWM.

Table 1-1 Veritas Volume Manager 5.0 MP3 RP1 fixed issues

Incident	Description
1374927	Fixed and issue with vxvm-startup2 does not set VISSWAP flag if swap device is encapsulated and mirrored.
1373432	Fixed a system panic in bcopy() due to null passed in from volioctl_copyin().
1368737	Fixed an issue when there are no mirrors to read, VOL_READ_MIRRORS ioctl returns -1 instead of 1.
1314301	Fixed an issue with `vxlustart`.
1288468	Fixed an issue with `vxconfigd` sleeping and no vx commands were responding.
1281274	Fixed an issue with `vxplex` core dumps during `vxassist addlog` due to DRL log length being less than 33 blocks.
1269468	Fixed an issue with `vxconfigd` core dumps.
1230351	Fixed a system panic in vol_klog_start() due to accessing freed mv read_sio.
1224659	Fixed an issue with the `vxconfigbackupd` script leading to 0 byte binconfig file being created.
1192166	Fixed the `vxdg -n [newdg] deport [origdg]` command causing a memory leak.
1135462	Fixed issue that was unable not to import disk group.
1114699	Fixed the `vxtask` command to display the resync progress subtask for shared volumes with DRL
1058665	Fixed the `vxdiskunsetup` command failing when disk access name does not match the physical path name.
853207	Fixed an issue with 4.1 vxclust reconfig step 2 timed out on joining; node, reconfiguration looping.
424397	Fixed an issue with VVR RU thread not starting nio after it is created from than waiting for all replicas to have NIO's created.

Veritas File System fixed issues

Table 1-2 describes fixed issues in the Veritas File System 5.0 MP3 RP1 release.

Table 1-2 Veritas File System 5.0 MP3 RP1 fixed issues

Incident	Description
1437490	The `fsclustadm`'s `lltdb.c` is now mult-threaded safe for CFSMountAgent.
1434438	Fixed a panic in vx_unlockmap() due to a null ml_tranp pointer.
1433066	Fixed a case of looping in vx_do_putpage () due to having a page beyond i_wsize.
1428661	Improved the performance of `fsadm resize` on SFCFS.
1423867	Optimized `vx_convnodata_files`().
1417973	Eliminated a benign error that occurred on globally- mounted VxFS file systems in a SunCluster environment when using the `scswitch` command or `mount` command.
1415188	Fixed a full `fsck` core dump that was caused by to running out of swap space, which resulted in a malloc failure.
1414178	Fixed an issue with VxFS using too much CPU while looking for odd-sized extents (vxi_alloc_fail).
1414175	Improved VxFS performance.
1413494	Fixed a failure of the `umount -f` command to unmount a VxFS file system.

Storage Foundation Cluster File System fixed issues

Table 1-3 describes fixed issues in the Storage Foundation Cluster File System 5.0 MP3 RP1 release.

Table 1-3 Storage Foundation Cluster File System 5.0 MP3 RP1 fixed issues

Incident	Description
1447197	Fixed an issue after a 5.0 MP3 upgrade, CFSMountAgent restarts and is not sending alive messages.

Storage Foundation for Oracle fixed issues

Table 1-4 describes fixed issues in the Storage Foundation for Oracle 5.0 MP3 RP1 release.

Table 1-4 Storage Foundation for Oracle 5.0 MP3 RP1 fixed issues

Incidents	Description
1435906	Fixed JumpStart problem of VxDBMS package perl scripts are not executable.
1435527	Improved boot time for DBEDAgent startup script.
1434688	Storage Foundation for Oracle is no longer creating world writable files under `/tmp`.
1433571	Sybase repository database server is no longer creating world writable files under `/tmp`.
1433244	Improved boot time for the DBED repository database server startup script.
1425261	Automatic truncation of the transaction log of the repository database. In addition incomplete recovery is automatically attempted in case the online transaction log was lost.
1425256	Support flashsnap CVM slave.

Storage Foundation for DB2 fixed issues

Table 1-5 describes fixed issues in the Storage Foundation for DB2 5.0 MP3 RP1 release.

Table 1-5 Storage Foundation for DB2 5.0 MP3 RP1 fixed issues

Incidents	Description
1435906	Fixed JumpStart problem with VxDBMS package perl scripts are not executable.
1435527	Improved boot time for DBEDAgent startup script.
1434688	Storage Foundation for DB2 is no longer creating world writable files under `/tmp`.
1433571	Sybase repository database server is no longer creating world writable files under `/tmp`.
1433244	Improved boot time for the DBED repository database server startup script.

Table 1-5 Storage Foundation for DB2 5.0 MP3 RP1 fixed issues

Incidents	Description
1425261	Automatic truncation of the transaction log of the repository database. In addition incomplete recovery is automatically attempted in case the online transaction log was lost.

Veritas Cluster Server fixed issues

Table 1-6 describes fixed issues in the Veritas Cluster Server 5.0 MP3 RP1 release.

Table 1-6 Veritas Cluster Server 5.0 MP3 RP1 fixed issues

Incidents	Description
1457429	Removed the VCS NOTICE V-16-1-53021 message after the `hastart` command is run.
1427100	Fixed an issue where LDom CfgFile did not work with LDom 1.0.3.
1424927	Optimized GAB connect messages.
1414709	The `hagrp -offline` command and `hares -offline` command now behave similarly when you bring the last resource in a service group offline.
1404384	Global groups can switch over to a node where WAC is not running, when PreSwitch is set to 1 and HAD runs properly.
1403471	Reduced time for global cluster fault detection.
1397738	Support provided for Solaris 8 and Solaris 9 branded zones.
1397692	Removed a condition where VCS engine clients hung in connect when the target system was down.
1395905	Changes implemented to close device file for device vxdmpconfig.
1394624	LLT: fixed an issue where the lltdlv thread spun indefinitely.

Table 1-6 Veritas Cluster Server 5.0 MP3 RP1 fixed issues

Incidents	Description

1392826	Fixed an issue where the Share agent was 10x slower on 5.0 MP1 with 300+ Share resources in a service group.
	
	Note: This fix changes basic VCS functionality, it is critically important for you to implement these changes for all service groups that contain NFSRestart resources.
	
	You must set the value of the PreOnline attribute to 1 for all service groups that contain NFSRestart resources. Failure to set the service group's PreOnline attribute to a value of 1 results in broken NFSRestart resource configurations.
	
	The `ha` commands to change this attribute are:
	`# haconf -makerw`
	`# hagrp -modify servicegroup_name PreOnline 1`
	`# haconf -dump -makero`

1379299	LLT: fixed llt_recordmac() messages.

Storage Foundation and High Availability known issues

The following sections describe the Veritas Storage Foundation High Availability (HA) known issues in this release.

Storage Foundation and High Availability known issues

The following are the Storage Foundation and High Availability issues that are known in this release.

Storage Foundation Manager 1.1.1 Central Server

The procedure to centrally manage Storage Foundation 5.0 MP3 RP1 hosts on Storage Foundation Manager 1.1.1 can be viewed at the following URL:

http://entsupport.symantec.com/docs/315384

Veritas Volume Manager known issues

The following are the Veritas Volume Manager issues that are known in this release.

Veritas Volume Manager does not update boot-archive on SPARC Solaris 10 Update 6 and up (1471606)

The SPARC version of Solaris 10 Update 6 adds use of boot-archive. VxVM does not update the boot-archive after installation. Usually this limitation causes no issues; however, there could be an issue if an unclean shutdown occurs prior to the next clean shutdown.

Workaround

After installation has completed, run the following command:

```
/sbin/bootadm update-archive
```

A reboot is required in some situations if the root disk is encapsulated on Solaris 10 (1190522)

Veritas Volume Manager is not registering and unregistering SMF scripts correctly. This issue may occur if the root disk is encapsulated on Solaris 10. To achieve proper behavior, a reboot is required.

Workaround

A reboot is required in the following situations:

- after removing the VxVM 5.0 MP3 RP1 using the `patchrm` command
- after installing 5.0 MP3 and before installing the VxVM 5.0 MP3 RP1

Autotagging can cause the reattach of a site to fail in a Campus Cluster (1470548)

Using the autotagging feature for a Campus Cluster can cause the site attach to fail. VxVM displays an error message such as the following:

```
VxVM vxdg ERROR V-5-1-10128 tagid already assigned to disk
```

Workaround

Tag disks manually; do not use autotagging.

STK6x50 array in A/PF mode can get spurious path failures (1471740)

For an STK6x50 array in A/PF mode, if any open is done on any paths during failover, the open may fail. The paths may be marked as failed. The DMP node may then go into failed state, potentially causing any plexes associated with the node to become detached.

Workaround

If a plex becomes detached, manually clear the FAILING flag on the disk and reattach the plex.

DS4x00 array A/PF failover on one node can cause I/O failure on other nodes in cluster (1471794)

SCSI-3 PR keys are not getting registered correctly on secondary paths of the cluster. Any I/O on the device will fail and can cause the plex to be detached.

Workaround

The DS4x00 array is only supported in A/PC mode.

Veritas File System known issues

There are no known issues in 5.0 MP3 RP1 release of Veritas File System.

Storage Foundation Cluster File System known issues

There are no known issues in 5.0 MP3 RP1 release of Storage Foundation Cluster File System.

Storage Foundation for Oracle known issues

The following are the Storage Foundation for Oracle issues that are known in this release.

The database fails over during Flashsnap operations (1469310)

In an SFHA environment, if the database fails over during Flashsnap operations such as the `dbed_vmsnap -o resync` command and various error messages appear. This issue occurs because Flashsnap commands do not create a VCS resource for the SNAP disk group. As such, when the database fails over, only the primary disk group is moved to another node.

Workaround

There is no workaround for this issue. The error messages depend on the timing of the database failover.

To fix the problem, you need to bring the FlashSnap state to SNAP_READY. Depending on the failure, you may have to use base VxVM commands to reattach mirrors. After mirrors are attached, you need to wait until the mirrors are in SNAPDONE state. Re-validate the snapplan again.

Storage Foundation for DB2 known issues

The following are the Storage Foundation for DB2 issues that are known in this release.

The database fails over during Flashsnap operations (1469310)

In an SFHA environment, if the database fails over during Flashsnap operations such as the `dbed_vmsnap -o resync` command and various error messages appear. This issue occurs because Flashsnap commands do not create a VCS resource for the SNAP disk group. As such, when the database fails over, only the primary disk group is moved to another node.

Workaround

There is no workaround for this issue. The error messages depend on the timing of the database failover.

To fix the problem, you need to bring the FlashSnap state to SNAP_READY. Depending on the failure, you may have to use base VxVM commands to reattach mirrors. After mirrors are attached, you need to wait until the mirrors are in SNAPDONE state. Re-validate the snapplan again.

Veritas Cluster Server known issues

There are no known issues in 5.0 MP3 RP1 release of Veritas Cluster Server.

Software limitations

The following sections describe the Veritas Storage Foundation High Availability (HA) software limitations in this release.

- Storage Foundation for Oracle software limitations
- Storage Foundation for DB2 software limitations

Storage Foundation for Oracle software limitations

The following are the Storage Foundation for Oracle software limitations that are known in this release.

Older backups failing to be restored using the DBED scripts

If you are currently using backup and restore for the DBED respository, it is crucial to perform a full backup of the DBED repository database after installing 5.0 MP3 RP1. Otherwise, prior backups cannot be restored using the 5.0 MP3 RP1 restore script.

See the *Veritas Storage Foundation for Oracle Administrator's Guide* for the `sfua_rept_adm` command.

For more information see "Storage Foundation for Oracle fixed issues" on page 13 for incident 1425261.

Storage Foundation for DB2 software limitations

The following are the Storage Foundation for DB2 software limitations that are known in this release.

Older backups failing to be restored using the DBED scripts

If you are currently using backup and restore for the DBED respository, it is crucial to perform a full backup of the DBED repository database after installing

5.0 MP3 RP1. Otherwise, prior backups cannot be restored using the 5.0 MP3 RP1 restore script.

See the *Veritas Storage Foundation for DB2 Administrator's Guide* for the `sfua_rept_adm` command.

For more information see "Storage Foundation for DB2 fixed issues" on page 13 for incident 1425261.

Downloading the rolling patch archive

The patches comprising the 5.0 MP3 RP1 release are available for download from the Veritas website. After downloading the 5.0 MP3 RP1 file, use the `tar -z` command to uncompress and extract the archive.

For the 5.0 MP3 RP1 download archive and instructions, see the following TechNote on the Symantec Technical Support website:

For Solaris SPARC,

http://entsupport.symantec.com/docs/281987

For Solaris x64,

http://entsupport.symantec.com/docs/286955

Patches included in this rolling patch

This section describes the Solaris SPARC and x64 patches included in this rolling patch.

- Veritas Cluster Server patches
- Storage Foundation patches
- File System patches
- Volume Manager patches
- Storage Foundation Cluster File System patches
- Storage Foundation for Oracle RAC patches
- Storage Foundation for DB2 patches
- Storage Foundation for Oracle patches
- Storage Foundation for Sybase patches
- Volume Replicator patches

Veritas Cluster Server patches

This sections describes the VCS Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-7 describes the Solaris SPARC VCS patches that are included in this rolling patch:

Table 1-7 VCS 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139356-01	Contains these packages: VRTSllt, VRTSgab, VRTSvxfen, VRTSvcs, and VRTSvcsag	X		
139357-01	Contains these packages: VRTSllt, VRTSgab, VRTSvxfen, VRTSvcs, and VRTSvcsag		X	
139358-01	Contains these packages: VRTSvcs and VRTSvcsag			X
139359-01	Contains these packages: VRTSllt, VRTSgab, and VRTSvxfen			X

Solaris x64

Table 1-8 describes the Solaris x64 VCS patches that are included in this rolling patch:

Table 1-8 VCS 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139360-01	Contains these packages: VRTSllt, VRTSgab, and VRTSvxfen	X
139361-01	Contains these packages: VRTSvcs and VRTSvcsag	X

Storage Foundation patches

This sections describes the Storage Foundation Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-9 describes the Solaris SPARC Storage Foundation patches that are included in this rolling patch:

Table 1-9 SF Solaris SPARC 5.0 MP3 RP1 patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-10 describes the Solaris x64 Storage Foundation patches that are included in this rolling patch:

Table 1-10 SF 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139348-02	VxFS 5.0MP3RP1 VERITAS File System Rolling Patch	X
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139360-01	SunOS 5.10: fixes for gab, llt, vxfen	X
139361-01	SunOS 5.10: fixes for vcs, vcsag	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

File System patches

This sections describes the File System Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-11 describes the Solaris SPARC File System patches that are included in this rolling patch:

Table 1-11 FS 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X

Table 1-11 FS 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-12 describes the Solaris x64 File System patches that are included in this rolling patch:

Table 1-12 FS 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139348-02	VRTSvxfs 5.0MP3RP1_x86: Rolling Patch for File System 5.0MP3	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

Volume Manager patches

This sections describes the Volume Manager Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-13 describes the Solaris SPARC Volume Manager patches that are included in this rolling patch:

Table 1-13 VxVM 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-14 describes the Solaris x64 Volume Manager patches that are included in this rolling patch:

Table 1-14 VxVM 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

Storage Foundation Cluster File System patches

This sections describes the Storage Foundation Cluster File System Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-15 describes the Solaris SPARC Storage Foundation Cluster File System patches that are included in this rolling patch:

Table 1-15 SFCFS Solaris SPARC 5.0 MP3 RP1 patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		

Table 1-15 SFCFS Solaris SPARC 5.0 MP3 RP1 patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X
139753-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0	X		
139754-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0		X	
139755-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0			X

Solaris x64

Table 1-16 describes the Solaris x64 Storage Foundation Cluster File System patches that are included in this rolling patch:

Table 1-16 SFCFS 5.0 Solaris x64 MP3 RP1 patches

Patches	Description	Solaris 10
139348-02	VxFS 5.0MP3RP1 VERITAS File System Rolling Patch	X
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139360-01	SunOS 5.10: fixes for gab, llt, vxfen	X
139361-01	SunOS 5.10: fixes for vcs, vcsag	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X
139756-01	VRTScavf 5.0MP3RP1_x86: Maintenance Patch for Cluster Server Agents 5.0	X

Storage Foundation for Oracle RAC patches

This sections describes the Storage Foundation for Oracle RAC Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-17 describes the Solaris SPARC Storage Foundation for Oracle RAC patches that are included in this rolling patch:

Table 1-17 SF for Oracle RAC Solaris SPARC 5.0 MP3 RP1 patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X
139362-01	VRTSdbms3 5.0MP3RP1: Rolling Patch for Solaris 8, 9 and 10	X	X	X
139366-01	VRTSdbcom 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139367-01	VRTSdbed 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X

Table 1-17 SF for Oracle RAC Solaris SPARC 5.0 MP3 RP1 patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X
139753-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0	X		
139754-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0		X	
139755-01	VRTScavf 5.0MP3RP1: Maintenance Patch for Cluster Server Agents 5.0			X

Solaris x64

Table 1-18 describes the Solaris x64 Storage Foundation for Oracle RAC patches that are included in this rolling patch:

Table 1-18 SF for Oracle RAC 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139348-02	VxFS 5.0MP3RP1 VERITAS File System Rolling Patch	X
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139360-01	SunOS 5.10: fixes for gab, llt, vxfen	X
139361-01	SunOS 5.10: fixes for vcs, vcsag	X
139363-01	VRTSdbms3 5.0MP3RP1_x86: Rolling Patch for Solaris 10	X
139371-01	VRTSdbcom 5.0MP3RP1_x86: Rolling Patch for 5.0 MP3	X
139372-01	VRTSdbed 5.0MP3RP1_x86: Rolling Patch for 5.0MP3	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X

Table 1-18 SF for Oracle RAC 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X
139756-01	VRTScavf 5.0MP3RP1_x86: Maintenance Patch for Cluster Server Agents 5.0	X

Storage Foundation for DB2 patches

This sections describes the Storage Foundation for DB2 Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-19 describes the Solaris SPARC Storage Foundation for DB2 patches that are included in this rolling patch:

Table 1-19 SF for DB2 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X

Table 1-19 SF for DB2 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X
139362-01	VRTSdbms3 5.0MP3RP1: Rolling Patch for Solaris 8, 9 and 10	X	X	X
139366-01	VRTSdbcom 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139369-01	VRTSdb2ed 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139370-01	VRTSd2gui 5.0MP3RP1: Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Storage Foundation for Oracle patches

This sections describes the Storage Foundation for Oracle Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-20 describes the Solaris SPARC Storage Foundation for Oracle patches that are included in this rolling patch:

Table 1-20 SF for Oracle 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X
139362-01	VRTSdbms3 5.0MP3RP1: Rolling Patch for Solaris 8, 9 and 10	X	X	X
139366-01	VRTSdbcom 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139367-01	VRTSdbed 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139368-01	VRTSorgui 5.0MP3RP1 Rolling Patch for 5.0MP3 for Solaris 8, 9 and 10	X	X	X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X

Table 1-20 SF for Oracle 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-21 describes the Solaris x64 Storage Foundation for Oracle patches that are included in this rolling patch:

Table 1-21 SF for Oracle 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139348-02	VxFS 5.0MP3RP1 VERITAS File System Rolling Patch	X
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139360-01	SunOS 5.10: fixes for gab, llt, vxfen	X
139361-01	SunOS 5.10: fixes for vcs, vcsag	X
139363-01	VRTSdbms3 5.0MP3RP1_x86: Rolling Patch for Solaris 10	X
139371-01	VRTSdbcom 5.0MP3RP1_x86: Rolling Patch for 5.0 MP3	X
139372-01	VRTSdbed 5.0MP3RP1_x86: Rolling Patch for 5.0MP3	X
139373-01	VRTSorgui 5.0MP3RP1_x86: Rolling Patch for Solaris 10	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X

Table 1-21 SF for Oracle 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

Storage Foundation for Sybase patches

This sections describes the Storage Foundation for Sybase Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-22 describes the Solaris SPARC Storage Foundation for Sybase patches that are included in this rolling patch:

Table 1-22 SF for Sybase 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139345-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3	X		
139346-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3		X	
139347-02	VRTSvxfs 5.0MP3RP1: Rolling Patch for File System 5.0MP3			X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139356-01	SunOS 5.8: fixes for gab, llt, vxfen, vcs, vcsag	X		
139357-01	SunOS 5.9: fixes for gab, llt, vxfen, vcs, vcsag		X	
139358-01	SunOS 5.10: fixes for vcs, vcsag			X
139359-01	SunOS 5.10: fixes for gab, llt, vxfen			X

Table 1-22 SF for Sybase 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-23 describes the Solaris x64 Storage Foundation for Sybase patches that are included in this rolling patch:

Table 1-23 SF for Sybase 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139348-02	VxFS 5.0MP3RP1 VERITAS File System Rolling Patch	X
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139360-01	SunOS 5.10: fixes for gab, llt, vxfen	X
139361-01	SunOS 5.10: fixes for vcs, vcsag	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X

Table 1-23 SF for Sybase 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

Volume Replicator patches

This sections describes the Volume Replicator Solaris SPARC and x64 patches.

Solaris SPARC

Table 1-24 describes the Solaris SPARC Volume Replicator patches that are included in this rolling patch:

Table 1-24 VVR 5.0 MP3 RP1 Solaris SPARC patches

Patches	Description	Solaris 8	Solaris 9	Solaris 10
123722-02	5.0MP3 Maintenance Patch for Authentication Server	X	X	X
139352-02	VRTSvxvm 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139354-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3	X	X	X
139737-01	VRTSdcli 5.0MP3RP1: Rolling Patch 01 for VRTSdcli 5.0MP3	X	X	X
139739-01	VRTSvmpro 5.0MP3RP1: Rolling Patch 01 for VRTSvmpro 5.0	X	X	X
139741-01	VRTSob 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139742-01	VRTSobc33 5.0MP3RP1: Maintenance Patch for VEA Server	X	X	X
139743-01	VRTSaa 5.0MP3RP1: Maintenance Patch for VRTSaa	X	X	X
139744-01	VRTSccg 5.0MP3RP1: Maintenance Patch for VRTSccg	X	X	X

Solaris x64

Table 1-25 describes the Solaris x64 Volume Replicator patches that are included in this rolling patch:

Table 1-25 VVR 5.0 MP3 RP1 Solaris x64 patches

Patches	Description	Solaris 10
139353-02	VM 5.0_x64_MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139355-01	VRTSvmman 5.0MP3RP1: Rolling Patch 01 for Volume Manager 5.0MP3_x86	X
139738-01	VRTSdcli 5.0MP3RP1_x86: Rolling Patch 01 for VRTSdcli 5.0MP3	X
139740-01	VRTSvmpro 5.0MP3RP1_x86: Rolling Patch 01 for VRTSvmpro 5.0	X
139745-01	VRTSob_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139746-01	VRTSobc33_x86 5.0MP3RP1: Maintenance Patch for VEA Server	X
139747-01	VRTSaa._x86 5.0MP3RP1: Maintenance Patch for VRTSaa	X
139748-01	VRTSccg._x86 5.0MP3RP1: Maintenance Patch for VRTSccg	X

Installing the Veritas software for the first time

This section describes how to install a Storage Foundation and High Availability Solutions product for the first time on a host and install 5.0 MP3 RP1.

- Installing Storage Foundation or Storage Foundation Cluster File System and 5.0 MP3 RP1
- Installing Storage Foundation for Oracle RAC and 5.0 MP3 RP1

Installing Storage Foundation or Storage Foundation Cluster File System and 5.0 MP3 RP1

This section describes how to install Storage Foundation and Storage Foundation Cluster File System for the first time on a host and install 5.0 MP3 RP1.

Review the *Veritas Storage Foundation 5.0 MP3 Installation Guide* for pre-installation instructions at the following URL:

ftp://exftpp.symantec.com/pub/support/products/Foundation_Suite/306937.pdf

Also review the *Veritas Storage Foundation 5.0 MP3 Release Notes* for important release information at the following URL:

ftp://ftp.entsupport.symantec.com/pub/support/documentation/sf_notes_sol.pdf

To install the Storage Foundation or Storage Foundation Cluster File System and 5.0 MP3 RP1

1. Install the Veritas Storage Foundation or Storage Foundation Cluster File System 5.0 MP3 software from the release CD.
   For example, if you are installing the Storage Foundation software, enter the following command from the top-level directory of the mounted CD:
   ```
   # ./installsf -installonly [-rsh] node1 node2 ... nodeN
   ```
   The `-installonly` option is required to perform the installation without configuring the software. For other products, substitute the appropriate script for `installsf`, such as `installsfcfs` for the Storage Foundation Cluster File System software.
2. Review the installation prerequisites for upgrading to 5.0 MP3 RP1.
   See "Prerequisites for upgrading to 5.0 MP3 RP1" on page 42.
3. Run the following command to manually upgrade to 5.0 MP3 RP1.
   The sample output below represents Solaris x64 architecture:
   ```
   # patchadd -M patch_dir 139353-02 139361-01 ...
   ```
   where *patch_dir* is the name of the patch directory.
   See "Patches included in this rolling patch" on page 20.

4 Run the same installation script that you used in step 1, this time specifying the `-configure` option to configure the software. For example,

```
# ./installsf -configure [-rsh] node1 node2 ... nodeN
```

For other products, substitute the appropriate script for `installsf` such as `installsfcfs` for the Storage Foundation Cluster File System software.
See the *Veritas Storage Foundation 5.0 MP3 Installation Guide* for more information on configuring Storage Foundation and High Availability products.

5 Restart the host.

Installing Storage Foundation for Oracle RAC and 5.0 MP3 RP1

This section describes how to install Storage Foundation for Oracle RAC for the first time on a host and install 5.0 MP3 RP1.

Review the *Veritas Storage Foundation 5.0 MP3 Installation Guide* for pre-installation instructions at the following URL:
ftp://ftp.entsupport.symantec.com/pub/support/documentation/sfrac_install_sol.pdf

Also review the *Veritas Storage Foundation 5.0 MP3 Release Notes* for important release information at the following URL:
ftp://ftp.entsupport.symantec.com/pub/support/documentation/sfrac_notes_sol.pdf

To install Storage Foundation for Oracle RAC and 5.0 MP3 RP1

1 Install the SF Oracle RAC 5.0 MP3 software from the release CD.
For example, if you are installing the SF Oracle RAC software, enter the following command from the top-level directory of the mounted CD:

```
# ./installsfrac -installonly [-rsh] node1 node2 ... nodeN
```

The `-installonly` option is required to perform the installation without configuring the software.

2 Review the installation prerequisites for upgrading to 5.0 MP3 RP1.
See "Prerequisites for upgrading to 5.0 MP3 RP1" on page 42.

3 On each node, run the following command to manually upgrade to 5.0 MP3 RP1.
The sample output below represents Solaris x64 architecture:

```
# patchadd -M patch_dir 139348-02 139353-02 ...
```

where *patch_dir* is the name of the patch directory.
See "Patches included in this rolling patch" on page 20.

4 Run the same installation script that you used in step 1, this time specifying the `-configure` option to configure the software. For example,

```
# ./installsfrac -configure [-rsh] node1 node2 ... nodeN
```

See the *Veritas Storage Foundation for Oracle RAC 5.0 MP3 Installation Guide* for more information on configuring Storage Foundation and High Availability products.

5 Restart the host.

Prerequisites for upgrading to 5.0 MP3 RP1

This section describes the prerequisites for upgrading 5.0 MP3 RP1.

Prerequisites on Veritas Cluster Server

You must have the following operating system and VCS release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-26 Operating system and VCS release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	VCS 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	VCS 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	VCS 5.0 MP3

Prerequisites on Storage Foundation

You must have the following operating system and Storage Foundation release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-27 Operating system and Storage Foundation release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	Storage Foundation 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	Storage Foundation 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	Storage Foundation 5.0 MP3

Prerequisites on Storage Foundation Cluster File System

You must have the following operating system and SFCFS release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-28 Operating system and SFCFS release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SFCFS 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SFCFS 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SFCFS 5.0 MP3

Prerequisites on Storage Foundation for Oracle RAC

You must have the following operating system and SF for Oracle RAC release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-29 Operating system and SFCFS for Oracle RAC release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SF for Oracle RAC 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SF for Oracle RAC 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SF for Oracle RAC 5.0 MP3

Prerequisites on Storage Foundation for Oracle

You must have the following operating system and SF for Oracle release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-30 Operating system and SFCFS for Oracle release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SF for Oracle 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SF for Oracle 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SF for Oracle 5.0 MP3

Prerequisites on Storage Foundation for Oracle HA

You must have the following operating system and SF for Oracle HA release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-31 Operating system and SFCFS for Oracle HA release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SF for Oracle HA5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SF for Oracle HA 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SF for Oracle HA 5.0 MP3

Prerequisites on Storage Foundation for DB2

You must have the following operating system and SF for DB2 release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-32 Operating system and SFCFS for DB2 release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SF for DB2 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SF for DB2 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SF for DB2 5.0 MP3

Prerequisites on Storage Foundation for DB2 HA

You must have the following operating system and SF for DB2 HA release installed on the system before you upgrade to 5.0 MP3 RP1:

Table 1-33 Operating system and SFCFS for DB2 HA release

Operating system	Product release
Solaris 8 (SPARC Platform 32-bit and 64-bit)	SF for DB2 HA 5.0 MP3
Solaris 9 (SPARC Platform 32-bit and 64-bit)	SF for DB2 HA 5.0 MP3
Solaris 10 (SPARC and x64 Platform 64-bit)	SF for DB2 HA 5.0 MP3

Upgrading 5.0 MP3 to 5.0 MP3 RP1

This section describes how to upgrade from 5.0 MP3 to 5.0 MP3 RP1 on a cluster or a standalone system.

- Upgrading to 5.0 MP3 RP1 on a cluster
  Use the procedures to upgrade to 5.0 MP3 RP1 on a cluster that has VCS, SFHA, SF for Oracle HA or SF for DB2 HA, SFCFS, or Storage Foundation for Oracle RAC installed.
- Upgrading to 5.0 MP3 RP1 on a standalone system
  Use the procedure to upgrade to 5.0 MP3 RP1 on a system that has Storage Foundation, SF for Oracle, or SF for DB2 installed.

Upgrading to 5.0 MP3 RP1 on a cluster

Upgrading 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 following are the stages of upgrading on a cluster:

1. Freeze service group operations and stop VCS on the cluster.
2. Select a group of one or more cluster nodes to upgrade, and leave a group of one or more nodes running.
3. Take the first group offline and install the software patches.
4. Bring the first group (with the newly installed patches) online to restart cluster failover services.
5. Upgrade the nodes in the second group, and bring them online. The cluster is fully restored.

- Upgrading to 5.0 MP3 RP1 on VCS cluster
- Upgrading to 5.0 MP3 RP1 on a Storage Foundation HA cluster
- Upgrading to 5.0 MP3 RP1 on a Storage Foundation Cluster File System cluster
- Upgrading to 5.0 MP3 RP1 on a Storage Foundation for Oracle RAC cluster

Upgrading to 5.0 MP3 RP1 on VCS cluster

You have the option to do a manual upgrade or a minimal downtime upgrade.

Refer to the following sections for more information:

- See "To perform a manual upgrade to 5.0 MP3 RP1 on VCS cluster" on page 47.
- See "Performing a minimal downtime upgrade to 5.0 MP3 RP1 on a VCS cluster" on page 50.

To perform a manual upgrade to 5.0 MP3 RP1 on VCS cluster

1. Log in as superuser.
2. List the service groups in your cluster and their status. On any node, type:
   ```
   # hagrp -state
   ```
3. Take the ClusterService service group offline if it is running. On any node, type:
   ```
   # hagrp -offline -force ClusterService -sys system
   ```
4. Make the VCS configuration writable. On any node, type:
   ```
   # haconf -makerw
   ```
5. Freeze all service groups. On any node, type:
   ```
   # hagrp -freeze service_group -persistent
   ```
   where service_group is the name of the service group. Note that the ClusterService group cannot be frozen.
6. Save the configuration (main.cf) file with the groups frozen. On any node, type:
   ```
   # haconf -dump -makero
   ```
7. Make a backup copy of the current main.cf and all types.cf configuration files. For example, on one node in the cluster, type:
   ```
   # cp /etc/VRTSvcs/conf/config/main.cf \
   /etc/VRTSvcs/conf/main.cf.save
   # cp /etc/VRTSvcs/conf/config/types.cf \
   /etc/VRTSvcs/conf/types.cf.save
   ```
8. Shut down VCS. On any node, type:
   ```
   # /opt/VRTSvcs/bin/hastop -all -force
   ```
9. Shut down CmdServer. On each node, type:
   ```
   # /opt/VRTSvcs/bin/CmdServer -stop
   ```
10. Verify that VCS has shut down. On any node, type:
    ```
    # /sbin/gabconfig -a
    ```
    The output resembles:
    ```
    GAB Port Memberships
    Port a gen 23dc0001 membership 01
    ```

The output shows no membership for port h.

11 For Solaris 10, on nodes that run non-global zones, check if the non-global zones are in the running state. Boot the non-global zones that are not in the running state.

- Check the zone's state. On each node, type:

  ```
  # zoneadm list -icv
  ```

- Boot the zone if it is not in the running state. On each node, type:

  ```
  # zoneadm -z zone boot
  ```

  where zone is the name of the non-global zone.

12 Unconfigure vxfen if the VCS cluster uses the fencing option. On each node, type:

```
# /sbin/vxfenconfig -U
```

13 Unload vxfen. On each node, perform the following steps:

- Identify the vxfen kernel module, for example:

  ```
  # modinfo|grep vxfen
  210 7ba44000 39488 258 1 vxfen (VRTS Fence 5.0MP3)
  ```

- Unload vxfen using the module number.

  ```
  # modunload -i 210
  ```

14 Unconfigure GAB. On each node, type:

```
# /sbin/gabconfig -U
```

15 Unload GAB. On each node, perform the following steps:

- Identify the GAB kernel module. For example:

  ```
  # modinfo | grep gab
  149 50cc6000 2b451 112 1 gab (GAB device 5.0MP3)
  ```

- Unload GAB using the module number:

  ```
  # modunload -i 149
  ```

16 Unconfigure LLT. On each node, perform the following steps:

- Type:

  ```
  # /sbin/lltconfig -U
  ```

- Type **y** on each node in response to the message.

17 Unload LLT. On each node, perform the following steps:

- Identify the LLT kernel module. For example:

  ```
  # modinfo | grep llt
  147 50ca4000 d6bc 110 1 llt (LLT 5.0MP3)
  ```

- Unload LLT using the module number:

  ```
  # modunload -i 147
  ```

18 Change directory to the Veritas Cluster Server patches directory on the disc.

19 Add the VCS 5.0 MP3 RP1 patches. On each node, type:

- For Solaris SPARC 8:

  # **patchadd 139356-01**
- For Solaris SPARC 9:

  # **patchadd 139357-01**
- For Solaris SPARC 10:

  # **patchadd 139359-01**
  # **patchadd 139358-01**
- For Solaris SPARC 8, 9, 10, add the 5.0 MP3 RP1 Authentication Service patch.

  # **patchadd 123722-02**
- For Solaris x64:

  # **patchadd 139360-01**
  # **patchadd 139361-01**

20 Verify that the patches have been installed. On each node, type:

showrev -p | grep VRTS

21 If you received any error messages when you unloaded the LLT, GAB, or VXFEN modules, reboot all the nodes in the cluster.

22 If you do not perform step 21, start the following VCS components manually. On each node, type:

/sbin/lltconfig -c
/sbin/gabconfig -cx
/sbin/vxfenconfig -c
/opt/VRTSvcs/bin/hastart

You do not have to start vxfen unless you use the fencing option.

23 After VCS has started, perform the following steps:

- Verify all resources have been probed. On any node, type:

  # **hastatus -summary**
- Unfreeze all service groups. On any node, type:

  # **haconf -makerw**
  # **hagrp -unfreeze *service_group* -persistent**
  # **haconf -dump -makero**

where *service_group* is the name of the service group.

24 Bring online the ClusterService service group, if necessary. On any node type:

hagrp -online ClusterService -sys *system*

where *system* is the node name.

Performing a minimal downtime upgrade to 5.0 MP3 RP1 on a VCS cluster

Perform a minimal downtime upgrade in the following phases:

Select a first group of one or more cluster nodes as target nodes to upgrade now. Leave a group of one or more nodes online to upgrade later.

Upgrade the target nodes as follows:

- Switch the service groups from the nodes that you plan to upgrade now to the nodes that you plan to upgrade later.
- Install the maintenance patches.
- Restart the target nodes.
- Upgrade the remaining nodes in the second group.
- Bring the service groups online on the nodes that you upgraded last.

Performing the pre-upgrade tasks

Perform the following procedure to prepare for the upgrade.

To perform pre-upgrade tasks

1. Select a node or a group of nodes in the cluster as the nodes that you want to upgrade first.
2. Log on as superuser on one of the target nodes for the upgrade.
3. Verify that /opt/VRTS/bin is set in your PATH environment variable to execute all product commands.
4. Back up the llttab, llthosts, gabtab, types.cf, and main.cf files.

```
# cp /etc/llttab /etc/llttab.bkp
# cp /etc/llthosts /etc/llthosts.bkp
# cp /etc/gabtab /etc/gabtab.bkp
# cp /etc/VRTSvcs/conf/config/main.cf \
/etc/VRTSvcs/conf/config/main.cf.bkp
# cp /etc/VRTSvcs/conf/config/types.cf \
/etc/VRTSvcs/conf/config/types.cf.bkp
```

5. Establish where the service groups are online. On one of the nodes in the cluster at the prompt, enter:

```
# hagrp -state
#Group Attribute System Value
sg1 State node01 |ONLINE|
sg1 State node02 |OFFLINE|
sg2 State node01 |ONLINE|
sg2 State node02 |OFFLINE|
```

   Where you plan to upgrade node01.

6. Switch the service groups to the remaining nodes where you plan to upgrade VCS later.

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

For example:

```
# hagrp -switch sg1 -to node02
```

7 Verify that the service groups are offline on the target nodes for upgrade.

```
# hagrp -state
#Group Attribute System Value
sg1 State node01 |OFFLINE|
sg1 State node02 |ONLINE|
sg2 State node01 |OFFLINE|
sg2 State node02 |ONLINE|
```

Performing the minimal downtime upgrade

You now perform the upgrade on the selected nodes.

To perform the minimal downtime upgrade

1 Shut down VCS and CmdServer on the selected target nodes for the upgrade. On each node, type:

```
# hastop -local
# /opt/VRTSvcs/bin/CmdServer -stop
```

2 Verify that VCS has shut down. On any node, type:

```
# /sbin/gabconfig -a
```

The output resembles:

```
GAB Port Memberships
Port a gen 23dc0001 membership 01
```

The output shows no membership for port h.

3 For Solaris 10, on nodes that run non-global zones, check if the non-global zones are in the running state. Boot the non-global zones that are not in the running state.

- Check the zone's state. On each node, type:

  ```
  # zoneadm list -icv
  ```

- Boot the zone if it is not in the running state. On each node, type:

  ```
  # zoneadm -z zone boot
  ```

  where zone is the name of the non-global zone.

4 Unconfigure vxfen if the VCS cluster uses the fencing option. On each node, type:

```
# /sbin/vxfenconfig -U
```

5 Unload vxfen. On each node, perform the following steps:

- Identify the vxfen kernel module, for example:

  ```
  # modinfo|grep vxfen
  210 7ba44000 39488 258 1 vxfen (VRTS Fence 5.0MP3)
  ```

- Unload vxfen using the module number.

  ```
  # modunload -i 210
  ```

6 Unconfigure GAB. On each node, type:

```
# /sbin/gabconfig -U
```

7 Unload GAB. On each node, perform the following steps:

- Identify the GAB kernel module. For example:

```
# modinfo | grep gab
149 50cc6000 2b451 112 1 gab (GAB device 5.0MP3)
```

- Unload GAB using the module number:

```
# modunload -i 149
```

8 Unconfigure LLT. On each node, perform the following steps:

- Type:

```
# /sbin/lltconfig -U
```

- Type **y** on each node in response to the message.

9 Unload LLT. On each node, perform the following steps:

- Identify the LLT kernel module. For example:

```
# modinfo | grep llt
147 50ca4000 d6bc 110 1 llt (LLT 5.0MP3)
```

- Unload LLT using the module number:

```
# modunload -i 147
```

10 Change directory to the Veritas Cluster Server patches directory on the disc.

11 Add the VCS 5.0 MP3 RP1 patches. On each target node, type:

- For Solaris SPARC 8:

```
# patchadd 139356-01
```

- For Solaris SPARC 9:

```
# patchadd 139357-01
```

- For Solaris SPARC 10:

```
# patchadd 139359-01
# patchadd 139358-01
```

- For Solaris SPARC 8, 9, 10, add the 5.0 MP3 RP1 Authentication Service patch.

```
# patchadd 123722-02
```

- For Solaris x64:

```
# patchadd 139360-01
# patchadd 139361-01
```

12 Verify that the patches have been installed. On each node, type:

```
# showrev -p | grep VRTS
```

13 Change the cluster ID in the /etc/llttab file on the nodes that were upgraded. Find the line that contains “set-cluster” and change the cluster ID that follows this keyword. Make sure that the new cluster ID is unique within the LAN.

14 On one of the upgraded nodes, edit the main.cf file to freeze all the service groups. Add the "Frozen=1" line to all the service group definitions. Copy the updated main.cf to all the upgraded nodes.

For example, if the original group's definition is:

```
Group oracle_sg (
SystemList = { node01 = 0, node02 = 1 }
AutoStartList = { node01, node02 }
```

The new group definition, after you add "Frozen = 1" is:

```
Group oracle_sg (
SystemList = { node01 = 0, node02 = 1 }
AutoStartList = { node01, node02 }
Frozen = 1
```

15 Restart the target nodes.

16 Manually seed the cluster with the `gabconfig -cx` command. From one of the nodes that you have upgraded, run the following command:

```
# gabconfig -cx
```

Run the `gabconfig -a` command to see if port a and port h are seeded. Output resembles the following:

```
# gabconfig -a
GAB Port Memberships
===============================
Port a gen 1ebf01 membership 0
Port h gen 1ebf03 membership 0
```

17 While the target nodes come up, upgrade the remaining node or set of nodes in the cluster.

Repeat the step 1 to step 13 on the remaining nodes.

Unfreezing and bringing service groups online

Perform the following on the nodes that you have previously upgraded while you upgrade the final node or set of nodes.

To unfreeze the service groups and bring the online

1 On one of the nodes that you have previously upgraded, make the configuration writable.

```
# haconf -makerw
```

2 Unfreeze the service groups. On an upgraded node, run the following command.

```
# hagrp -unfreeze service_group -persistent
```

3 Bring all the service groups online on the upgraded nodes. On an upgraded node, for each service group run the following command.

```
# hagrp -online service_group -sys nodename
```

4 Save the configuration.

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

5 When the upgrade is complete on the final nodes, restart them.
Execute the following command to restart the nodes:

```
# /usr/sbin/shutdown -y -i6 -g0
```

Upgrading to 5.0 MP3 RP1 on a Storage Foundation HA cluster

The following procedure describes upgrading on a Storage Foundation HA, SF for Oracle HA or SF for DB2 HA cluster.

To upgrade to 5.0 MP3 RP1 on a Storage Foundation HA 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 is being upgraded:

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

8 Select the group of nodes that are to be upgraded first, and follow step 9 through step 20 for these nodes.

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

```
# hastop -local
```

10 Stop the VCS command server:

```
# kill -9 pid_of_CmdServer
```

where *pid_of_CmdServer* is the process ID of CmdServer.

11 Stop cluster fencing, GAB, and LLT.

```
# /etc/init.d/vxfen stop
# /etc/init.d/gab stop
# /etc/init.d/S70llt 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 8.

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 commands to upgrade to 5.0 MP3 RP1:
The sample output below represents Solaris x64 architecture:

```
# patchadd -M patch_dir 139353-02 139361-01 ...
```

where *patch_dir* is the name of the patch directory.
See "Patches included in this rolling patch" on page 20.

15 After all the nodes in the cluster are upgraded, shut down and reboot each of the upgraded nodes. After the nodes come up, application failover capability is available for that group.

16 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
```

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

```
# haconf -makerw
```

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

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

19 Make the VCS configuration read-only:

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

20 Switch the service group to the original node:

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

21 Repeat step 9 through step 20 for the second group of nodes.

22 If you are currently using backup and restore for the DBED repository. Perform a full backup of the DBED repository database after completing the 5.0 MP3 RP1 installation.
For more information see the "Software limitations" on page 19 about older backups failing to be restored using the DBED scripts.
See the *Veritas Storage Foundation for Oracle Administrator's Guide* for the `sfua_rept_adm` command.
For more information see "Storage Foundation for Oracle fixed issues" on page 13 or "Storage Foundation for DB2 fixed issues" on page 13 for incident 1425261.

Upgrading to 5.0 MP3 RP1 on a Storage Foundation Cluster File System cluster

The following procedure describes upgrading on a SFCFS cluster.

To upgrading to 5.0 MP3 RP1 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. If you have a failover service group, switch the service group to another 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 31 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:

   ```
   # kill -9 pid_of_CmdServer
   ```

   where *pid_of_CmdServer* is the process ID of CmdServer.
10. Stop ODM, cluster fencing, GAB, and LLT in the following order:

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

11. Run the following command to check if each node's root disk is under VxVM control.

    ```
    # df -v /
    ```

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

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

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

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

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

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

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

See "System requirements" on page 8.

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

```
# df | grep vxfs
```

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

```
# umount /checkpoint_name
```

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

```
# df | grep vxfs
```

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

```
# umount /filesystem
```

15 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.

16 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.

17 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
```

18 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
```

19 Run the following commands to upgrade to 5.0 MP3 RP1.
The sample output below represents Solaris x64 architecture:

```
# patchadd -M patch_dir 139353-02 139361-01 ...
```

where *patch_dir* is the name of the patch directory.
See "Patches included in this rolling patch" on page 20.

20 After all the nodes in the cluster are upgraded, shut down and reboot each of the upgraded nodes. After the nodes come back up, application failover capability is available for that group.

21 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*.

22 If necessary, reinstate any missing mount points in the `/etc/vfstab` file on each node.

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

```
# haconf -makerw
```

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

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

25 Make the configuration read-only:

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

26 Switch the service group to the original node:

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

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

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

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

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

29 If you stopped any RVGs in step 15, restart each RVG:

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

30 Remount all VxFS file systems on all nodes:

```
# mount /filesystem
```

31 Remount all Storage Checkpoints on all nodes:

```
# mount /checkpoint_name
```

32 Repeat step 8 through step 31 for the second group of nodes.

Upgrading to 5.0 MP3 RP1 on a Storage Foundation for Oracle RAC cluster

The following procedure describes upgrading on a SF for Oracle RAC cluster.

To upgrading to 5.0 MP3 RP1 on a SFRAC 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 34 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 active, you must stop 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:

```
# kill -9 pid_of_CmdServer
```

where *pid_of_CmdServer* is the process ID of CmdServer.

11 Stop VCSMM and LMX if they are running.

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

12 Unregister CFS from GAB.

```
# fsclustadm cfsdeinit
```

13 Stop cluster fencing, ODM, GAB, and LLT.

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

14 On each node, unload the vxfen, LMX, GAB, and LLT kernel modules if they are still loaded. Enter the following commands:

a Verify if the vxfen kernel module is loaded. For example:

```
# modinfo|grep vxfen
210 7ba44000 39488 258 1 vxfen (VRTS Fence 5.0MP3)
```

If the vxfen kernel module is loaded then unload it. For example:

```
# modunload -i 210
```

b Verify if the LMX kernel module is loaded. For example:

```
# modinfo | grep lmx
239 ffffffff1253000  13a30 236   1  lmx (LLT Mux '5.0MP3')
```

If the LMX kernel module is loaded then unload it. For example:

```
# modunload -i 239
```

c Verify if the GAB kernel module is loaded. For example:

```
# modinfo | grep gab
149 50cc6000 2b451 112 1 gab (GAB device 5.0MP3)
```

If the GAB kernel module is loaded then unload it. For example:

```
# modunload -i 149
```

d Verify if the LLT kernel module is loaded. For example:

```
# modinfo | grep llt
147 50ca4000 d6bc 110 1 llt (LLT 5.0MP3)
```

If the LLT kernel module is loaded then unload it. For example:

```
# modunload -i 147
```

15 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.

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

Note: If you are upgrading an Storage Foundation for 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 8.

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

```
# df | 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
```

18 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.

19 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
```

20 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
```

21 On each node, run the following commands to upgrade to 5.0 MP3 RP1.

Note: You must add patch 139742-01 prior to adding patch 129741-01 or the installation might fail.

Sample output below:

```
# patchadd -M patch_dir 139348-02 139353-02 ...
```

where *patch_dir* is the name of the patch directory.

See "Storage Foundation for Oracle RAC patches" on page 28.

22 After all the nodes in the cluster are upgraded, 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/vfstab` file on each node.

25 Run the following commands to start the Storage Foundation for Oracle RAC processes:

```
# /etc/init.d/llt start
# /etc/init.d/gab start
# /etc/init.d/odm start
# /etc/init.d/vxfen start
# /etc/init.d/vcsmm start
# /etc/init.d/lmx 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 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 Storage Foundation for Oracle RAC:

a Run the following command:

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

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

- Relink Storage Foundation for Oracle RAC for Oracle 9i
- Relink Storage Foundation for Oracle RAC for Oracle 10g Release 1
- Relink Storage Foundation for Oracle RAC for Oracle 10g Release 2

37 If you are currently using backup and restore for the DBED repository. Perform a full backup of the DBED repository database after completing the 5.0 MP3 RP1 installation.

For more information see the "Software limitations" on page 19 about older backups failing to be restored using the DBED scripts.

See the *Veritas Storage Foundation for Oracle Administrator's Guide* for the `sfua_rept_adm` command.

For more information see "Storage Foundation for Oracle fixed issues" on page 13 or "Storage Foundation for DB2 fixed issues" on page 13 for incident 1425261.

Upgrading to 5.0 MP3 RP1 on a standalone system

You can use this procedure to upgrade on a standalone system that runs Storage Foundation, SF for Oracle, or SF for DB2.

To upgrading to 5.0 MP3 RP1 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 | grep vxfs
```

6 Unmount all Storage Checkpoints and file systems:

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

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

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

b Use the `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.

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

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

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

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

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

10 Check if the VEA service is running:

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

If the VEA service is running, stop it:

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

11 Use the following commands to upgrade to 5.0 MP3 RP1.

The sample output below represents Solaris x64 architecture:

```
# patchadd -M patch_dir 139353-02 139361-01 ...
```

where *patch_dir* is the name of the patch directory.

See "Patches included in this rolling patch" on page 20.

12 Shut down and restart the system.

13 If necessary, reinstate any missing mount points in the `/etc/vfstab` file.

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

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

15 If you stopped any RVGs in step 7, restart each RVG:

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

16 Remount all VxFS file systems and Storage Checkpoints:

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

17 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
```

18 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*.

19 If you are currently using backup and restore for the DBED repository. Perform a full backup of the DBED repository database after completing the 5.0 MP3 RP1 installation.

For more information see the "Software limitations" on page 19 about older backups failing to be restored using the DBED scripts.

See the *Veritas Storage Foundation for Oracle Administrator's Guide* for the `sfua_rept_adm` command.

For more information see "Storage Foundation for Oracle fixed issues" on page 13 or "Storage Foundation for DB2 fixed issues" on page 13 for incident 1425261.

Verifying software versions

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

```
# pkginfo -l VRTSvlic patch-id_name patch-id_name ...
```

Removing 5.0 MP3 RP1

Roll back of the 5.0 MP3 RP1 to the release 5.0 MP3 version is not supported for certain products. It is recommended that you follow the steps in the following sections to remove all the installed Veritas software, and then perform a complete reinstallation of the release 5.0 MP3 software.

You can roll back 5.0 MP3 RP1 to the release 5.0 MP3 version for Veritas Cluster Server.

- Removing 5.0 MP3 RP1 from Veritas Cluster Server
- Removing 5.0 MP3 RP1 on Storage Foundation or Storage Foundation Cluster File System
- Removing 5.0 MP3 RP1 on Storage Foundation for Oracle RAC

Removing 5.0 MP3 RP1 from Veritas Cluster Server

Use the following procedure to manually remove VCS 5.0 MP3 RP1 from your cluster.

To manually remove 5.0 MP3 RP1 from VCS

1 List the service groups in your cluster and their status. On any node, type:

```
# hagrp -state
```

2 Take the ClusterService service group offline if it is running. On any node, type:

```
# hagrp -offline -force ClusterService -sys system
```

3 Make the VCS configuration writable. On any node, type:

```
# haconf -makerw
```

4 Freeze all service groups. On any node, type:

```
# hagrp -freeze service_group -persistent
```

where service_group is the name of the service group. Note that the ClusterService group cannot be frozen.

5 Save the configuration (main.cf) file with the groups frozen. On any node, type:

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

6 Make a backup copy of the current main.cf and all types.cf configuration files. For example, on one node in the cluster, type:

```
# cp /etc/VRTSvcs/conf/config/main.cf \
/etc/VRTSvcs/conf/main.cf.save
# cp /etc/VRTSvcs/conf/config/types.cf \
/etc/VRTSvcs/conf/types.cf.save
```

7 Shut down VCS. On any node, type:

```
# /opt/VRTSvcs/bin/hastop -all -force
```

8 Shut down CmdServer. On each node, type:

```
# /opt/VRTSvcs/bin/CmdServer -stop
```

9 Verify that VCS has shut down. On any node, type:

```
# /sbin/gabconfig -a
```

The output resembles:

```
GAB Port Memberships
Port a gen 23dc0001 membership 01
```

The output shows no membership for port h.

10 For Solaris 10, on nodes that run non-global zones, check if the non-global zones are in the running state. Boot the non-global zones that are not in the running state.

- Check the zone's state. On each node, type:

  ```
  # zoneadm list -icv
  ```

- Boot the zone if it is not in the running state. On each node, type:

  ```
  # zoneadm -z zone boot
  ```

  where zone is the name of the non-global zone.

11 Unconfigure vxfen if the VCS cluster uses the fencing option. On each node, type:

```
# /sbin/vxfenconfig -U
```

12 Unload vxfen. On each node, perform the following steps:

- Identify the vxfen kernel module, for example:

```
# modinfo|grep vxfen
210 7ba44000 39488 258 1 vxfen (VRTS Fence 5.0MP3RP1)
```

- Unload vxfen using the module number.

```
# modunload -i 210
```

13 Unconfigure GAB. On each node, type:

```
# /sbin/gabconfig -U
```

14 Unload GAB. On each node, perform the following steps:

- Identify the GAB kernel module. For example:

```
# modinfo | grep gab
149 50cc6000 2b451 112 1 gab (GAB device 5.0MP3RP1)
```

- Unload GAB using the module number:

```
# modunload -i 149
```

15 Unconfigure LLT. On each node, perform the following steps:

- Type:

```
# /sbin/lltconfig -U
```

- Type **y** on each node in response to the message.

16 Unload LLT. On each node, perform the following steps:

- Identify the LLT kernel module. For example:

```
# modinfo | grep llt
147 50ca4000 d6bc 110 1 llt (LLT 5.0MP3RP1)
```

- Unload LLT using the module number:

```
# modunload -i 147
```

17 Remove the VCS 5.0 MP3 RP1 patches. On each node, type:

- For Solaris SPARC 8:

```
# patchrm 139356-01
```

- For Solaris SPARC 9:

```
# patchrm 139357-01
```

- For Solaris SPARC 10:

```
# patchrm 139358-01
# patchrm 139359-01
```

- For Solaris SPARC 8, 9, 10, remove the 5.0 MP3 RP1 Authentication Service patch.

```
# patchrm 123722-02
```

- For Solaris x64:

```
# patchrm 139361-01
# patchrm 139360-01
```

18 Verify that the patches have been removed. On each node, type:

```
# showrev -p | grep VRTS
```

19 If the LLT, GAB, or VXFEN modules cannot be stopped or unloaded following the patch removal, reboot all nodes in the cluster.

20 If you do not perform step 19, start the VCS components manually. On each node, type:

```
# /sbin/lltconfig -c
# /sbin/gabconfig -cx
# /sbin/vxfenconfig -c
# /opt/VRTSvcs/bin/hastart
```

You do not have to start vxfen unless you use the fencing option.

21 After VCS has started, perform the following steps:

- Verify all resources have been probed. On any node, type:

```
# hastatus -summary
```

- Unfreeze all service groups. On any node, type:

```
# haconf -makerw
# hagrp -unfreeze service_group -persistent
# haconf -dump -makero
```

where *service_group* is the name of the service group.

22 Bring online the ClusterService service group, if necessary. On any node type:

```
# hagrp -online ClusterService -sys system
```

where *system* is the node name.

Removing 5.0 MP3 RP1 on Storage Foundation or Storage Foundation Cluster File System

You can use the following procedure to uninstall 5.0 MP3 RP1 on Storage Foundation or Storage Foundation Cluster File System (SFCFS).

To uninstall 5.0 MP3 RP1 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 Stop VCS along with all the resources. Then, stop the remaining resources manually:

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

4 Stop the VCS command server:

```
# kill -9 pid_of_CmdServer
```

where *pid_of_CmdServer* is the process ID of CmdServer.

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 restarted from the unencapsulated root disk.

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

```
# df | 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 command in the `/opt/VRTS/install` directory. For example, to uninstall the Storage Foundation or Veritas Storage Foundation Cluster File System, use the following commands:

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

You can use this command to remove the packages from one or more systems. For other products, substitute the appropriate script for `uninstallsf` such as `uninstallsfcfs` for the Storage Foundation Cluster File System software. The `-usersh` option is required if you are using the remote shell (RSH) rather than the secure shell (SSH) to uninstall the software simultaneously on several systems.

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

After uninstalling the Veritas software, refer to the appropriate product's 5.0 MP3 Installation Guide document to reinstall the 5.0 MP3 software.

Removing 5.0 MP3 RP1 on Storage Foundation for Oracle RAC

You can use the following procedure to uninstall the 5.0 MP3 RP1 on Storage Foundation for Oracle RAC systems.

To uninstall the 5.0 MP3 RP1 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 Stop all other VCS resources on each cluster node:

```
# hastop -local
```

3 Stop cluster fencing, ODM, VCSMM, LMX, GAB and LLT on each cluster node:

```
# /etc/init.d/vxfen stop
# /etc/init.d/odm stop
# /etc/init.d/vcsmm stop
# /etc/init.d/lmx stop
# /etc/init.d/gab stop
# /etc/init.d/llt stop
```

4 On each node, unload the vxfen, LMX, GAB, and LLT kernel modules if they are still loaded. Enter the following commands:

a Verify if the vxfen kernel module is loaded. For example:

```
# modinfo|grep vxfen
210 7ba44000 39488 258 1 vxfen (VRTS Fence 5.0MP3)
```

If the vxfen kernel module is loaded then unload it. For example:

```
# modunload -i 210
```

b Verify if the LMX kernel module is loaded. For example:

```
# modinfo | grep lmx
239 fffffffff1253000  13a30 236   1  lmx (LLT Mux '5.0MP3')
```

If the LMX kernel module is loaded then unload it. For example:

```
# modunload -i 239
```

c Verify if the GAB kernel module is loaded. For example:

```
# modinfo | grep gab
149 50cc6000 2b451 112 1 gab (GAB device 5.0MP3)
```

If the GAB kernel module is loaded then unload it. For example:

```
# modunload -i 149
```

d Verify if the LLT kernel module is loaded. For example:

```
# modinfo | grep llt
147 50ca4000 d6bc 110 1 llt (LLT 5.0MP3)
```

If the LLT kernel module is loaded then unload it. For example:

```
# modunload -i 147
```

5 Uninstall the Storage Foundation for Oracle RAC 5.0 MP3 RP1 patches.
Sample output below:

```
# patchrm 123722-02 139737-01 ...
```

See "Storage Foundation for Oracle RAC patches" on page 28.
Refer to the README file for the patch details.

6 After removing the patches, shut down the nodes:

```
# /usr/sbin/shutfown -g0 -y -i6
```

7 Uninstall Storage Foundation for Oracle RAC.

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

See the *Veritas Storage Foundation for Oracle RAC 5.0 MP3 Installation and Configuration Guide* for more information.

After uninstalling the packages, refer to the Storage Foundation for Oracle RAC 5.0 MP3 Installation and Configuration Guide to reinstall the 5.0 MP3 software.