SPFS README

VERITAS

Patch Upgrade Procedure for SANPoint Foundation Suite 3.5 Update 4 for HP-UX

Installing SANPoint Foundation Suite for the First Time

If you are installing SANPoint Foundation Suite™ (SPFS) for the first time, read the *VERITAS SANPoint Foundation Suite Installation and Configuration Guide* for instructions. Also review the *VERITAS SANPoint Foundation Suite Release Notes* for important release information. After installing VERITAS SPFS 3.5, follow the instructions in this document to install VERITAS SPFS component product patches.

Note To add a node that has SPFS 3.5 installed, to an existing cluster with SPFS 3.5 Update 4 installed, first upgrade the node to 3.5 Update 4 and then configure the cluster.

SANPoint Foundation Suite operates only on HP-UX 11.11 64-bit systems. All nodes in the cluster must be running the same HP-UX version.

Note The 3.5 Update 4 release does not support a rolling upgrade in a VERITAS clustered environment. You cannot upgrade a cluster to use the 3.5 Update 4 patches while the cluster is in operation.

Patches for Upgrading SPFS

Patches are available for the SPFS component products listed below. The patches are located under the `patches` directory of the VERITAS SANPoint Foundation Suite 3.5 Update 4 for HP-UX disc.

Note The HP-UX operating system patches `PHKL_23337`, `PHCO_29379`, `PHKL_30622`, `PHKL_31162`, and `PHKL_31903` must be installed before or along with these patches. You can download these patches from: ftp://ftp.itrc.hp.com/hp-ux_patches/s700_800/11.X/

```
PHCO_30700 1.0 VERITAS File System Mgmt Srvc Provider Patch
PHCO_30730 1.0 VERITAS Enterprise Administrator Srvc Patch
PHCO_30731 1.0 VERITAS Enterprise Administrator Patch
PHCO_34199 1.0 VxFS 3.5-ga15 Command Cumulative Patch 07
PHCO_34348 1.0 VERITAS VM Mgmt Service Provider Patch 05
PHCO_35291 1.0 VxVM 3.5m Command Cumulative Patch 10
PVCO_03637 1.0 VRTScavf 3.5-ga10 VxFS 3.5 Administration Model
              Patch 02
PHKL_34122 1.0 VxFS 3.5-ga15 Kernel Cumulative Patch 14
PHKL_35292 1.0 VxVM 3.5m Kernel Cumulative Patch 09
PVKL_03611 1.0 VERITAS Group Lock Manager 3.5-REV=ga05 Patch 01
PVCO_03622 3.5.2 Veritas Cluster Server Cluster Manager-Java
                 Console 3.5 Patch 2
PVCO_03673 3.5.3 Veritas Cluster Server 3.5 Patch 3 or Update 4
PVKL_03674 3.5.3 VERITAS GAB 3.5 Patch 3 or Update 4
PVKL_03675 3.5.3 VERITAS LLT 3.5 Patch 3 or Update 4
```

PVCO_03623 3.5.2 Veritas Cluster Manager 3.5 Patch 2 (Web Console)

Upgrading from SPFS 3.5 or 3.5 Update 1 or 3.5 Update 2 or 3.5 Update 3 to 3.5 Update 4

SPFS 3.5 Update 4 is a set of cumulative patches that supersede the SPFS 3.5 Update 3 patch release.

This document describes the following procedures:

- Preinstallation tasks
- Installing the 3.5 Update 4 patches on a running SPFS 3.5 Cluster
- Installing the 3.5 Update 4 patches on an inactive SPFS 3.5 Cluster
- Removing the 3.5 Update 4 patches from a running SPFS 3.5 Cluster
- Removing the 3.5 Update 4 patches from an inactive SPFS 3.5 Cluster

Preinstallation Tasks

Before upgrading or removing the SPFS 3.5 Update 4, you must perform the following preinstallation tasks:

1. The VERITAS Enterprise Administrator (VEA) service command name was changed from `vxsvcctrl.sh` to `vxsvcctrl`. You can maintain backward compatibility by creating a symbolic link:
   ```
   # ln -s /opt/VRTSob/bin/vxsvcctrl /opt/VRTSob/bin/vxsvcctrl.sh
   ```

2. Before installing SPFS 3.5 Update 4, you must uninstall all VxFS and VxVM unofficial patches:

   a. Determine whether any unofficial patches are installed:
      ```
      # swlist | grep UNOF | awk '{print $1}'
      ```

   b. Remove the following VxFS and VxVM unofficial patches:
      ```
      # swremove -x autoreboot=true UNOF_PATCHID1 UNOF_PATCHID2 \
      UNOF_PATCHID3 ...
      ```
      Where *UNOF_PATCHID1*, *UNOF_PATCHID2*, and *UNOF_PATCHID3* are the names of the unofficial patch IDs.

3. Verify that the SPFS packages installed are at the levels shown below:

   ```
   # swlist -l product | egrep -i 'VRTS'

   VRTSvxfs  3.5-gal5     VERITAS File System with CFS Support
   VRTSglm   3.5-REV=ga05 VERITAS Group Lock Manager
   VRTSvxvm  3.5m         Base VERITAS Volume Manager 3.5 for HP-UX
   VRTSvmpro 3.5m         VERITAS Volume Manager Management Services
                          Provider
   VRTSfspro 3.5-ga08     VERITAS File System Management Services
                          Provider
   VRTSgab   3.5          VERITAS Group Membership and Atomic
                          Broadcast
   VRTSllt   3.5          VERITAS Low Latency Transport
   VRTSob    3.0.2.261a   VERITAS Enterprise Administrator Service
   VRTSvcs   3.5          Veritas Cluster Server
   VRTSvcsmg 3.5          VERITAS Cluster Server Message Catalogs
   VRTSvcsmn 3.5          VERITAS Cluster Server Manual Pages
   VRTScavf  3.5-ga10     VERITAS 3.5 Administration Model Patch 02
   ```

Installing Patches on a Running Cluster

To install patches on a running cluster:

Note In Updates 1, 2, 3, and 4, the VEA service command name was changed from `vxsvcctrl.sh` to `vxsvcctrl`. Use `vxsvcctrl` at the Updates 1, 2, 3, and 4level and `vxsvcctrl.sh` at the VERITAS Database Edition 3.5 level. Alternatively, you can create a symbolic link as described in "Preinstallation Tasks" on page 2 to maintain backward compatibility.

1. Log in as superuser (`root`) on each node in the cluster.

2. Stop the VERITAS Enterprise Administrator (VEA) service on each node in the cluster.

   a. Verify the status of the VEA service:
   ```
   # /opt/VRTSob/bin/vxsvcctrl.sh status
   Current state of server : RUNNING
   ```

   b. Stop the VEA service:
   ```
   # /opt/VRTSob/bin/vxsvcctrl.sh stop
   ```

   c. Verify the status of the VEA service again:
   ```
   # /opt/VRTSob/bin/vxsvcctrl.sh status
   Current state of server : NOT RUNNING
   ```

3. Remove the following file:
   ```
   # rm -f /var/vx/isis/vxisis.lock
   ```

4. Verify on each node in the cluster that `/opt/VRTS/bin` is in your PATH so that you can execute all the product commands.

5. Insert the VERITAS Storage Solutions 3.5 Update 4 disc.

6. After inserting the software disc, if the disc is not mounted, enter:
   ```
   # pfs_mount -t hsfs /dev/dsk/device /cdrom
   ```
   where *device* is the default address for the CD-ROM drive.

7. List the service groups in the cluster and their status. On any node, enter:
   ```
   # hagrp -state
   ```

8. Take all service groups offline including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:
   ```
   # hagrp -offline service_group -sys nodename
   # hagrp -offline cfs_sg -sys nodename
   # hagrp -offline cvm_sg -sys nodename
   ```

9. Make the VCS configuration writable. On any node, enter:
   ```
   # haconf -makerw
   ```

10. Freeze all service groups including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:
    ```
    # hagrp -freeze service_group -persistent
    # hagrp -freeze cfs_sg -persistent
    # hagrp -freeze cvm_sg -persistent
    ```


11. Save the configuration file (`main.cf`) with the groups frozen. On any node, enter:

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

12. Shut down VCS. On any node, enter:

```
# hastop -all -force
```

13. If you are upgrading from 3.5 Update 1, use the `echo` command to create a temporary unconfiguration file on each node in the cluster. If you are not upgrading from 3.5 Update 1, proceed to step 14.

```
# echo "unconfigfile" > /opt/VRTS/bin/unconfigure.VXVM
```

14. On each node in the cluster enter the following command to install the first set of patches:

```
# swinstall -x autoreboot=true -s /cdrom/patches \
PHCO_30700 PHCO_30730 PHCO_30731 PHCO_34199 PHCO_34348 \
PHCO_35291 PHKL_34122 PHKL_35292 PVCO_03637
```

15. After each cluster node has rebooted, shut down VCS. On any node, enter:

```
# hastop -all -force
```

16. Verify on each node that the GAB ports and LLT are unconfigured.

    a. List the GAB port memberships:

```
# gabconfig -a
GAB Port Memberships
===============================
Port a gen a841a803 membership 01
```

    b. Unconfigure the GAB port memberships:

```
# gabconfig -U
```

    c. List the GAB ports:

```
# gabconfig -a
GAB Port Memberships
===============================
```

    d. Unlink the LLT protocol from all network devices:

```
# lltconfig -U -o
```

17. On each node in the cluster, enter the following command to unload the `vxglm` module:

```
# kmadmin -U vxglm
kmadmin: Module 3 unloaded
```

18. On each node in the cluster, enter the following command to unload GAB and LLT modules.

    a. Unload the GAB modules:

```
# kmadmin -U gab
```

    b. Unload the LLT modules:

```
# kmadmin -U llt
```

Note If GAB or LLT do not unload, see "Troubleshooting" on page 14.

19. On each node in the cluster, install the LLT, GAB, VCS and GLM patches in the following order:

Note Installation of `PVCO_03622` and `PVCO_03623` patches are optional. These patches can only be installed if the base packages `VRTScscm` and `VRTSvcsag` are already installed.

```
# swinstall -s /cdrom/patches PVKL_03674 PVKL_03675
# swinstall -s /cdrom/patches PVCO_03673 PVCO_03622 PVCO_03623
# swinstall -s /cdrom/patches PVKL_03611
```

20. Update the `types.cf` file to the new version on each node in the cluster:

Note If `/etc/VRTSvcs/config/config/types.cf` is modified, the same changes have to be applied to the new `types.cf` file.

```
# cp -p /etc/VRTSvcs/conf/config/types.cf \
/etc/VRTSvcs/conf/config/types.cf.orig
# cp -p /etc/VRTSvcs/conf/types.cf \
/etc/VRTSvcs/conf/config/types.cf
```

21. Reboot each node in the cluster.

22. On each node in the cluster, enter the following command to verify that the patches are installed:

```
# swlist | egrep -E 'PV|PH'
```

The following information is displayed after a successful patch installation:

```
PHCO_30700 1.0 VERITAS File System Mgmt Srvc Provider Patch
PHCO_30730 1.0 VERITAS Enterprise Administrator Srvc Patch
PHCO_30731 1.0 VERITAS Enterprise Administrator Patch
PHCO_34199 1.0 VxFS 3.5-ga15 Command Cumulative Patch 07
PHCO_34348 1.0 VERITAS VM Mgmt Service Provider Patch 05
PHCO_35291 1.0 VxVM 3.5m Command Cumulative Patch 10
PVCO_03637 1.0 VRTScavf 3.5-ga10 VxFS 3.5 Administration Model
               Patch 02
PHKL_34122 1.0 VxFS 3.5-ga15 Kernel Cumulative Patch 14
PHKL_35292 1.0 VxVM 3.5m Kernel Cumulative Patch 09
PVKL_03611 1.0 VERITAS Group Lock Manager 3.5-REV=ga05 Patch 01
PVCO_03622 3.5.2 Veritas Cluster Server Cluster Manager-Java
                 Console 3.5 Patch 2
PVCO_03673 3.5.3 Veritas Cluster Server 3.5 Patch 3 or Update 4
PVKL_03674 3.5.3 VERITAS GAB 3.5 Patch 3 or Update 4
PVKL_03675 3.5.3 VERITAS LLT 3.5 Patch 3 or Update 4
PVCO_03623 3.5.2 Veritas Cluster Manager 3.5 Patch 2 (Web
                 Console)
```

23. Restart VCS. On each node in the cluster, enter:

```
# hastart
```

24. After VCS is started on all nodes, verify the system status. On any node, enter:

```
# hastatus -summary
```

25. Make the VCS configuration writable. On any node, enter:

```
# haconf -makerw
```


26. Unfreeze all service groups, including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:

```
# hagrp -unfreeze service_group -persistent
# hagrp -unfreeze cfs_sg -persistent
# hagrp -unfreeze cvm_sg -persistent
```

27. Make the configuration read-only. On any node in the cluster, enter:

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

28. Bring all the service groups, including the *cfs_sg* and *cvm_sg* service groups, online on all nodes in the cluster. On each node in the cluster, enter:

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

29. Restart the VERITAS Enterprise Administrator (VEA) service. On each node in the cluster.

    a. Verify the status of the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : NOT RUNNING
    ```

    b. Start the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl start
    ```

    c. Verify the status of the VEA service again:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : RUNNING
    ```

Installing Patches on an Inactive Cluster

To install patches on an inactive cluster:

Note In Updates 1, 2, 3, and 4, the VEA service command name was changed from `vxsvcctrl.sh` to `vxsvcctrl`. Use `vxsvcctrl` at the Updates 1, 2, 3, and 4 level and `vxsvcctrl.sh` at the VERITAS Database Edition 3.5 level. Alternatively, you can create a symbolic link as described in "Preinstallation Tasks" on page 2 to maintain backward compatibility.

1. Log in as superuser (`root`) on each node in the cluster.

2. Stop the VERITAS Enterprise Administrator (VEA) service on each node in the cluster.

    a. Verify the status of the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl.sh status
    Current state of server : RUNNING
    ```

    b. Stop the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl.sh stop
    ```

    c. Verify the status of the VEA service again:
    ```
    # /opt/VRTSob/bin/vxsvcctrl.sh status
    Current state of server : NOT RUNNING
    ```

3. Remove the following file:

```
# rm -f /var/vx/isis/vxisis.lock
```

4. Verify on each node in the cluster that `/opt/VRTS/bin` is in your PATH so that you can execute all the product commands.

5. Insert the VERITAS Storage Solutions 3.5 Update 4 disc.

6. After inserting the software disc, if the disc is not mounted, enter:

```
# pfs_mount -t hsfs /dev/dsk/device /cdrom
```

where *device* is the default address for the CD-ROM drive.

7. If you are upgrading from 3.5 Update 1, use the `echo` command to create a temporary unconfiguration file on each node in the cluster. If you are not upgrading from 3.5 Update 1, proceed to step 8.

```
# echo "unconfigfile" > /opt/VRTS/bin/unconfigure.VXVM
```

8. On each node in the cluster enter the following command to install the first set of patches:

```
# swinstall -x autoreboot=true -s /cdrom/patches \
PHCO_30700 PHCO_30730 PHCO_30731 PHCO_34199 PHCO_34348 \
PHCO_35291 PHKL_34122 PHKL_35292 PVCO_03637
```

9. After each cluster node has rebooted, shut down VCS. On any node, enter:

```
# hastop -all -force
```

10. Verify on each node that the GAB ports and LLT are unconfigured.

    a. List the GAB port memberships:

```
# gabconfig -a
GAB Port Memberships
===============================
Port a gen a841a803 membership 01
```

    b. Unconfigure the GAB port memberships:

```
# gabconfig -U
```

    c. List the GAB ports:

```
# gabconfig -a
GAB Port Memberships
===============================
```

    d. Unlink the LLT protocol from all network devices:

```
# lltconfig -U -o
```

11. On each node in the cluster enter the following command to unload the `vxglm` module:

```
# kmadmin -U vxglm
kmadmin: Module 3 unloaded
```

12. On each node in the cluster enter the following command to unload GAB and LLT modules.

    a. Unload the GAB modules:

```
# kmadmin -U gab
```

    b. Unload the LLT modules:

```
# kmadmin -U llt
```

Note If GAB or LLT do not unload, see "Troubleshooting" on page 14.

13. On each node in the cluster, install the LLT, GAB, VCS and GLM patches in the following order:

Note Installation of `PVCO_03622` and `PVCO_03623` patches are optional. These patches can only be installed if the base packages `VRTScscm` and `VRTSvcsag` are already installed.

```
# swinstall -s /cdrom/patches PVKL_03674 PVKL_03675
# swinstall -s /cdrom/patches PVCO_03673 PVCO_03622 PVCO_03623
# swinstall -s /cdrom/patches PVKL_03611
```

14. Update the `types.cf` file to the new version on each node in the cluster:

Note If `/etc/VRTSvcs/config/config/types.cf` is modified, the same changes have to be applied to the new `types.cf` file.

```
# cp -p /etc/VRTSvcs/conf/config/types.cf \
/etc/VRTSvcs/conf/config/types.cf.orig
# cp -p /etc/VRTSvcs/conf/types.cf \
/etc/VRTSvcs/conf/config/types.cf
```

15. Reboot each node in the cluster.

16. On each node in the cluster, enter the following command to verify that the patches are installed:

```
# swlist | egrep -E 'PV|PH'
```

The following information is displayed after a successful patch installation:

```
PHCO_30700 1.0 VERITAS File System Mgmt Srvc Provider Patch
PHCO_30730 1.0 VERITAS Enterprise Administrator Srvc Patch
PHCO_30731 1.0 VERITAS Enterprise Administrator Patch
PHCO_34199 1.0 VxFS 3.5-ga15 Command Cumulative Patch 07
PHCO_34348 1.0 VERITAS VM Mgmt Service Provider Patch 05
PHCO_35291 1.0 VxVM 3.5m Command Cumulative Patch 10
PVCO_03637 1.0 VRTScavf 3.5-ga10 VxFS 3.5 Administration Model
               Patch 02
PHKL_34122 1.0 VxFS 3.5-ga15 Kernel Cumulative Patch 14
PHKL_35292 1.0 VxVM 3.5m Kernel Cumulative Patch 09
PVKL_03611 1.0 VERITAS Group Lock Manager 3.5-REV=ga05 Patch 01
PVCO_03622 3.5.2 Veritas Cluster Server Cluster Manager-Java
                 Console 3.5 Patch 2
PVCO_03673 3.5.3 Veritas Cluster Server 3.5 Patch 3 or Update 4
PVKL_03674 3.5.3 VERITAS GAB 3.5 Patch 3 or Update 4
PVKL_03675 3.5.3 VERITAS LLT 3.5 Patch 3 or Update 4
PVCO_03623 3.5.2 Veritas Cluster Manager 3.5 Patch 2 (Web
                Console)
```

17. Restart the VERITAS Enterprise Administrator (VEA) service on each node in the cluster.

    a. Verify the status of the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : NOT RUNNING
    ```

    b. Start the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl start
    ```

    c. Verify the status of the VEA service again:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : RUNNING
    ```

Removing Patches from a Running Cluster

To remove patches from a running cluster:

Note In Updates 1, 2, 3, and 4, the VEA service command name was changed from `vxsvcctrl.sh` to `vxsvcctrl`. Use `vxsvcctrl` at the Updates 1, 2, 3, and 4 level and `vxsvcctrl.sh` at the VERITAS Database Edition 3.5 level. Alternatively, you can create a symbolic link as described in "Preinstallation Tasks" on page 2 to maintain backward compatibility.

1. Log in as superuser (`root`) on each node in the cluster.

2. Stop the VEA service on each node in the cluster:

    a. Verify the status of the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : RUNNING
    ```

    b. Stop the VEA service:
    ```
    # /opt/VRTSob/bin/vxsvcctrl stop
    ```

    c. Verify the status of the VEA service again:
    ```
    # /opt/VRTSob/bin/vxsvcctrl status
    Current state of server : NOT RUNNING
    ```

3. Remove the following file:
    ```
    # rm -f /var/vx/isis/vxisis.lock
    ```

4. List the service groups in the cluster and their status. On any node, enter:
    ```
    # hagrp -state
    ```

5. Take all service groups offline, including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:
    ```
    # hagrp -offline service_group -sys nodename
    # hagrp -offline cfs_sg -sys nodename
    # hagrp -offline cvm_sg -sys nodename
    ```

6. Make the VCS configuration writable. On any node, enter:
    ```
    # haconf -makerw
    ```

7. Freeze all service groups including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:

```
# hagrp -freeze service_group -persistent
# hagrp -freeze cfs_sg -persistent
# hagrp -freeze cvm_sg -persistent
```

8. Save the configuration file (`main.cf`) with the groups frozen. On any node, enter:

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

9. Shut down VCS. On any node, enter:

```
# hastop -all -force
```

10. If you are reverting to the 3.5 Update 1 patch level and did not create the `unconfigure.VXVM` file as shown in step 13 on page 4, run the following commands on each node in the cluster or subsequent attempts to remove the Volume Manager 3.5 Update 1 patches will fail. If you are not reverting to 3.5 Update 1, proceed to step 11.

```
# echo "unconfigfile" > /opt/VRTS/bin/unconfigure.VXVM
# swmodify -x \
files=/opt/VRTS/bin/unconfigure.VXVM VRTSvxvm.VXVM-KRN
```

11. Remove the following patches from each node in the cluster:

```
# swremove -x autoreboot=true PHCO_30700 PHCO_30730 \
PHCO_30731 PHCO_34199 PHCO_34348 PHCO_35291 PHKL_34122 \
PHKL_35292 PVCO_03637
```

12. If you are reverting to SPFS 3.5 Update 1, run the `swmodify` command on each node in the cluster to avoid `swverify` failures on the `VRTSvxvm` product. If you are not reverting to 3.5 Update 1, proceed to step 13.

```
# swmodify -x \
files=/etc/vx/type/static/vxconfigd VRTSvxvm.VXVM-KRN
```

13. After each cluster node has rebooted, shut down VCS. On any node, enter:

```
# hastop -all -force
```

14. Verify on each node that the GAB ports and LLT are unconfigure.

    a. List the GAB port memberships:

```
# gabconfig -a
GAB Port Memberships
===============================
Port a gen a841a803 membership 01
```

    b. Unconfigure the GAB port memberships:

```
# gabconfig -U
```

    c. List the GAB ports:

```
# gabconfig -a
GAB Port Memberships
===============================
```

    d. Unlink the LLT protocol from all network devices:

```
# lltconfig -U -o
```

15. On each node in the cluster enter the following command to unload the `vxglm` module:

```
# kmadmin -U vxglm
kmadmin: Module 3 unloaded
```

16. On each node in the cluster enter the following command to unload GAB and LLT modules:

    a. Unload the GAB modules:
    ```
    # kmadmin -U gab
    ```

    b. Unload the LLT modules:
    ```
    # kmadmin -U llt
    ```

Note If GAB or LLT do not unload, see "Troubleshooting" on page 14.

17. On each node in the cluster remove the following patches in order:

Note If `PVCO_03622` and `PVCO_03623` patches do not exist, then there is no need to remove them.

```
# swremove PVCO_03673
# swremove PVCO_03622
# swremove PVCO_03623
# swremove PVKL_03674
# swremove PVKL_03675
# swremove PVKL_03611
```

18. On each node in the cluster restore the original `types.cf` file:

```
# cp -p /etc/VRTSvcs/conf/config/types.cf.orig \
/etc/VRTSvcs/conf/config/types.cf
```

19. Reboot each node in the cluster.

20. Verify that the patches were removed from each node:

```
# swlist | egrep -E 'PV|PH'
```

    Not one of the listed patches is displayed.

21. Restart VCS. On each node in the cluster, enter:

```
# hastart
```

22. After VCS is started on all nodes, verify the system status. On any node, enter:

```
# hastatus -summary
```

23. From any node, make the VCS configuration writable:

```
# haconf -makerw
```

24. Unfreeze all service groups, including the *cfs_sg* and *cvm_sg* service groups. On any node, enter:

```
# hagrp -unfreeze service_group -persistent
# hagrp -unfreeze cfs_sg -persistent
# hagrp -unfreeze cvm_sg -persistent
```


25. Make the configuration read-only, on each node in the cluster:

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

26. Bring all the service groups, including the *cfs_sg* and *cvm_sg* service groups, online on all nodes in the cluster. On each node in the cluster, enter:

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

27. Verify that the patches were removed from each node:

```
# swlist | egrep -E 'PV|PH'
```

Not one of the listed patches is displayed.

28. Restart the VERITAS Enterprise Administrator (VEA) service on each node in the cluster.

    a. Verify the status of the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl.sh status
Current state of server : NOT RUNNING
```

    b. Start the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl.sh start
```

    c. Verify the status of the VEA service again:

```
# /opt/VRTSob/bin/vxsvcctrl.sh status
Current state of server : RUNNING
```

Removing Patches from an Inactive Cluster

To remove patches on an inactive cluster:

Note In Updates 1, 2, 3, and 4, the VEA service command name was changed from `vxsvcctrl.sh` to `vxsvcctrl`. Use `vxsvcctrl` at the Updates 1, 2, 3, and 4 level and `vxsvcctrl.sh` at the VERITAS Database Edition 3.5 level. Alternatively, you can create a symbolic link as described in "Preinstallation Tasks" on page 2 to maintain backward compatibility.

1. Log in as superuser (`root`) on each node in the cluster.

2. Stop the VERITAS Enterprise Administrator (VEA) service on each node in the cluster.

    a. Verify the status of the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl status
Current state of server : RUNNING
```

    b. Stop the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl stop
```

    c. Verify the status of the VEA service again:

```
# /opt/VRTSob/bin/vxsvcctrl status
Current state of server : NOT RUNNING
```

3. Remove the following file:

```
# rm -f /var/vx/isis/vxisis.lock
```

4. If you are reverting to the 3.5 Update 1 patch level and did not create the `unconfigure.VXVM` file as shown in step 13 on page 4, run the following commands on each node in the cluster or subsequent attempts to remove the Volume Manager 3.5 Update 1 patches will fail. If you are not reverting to 3.5 Update 1, proceed to step 5.

```
# echo "unconfigfile" > /opt/VRTS/bin/unconfigure.VXVM
# swmodify -x \
files=/opt/VRTS/bin/unconfigure.VXVM VRTSvxvm.VXVM-KRN
```

5. Remove the following patches from each node in the cluster:

```
# swremove -x autoreboot=true PHCO_30700 PHCO_30730 \
PHCO_30731 PHCO_34199 PHCO_34348 PHCO_35291 PHKL_34122 \
PHKL_35292 PVCO_03637
```

6. If you are reverting to SPFS 3.5 Update 1, run the `swmodify` command on each node in the cluster to avoid `swverify` failures on the `VRTSvxvm` product. If you are not reverting to 3.5 Update 1, proceed to step 7.

```
# swmodify -x \
files=/etc/vx/type/static/vxconfigd VRTSvxvm.VXVM-KRN
```

7. After each cluster node has rebooted, shut down VCS. On any node, enter:

```
# hastop -all -force
```

8. Verify on each node that the GAB ports and LLT are unconfigured.

   a. List the GAB port memberships:

```
# gabconfig -a
GAB Port Memberships
===============================
Port a gen a841a803 membership 01
```

   b. Unconfigure the GAB port memberships:

```
# gabconfig -U
```

   c. List the GAB ports:

```
# gabconfig -a
GAB Port Memberships
===============================
```

   d. Unlink the LLT protocol from all network devices.

```
# lltconfig -U -o
```

9. On each node in the cluster enter the following command to unload the `vxglm` module:

```
# kmadmin -U vxglm
kmadmin: Module 3 unloaded
```

10. On each node in the cluster enter the following command to unload GAB and LLT modules.

    a. Unload the GAB modules:

```
# kmadmin -U gab
```

    b. Unload the LLT modules:

```
# kmadmin -U llt
```

Note If GAB or LLT do not unload, see "Troubleshooting" on page 14.

11. On each node in the cluster remove the following patches in order:

Note If PVCO_03622 and PVCO_03623 patches do not exist, then there is no need to remove them.

```
# swremove PVCO_03673
# swremove PVCO_03622
# swremove PVCO_03623
# swremove PVKL_03674
# swremove PVKL_03675
# swremove PVKL_03611
```

12. Reboot each node in the cluster.

13. After all the nodes in the cluster have rebooted, verify that the patches were removed from each node:

```
# swlist | egrep -E 'PV|PH'
```

Not one of the listed patches is displayed.

14. Restart the VERITAS Enterprise Administrator (VEA) service on each node in the cluster:

a. Verify the status of the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl.sh status
Current state of server : NOT RUNNING
```

b. Start the VEA service:

```
# /opt/VRTSob/bin/vxsvcctrl.sh start
```

c. Verify the status of the VEA service again:

```
# /opt/VRTSob/bin/vxsvcctrl.sh status
Current state of server : RUNNING
```

Troubleshooting

When the system cannot unload LLT or GAB modules, the kmadmin command might issue a Device busy message. This happens when another module is using the LLT or GAB modules. You must unload those modules before unloading LLT and GAB.

1. To see registered or loaded modules, enter:

```
# kmadmin -s
```

If you are running SPFS, the following modules are displayed:

```
Name            ID        Status         Type
=====================================================
krm             1         LOADED         WSIO
llt             2         LOADED         STREAMS Driver
gab             3         LOADED         WSIO
vxglm           4         LOADED         WSIO
```

2. To unload a module, enter the following:

```
# kmadmin -U <module_name>
```

where *module_name* is the name of the module.

Note Unload the vxglm and krm modules if the status is LOADED, and then unload LLT and GAB.

Fixed Issues

The following are new Veritas SANPoint Foundation Suite fixed issues in this Update 4 release:

Incident	Description
148994	System can panic or have buffer corruption while using FDD/QIO interface, because a field in buffer structure was being set incorrectly for HP buffer cache buffers mistaking them as VxFS buffer cache buffers. Has been fixed.
149565	Setting a `nodata` flag on a mounted clone would fail if clone was mounted on primary. Has been fixed.
150368	When a disk with disk layout Version 5 from an HP-UX 11.23 system and is mounted on an HP-UX 11.11 system, VxFS allows the disk to be mounted. However, disk layout Version 5 is not supported on HP-UX 11.11. VxFS should not allow the disk to be mounted. Has been fixed.

Software Issues

See the accompanying `README_VXVM` and `README_VCS` files for information on the incidents fixed by the patches and the current software limitations for those products. The following is the list of known Cluster File System issues:

Incident	Description
110518	The following issue is applicable only when using the VERITAS FlashSnap Option. The `fstyp`, `df`, `bdf` commands (and possibly other commands that invoke `fstyp`), may hang when run on a VxFS 3.5 file system on which 14 or more Storage Checkpoints were created. This problem occurs when file system metadata grows beyond a certain limit, causing the commands to read a particular disk block indefinitely. To avoid this problem, limit the number of Storage Checkpoints created on the file system to 14. For updates on this issue and information on the proposed patch, see the following VERITAS TechNote: http://support.veritas.com/docs/260615
138120	`vx_hsm_get_dirattr()` reads a directory's dirents 8kb at a time, if the passed in user buffer is not large enough to hold the combined entries' corresponding file stats information (up to ~114kb) then the next call to `vx_hsm_get_dirattr()` will continue from the wrong offset within the directory resulting in some directory entries being skipped (there is no error indication, the expectation is to continue from the last dirent info that could fit into the user's buffer, however the next directory read will begin 8kb further down the directory). As a workaround this issue can be avoided by passing a sufficiently large user buffer.
149398	The `quotactl` system call on HPUX would fail with `EFAULT` if issued from CFS secondary. This causes all quota related commands on vxfs to fail from CFS secondary.

Incident	Description
149564	Occasionally, the log replay on the file system can fail. As a workaround run a full `fsck` to restore the file system. After running `fsck`, a message similar to the following displays: `fileset 1 primary-ilist inode 5 (Fset-Header 1) failed validation clear? (ynq).` Enter `n` for no.
895569	The creation of Storage Checkpoints on multiple file systems using `fsckptadm createall <ckpt-name> <mount-point> ..` command is not supported in this release of CFS. Instead, use the `fsckptadm create <ckpt-name> <mountpoint>` command in a CFS environment to individually create the Storage Checkpoints.

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SANPoint Foundation Suite 3.5 Update 4

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