

VERITAS Volume Replicator 4.1

Installation Guide

HP-UX

N13015G

June 2005

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

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Preface

The *VERITAS™ Volume Replicator Installation Guide* provides information on installing VERITAS Volume Replicator (VVR). This document gives an overview of how to install VVR, and includes a configuration worksheet to help plan a VVR configuration.

Audience

This guide is for system administrators who install VVR and assumes:

- ◆ A basic understanding of system administration.
- ◆ A working knowledge of the UNIX operating system.
- ◆ A basic understanding of VERITAS Volume Manager (VxVM).



How This Guide Is Organized

[Chapter 1. “Preinstallation Instructions” on page 1](#) describes information about VERITAS licenses, planning an installation or upgrade, and other items which should be considered before proceeding with the installation or upgrade.

[Chapter 2. “Installing VERITAS Volume Replicator” on page 11](#) describes the procedures for installing VERITAS Volume Replicator for the first time.

[Chapter 3. “Upgrading VERITAS Volume Replicator” on page 15](#) describes the procedures for upgrading VERITAS Volume Replicator.

[Chapter 4. “Configuring VERITAS Volume Replicator” on page 39](#) provides a configuration worksheet and other information about configuring VVR.

[Chapter 5. “Uninstalling VERITAS Volume Replicator” on page 45](#) provides instructions for removing VVR packages.

Related VERITAS Documents

For more information on any of the topics presented in this guide, refer to the VVR or the VERITAS Volume Manager (VxVM) documentation sets. Refer to the *VERITAS Volume Replicator Release Notes* for more information on these documentation sets.



Conventions

Convention	Usage	Example
monospace	Used for path names, commands, output, directory and file names, functions, and parameters.	Read tunables from the <code>/etc/vx/tunefstab</code> file. See the <code>ls(1)</code> manual page for more information.
monospace (bold)	Indicates user input.	# ls pubs C:\> dir pubs
<i>italic</i>	Identifies book titles, new terms, emphasized text, and variables replaced with a name or value.	See the <i>User's Guide</i> for details. The variable <i>system_name</i> indicates the system on which to enter the command.
bold	Depicts GUI objects, such as fields, list boxes, menu selections, etc. Also depicts GUI commands.	Enter your password in the Password field. Press Return .
blue text	Indicates hypertext links.	See " Getting Help " on page xii.
#	Unix superuser prompt (all shells).	# cp /pubs/4.1/user_book /release_mgnt/4.1/archive
C:\>	Windows user prompt.	C:\> copy \pubs\4.1\user_book c:\release_mgnt\4.1\archive



Getting Help

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Preinstallation Instructions

1

This chapter explains the steps to perform before installing or upgrading VERITAS Volume Replicator (VVR). Before installing VVR, read the *VERITAS Volume Replicator Release Notes* and the *Getting Started Guide* and also obtain a license key for VERITAS Volume Replicator.

Obtaining a License Key

VERITAS Volume Replicator requires a license. Note that even if you have already obtained a VERITAS Volume Manager license key, you must obtain a separate license key for VVR. For details about VERITAS licenses and how to obtain them, see the section about license information in the *VERITAS Storage Foundation Installation Guide* (formerly the *VERITAS Volume Manager Installation Guide*).

VERITAS Product Licensing

Product keys are available on the License Key certificate. The certificate also includes the number of product licenses purchased. A single key enables product installation on the number and the type of systems for which you purchased the license. A key may enable the operation of more products than specified on the certificate, but you are legally limited to the number of product licenses purchased.

The `VRTSVLIC` package enables VERITAS product licensing. The following commands and their manual pages are available on the system after `VRTSVLIC` is installed:

- `vxlicinst` installs a license key for a VERITAS product
- `vxlicrep` displays currently installed licenses
- `vxlictest` retrieves features and their descriptions encoded in a license key

If you encounter problems while licensing your product, visit the VERITAS licensing support website at <http://www.veritas.com/buy/vLicense/vLicenseHome.jhtml>.



Planning your VVR Configuration

Planning is the key to successfully configuring VVR. To set up an optimum VERITAS Volume Replicator configuration, you must understand how the various VVR components interact with each other. In addition, you must consider the factors that are specific to your environment while planning your VVR configuration. When planning your VVR configuration, refer to the following VVR documents:

- ◆ *VERITAS Volume Replicator Planning and Tuning Guide*

The *VERITAS Volume Replicator Planning and Tuning Guide* describes the importance of factors such as network bandwidth in planning your configuration. It helps you determine the characteristics of your VVR environment, such as the appropriate size of the SRL, and which mode of replication to use. This guide also provides information about performance considerations, including the VVR parameters that are tunable and that affect performance.

- ◆ *VERITAS Volume Replicator Advisor User's Guide*

VRAdvisor is a tool that helps you evaluate your network and application characteristics so that you can set up an optimal VVR configuration. You must understand the concepts explained in the *VERITAS Volume Replicator Planning and Tuning Guide* before using VRAdvisor.

These documents are available on the documentation disc. For more information on the documentation disc, see the *Getting Started Guide*. After you have installed VVR and have determined the requirements for your configuration, you are ready to set up VVR and start replication. See [“Interfaces of VERITAS Volume Replicator”](#) on page 43.

Preinstallation or Upgrade Planning

This installation guide describes installing and upgrading VVR. Before installing or upgrading VVR:

- ✓ Confirm that your system has enough free disk space to install VVR.
- ✓ Make sure you have root permissions. You must have root permissions to perform the install and upgrade procedures.

For a detailed explanation of the VVR tunables, see *VERITAS Volume Replicator Planning and Tuning Guide*. For information about how to change the value of the tunables, see the *VERITAS Volume Replicator Administrator's Guide*. These documents are available on the documentation disc. For more information on the documentation disc, see the *Getting Started Guide*.

Planning a VEA Installation

- ✓ The VERITAS Enterprise Administrator (VEA) server `VRTSOsb` must be installed on the hosts on which VVR is installed.
- ✓ The VEA providers must be installed on the hosts on which VVR is installed, not on the client.
- ✓ If you plan to run the VEA client on a machine other than the machine to be administered, install the VEA client on the machine where the client will run. Refer to the *VERITAS Storage Foundation Installation Guide* for instructions on installing VEA clients.
- ✓ To use the VVR functionality in VEA, the VERITAS Volume Replicator Service Provider package, `VRTSvrpro`, must be installed on all hosts in the Replicated Data Set (RDS).
- ✓ For `VRTSvrpro` to function, the VERITAS Volume Manager Management Services Provider package, `VRTSvmpro`, must be installed on your system.
- ✓ To use the functionality for receiving SNMP notifications and email notifications, the VERITAS Action Provider package, `VRTSap`, and the VERITAS Task Execution Provider package, `VRTStep`, must be installed.



Planning an Upgrade from VVR 3.5 Update 3

VVR is capable of replicating data between VVR 4.1 and VVR 3.5 Update 3. The major advantage is that this removes the restriction of upgrading the Primary and Secondary at the same time.

When replicating between versions, you can easily upgrade VVR with reduced application downtime. While the Primary is being upgraded, the application can be migrated to the Secondary, thus reducing downtime. The replication between the (upgraded) Primary and the Secondary which have different versions of VVR will still continue. This facilitates high availability even when the VVR upgrade is not complete on both the nodes.

If you do not need to upgrade all the hosts in the RDS simultaneously, you can use replication between versions after you upgrade one host. The upgrade can be performed either on the Primary or on the Secondary. You can then upgrade the other hosts in the RDS later at your convenience.

If you have a cluster setup, you must upgrade all the nodes in the cluster at the same time. For more information on upgrading VVR when VCS is present, see [“Upgrading VVR When VCS Agents are Configured”](#) on page 31.

Note When replicating between versions of VVR, avoid using commands associated with new features. The earlier version may not support new features and problems could occur.

Compatibility Considerations

Refer to the *VERITAS Volume Replicator Release Notes*.

Mounting the Software Disc

Insert the VERITAS disc into the DVD drive connected to your system and perform the steps given below to mount the disc. For more information, see *VERITAS Storage Foundation Installation Guide*.

▼ To mount the software disc

1. Log in as superuser.
2. Insert the VxVM disc into your system’s DVD drive.

3. Determine the block device file for the DVD drive by entering:

```
# ioscan -fnC disk
```

Make a note of the device file as it applies to your system.

4. Run the following commands to start PFS (Portable File System):

```
# nohup pfs_mountd &
```

```
# nohup pfsd &
```

5. Mount the software disc. For example, to mount the DVD at the mount point /dvdrom, enter:

```
# /usr/sbin/pfs_mount -t rrip /dev/dsk/c#t#d# /dvdrom
```

where /c#t#d# is the location of the drive.

Note The installation process may generate one or more messages indicating that the media is not writable. You can ignore these messages.

Location of the VVR Packages

You can find the VVR packages on the VERITAS software disc under the /dvd_path/depot directory and the *VERITAS Volume Replicator Release Notes* in the volume_replicator/release_notes directory. Refer to “[List of Required and Optional Packages for VVR](#)” on page 7 for a list of the VVR packages.

This manual refers to the location of the VERITAS software disc as /dvd_path. For example, if the VERITAS software disc is mounted at /dvdrom/VERITAS, then the location of the VVR packages is given as /dvd_path/depot.



Disk Space Requirements

Confirm that your system has enough free disk space to install VVR. Use the `Precheck` option of the product installer to determine whether there is sufficient space. The following table shows the approximate disk space used by VVR for the required and optional packages:

English	/ (root)	/opt	/usr	/var
Required Packages	170 MB	60 MB	85 MB	0.5 MB
Optional Packages	240 MB	256 MB	85 MB	0.5 MB
All Packages	410 MB	316 MB	170 MB	1 MB



List of Required and Optional Packages for VVR

The following list shows the required software packages for VVR:

VRTSvlic	VERITAS Licensing Utilities.
VRTSvxvm	VERITAS Volume Manager and Volume Replicator.
VRTSob	VERITAS Enterprise Administrator Service.
VRTSvmpro	VERITAS Virtual Disk Management Services Provider. (requires VRTSob and VRTSobgui)
VRTSvrpro	VERITAS Volume Replicator Management Services Provider. (requires VRTSvmpro)
VRTSalloc	VERITAS Volume Manager: VERITAS Intelligent Storage Provisioning
VRTSvcsvr	VERITAS Cluster Server Agents for VERITAS Volume Replicator.
VRTSperl	VERITAS Perl Redistribution

The following list shows the optional software packages for VVR:

VRTSjre	VERITAS JRE Redistribution.
VRTSweb	VERITAS Java Web Server.
VRTSvrw	VERITAS Volume Replicator Web Console.
VRTSobgui	VERITAS Enterprise Administrator.
VRTSvmdoc	VERITAS Volume Manager documentation.
VRTSvrdoc	VERITAS Volume Replicator documentation.
VRTSap	VERITAS Action Provider.
VRTStep	VERITAS Task Execution Provider.
VRTSvrmsg	VERITAS Volume Replicator Support for HP Serviceguard



The following list shows the optional software packages for VERITAS Volume Replicator Advisor (VRAdv):

VRTSvradv.msi Windows client for VERITAS Volume Replicator Advisor

For more information about VERITAS Volume Replicator Advisor, refer to the *VERITAS Volume Replicator Advisor User's Guide* (`vvr_advisor_users.pdf`), which is located in the directory `volume_replicator/tools/vradvisor/docs`.

Accessing Manual Pages and Documentation Directories

Manual pages are installed in the `/usr/share/man` directories. Add the directory to your `MANPATH` environment variable to make them accessible.

For Bourne or Korn shell (`sh` or `ksh`), type:

```
# MANPATH=$MANPATH:/usr/share/man  
# export MANPATH
```

For C shell (`csh` or `tcsh`), type:

```
# setenv MANPATH ${MANPATH}:/usr/share/man
```

Installation of the documentation packages copies PDF files into the `/usr/share/doc` directory.





Installing VERITAS Volume Replicator

2

This chapter explains how to install the VERITAS Volume Replicator (VVR) packages. You can install the VERITAS Volume Replicator packages using one of the following methods:

- ✓ [Installing VVR Packages Using the VERITAS Product Installer](#)
- ✓ [Installing VVR Packages Using the installvvr Script](#)

Note The VERITAS product installer ensures package compatibility and proper license installation, and is the recommended method for installation.

- ✓ [Installing VVR Packages Using the swinstall Command](#)

To use the VCS Agents for VVR, you must install and configure VCS. For instructions, refer to the *VERITAS Cluster Server Installation Guide*. Installing VVR includes installing the VCS Agents for VVR package. After installing VVR, you need to configure the VCS agents for VVR. For details, refer to the *VERITAS Cluster Server Agents for VERITAS Volume Replicator Configuration Guide*.

Prerequisites

- ◆ To be able to use this release of the VERITAS Volume Manager (VxVM) or VERITAS Storage Foundation you must upgrade the operating system to the latest version, that is, HP-UX 11i version 2.0.
- ◆ After OS upgrade, the VxVM version 3.5 is available. Install VxVM from the product disc to overwrite the 3.5 version with version 4.1. For more information, see *VERITAS Storage Foundation Installation Guide*.

After this release of VERITAS Volume Manager (VxVM) or VERITAS Storage Foundation is already installed on your system, you can start using VVR by installing the VVR license and configuring VVR. For information, see “[Configuring VERITAS Volume Replicator](#)” on page 39.



Installing VVR Packages Using the VERITAS Product Installer

The VERITAS products disc provides a product installer, which is the recommended method to license and install the product.

The *Getting Started Guide*, included with the VERITAS products disc, provides complete information on using the product installer.

Use the VERITAS product installer to install the VVR packages. Select VERITAS Volume Replicator.

After installing VVR, you must configure VVR and start the VVR processes. See [“Configuring VERITAS Volume Replicator”](#) on page 39.

Note If you have obtained a VERITAS product from an electronic download site, the single product download files do not contain the product installer installation script. You must therefore use the product specific installation script to install the product. After you have downloaded VERITAS Volume Replicator, use the `installvvr` script instead of the `installer` script to install the packages.

Installing VVR Packages Using the `installvvr` Script

You can also install the VERITAS Volume Replicator packages using the `installvvr` script by running this script from the command line.

Installing VVR Packages Using the `swinstall` Command

If you prefer, you can use the `swinstall` command rather than the product installer provided on the disc with VERITAS Volume Replicator to install the packages.

Note If you choose to install VERITAS Volume Replicator using the `swinstall` command, you must manually add the appropriate patches.

Installing the VVR License

Use the previously obtained license key to install the license. To display a list of all licenses on the system, use the `vxlicrep` command. To verify that the license is permanent and has not expired, use the `vxlictest` command.

▼ To install a new VVR license

```
# vxlicinst
```

Follow the prompts.

Notes on Installing VVR when VxVM is Already Installed

If the 4.1 release of VERITAS Volume Manager (VxVM) is already installed on your system, you can start using VVR by installing the VVR license. If a previous version of operating system is installed on your system, you must upgrade the Operating System (OS) version to HP-UX 11i version 2.0. After OS upgrade, the VxVM version 3.5 is available. Install VxVM from the product disc to overwrite the 3.5 version with version 4.1. For more information, see *VERITAS Storage Foundation Installation Guide*.

- ◆ You must run the script `vxstart_vvr` that resides in `/usr/sbin` directory.
- ◆ Volumes with Dirty Region Logs (DRLs) cannot be associated with an Replicated Volume Group (RVG). If you plan to associate existing volumes that have DRLs with an RVG, remove the DRLs first. To remove a DRL from a volume, use the following command:

```
# vxassist -g diskgroup remove log volume_name nlog=0
```

- ◆ Use `vxdiskadm` to initialize any new disks and to create disk groups.

To use the new features of VVR 4.1, upgrade the version of each disk group by entering the following command:

```
# vxdg upgrade diskgroup
```

- ◆ Use `vxlictest` to verify that VVR is licensed.

```
# vxlictest -n "VERITAS Volume Manager" -f VVR
```

Installing the VVR Packages Using the swinstall Command

▼ To install the optional VVR packages using the swinstall command

1. Log in as `root`.
2. Create a directory for installation:

```
# mkdir /tmp/install
```

3. Insert the software disc with the VVR software in to the DVD drive of your system.



4. Mount the disc and go to the directory that contains the software packages as follows:

```
# /usr/sbin/pfs_mount -t rrip /dev/dsk/c##d# /dvdrom
# cd /dvd_path/depot
```

Note Install the packages in the order specified below to ensure proper installation (for example, you must install `VRTSVxvm` before `VRTSvmpro`). If any of the packages are already installed on your system as a result of other VERITAS product installations, a message displays.

5. Use the following command to install the optional software packages:

To do it interactively:

Register the depot using the command:

```
# swreg -l depot /dvd_path/depot
```

Install the optional packages using the command:

```
# swinstall /dvd_path/depot VRTSobgui VRTSjre VRTSweb VRTSvrw \
VRTSvcsvr VRTSmcsg VRTSvmdoc VRTSvrdoc VRTSvmmman \
VRTSap VRTStep
```

The system prints out a series of status messages as the installation progresses and prompts you for any required information, such as the license key. Answer all questions asked during the installation.

To do it non-interactively:

```
# swinstall -s /dvd_path/depot VRTSobgui VRTSjre VRTSweb VRTSvrw \
VRTSvcsvr VRTSmcsg VRTSvmdoc VRTSvrdoc VRTSvmmman \
VRTSap VRTStep
```

After installing VVR, use the VERITAS product installer to configure VVR. See [“Configuring VERITAS Volume Replicator”](#) on page 39. Configuring VVR using the VERITAS product installer also starts the VVR processes. If you intend to maintain the existing or default configuration, you can start the VVR processes using the `vxstart_vvr` script in the `/usr/sbin` directory.

Upgrading VERITAS Volume Replicator

3

This chapter explains how to upgrade VERITAS Volume Replicator (VVR) in the following situations:

Note VVR 4.1 is supported only on HP-UX 11i version 2.0. You must therefore upgrade the operating system first, before proceeding with the upgrade procedures.



Product	Version	Method to upgrade
Upgrading VERITAS Volume Replicator when it is not in a clustered setup.	3.5 and later	<p>Use the upgrade script (upgrade_start) to perform the steps to preserve the VVR configuration before the upgrade. For instructions, see “Preparing for the Upgrade” on page 19.</p> <p>Use the VERITAS product installer with the VERITAS Volume Replicator option. For instructions, see “Upgrading the VERITAS Packages” on page 20. To upgrade VVR only you can also use the swinstall script.</p> <p>Use the upgrade script (upgrade_finish) to restore the original VVR configuration after the upgrade. For instructions, see “Restoring the Original Configuration” on page 21</p>
	Prior to 3.5	<p>You will need to preserve the VVR configuration using the manual steps described in the section “Preparing for the Upgrade” on page 24.</p> <p>Use the VERITAS product installer with the VERITAS Volume Replicator option. For instructions, see “Upgrading the VERITAS Packages” on page 20. To upgrade VVR only you can also use the swinstall command. For instructions, see “Upgrading from any Prior Release to VVR 4.1 Using the swinstall Command.”</p> <p>Restore the VVR configuration after the upgrade using the steps described in the section, see “Restoring the Original Configuration” on page 26.</p>
Upgrading VERITAS Volume Replicator without disrupting replication between VVR 3.5 Update 3 and VVR 4.1		<p>When upgrading from 3.5, you have the option to upgrade without disrupting replication. For details, see “Upgrading VVR Without Disrupting Replication” on page 30.</p>

Product	Version	Method to upgrade
Upgrading VERITAS Volume Replicator when VCS Agents for VVR <i>are</i> configured.	3.5 and later	Prepare your cluster and then use the VERITAS product installer with the appropriate option, or the appropriate installation script. For instructions, see "Upgrading VVR When VCS Agents are Configured" on page 31.
	Prior to 3.5	Prepare your cluster and then follow the instructions in the section "Upgrading VVR When HP Serviceguard is Configured" on page 38 which describes the steps without the upgrade scripts.
Upgrading VERITAS Volume Replicator when HP Serviceguard is configured.	3.5 and later	Refer to the instructions provided in the section "Upgrading VVR When HP Serviceguard is Configured" on page 38.



Upgrading from VVR 3.5 or Later using the Product Installer

Note that Volume Replicator Administrative Services (VR-AS) has been integrated with VVR, that is, VR-AS is no longer a separate package; VR-AS is upgraded when VVR is upgraded.

This section describes the procedure for upgrading, using the VERITAS product installer. You can use the VERITAS product installer to upgrade from VVR 3.5 or later. This is the recommended method of upgrading. Prior to this however you must make sure that you have upgraded the operating system the HP-UX 11i version 2.0.

To upgrade VVR only, use the VERITAS product installer and select the VERITAS Volume Replicator option. You can also use the `installvvr` script.

If you have multiple VERITAS products, select the option for the appropriate VERITAS product suite, and refer to the corresponding installation guide for more details. For example, if you have VERITAS Storage Foundation installed, select VERITAS Storage Foundation in the VERITAS product installer, or use the `installsf` script. For details, see the *VERITAS Storage Foundation Installation Guide*. Refer to the *Getting Started Guide* for a complete list of VERITAS products, including the associated installation script names and where to find documentation about installation.

If required, refer to “[Configuring VERITAS Volume Replicator](#)” on page 39 to configure VVR after the upgrade.

Note If you have multiple VERITAS products, we strongly recommend using the option to upgrade the entire product suite rather than upgrading each product individually. This ensures that upgrade steps are done in the proper order and product interdependencies are met.

Preserving the Original VVR Configuration Using Upgrade Scripts

To upgrade to the latest version of VVR you will need to perform an OS upgrade. After OS upgrade, the VxVM version 3.5 is available. Install VxVM from the product disc to overwrite the 3.5 version with version 4.1. For more information, see the *VERITAS Storage Foundation Installation Guide*. Enable VVR by using the appropriate license.

This section describes the procedure that you must perform before and after upgrading to the latest VxVM version. This can be done with or without the scripts. We recommend that you perform the pre and post upgrade tasks using upgrade scripts. If you do not intend to upgrade to VVR 4.1 using upgrade scripts, refer to the section “[Preserving the Original VVR Configuration Without Using Upgrade Scripts](#)” on page 23.

Note The upgrade procedure retains the existing VxVM configuration. After upgrading, you can use the existing VxVM configuration, without running the `vxinstall` command.

To upgrade VVR, perform the following tasks in the order presented below:

1. [Preparing for the Upgrade](#)
2. [Upgrading the VERITAS Packages](#)
3. [Restoring the Original Configuration](#)

Preparing for the Upgrade

1. Make sure that the disk groups that contain RVGs are at disk group version 80 or 90, if you are upgrading from any earlier version.
2. Make sure the size of the SRL volume is greater than 110 MB. For instructions on resizing the SRL, refer to the *VERITAS Volume Replicator Administrator's Guide*.
3. Stop all the applications involved in replication. For example, if a data volume contains a file system, unmount it.
4. Verify that all the Primary RLINKs are up-to-date on all the hosts.

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

Caution Do not continue until the Primary RLINKs are up-to-date.

5. Run the `vvr_upgrade_start` script on all hosts to save the original VVR configuration using the following command:

```
# /dvd_path/volume_replicator/scripts/upgrade/vvr_upgrade_start
```

Note The `vvr_upgrade_start` script will fail and revert back to the original configuration if it finds that the SRL size is less than 110 MB. It will stop with a message that prompts you to modify the SRL size. For detailed instructions on changing the SRL size, refer to the *VERITAS Volume Replicator Administrator's Guide*.

6. Remove the existing optional packages as described in “[Removing the VVR Packages](#)” on page 49.



Upgrading the VERITAS Packages

▼ **On all hosts on which the upgrade is to be performed:**

1. You must upgrade the OS to HP-UX 11i version 2.0 if you have an earlier version of the Operating System.

Note After OS upgrade, the VxVM version 3.5 is available. Install VxVM from the product disc to overwrite the 3.5 version with version 4.1. For more information, see *VERITAS Storage Foundation Installation Guide*.

If you are upgrading from a version of VVR prior to VVR 3.5, make sure you change the default port number to 4145, which is an IANA assigned number. To retain the existing port numbers, issue the `vrport heartbeat` command.

After upgrading to VxVM 4.1 on all the required hosts, reboot the system if it has not already rebooted, using the following command:

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

2. If the software disc is not mounted, mount it using the instructions provided in the section “[Mounting the Software Disc](#)” on page 4.
3. Start the product installer:

```
# cd /dvd_path
# ./installer
```
4. Select Install a Product.
5. Select the appropriate product name:
 - ◆ If you are upgrading VVR only, use the VERITAS Volume Replicator option.
 - ◆ If you are upgrading multiple VERITAS products, select the appropriate option in the product installer to update all the VERITAS products at the same time.

Note If you have multiple VERITAS products, we strongly recommend using the option to upgrade the entire product suite rather than upgrading each product individually. This ensures that upgrade steps are done in the proper order and dependencies are met.

Refer to the appropriate installation guide for detailed instructions.

6. Follow the prompts.



The script displays the name of the directory used for the upgrade. The upgrade directory is created in `/var/tmp` on the host from which the upgrade procedure was begun. The upgrade directory has the name `vvr_upgrade_hostname$timestamp` where the `hostname` is the machine being upgraded, and `$timestamp` is the same digit sequence as the suffix of the log file created for the current session.

For example, the directory `/var/tmp/vvr_upgrade_seattle126061743` contains the upgrade files for the host `seattle`.

Note We strongly recommend you back up the upgrade directory created here, because it is used to restore the configuration.

7. The script prompts you whether you want to configure the product at this time. If you are upgrading VVR, configure VVR after rebooting your machine.

When the script completes, it displays messages similar to the following:

```
CPI WARNING V-9-111-1114 You have completed upgrading VxVM on some
or all of the systems. Reboot your systems at this time. During the
reboot your default disk group will be set to rootdg for you. After
a system has come up, you may configure the default disk group
using the command, vxdctl defaultdg. Review the manual page for
vxdctl(1M) for further details.
```

8. When the upgrade completes, the hosts that are being upgraded must be rebooted. After the hosts reboot, follow the steps in [“Restoring the Original Configuration.”](#)

Restoring the Original Configuration

1. On all Secondary hosts, make sure the data volumes on the Secondary are the same length as the corresponding ones on the Primary. To shrink volumes on the Secondary that are no longer of the same length as those on the Primary, use the following command on each volume on the Secondary:

```
# vxassist -g diskgroup shrinkto volume_length
```

where `volume_length` is the length of the volume on the Primary.

2. Issue the following command on all the hosts to complete the upgrade. If a host contains only Secondary RVGs, we recommend that you first run the following command on that host:

```
# /dvd_path/volume_replicator/scripts/upgrade/vvr_upgrade_finish
```



The `vvr_upgrade_finish` script upgrades only the SRL, after which, the RVG cannot work with the earlier versions of VxVM or VVR. Also, the `vvr_upgrade_finish` script does not automatically upgrade the disk group version. To use the new features in this release, upgrade the disk group using the `vx dg upgrade diskgroup` command.

3. Starting with VVR 4.1, a new tunable, `vol_rvio_maxpool_sz`, serves the same purpose as the `voliomem_maxpool_sz` tunable.

Note If you have previously tuned the value of the `voliomem_maxpool_sz` tunable for your installation, we recommend that you set the `vol_rvio_maxpool_sz` tunable to be the same value for this release.

- a. Type `sam` to bring up the SAM interface.
- b. Use the Tab key to move the control to the SAM Areas display.
- c. Select the `Kernel Configuration` area to display a list of options from which you must select `Kernel configuration <character Mode>`. From the `Kernel Configuration` display select `Tunables`.

- d. Scroll to the required parameter and select it. Use the `Modify Configurable Parameter` from the `Actions` option to modify the parameter as follows:

```
vol_rvio_maxpool_sz=value;
```

where the *value* is the same as the existing value for `voliomem_maxpool_sz`. If you are upgrading from any prior release, the value for `voliomem_maxpool_sz` is found in SAM database. The change will take effect only after the next system reboot.

- e. To use this value in the current session before reboot, run the following command on the Primary:

```
# vxtune vol_rvio_maxpool_sz value
```

where the *value* is the same as the existing value for `voliomem_maxpool_sz`.

Note Do not remove the `voliomem_maxpool_sz` tunable from the SAM database, file if VxVM is using this tunable to set the MAXPOOL size.

Upgrading from any Prior Release to VVR 4.1 Using the swinstall Command

If you are upgrading from a release prior to VVR 3.5 then you must perform the pre and post upgrade tasks using the method described in this section. If you are upgrading from release 3.5 and later you can use the upgrade scripts to perform the pre and post upgrade tasks as described in section “[Preserving the Original VVR Configuration Using Upgrade Scripts](#)” on page 18.

Preserving the Original VVR Configuration Without Using Upgrade Scripts

This section explains how to upgrade to VVR 4.1 using individual commands, instead of the VVR upgrade scripts.

Note The upgrade procedure retains the existing VxVM configuration. After upgrading, you can use the existing VxVM configuration, without running the `vxinstall` command.

If you are upgrading from a version of VVR prior to VVR 3.5, make sure you change the default port number to 4145, which is an IANA assigned number. For more information, refer to the *VERITAS Volume Replicator Planning and Tuning Guide*.

To upgrade VVR, perform the following tasks in the order presented below:

1. [Preparing for the Upgrade](#)
2. [Upgrading the VERITAS Packages](#)
3. [Restoring the Original Configuration](#)



Preparing for the Upgrade

- ◆ Make sure that the disk groups that contain RVGs are at disk group version 80 or 90, if you are upgrading from any earlier version.
- ◆ Make sure the size of the SRL volume is greater than 110 MB. For instructions on resizing the SRL, refer to the *VERITAS Volume Replicator Administrator's Guide*.

▼ On both the Primary and the Secondary

If you are upgrading from VVR 3.2 to VVR 4.1, do the following:

- ❖ If the following environment variables have been previously set in the file `/sbin/init.d/vras-vradmind.sh`, note down their values:

```
VRAS_DEBUG_LOG_TAGS
```

```
VRAS_LOG_MAXLEN
```

OR

- ❖ Copy the `/sbin/init.d/vras-vradmind.sh` file to a location that you can access after the system reboots.

▼ Perform the following steps on the Primary:

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

2. Stop all the RVGs:

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

3. Verify that all the RLINKs are up-to-date.

Caution Do not continue until the RLINKs are up-to-date.

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

4. To make sure that VVR does not replicate until the upgrade is complete, detach all the RLINKs from the RVGs:

```
# vxrlink -g diskgroup det rlink_name
```

5. Copy the `/etc/vx/vras/vras_env` and `/etc/vx/vvrports` files at some location from where you can access them after the upgrade.

6. Dissociate the SRL volume from each RVG.

Note Any checkpoints that you have created will be lost after dissociating the SRL.

```
# vxvol -g diskgroup dis srl_name
```

- To resolve problems with DCMs in earlier releases, remove all DCMs from stripe-mirror volumes.

For each RLINK, if srlprot is set to dcm, change it to override:

```
# vxedit -g diskgroup set srlprot=override rlink_name
```

For each stripe-mirror volume, remove the DCM:

```
# vxassist -g diskgroup remove log volume nlog=0
```

▼ **Perform the following steps on all Secondary nodes:**

- Stop all the RVGs:

```
# vxrvrg -g diskgroup stop rvg_name
```

- To make sure that VVR does not replicate until the upgrade is complete, detach all the RLINKs from the RVGs:

```
# vxrlink -g diskgroup det rlink_name
```

- Dissociate the SRL volume from each RVG.

Note Any checkpoints that you have created will be lost after dissociating the SRL.

```
# vxvol -g diskgroup dis srl_name
```

- To resolve problems with DCMs in earlier releases, remove all DCMs from stripe-mirror volumes.

For each RLINK, if srlprot is set to dcm, change it to override:

```
# vxedit -g diskgroup set srlprot=override rlink_name
```

For each stripe-mirror volume, remove the DCM:

```
# vxassist -g diskgroup remove log volume nlog=0
```

- Copy the /etc/vx/vras/vras_env and /etc/vx/vvrports files at some location from where you can access them after the upgrade.

▼ **Uninstalling the optional packages**

Remove the existing optional packages as described in “[Removing the VVR Packages](#)” on page 49.



Upgrading the VERITAS Packages

▼ On both the Primary and the Secondary:

1. You must upgrade to HP-UX 11i version 2.0 with VVR 4.1.

Note After OS upgrade, the VxVM version 3.5 is available. Install VxVM from the product disc to overwrite the 3.5 version with version 4.1. For more information, see *VERITAS Storage Foundation Installation Guide*.

If you are upgrading from a version of VVR prior to VVR 3.5, make sure you change the default port number to 4145, which is an IANA assigned number. To retain the existing port numbers, issue the command:

```
vrport heartbeat <port_number>
```

2. After upgrading to VxVM 4.1 on all the required hosts, reboot the system if it has not already rebooted, using the following command:

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

Note During the reboot process, ignore the following error messages that appear on the Primary console:

```
VxVM VVR vxrlink ERROR V-5-1-3371 Can not recover rlink_name.  
rvg_name is in PASSTHRU mode  
VxVM VVR vxrlink ERROR V-5-1-3473 Log header I/O error
```

Also ignore the following error message that appears on the Secondary console:

```
WARNING: VxVM VVR vxio V-5-0-0 Rlink rlink_name is stale and  
not replicating
```

3. Install the new packages, as described in the section [“Installing VVR Packages Using the swinstall Command”](#) on page 12.

For a list of packages, refer to [“List of Required and Optional Packages for VVR”](#) on page 7.

Restoring the Original Configuration

▼ Perform the following steps on all Secondary nodes:

1. Associate the SRL back to the RVG:

```
# vxvol -g diskgroup aslog rvg_name srl_name
```

2. Before attaching the RLINKs, make sure that the data volumes on the Primary are the same length as the corresponding ones on the Secondary. To shrink volumes that are longer on the Secondary than the Primary, use the following command on each volume on the Secondary:

```
# vxassist -g diskgroup shrinkto volume_length
```

where *length* is the length of the volume on the Primary.

3. If you are upgrading from a version prior to VVR 3.5, use the `vxprint` command to display the `local_host` attribute of an RLINK; otherwise go to the [step 7](#).

```
# vxprint -l rlink_name
```

4. Copy the tunables from the files that you had saved when performing the steps provided in [Preparing for the Upgrade](#) to the current configuration files.

5. Start the VVR daemons:

```
# /usr/sbin/vxstart_vvr
```

6. For releases prior to VVR 3.5, set the new IANA assigned port number for each RLINK by resetting the `local_host` attribute to the `local_host` value displayed in [step 3](#):

```
# vxedit -g diskgroup set local_host=host_name rlink_name
```

7. Attach the RLINKs to the RVG:

```
# vxrlink -g diskgroup -f att rlink_name
```

▼ Perform the following steps on the Primary:

1. Associate the SRL back to the RVG:

```
# vxvol -g diskgroup aslog rvg_name srl_name
```

2. Recover the RLINKs:

```
# vxrlink -g diskgroup recover rlink_name
```

Ignore the following error message if it occurs:

```
RLINK rlinkname is already recovered.
```

3. If you are upgrading from a release prior to VVR 3.5, use the `vxprint` command to display the `local_host` attribute of an RLINK.

```
# vxprint -l rlink_name
```



4. Copy the tunables from the files that you had saved when performing the steps provided in [Preparing for the Upgrade](#) to the current configuration files.

5. Start the VVR daemons:

```
# /usr/sbin/vxstart_vvr
```

6. For releases prior to VVR 3.5, set the new IANA assigned port number for each RLINK by resetting the `local_host` attribute to the `local_host` value displayed in [step 3](#).

```
# vxedit -g diskgroup set local_host=host_name rlink_name
```

7. Attach the RLINKs to the RVG:

Caution Do this only for RLINKs for which you performed all the steps in [“Preparing for the Upgrade”](#) on page 19.

```
# vxrlink -g diskgroup -f att rlink_name
```

▼ Perform the following steps on the Primary and all Secondary nodes

1. If you are upgrading from VVR 3.2 to VVR 4.1, set the previously noted down values of the environment variables `VRAS_DEBUG_LOG_TAGS` and `VRAS_LOG_MAXLEN` in the `/etc/vx/vras/vras_env` file.

If you change the values in the `/etc/vx/vras/vras_env` file, restart the VVR servers as follows:

To stop the VVR servers:

```
# /sbin/init.d/vras-vradmind.sh stop
# /sbin/init.d/vxrsyncd.sh stop
```

To restart the VVR servers:

```
# /sbin/init.d/vras-vradmind.sh start
# /sbin/init.d/vxrsyncd.sh start
```

2. After the upgrade, add DCMs back to each volume from which you removed them:

```
# vxassist -g diskgroup addlog volume logtype=dcm
```

When all DCMs have been added, if `srlprot` was previously set to `dcm` for an RLINK, set `srlprot` back to `dcm`:

```
# vxedit -g diskgroup set srlprot=dcm rlink_name
```

3. Start the RVG:

```
# vxrvrg -g diskgroup start rvg_name
```



Note Importing a disk group created on a previous version of VxVM does not automatically upgrade the disk group to the current version. To use the new features, upgrade all disk groups using the following command:

```
# vxdbg upgrade diskgroup
```

4. Starting with VVR 4.1, a new tunable, `vol_rvio_maxpool_sz`, serves the same purpose as the `voliomem_maxpool_sz` tunable.

If you set the `voliomem_maxpool_sz` tunable in a prior release, you must set the `vol_rvio_maxpool_sz` tunable for this release.

- a. Type `sam` to start the SAM interface.
- b. Use the Tab key to move the control to the SAM areas display.
- c. Select the Kernel Configuration area to display a list of options from which you must select Kernel configuration <character Mode>. From the Kernel Configuration display, select Tunables .
- d. Scroll to the required parameter and select it. Use the Modify Configurable Parameter from the Actions option to modify the parameter as follows:

```
vol_rvio_maxpool_sz=value;
```

where the *value* is the same as the existing value for `voliomem_maxpool_sz`. If you are upgrading from any earlier release, the value for `voliomem_maxpool_sz` is found in SAM database. The change takes effect only after the next system reboot.

- e. To use this value in the current session before reboot, run the following command on the Primary:

```
# vxtune vol_rvio_maxpool_sz value
```

where the *value* is the same as the existing value for `voliomem_maxpool_sz`.

Note Do not remove the `voliomem_maxpool_sz` tunable from the SAM database file if VxVM is using this tunable to set the MAXPOOL size.



Upgrading VVR Without Disrupting Replication

This section describes the upgrade procedure from VVR 3.5 Update 3 to VVR 4.1 when replication is in progress, assuming that you do not need to upgrade all the hosts in the RDS, simultaneously. For information about setting up replication between versions, see [“Planning an Upgrade from VVR 3.5 Update 3”](#) on page 4.

Considering that initially both the Primary and the Secondary have 3.5 Update 3 installed, the upgrade can be performed either on the Primary or on the Secondary. Following are two set of steps, one for the Primary upgrade and one for the Secondary.

Note If you have a cluster setup, you must upgrade all the nodes in the cluster at the same time. For more information on upgrading VVR when VCS is present, refer to [“Upgrading VVR When VCS Agents are Configured”](#) on page 31.

Upgrading on the Secondary

1. Stop replication to the Secondary host by initiating a Primary pause:

```
# vradmin -g diskgroup pauserep local_rvname sec_hostname
```

2. Follow the instructions provided in [“Upgrading from VVR 3.5 or Later using the Product Installer”](#) on page 18 to upgrade from VVR 3.5 Update 3 to VVR 4.1 on the Secondary.

3. Resume the replication from the Primary:

```
# vradmin -g diskgroup resumerep local_rvname sec_hostname
```

Upgrading on the Primary

To reduce application downtime while upgrading, refer to [“Planning an Upgrade from VVR 3.5 Update 3”](#) on page 4.

Follow the instructions provided in [“Upgrading from VVR 3.5 or Later using the Product Installer”](#) on page 18 to upgrade from VVR 3.5 Update 3 to VVR 4.1 on the Primary.

Upgrading VVR When VCS Agents are Configured

This section details the procedure for upgrading VVR when VCS is present, with and without using upgrade scripts.

Note We recommend that you upgrade VVR using upgrade scripts. The `vvr_upgrade_start` and the `vvr_upgrade_finish` scripts can be found on the VERITAS software disc under the `foundation_suite/volume_replicator/scripts/` directory.

If you do not intend to use the `vvr_upgrade_start` script, perform the steps listed under the section “[Preparing for the Upgrade](#)” on page 24.

To upgrade VVR, perform the following tasks:

- ◆ [Determining the Nodes on Which the RVG Resource is Online](#)
- ◆ [Freezing the Service Groups and Stopping all the Applications](#)
- ◆ [Preparing for the Upgrade VVR When VCS is Present](#)
- ◆ [Upgrading VERITAS Packages When VCS is Present](#)
- ◆ [Unfreezing the Service Groups](#)
- ◆ [Restoring the Original Configuration](#)

Determining the Nodes on Which the RVG Resource is Online

This section gives instructions for determining the nodes within a cluster on which VVR must be upgraded. Perform the following steps for the Primary and Secondary clusters.

1. Log in as the superuser.
2. Make sure that `/opt/VRTS/bin` is in your PATH so that you can execute all the product commands.
3. Display the list of service groups that have RVG resources by typing the following command on any node in the cluster:


```
# hares -display -type RVG -attribute Group
```
4. For each of the service groups listed in the output of [step 3](#), get the list of nodes on which the service group is present by typing the following command on any node in the cluster:

```
# hagrps -value group_name SystemList
```

Note the list of the nodes displayed in the output of the command.



5. Repeat [step 1](#) to [step 4](#) for each cluster.

Freezing the Service Groups and Stopping all the Applications

1. On any node in the cluster, list the disk groups in your configuration, and note down the disk group names listed in the output for future use:

```
# hares -display -type RVG -attribute DiskGroup
```

The output displays a list of the disk groups that are under VCS control.

2. For each disk group listed in the output in [step 1](#), list its corresponding disk group resource name:

```
# hares -list DiskGroup=diskgroup Type=DiskGroup
```

3. For each disk group resource name listed in the output in [step 2](#), get and note down the node on which the disk group is imported by typing the following command:

```
# hares -display dg_resname -attribute State
```

The output displays the disk groups that are under VCS control and nodes on which the disk groups are imported.

4. Because the upgrade requires a reboot, cleanly shut down all applications as follows:
 - ◆ OFFLINE all application service groups that do not contain RVG resources.
 - ◆ If the application resources are part of the same service group as an RVG resource, then OFFLINE only the application resources.

Note You must also stop any remaining applications not managed by VCS.

5. On any node in the cluster, make the VCS configuration writable:

```
# haconf -makerw
```

6. On any node in the cluster, list the groups in your configuration:

```
# hagr -list
```

7. On any node in the cluster, freeze all service groups by typing the following command for each group name displayed in the output from step 5:

```
# hagr -freeze group_name -persistent
```

Note down the list of frozen service groups for future use.

8. On any node in the cluster, save the configuration file (`main.cf`) with the groups frozen:

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

Note Continue only after you have performed [step 1](#) to [step 8](#) for each node of the cluster.

9. Shut down VCS on each of the nodes that have been identified for upgrade, in the section “[Determining the Nodes on Which the RVG Resource is Online](#)” on page 31.

For each node being upgraded, enter the following command on any node in the cluster:

```
# hastop -sys node_name... -force
```

Note Perform this step for all of the nodes that you are upgrading, on the Primary and Secondary clusters.

Preparing for the Upgrade VVR When VCS is Present

1. List the disk groups on each of the nodes by typing the following command on each node:

```
# vxdisk -o alldgs list
```

The output displays a list of the disk groups that are under VCS control and the disk groups that are not under VCS control. Note that disk groups that are not locally imported are displayed in parentheses.

2. If any of the disk groups in your VCS configuration that contain RVGs have not been imported on any node, import them by entering the following command on any node:

```
# vxdg -t import diskgroup
```

3. For the remaining disk groups listed for each node in step 1, if any disk group is not imported, then import the disk group by typing the following command on the appropriate node:

```
# vxdg import diskgroup
```

4. If a disk group is already imported, then recover the disk group by typing the following command on the node on which it is imported:

```
# vxrecover -bs
```



5. Verify that all the Primary RLINKs are up to date on all the Primary nodes on which applications were OFFLINED or stopped in [step 4](#) of the section “[Freezing the Service Groups and Stopping all the Applications](#)” on page 32.

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

Note Do not continue until the Primary RLINKs are up to date.

6. To preserve the original VVR configuration perform one of the following tasks:
 - a. Run the `vvr_upgrade_start` script on the nodes that are to be upgraded, before upgrading your installation.

Note The `vvr_upgrade_start` script can be found on the *VERITAS* software disc under the `foundation_suite/volume_replicator/scripts/` directory. Use the upgrade scripts only for *VERITAS* versions 3.5 and later. For versions prior to 3.5 you must manually perform the tasks to preserve the configuration.

```
# /dvd_path/volume_replicator/scripts/upgrade/vvr_upgrade_start
```

- b. To preserve the VVR configuration without using upgrade scripts, perform the steps prelisted under the section “[Preparing for the Upgrade](#)” on page 24.

Upgrading VERITAS Packages When VCS is Present

Note Upgrade VVR only after you have completed the steps provided in the section “[Preparing for the Upgrade VVR When VCS is Present](#)” on page 33, on the Primary and Secondary clusters. You must upgrade VVR on the nodes identified by the steps in the section “[Determining the Nodes on Which the RVG Resource is Online](#)” on page 31 for the Primary and Secondary cluster.

To upgrade to VVR packages using the product installer, refer to the information provided in the section “[Upgrading the VERITAS Packages](#)” on page 20.

To upgrade to VVR packages using the `swinstall` command, refer to the information provided in the section “[Upgrading the VERITAS Packages](#)” on page 26.

Unfreezing the Service Groups

1. On any node in the cluster, make the VCS configuration writable:

```
# haconf -makerw
```

2. Unfreeze all service groups that were frozen in [step 7](#) of the section “[Freezing the Service Groups and Stopping all the Applications](#)” on page 32, by typing the following command on any node in the cluster:

```
# hagrpg -unfreeze service_group -persistent
```

3. Save the configuration on any node in the cluster.

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

4. Bring the respective IP resources online on each node listed in [step 3](#) of the section “[Freezing the Service Groups and Stopping all the Applications](#)” on page 32, by typing the following command on any node in the cluster. This IP is the virtual IP that is used for replication within the cluster.

```
# hares -online ip_name -sys system
```

Restoring the Original Configuration

1. Upgrade VVR on all the nodes in the Primary and Secondary clusters.
2. Import all the disk groups in your VVR configuration.

```
# vxdg -t import diskgroup
```

Each disk group should be imported onto the same node on which it was online when the upgrade was performed. The reboot after the upgrade could result in another node being online; for example, because of the order of the nodes in the AutoStartList. In this case, switch the disk groups to the node which was originally online using the following command:

```
# hagrpg -switch diskgroup -to system
```

3. Recover all the disk groups by typing the following command on the node on which the disk group was imported in [step 2](#) above:

```
# vxrecover -bs
```

4. On all nodes that are Secondary hosts of VVR, make sure the data volumes on the Secondary are the same length as the corresponding ones on the Primary. To shrink volumes that are longer on the Secondary than the Primary, use the following command on each volume on the Secondary:

```
# vxassist -g diskgroup shrinkto volume_name volume_length
```

where *volume_length* is the length of the volume on the Primary.



Note Do not continue until you complete this step on all the nodes in the Primary and Secondary clusters on which VVR is upgraded.

5. Restore the configuration according to the method you used for preserving the configuration:

If you used the upgrade scripts to preserve the configuration for upgrading from VVR 3.5

- a. Complete the upgrade by running the `vvr_upgrade_finish` script on all the nodes on which VVR was upgraded. We recommend that you first run the `vvr_upgrade_finish` script on each node that is a Secondary host of VVR.

The `vvr_upgrade_finish` script can be found on the *VERITAS* software disc under the `foundation_suite/volume_replicator/scripts/` directory.

- b. To run the `vvr_upgrade_finish` script, type the following command:

```
# /dvd-path/volume_replicator/scripts/vvr_upgrade_finish
```

- c. Attach the RLINKs to the RVG:

```
# vxrlink -g diskgroup -f att rlink_name
```

If the following messages appear on any node, go to [step d](#); otherwise, skip to [step 6](#).

```
vxvm:vxrlink: INFO: V-5-0-5298 Unable to establish connection  
with remote host remote_hostname, retrying.
```

```
vxvm:vxrlink: ERROR: V-5-0-5579 Unable to establish  
connection with remote remote_hostname.
```

- d. Start `vradmind` on the remote host using the command

```
# /sbin/init.d/vras-vradmind.sh start
```

- e. Attach the RLINKs on the nodes on which the messages were displayed:

```
# vxrlink -g diskgroup -f att rlink_name
```

If you did not use the upgrade scripts to preserve the configuration for upgrading from releases prior to VVR 3.5

- a. Perform the steps listed under the section [“Restoring the Original Configuration”](#) on page 26.

- b. Attach the RLINKs to the RVG:

```
# vxrlink -g diskgroup -f att rlink_name
```


If the following messages appear on any node, go to [step c](#); otherwise, skip to [step 6](#).

```
vxvm:vxrlink: INFO: V-5-0-5298 Unable to establish connection  
with remote host remote_hostname, retrying.
```

```
vxvm:vxrlink: ERROR: V-5-0-5579 Unable to establish  
connection with remote remote_hostname.
```

- c. Start vradmind on the remote host using the command

```
# /sbin/init.d/vras-vradmind.sh start
```

- d. Attach the RLINKs on the nodes on which the messages were displayed:

```
# vxrlink -g diskgroup -f att rlink_name
```

6. Upgrade all the disk groups on all the nodes on which VVR has been upgraded:

```
# vxdg upgrade diskgroup
```

7. Restart the applications that were stopped.



Upgrading VVR When HP Serviceguard is Configured

▼ To upgrade VVR when HP Serviceguard is configured

1. If VVR is configured to be highly available using HP Serviceguard, then before upgrading, we recommend that you halt the package:

```
# cmhaltpkg pkg_name
```

2. Upgrade VVR using the instructions provided in the following sections:
 - ◆ To upgrade from a release 3.5 and later, see [“Upgrading from VVR 3.5 or Later using the Product Installer”](#) on page 18.
 - ◆ To upgrade from a release prior to 3.5 see [“Upgrading from any Prior Release to VVR 4.1 Using the swinstall Command”](#) on page 23.



Configuring VERITAS Volume Replicator

4

This chapter explains how to configure VERITAS Volume Replicator (VVR). The Configuration Worksheet enables you to plan your VVR environment before going on to configuring VVR.

Configuring VVR and Starting VVR Processes

After you have purchased a VVR license, use the VERITAS product installer to configure and start VVR.

1. Start the VERITAS product installer. The *Getting Started Guide*, included with the VERITAS products disc, provides complete information on using the product installer.
2. Select the Configure an Installed Product option.
3. At the prompt, enter the name of the system or systems on which you want to configure VVR.

Enter the system names separated by spaces on which to configure VVR: **seattle london**

4. The script performs an initial system check. The script confirms success by displaying information, such as the OS version, whether the communication is established with the remote hosts, and whether the required VVR packages are installed. When the initial system check completes, the following message is displayed:

Initial system check completed successfully.

5. Press Return to continue. The script proceeds to verify whether the required licenses are installed. If a valid license for VVR is not present, the script prompts you to enter a license. The script validates whether the license entered enables VVR. If you need a license, refer to [“Obtaining a License Key”](#) on page 1. You cannot proceed until you enter a valid VVR license. If a valid VVR license is present on the system, the script provides the option to add additional licenses.



The following message displays when the license check is complete:

```
VVR licensing verified successfully.
```

6. Press **Return** to continue. The script prompts you to configure VVR.

```
Are you ready to configure VVR? [y,n,q] (y)
```

7. Press **Return** to continue. The script enables you to choose whether you want to use enclosure-based naming. If you enter **Y** to the enclosure-based naming question, the script decides whether the system is eligible for enclosure-based naming. If it is eligible, you will be asked to confirm that you want to go ahead. For more information about enclosure-based naming, refer to the VERITAS Volume Manager documentation.

```
Do you want to set up the enclosure-based naming scheme? [y,n,q,?] (n)
```

8. The script displays the default ports that will be used by VVR. Follow the instructions on the screen if you want to change the VVR ports.

```
Do you want to change any of the VVR ports on seattle? [y,n,q] (n)
Do you want to use the same port settings on all systems? [y,n,q] (y)
```

9. Change the VRAS log size if required.

```
The maximum size of the VRAS debug log on seattle is set to 30 MB.
Do you want to change this ? [y,n,q] (n)
Do you want to use the same setting on all systems? [y,n,q] (y)
```

10. Change the frequency of online stats collection, if required.

```
The frequency of online stats collection on seattle is set to per
10 seconds.
Do you want to change the frequency of online stats collection on
seattle ? [y,n,q] (n)
```

11. Change the maximum number of days that online stats are retained, if required.

```
The maximum number of days for which online stats can be retained
is set to 3 on seattle
```

```
Do you want to change the maximum number of days for online stats ?
[y,n,q] (n)
```

- 12.** Configure the VVR tunables if required. For more information about the VVR tunables, refer to the *VERITAS Volume Replicator Tuning and Planning Guide*.

Starting with VVR 4.1, a new tunable, `vol_rvio_maxpool_sz`, serves the same purpose as the `voliomem_maxpool_sz` tunable.

If you set the `voliomem_maxpool_sz` tunable in a prior release, you must set the `vol_rvio_maxpool_sz` tunable for this release.

Do you want to view or modify VVR tunables on any of the hosts?
[y,n,q,?] (n)

The script displays a message indicating whether the configuration is successful. Press **Return** to continue.

- 13.** To start the VVR processes (`vradmind`, `vxnetd`, and `vxrsyncd`), press **Return**.

Do you want to start VERITAS Volume Replicator processes now?
[y,n,q] (y)

- 14.** Confirm whether you want to set up default disk groups. The script determines whether the systems are eligible.

After setting up default disk groups and starting the VVR processes, the script displays the following messages:

```
VERITAS Volume Replicator was started successfully.
```

```
Configuration of VERITAS Volume Replicator 4.1 has completed
successfully.
```

The script also displays the location of the log files which were created in the configuration process.

Configuration Worksheet

The configuration worksheet helps you plan the layout of a Replicated Data Set. Use one copy of the worksheet for each RVG on each host of the RDS, that is, one Primary and as many Secondaries as required. For example, for one Primary and two Secondaries you need three worksheets.

Note that VVR provides the planning tool VERITAS Volume Replicator Advisor (VRAdvisor) to help you determine an optimum VVR configuration that suits your business needs. For more information about VRAdvisor, see the *VERITAS Volume Replicator Advisor User's Guide*.



Configuration Worksheet

Primary/Secondary (choose one):			
Hostname:		Aliases:	
IP Addresses:			
Disk Group:			
RVG:			
(If this is the Primary host, repeat the RLINK information for each Secondary host in the configuration.)			
RLINK:			
Remote Host:		Remote DG:	
Remote RLINK:			
Synchronous (off/override/fail):			
Latencyprot (off/override/fail):			
Srlprot (autodcm/off/override/fail/dcm):			
SRlog:			
Volume:	Plex:	Disk:	Size:
Data Volumes:			
Volume:	Plex:	Disk:	Size:
Volume:	Plex:	Disk:	Size:
Volume:	Plex:	Disk:	Size:
Volume:	Plex:	Disk:	Size:
(Repeat the "Data Volumes:" information for each Data Volume in the configuration.)			



Interfaces of VERITAS Volume Replicator

You can configure, administer, and monitor VERITAS Volume Replicator (VVR) using one of the following interfaces:

- ◆ Command-Line Interface (CLI)

You can use the command-line interface of VVR to configure, administer, and monitor VVR in a distributed environment. For more information, see the *VERITAS Volume Replicator Administrator's Guide*.

- ◆ VVR VEA--Java-based desktop GUI

VERITAS Enterprise Administrator (VEA) is a Java-based Graphical User Interface (GUI) that can be used to configure and manage storage objects. VVR VEA enables you to configure, monitor, and administer VVR in a distributed environment. For more information, see Chapter 8, "Administering VVR Using VVR VEA" in the *VERITAS Volume Replicator Administrator's Guide*.

- ◆ Volume Replicator Web Console (VRW)--Web-based GUI

VERITAS Volume Replicator Web Console (VRW) is the Web-based Graphical User Interface of VVR. For information on configuring and administering VVR using VRW, see the *VERITAS Volume Replicator Web Console Administrator's Guide*.





Uninstalling VERITAS Volume Replicator

5

This chapter explains how to uninstall VERITAS Volume Replicator (VVR). Uninstalling Volume Replicator involves removing the Replicated Data Set (RDS) and uninstalling VERITAS Volume Manager.

Uninstalling the VCS Agents for VVR

If VCS Agents for VVR are not installed on your system, go to “[Uninstalling VERITAS Volume Replicator \(VVR\)](#)” on page 46. To uninstall the VCS Agents for VVR, you must first disable the agents.

Disabling the Agents on a System

This section explains how to disable a VCS agent for VVR on a system. To disable an agent, you must change the service group containing the resource type of the agent to an OFFLINE state. Then, you can stop the application or switch the application to another system.

▼ To disable the agents

1. Check whether any service group containing the resource type of the agent is online by typing the following command:

```
# hagrps -state service_group -sys system_name
```

If none of the service groups is online, skip to [step 3](#).

2. If the service group is online, take it offline by using one of the following commands:

To take the service group offline on one system and online it on another system, use the `-switch` option:

```
# hagrps -switch service_group -to system_name
```



To take the service group offline without bringing it online on any other system in the cluster, enter:

```
# hagrps -offline service_group -sys system_name
```

3. Stop the agent on the system by entering:

```
# haagent -stop agent_name -sys system_name
```

When you get the message Please look for messages in the log file, check the file `/var/VRTSVCS/log/engine_A.log` for a message confirming that each agent has stopped.

You can also use the `ps` command to confirm that the agent is stopped.

4. Now, remove the system from the `SystemList` of the service group. If you disable the agent on all the systems in the `SystemList`, you can also remove the service groups and resource types from the VCS configuration. For instructions, see the chapter on administering VCS from the command line in the *VERITAS Cluster Server User's Guide*.

Continue with “[Uninstalling VERITAS Volume Replicator \(VVR\)](#)” on page 46. This removes the VCS agents for VVR package.

Uninstalling VERITAS Volume Replicator (VVR)

Note If you are upgrading VERITAS Volume Replicator, do not remove the Replicated Data Set, but only remove the VVR packages as described in “[Removing the VVR Packages](#)” on page 49.

Uninstalling VERITAS Volume Replicator (VVR) involves performing the following tasks in the order presented below:

- ✓ [Removing the Replicated Data Set](#)
- ✓ [Removing the VVR Packages](#)

For more information on the commands used in this chapter, see *VERITAS Volume Replicator Administrator's Guide*.

Removing the Replicated Data Set

This section gives the steps to remove a Replicated Data Set (RDS) when the application is either active or stopped.

▼ To remove the Replicated Data Set

1. Verify that all RLINKs are up-to-date:

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

If the Secondary is not required to be up-to-date, proceed to [step 2](#) and stop replication using the `-f` option with the `vradmin stoprep` command.

2. Stop replication to the Secondary by issuing the following command on any host in the RDS:

The `vradmin stoprep` command fails if the Primary and Secondary RLINKs are not up-to-date. Use the `-f` option to stop replication to a Secondary even when the RLINKs are not up-to-date.

```
# vradmin -g diskgroup stoprep local_rvgname sec_hostname
```

The argument `local_rvgname` is the name of the RVG on the local host and represents its RDS.

The argument `sec_hostname` is the name of the Secondary host as displayed in the output of the `vradmin printrvg` command.

3. Remove the Secondary from the RDS by issuing the following command on any host in the RDS:

```
# vradmin -g diskgroup delsec local_rvgname sec_hostname
```

The argument `local_rvgname` is the name of the RVG on the local host and represents its RDS.

The argument `sec_hostname` is the name of the Secondary host as displayed in the output of the `vradmin printrvg` command.

4. Remove the Primary from the RDS by issuing the following command on the Primary:

```
# vradmin -g diskgroup delpri local_rvgname
```

When used with the `-f` option, the `vradmin delpri` command removes the Primary even when the application is running on the Primary.

The RDS is removed. Go on to uninstalling Volume Manager to uninstall VVR.



5. If you want to delete the SRLs from the Primary and Secondary hosts in the RDS, issue the following command on the Primary and all Secondaries:

```
# vxedit -r -g diskgroup rm srl_name
```
6. To uninstall the VVR packages, see “[Removing the VVR Packages](#)” on page 49.

Removing the VVR Packages

If you want to remove the VVR software packages, use the `uninstall` program or the `swremove` command.

▼ To remove the VVR packages using the `uninstall` program

1. Insert the software disc, mount it, and enter the following commands:

```
# cd /dvd_path/volume_replicator
# ./uninstallvvr
```

The program prompts you to confirm whether you want to remove the packages that are being used by other VERITAS products.

2. Answer the set of questions depending on your requirements. Note that if you uninstall the `VRTSvxvm` package you will not be able to use the VERITAS Volume Manager functionality.

The program asks you to confirm that you want to remove VVR and then removes all the packages except the infrastructure packages. If open volumes exist, the program prompts you to stop the open volumes and unmount the file systems.

The output is similar to the following:

```
uninstallvvr is now ready to uninstall VVR packages.
All VVR processes that are currently running will be stopped.
Are you sure you want to uninstall VVR packages? [y,n,q] (y)
```

3. Press **Return** to continue. The output is similar to the following:

```
Uninstalling VERITAS Volume Replicator packages on seattle:
Uninstalling VRTStep 1.20.025 on seattle .....Done 1 of 10 steps
Uninstalling VRTSap 2.00.015 on seattle .....Done 2 of 10 steps
Uninstalling VRTSvmmman 4.1 on seattle ..... Done 3 of 10 steps
Uninstalling VRTSvrdoc 4.1 on seattle ..... Done 4 of 10 steps
Uninstalling VRTSvrw 4.1 on seattle ..... Done 5 of 10 steps
Uninstalling VRTSweb 4.1 on seattle ..... Done 6 of 10 steps
Uninstalling VRTSjre 1.4 on seattle ..... Done 7 of 10 steps
Uninstalling VRTSvcsvr 4.1 on seattle ..... Done 8 of 10 steps
Uninstalling VRTSvrpro 4.1 on seattle .....Done 9 of 10 steps
Uninstalling VRTSvmpro 4.1 on seattle .....Done 10 of 10 steps
VERITAS Volume Replicator package uninstall completed
successfully.
```

Uninstallation of VERITAS Volume Replicator has completed successfully.

The uninstallation summary is saved at:
/opt/VRTS/install/logs/uninstallvvr819160807.summary



The `uninstallvvr` log is saved at:
`/opt/VRTS/install/logs/uninstallvvr819160807.log`

4. Confirm the packages have been removed.

```
# swlist | grep VRTS
```

If you do not have any other VERITAS products installed on the system, you can remove the `/etc/vx` directory, the `/usr/lib/vxvm` directory, and the `/opt/VRTS*` directories.

▼ To remove the VVR packages using the `swremove` command

Before removing the packages, determine whether any other VERITAS products are installed on your system. Other products might depend on the packages you may be removing. A warning appears when you try to remove packages that are being used by other products.

1. Use the `swremove` command to remove the installed VERITAS Volume Replicator software packages. Remove the packages in the order shown:

```
# swremove VRTSvmdoc VRTSvrdoc VRTSvmmman VRTSvcsvr VRTSap VRTStep
```

You can also include `VRTSvlic` in the removal line, if you have not installed any other packages that use `VRTSvlic`.

2. Remove the VERITAS Provider Packages, VERITAS Virtual Disk Management Services Provider and VERITAS Volume Replicator Management Services Provider, use the following commands:

```
# swremove VRTSvmpro  
# swremove VRTSvrpro
```

3. Remove the VERITAS Enterprise Administrator packages using the following commands:

```
# swremove VRTSob  
# swremove VRTSobgui
```

4. Remove the Windows Client software:
 - a. Click **Start > Settings > Control Panel > Add/Remove Software**
 - b. Choose **VERITAS Enterprise Administrator** for removal.
5. Remove the VERITAS Volume Replicator Web Console (VRW) Application package:

```
# swremove VRTSvrw
```

Note The VERITAS Web GUI Engine, VRTSweb is used by other VERITAS products, such as GCM or QuickStart, that have Web GUIs. Do not perform [step 6](#) if you have other VERITAS products with Web GUIs installed on your system.

6. Remove the VERITAS Web GUI Engine VRTSweb by entering the following command:

```
# swremove VRTSweb
```

7. Remove VRTSVxvm. For instructions, see the *VERITAS Storage Foundation Installation Guide*.

Uninstalling VERITAS Infrastructure Packages

There are several packages, referred to as *infrastructure* packages, that are used by multiple VERITAS products. These packages are not removed when uninstalling a single VERITAS product. If you remove all VERITAS products from a system and want to ensure that there are no remaining VERITAS packages, you can run the `uninstallinfr` script.

```
# cd /opt/VRTS/install  
# ./uninstallinfr
```

This script removes the VRTSvlic licensing package and the VRTScpi and VRTSperl packages required for product installation. The VERITAS Enterprise Administrator packages, VRTSob and VRTSobgui, are also removed.





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