Veritas™ Volume Replicator Installation Guide

AIX

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Veritas Volume Replicator Installation Guide

Veritas Volume Replicator 5.0

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Veritas Volume Replicator is a licensed product. See the *Veritas Volume Replicator Installation Guide* for license installation instructions.

Technical support

For technical assistance, visit http://support.veritas.com and select phone or email support. Use the Knowledge Base search feature to access resources such as TechNotes, product alerts, software downloads, hardware compatibility lists, and our customer email notification service.

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Chapter 1

Preinstallation instructions

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*.

You must also obtain a license key for Veritas Volume Replicator before installing VVR. Note that even if you have already obtained a Veritas Volume Manager license key, you must obtain a separate license key for VVR.

Symantec product licensing

This product includes a License Key certificate. The certificate specifies the product keys and the number of product licenses purchased. A single key lets you install the product on the number and type of systems for which you purchased the license. A key may enable the operation of more products than are specified on the certificate; however, you are legally limited to the number of product licenses purchased.

The product installation procedures (see "Installing Veritas Volume Replicator" on page 17) describe how to activate the key. If you encounter problems while licensing this product, visit the Symantec licensing support website at:

http://www.veritas.com/buy/vLicense/vLicenseHome.jhtml

The VRTSvlic package enables product licensing. After the VRTSvlic is installed, the following commands and their manual pages are available on the system:

vxlicinst	Installs a license key for a Symantec product
vxlicrep	Displays currently installed licenses
vxlictest	Retrieves features and their descriptions encoded in a license key

Even though other products are included on the enclosed software discs, you can only install the Symantec software products for which you have purchased a license.

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 Guid*e 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 Storage Replicator Log (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 Guid*e 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 48.

Centralized management considerations

Veritas Storage Foundation Management Server by Symantec ties together the Storage Foundation product offerings to ensure that the hosts in your data center use storage as efficiently as possible. You can use it to centrally monitor, visualize, and manage Storage Foundation hosts and generate reports about the hosts and the storage resources they consume.

The central console seamlessly integrates a wide range of management tasks like monitoring and reporting.

SF Management Server also offers customizable policy-based management that helps you automate:

- Notification
- Recovery
- Other user-definable actions

SF Management Server is not available on the Storage Foundation and High Availability Solutions release and must be obtained separately. For information on ordering SF Management Server, visit:

http://www.symantec.com/enterprise/sfms

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 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 Management Services 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 Agent package, `VRTSaa` must be installed.

Planning an upgrade from the previous VVR version

VVR is capable of replicating data between VVR 5.0 and VVR 4.0 or later. 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.You can then upgrade the other hosts in the RDS later at your convenience. We recommend that the Secondary hosts be upgraded before the Primary host in the RDS.

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, see "Upgrading VVR when VCS agents are configured" on page 35.

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

Veritas software is provided on a DVD format disc.

To mount the software disc

1. Log in as superuser.
2. Place the Veritas software disc into a DVD drive connected to your system.
3. Mount the disc by determining the device access name of the DVD drive. The format for the device access name is `cdx` where x is the device number. After inserting the disc, type the following commands:

   ```
   # mkdir -p /cdrom
   # mount -V cdrfs -o ro /dev/cdX /cdrom
   ```
4. Change to the appropriate AIX distribution directory and product subdirectory to view the product release notes and installation guides.

Location of the VVR packages

You can find the VVR packages on the Veritas software disc under the `volume_replicator/pkgs` directory and the *Veritas Volume Replicator*

Release Notes in the `volume_replicator/release_notes` directory. Refer to "List of packages for VVR" on page 14 for a list of the VVR packages.

This manual refers to the location of the Veritas software disc as `/disc_path`. For example, if the Veritas software disc is mounted at `/cdrom/VERITAS`, then the location of the VVR packages is given as `/disc_path/volume_replicator/pkgs`.

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 packages for VVR

The following list shows the software packages for VVR:

VRTSvlic	Veritas Licensing Utilities.
VRTSveki	Veritas Kernel Interface.
VRTSvxvm	Veritas Volume Manager and Veritas 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
VRTSjre15	Veritas JRE Redistribution.
VRTSweb	Symantec Web Server.
VRTSvrw	Veritas Volume Replicator Web Console.
VRTSobgui	Veritas Enterprise Administrator.
VRTSvmdoc	Veritas Volume Manager documentation.
VRTSvrdoc	Veritas Volume Replicator documentation.

The following list shows the software packages for 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 `/opt/VRTS/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:/opt/VRTS/man
# export MANPATH
```

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

```
# setenv MANPATH ${MANPATH}:/opt/VRTS/man
```

Note: The `nroff` versions of the online manual pages are not readable using the `man` command if the `bos.txt.tfs` fileset is not installed; however, the `VRTSvxvm` and `VRTSvxfs` packages install ASCII versions in the `/opt/VRTS/man/catman*` directories that are readable without the `bos.txt.tfs` fileset.

Installation of the documentation packages copies PDF files into the `/opt/VRTS/docs` directory.

Chapter 2

Installing Veritas Volume Replicator

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

✔ Installing VVR using the product installer

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

✔ Installing VVR packages using the installvvr script

✔ Installing VVR when VxVM is already installed

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*.

Note: If 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 43.

Installing VVR using the product installer

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

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

To install VVR using the product installer

1. Start the product installer:

```
# cd disc_path
# ./installer
```

2. Select Install/Upgrade a Product.
3. Select the appropriate product name:
   - If you are installing VVR only, use the Veritas Volume Replicator option.
   - If you are installing multiple Veritas products, select the appropriate option in the product installer to install all of the Veritas products at the same time. Refer to the appropriate installation guide for detailed instructions.

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

4. Follow the prompts to install VVR.
5. The product installer provides an option to configure VVR. If you choose to configure now, select yes when the following prompt is displayed:

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

6. Follow the prompts to configure VVR.
   If you choose not to configure now, you must configure VVR and start the VVR processes after installing VVR. For details, see "Configuring VVR and starting VVR processes" on page 43.
   If you installed VVR as a standalone host, you can now use VVR from the command line.

Installation options

The installer provides three installation options:

- Install required packages
- Install required and optional packages
- Install additional packages to allow easy upgrade to higher product level

Install required packages

This option installs only the packages required to operate the licensed product.

Install required and optional packages

This option also installs optional packages, such as documentation and client features, that are not required to operate the licensed product.

Install additional packages

This option installs all packages of higher product level. For example, if you install Storage Foundation for Oracle, you can install additional packages for Storage Foundation for Oracle RAC. This enables you to upgrade simply by entering an additional product license key. Even though the extra packages are installed, only the selected product and its licensed options are configured. This is the default option.

Log files

After every product installation, the installer creates three text files:

- Installation log file
- Response file
- Summary file

The name and location of each file is displayed at the end of a product installation, and are always located in the `/opt/VRTS/install/logs` directory. It is recommended that you keep the files for auditing, debugging, and future use.

Using the installation log file

The installation log file contains all commands executed during the procedure, their output, and errors generated by the commands. This file is for debugging installation problems and can be used for analysis by Veritas Support.

Using the response file

The response file contains the configuration information that you entered during the procedure. You can use the response file for future installation procedures by invoking an installation script with the `responsefile` option. The response file passes arguments to the script to automate the installation of that product. You can edit the file to automate installation and configuration of additional systems.

Using the summary file

The summary file contains the output of the product installation scripts. This file shows the products that were installed, the location of the log and response files related to a particular installation, and messages displayed at the end of installation. You can use the summary file to prepare for running Veritas software following installation.

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. The script provides an option to configure VVR. If you choose to configure now, select yes when the following prompt is displayed:

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

Follow the prompts to configure VVR.

If you choose not to configure now, you must configure VVR and start the VVR processes after installing VVR. For details, see "Configuring VVR and starting VVR processes" on page 43.

Options for the installation script

Table 2-1 lists the options available when using the product installation script. Installation script command usage takes the following form:

installation_script [*system1 system2...*] [*options*]

installation_script can be any product installation script such as `installvvr` or the product installer. For an initial install or upgrade, options are not typically required.

Table 2-1 Product installer command line options

Command Line Option	Function
system1 system2...	Specifies the systems on which to run the installation options. A system name is required for all options. If not specified, the command prompts for a system name.
–configure	Configures the product after installing using the `-installonly` option.
–enckeyfile *encryption_key_file*	See the `-responsefile` and the `-encrypt` options.

Table 2-1 Product installer command line options

Command Line Option	Function
–encrypt *password*	Encrypts *password* using the encryption key provided with the `-enckeyfile` option so that the encrypted password can be stored in response files.
–installpkgs	Displays all product packages in correct installation order. Output can be used to create scripts for command line installs, or for installations over a network. See the `requiredpkgs` option.
–installonly	Installs packages, but does not configure the product.
–keyfile *ssh_key_file*	Specifies a key file for secure shell (SSH) installs. This option passes `-i ssh_key_file` to every SSH invocation.
–license	Registers or updates product licenses on the specified systems.
–logpath *log_path*	Specifies a directory other than `/opt/VRTS/install/logs` as the location where installer log files, summary files, and response files are saved.
–noextrapkgs	Additional packages can be installed so that you can upgrade to another Symantec product simply by installing a new license. The `–noextrapkgs` option bypasses installation of extra product packages to simplify future maintenance updates.
–nolic	Allows installation of product packages without entering a license key. Licensed features cannot be configured, started, or used when this option is specified.
–nooptionalpkgs	Bypasses installation of optional product packages such as user documentation and manual pages.
–nostart	Bypasses startup of the product following installation and configuration.
–patchpath *patch_path*	Designates the path of a directory that contains all patches to install. The directory is typically an NFS-mounted location and must be accessible all specified installation systems.

Table 2-1 Product installer command line options

Command Line Option	Function
–pkgpath *package_path*	Designates the path of a directory that contains all packages to install. The directory is typically an NFS-mounted location and must be accessible all specified installation systems.
–precheck	Performs a preinstallation check to determine if systems meet all installation requirements. Symantec recommends doing a precheck before installing a product.
–requiredpkgs	Displays all required product packages in correct installation order. Optional packages are not listed. Output can be used to create scripts for command line installs, or for installations over a network. See `installpkgs` option.
–responsefile *response_file* [–enckeyfile *encryption_key_file*]	Automates installation and configuration by using system and configuration information stored in a specified file instead of prompting for information. The *response_file* must be a full path name. If not specified, the response file is automatically generated as `installerer`*number*`.response`. *number* is random. You must edit the response file to use it for subsequent installations. Variable field definitions are defined within the file. The `–enckeyfile` option and *encryption_key_file* name are required with the `–responsefile` option when the response file contains encrypted passwords.
–rootpath *root_path*	Specifies an alternative root directory on which to install packages. On Solaris operating systems, `–rootpath` passes `–R path` to `pkgadd`. On HP-UX operating systems, `–rootpath` passes `–I path` to `swinstall`. The `–rootpath` option is not supported on AIX or Linux operating systems.

Table 2-1 Product installer command line options

Command Line Option	Function
–rsh	Specify this option when you want to use RSH and RCP for communication between systems instead of the default SSH and SCP. The `–rsh` option requires that systems be preconfigured so that commands between systems execute without prompting for passwords or confirmations.
–tmppath *tmp_path*	Specifies a directory other than `/var/tmp` as the working directory for the installation scripts. This destination is where initial logging is performed and where packages are copied on remote systems before installation.

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.

Installing VVR when VxVM is already installed

If this release of Veritas Volume Manager (VxVM) is already installed on your system, you can start using VVR by installing the VVR license. After the VVR license is installed, follow the procedure “Installing VVR using the product installer” on page 17. This installs VVR-specific components and configures VVR.

If a previous version of Veritas Volume Manager (VxVM) is already installed on your system, you must upgrade to this release of VxVM. In some cases, this requires upgrading the operating system (OS) version to the latest version. For details on the supported operating system versions, see *Veritas Volume Replicator Release Notes*. To upgrade to this release of VxVM, see *Veritas Storage Foundation Installation Guide*. After VxVM is upgraded, follow the procedure provided in the section “Installing VVR using the product installer” on page 17. This installs VVR-specific components and configures VVR.

To use the new features of VVR 5.0, upgrade the version of each disk group by entering the following command:

```
# vxdg upgrade diskgroup
```

Chapter 3

Upgrading Veritas Volume Replicator

This chapter explains how to upgrade Veritas Volume Replicator (VVR) from an earlier version to VVR 5.0.

Supported upgrade methods

Product	Version	Method to upgrade
Veritas Volume Replicator with Operating System upgrade	3.2.2.0 and later	Use the VVR upgrade scripts. See "Upgrading the operating system" on page 41.
Veritas Volume Replicator when VCS Agents for VVR are *NOT* configured.	3.5 and later	Use the Veritas product installer with the Veritas Volume Replicator option, or the appropriate installation script. For instructions, see "Upgrading using the Veritas product installer" on page 27. When upgrading from 4.0, you have the option to upgrade without disrupting replication. For details, see "Upgrading VVR without disrupting replication" on page 34.
	3.2.2.0 through 3.5	Use the VVR upgrade scripts (`vvr_upgrade_start` and `vvr_upgrade_finish`). For instructions, see "Upgrading using VVR upgrade scripts" on page 31.

Product	Version	Method to upgrade
Veritas Volume Replicator when VCS Agents for VVR *are* 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 35.
	3.2.2.0 through 3.5	Prepare your cluster and then use the VVR upgrade scripts (`vvr_upgrade_start` and `vvr_upgrade_finish`). For instructions, see "Upgrading VVR when VCS agents are configured" on page 35.

Upgrading using the Veritas product installer

This section describes using the Veritas product installer. Use this method to upgrade VVR, unless you are upgrading in a scenario that is not supported by the Veritas product installer.

Note: We recommend using the Veritas product installer for upgrading VVR when possible. See "Supported upgrade methods" on page 25.

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 43 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.

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

- Preparing to upgrade using the product installer
- Upgrading Veritas packages using the product installer
- Restoring the original configuration using the product installer

Preparing to upgrade using the product installer

Note: If you are upgrading an installation that uses VCS Agents for VVR, use the steps in "Preparing for the upgrade when VCS agents are configured" on page 37.

1. Make sure that the disk groups that contain RVGs are at least at disk group version 80.

   ```
   # vxdg list diskgroup
   ```

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
   ```

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

Upgrading Veritas packages using the product installer

1. Start the product installer:

   ```
   # cd disc_path
   # ./installer
   ```

2. Select Install/Upgrade a Product.

3. 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. Refer to the appropriate installation guide for detailed instructions.

   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 interdependencies are met.

4. The script detects that an existing installation of VVR is present, and handles upgrade tasks.

5 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.

6 The script displays the location of the log files.
When the script completes, it displays messages similar to the following:

```
CPI WARNING V-9-11-2246 You have completed upgrading VxVM on
some or all of the systems. Reboot your systems at this time.
```

7 Prior to rebooting, copy the VVRTypes.cf from `/etc/VRTSvcs/conf` to `/etc/VRTSvcs/conf/config`.

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 using the product installer."

Note: If you are upgrading an installation that uses VCS Agents for VVR, do not configure VVR until after you have rebooted the machine and performed the steps in "Unfreezing the service groups" on page 39 and "Restoring the original configuration when VCS agents are configured" on page 40.

Restoring the original configuration using the product installer

You must configure VVR to restore the original configuration and complete the upgrade. Configuring VVR also starts the VVR processes.

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 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.

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

```
# vxdg upgrade diskgroup
```

3 Restore the original configuration on each host that has been upgraded, starting with the Secondary hosts. To restore the configuration, configure VVR using one of the following methods:

- Use the Veritas product installer, select Configure an Installed Product, and then select Veritas Volume Replicator.
- Use the installation script `installvvr` with the `-configure` option.

The configuration is restored from the configuration files and scripts that were saved in the upgrade directory during the upgrade session. For details, refer to "Configuring Veritas Volume Replicator" on page 43.

4 Starting with VVR 4.0, a new tunable, **Maximum memory allocated for VVR I/O pool**, serves the same purpose as the `voliomem_maxpool_sz` tunable. If you have previously tuned the value of the `voliomem_maxpool_sz` tunable for your installation, we recommend that you set the **Maximum memory allocated for VVR I/O pool** tunable for this release.

a Use SMIT to set the VVR tunable **Maximum memory allocated for VVR I/O pool** to the same *`value`* as the existing value for `voliomem_maxpool_sz`
For information about tuning VVR with SMIT, see the *Veritas Volume Replicator Administrator's Guide*.

b To use this value in the current session before reboot, run:

```
# vxtune vol_rvio_maxpool_sz value
```

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

5 Restart the applications that were stopped.

If the upgrade fails

If the upgrade fails during the configuration phase, after displaying the VVR upgrade directory, the configuration needs to be restored before the next attempt. Run the scripts in the upgrade directory in the following order to restore the configuration:

```
# restoresrl
# adddcm
# srlprot
# attrlink
# start.rvg
```

After the configuration is restored, the current step can be retried.

Upgrading using VVR upgrade scripts

This section describes the procedure to upgrade to VVR 5.0 using upgrade scripts. Use this method only if you are upgrading in a scenario that is not supported by the Veritas product installer.

Note: We recommend using the Veritas product installer for upgrading VVR when possible. See "Supported upgrade methods" on page 25.

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

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

- Preparing to upgrade using upgrade scripts
- Upgrading Veritas packages using upgrade scripts
- Restoring the original configuration using upgrade scripts

Preparing to upgrade using upgrade scripts

1. Make sure that the disk groups that contain RVGs are at least at disk group version 80.

   ```
   # vxdg list diskgroup
   ```

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:

   ```
   # /disc_path/volume_replicator/scripts/vvr_upgrade_start
   ```

   Note: If the `vvr_upgrade_start` script finds that the SRL size is less than 110 MB, then the script fails and reverts back to the original configuration. It stops with a message that prompts you to modify the SRL size. To change the SRL size, see the *Veritas Volume Replicator Administrator's Guide*.

Upgrading Veritas packages using upgrade scripts

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

1. If necessary, upgrade the operating system. For more information, refer to "Upgrading the operating system" on page 41.
2. Upgrade VxVM from the product disc to overwrite the previous version with version 5.0. For more information, see *Veritas Storage Foundation Installation Guide*.
3. If you have not rebooted the system, reboot it now using the following command:

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

   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-5-0-278 Rlink rlink_name is stale and
   not replicating
   ```

4. Upgrade the required and optional packages for VVR, as follows:
   a. Remove the old packages as described in "Removing the VVR packages" on page 51.
   b. Copy the packages from the Veritas software disk to a temporary directory.

      ```
      # cd /disc_path
      # cp -r volume_replicator/pkgs/* /tmp_dir
      ```

   c. Unzip the package files.

      ```
      # gunzip VRTS*.gz
      ```

   d. Decompress and extract each package.

      ```
      # tar xf package_name.tar
      ```

   e. Use the following command to display the list of VVR packages. The packages must be installed in the order shown.

      ```
      # ./installvvr -installpkgs
      ```

   f. Install the new packages using the installp command.

Note: If you have additional Veritas products to upgrade, refer to the installation guide for the product for a list of packages to upgrade.

If you are upgrading an installation with VCS Agents for VVR configured, continue to "Unfreezing the service groups" on page 39.

Otherwise, continue with "Restoring the original configuration using upgrade scripts."

Restoring the original configuration using upgrade scripts

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 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.

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

   ```
   # vxdg upgrade diskgroup
   ```

3. 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:

   ```
   # /disc_path/volume_replicator/scripts/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.

4. Starting with VVR 4.0, a new tunable, **Maximum memory allocated for VVR I/O pool**, serves the same purpose as the `voliomem_maxpool_sz` tunable. If you have previously tuned the value of the `voliomem_maxpool_sz` tunable for your installation, we recommend that you set the **Maximum memory allocated for VVR I/O pool** tunable for this release.

   a. Use SMIT to set the VVR tunable **Maximum memory allocated for VVR I/O pool** to the same *value* as the existing value for `voliomem_maxpool_sz`

      For information about tuning VVR with SMIT, see the *Veritas Volume Replicator Administrator's Guide*.

   b. To use this value in the current session before reboot, run:

      ```
      # vxtune vol_rvio_maxpool_sz value
      ```

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

5. Restart the applications that were stopped.

Upgrading VVR without disrupting replication

This section describes the upgrade procedure from an earlier version of VVR to the current version of VVR 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 the previous VVR version" on page 10.

When both the Primary and the Secondary have the previous version of VVR installed, the upgrade can be performed either on the Primary or on the Secondary. We recommend that the Secondary hosts be upgraded before the Primary host in the RDS. This section includes separate sets of steps, for the Primary upgrade and for the Secondary upgrade.

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 35.

Upgrading on the Secondary

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

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

2. Follow the instructions provided in "Upgrading using the Veritas product installer" on page 27 to upgrade from VVR 4.0 to VVR 5.0 on the Secondary.

3. Resume the replication from the Primary using the following command:

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

Upgrading on the Primary

To reduce application downtime while upgrading, refer to "Planning an upgrade from the previous VVR version" on page 10.

- Follow the instructions provided in "Upgrading using the Veritas product installer" on page 27 to upgrade from VVR 4.0 to VVR 5.0 on the Primary.

Upgrading VVR when VCS agents are configured

This section details the procedure for upgrading VVR when VCS agents for VVR are configured:

- Use the Veritas product installer for upgrading VVR, unless you are upgrading in a scenario that is not supported by the Veritas product installer.

  Note: We recommend using the Veritas product installer for upgrading VVR when possible. See "Supported upgrade methods" on page 25.

- Use the VVR upgrade scripts only if you are upgrading in a scenario that is not supported by the Veritas product installer.

Prerequisites

- ✔ 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*.
- ✔ Before upgrading to VVR 5.0, upgrade your installation to 3.2.2.0 and install the latest patch. To obtain the patch, contact Veritas Customer Support.

To upgrade VVR when VCS agents for VVR are configured, perform the following tasks in the order presented below:

- Freezing the service groups and stopping all the applications
- Preparing for the upgrade when VCS agents are configured
- Upgrading Veritas packages when VCS is present
- Unfreezing the service groups
- Restoring the original configuration when VCS agents are configured

Freezing the service groups and stopping all the applications

To freeze the service groups and stop all applications

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. Because the upgrade requires a reboot, cleanly shut down all applications as follows:

- OFFLINE all application service groups that do not contain RVG or RVGShared resources, except the ClusterService, cvm and RVGLogowner groups.
- If the application resources are part of the same service group as an RVG or RVGShared resource, then OFFLINE only the application resources.

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

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

```
# haconf -makerw
```

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

```
# hagrp -list
```

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

```
# hagrp -freeze group_name -persistent
```

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

7 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 3 to step 7 for each cluster.

8 Display the list of service groups that have RVG resources and the nodes on which each service group is online by typing the following command on any node in the cluster:

```
# hares -display -type RVG -attribute State
Resource        Attribute         System     Value
VVRGrp           State             london1    ONLINE
ORAGrp           State             london1    ONLINE
```

Note: For the resources that are ONLINE, write down the nodes displayed in the System column of the output.

9 Repeat step 1 for each cluster.

10 For private disk groups, determine and note down the hosts on which the disk groups are imported. For instructions, see "Determining the nodes on which disk groups are online."

11 For shared disk groups, run the following command on any node in the CVM cluster:

```
# vxdctl -c mode
```

Note the master and record it for future use.

Determining the nodes on which disk groups are online

For private disk groups, determine and note down the hosts on which the disk groups containing RVG resources are imported. This information is required for restoring the configuration after the upgrade.

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
```

Note: Write down the 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.

Preparing for the upgrade when VCS agents are configured

If you have configured the VCS agents, then we recommend that you take backups of the configuration files, such as `main.cf` and `types.cf`, which are present in the `/etc/VRTSvcs/conf/config` directory.

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: The disk groups that are not locally imported are displayed in parentheses.

2 If any of the disk groups have not been imported on any node, import them. For disk groups in your VCS configuration, you can import them on any node. For disk groups that are not under VCS control, choose an appropriate

node on which to import the disk group. Enter the following command on the appropriate node:

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

3 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
```

4 Verify that all the Primary RLINKs are up to date.

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

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

Upgrading Veritas packages when VCS is present

After you have performed the steps in the preceeding sections, upgrade your Veritas products in one of the following ways:

- Using the Veritas product installer
- Using the VVR upgrade scripts

Using the Veritas product installer

Upgrade your Veritas products according to the instructions in "Upgrading Veritas packages using the product installer" on page 28. Select the option for the product suite.

Note: Upgrade VVR only after you have completed the steps provided in "Preparing for the upgrade when VCS agents are configured" on page 37 on the Primary and Secondary clusters. You must upgrade VVR on all nodes for the Primary and Secondary cluster.

Using the VVR upgrade scripts

Use this option to upgrade only if you are upgrading in a scenario that is not supported by the Veritas product installer.

Note: We recommend using the Veritas product installer for upgrading VVR when possible. See "Supported upgrade methods" on page 25.

Note: To preserve your configuration, you must run the `vvr_upgrade_start` script before upgrading your installation.

5 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: 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

```
# /disc_path/foundation_suite/volume_replicator/scripts\
  /vvr_upgrade_start
```

b If you do not intend to preserve the original VVR configuration, perform the steps listed under the section "Preparing to upgrade using the product installer" on page 28.

6 Upgrade your Veritas products according to the instructions in "Upgrading Veritas packages using upgrade scripts" on page 32.

Unfreezing the service groups

To unfreeze 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 6 of the section "Preparing for the upgrade when VCS agents are configured" on page 37 by typing the following command on any node in the cluster:

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

3 Save the configuration on any node in the cluster.

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

4 If you are upgrading in a shared disk group environment, bring online the RVGShared groups with the following commands:

```
hagrp -online RVGShared -sys masterhost
```

5 Bring the respective IP resources online on each node listed in step 3 of the section "Preparing for the upgrade when VCS agents are configured" on page 37, 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
```

6 In shared disk group environment, online the virtual IP resource on the master node that you noted in step 11 on page 37.

Restoring the original configuration when VCS agents are configured

Note: Restore the original configuration only after you have upgraded VVR on all nodes for the Primary and Secondary cluster.

1 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 VCS group containing the disk groups to the node on which the disk group was online while preparing for the upgrade.

```
# hagrp -switch grpname -to system
```

2 Recover all the disk groups by typing the following command on the node on which the disk group was imported in step 1 above:

```
# vxrecover -bs
```

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

```
# vxdg upgrade diskgroup
```

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 upgrade:

If you upgraded with the VVR upgrade scripts

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.

a To run the `vvr_upgrade_finish` script, type the following command:

```
# /disc_path/volume_replicator/scripts/vvr_upgrade_finish
```

where *disc_path* is the location where the Veritas software disc is mounted.

b Attach the RLINKs on the nodes on which the messages were displayed:

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

If you upgraded with the product installer

Use the Veritas product installer and select Configure an Installed Product. Or use the installation script with the `-configure` option. For details, refer to "Restoring the original configuration using the product installer" on page 29.

6 Bring online the RVGLogowner group on the master:

```
# hagrp -online RVGLogownerGrp -sys masterhost
```

7 Start and bring online the cvm group on the remaining host:

```
# hagrp -online cvm -sys slave_host
```

8 Restart the applications that were stopped.

Upgrading the operating system

To upgrade the operating system, you do not need to perform any VVR-specific steps. Refer to the *Veritas Storage Foundation Installation Guide* for more information.

Chapter 4

Configuring Veritas Volume Replicator

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 “Symantec product

licensing" on page 7. 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 4.0, 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 5.0 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:

Primary/Secondary (choose one):			
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*.
- Veritas Volume Replicator Web GUI (VRW)--Web-based GUI
  Veritas Volume Replicator Web GUI (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 GUI Administrator's Guide*.

Chapter 5

Uninstalling Veritas Volume Replicator

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 50. 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:

   ```
   # hagrp -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:

   ```
   # hagrp -switch service_group -to system_name
   ```

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

```
# hagrp -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 50. 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 51.

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 51.

Removing the VVR packages

To remove the VVR packages

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

```
# cd /disc_path/pkgs
# ./installer
```

2 Select Uninstall from the menu.

3 Select VVR. This calls the `uninstallvvr` script.

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

4 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)
```

5 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 VRTSvmman 5.0 on seattle .......Done 3 of 10 steps
Uninstalling VRTSvrdoc 5.0 on seattle .......Done 4 of 10 steps
Uninstalling VRTSvrw 5.0 on seattle .........Done 5 of 10 steps
Uninstalling VRTSweb 5.0 on seattle .........Done 6 of 10 steps
Uninstalling VRTSjre 1.4 on seattle .........Done 7 of 10 steps
Uninstalling VRTSvcsvr 5.0 on seattle .......Done 8 of 10 steps
Uninstalling VRTSvrpro 5.0 on seattle .......Done 9 of 10 steps
Uninstalling VRTSvmpro 5.0 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
```

Appendix 6

Configuring the Symantec License Inventory Agent

This appendix includes the following topics:

The Symantec License Inventory Manager installation disc is available separately. For information on how to order the full product, see "How to order the Symantec License Inventory Manager license and media kit" on page 57. The installation media provides online documentation with details on all topics discussed in this appendix.

Read the following Technical Support TechNote for the latest information on updates, patches, and software issues regarding this product:

http://support.veritas.com/docs/282183

You can also download the *Symantec License Inventory Agent 4.1 Release Notes*, from this website.

About the Symantec License Inventory Manager

The Symantec License Inventory Manager (license inventory manager) is an enterprise asset management tracking tool that inventories Symantec Information Availability products in your network and consolidates critical information on the deployment of these products to facilitate license management and compliance tracking. Using the information provided by the license inventory manager, you can:

- Determine all the Symantec software products and licenses being used in your enterprise
- Achieve easier license self-compliance management
- Know your Enterprise License Agreement deployment status
- Reduce administrative overhead for managing license compliance
- Renew support and maintenance based on the licenses you have deployed
- Gain more control over your Symantec software usage
- Manage department chargebacks based on actual software usage
- Use more flexible licensing and pricing models
- Exploit detailed deployment data to perform return on investment analyses for purchased software

The license inventory manager is a three-tiered system that consists of a server tier, access point tier, and an agent tier. The server tier is the Symantec License Inventory Server, which consolidates and stores information that it gathers from the agents and access points.

The optional access point tier includes Symantec License Inventory Access Points and serves as a consolidation layer between the agents and server.

The agent tier includes Symantec License Inventory Agents, which are deployed on individual hosts in a network. Each agent gathers product information on the supported Symantec products that are installed on the agent's host, then sends the information to an access point or the server.

When the Symantec License Inventory Agent is installed

The Symantec product installer installs or upgrades the agent on the host with the Symantec product. The agent is installed in the following directory:

`/opt/SYMClma`

The agent is installed with a default configuration that minimizes its impact on a running system. The minimum configuration prevents remote communication with the agent to keep its data and interfaces secure.

When the server and access points are installed

The server and access points are not installed automatically. If you want to use the Symantec License Inventory Manager, you must manually install the server and, optionally, the access points. After you install the server and access points, the agents can gather information and you can create inventory reports.

You can install the server and access points from the Symantec License Inventory Manager installation disc.

What you can do with the agent after it is installed

If you are already participating in a Symantec sales program that requires the use of the agent, or if you want to order and deploy the Symantec License Inventory Manager, you can use the agent to track Symantec products on the systems on which it was installed. To use the agent, however, you must manually configure it to enable remote communication between the agent and its server or access point.

Complete instructions for reconfiguring the agent are provided in the *Symantec License Inventory Manager 4.1 Release Notes*. You can download this document from the following website:

http://support.veritas.com/docs/282183

How to remove the agent

If you do not want to use the Symantec License Inventory Manager, you can remove the agent using the operating system package removal commands to remove the agent packages, which include SYMClma and VRTSsmf.

The server and access point also use the VRTSsmf package. If the server or access point is installed on this host with the agent, you can remove the SYMClma package, but not the VRTSsmf package. If neither the server nor the access point is installed on this host, you can remove both the SYMClma and VRTSsmf packages.

If you remove both packages, remove the SYMClma package first.

Table 6-1 lists the commands required to remove these packages on the supported platforms.

Table 6-1 Package removal commands required to remove the agent

Platform	Package removal command
AIX	`installp -u VRTSlma` `installp -u VRTSsmf`
HP-UX	`swremove SYMClma` `swremove VRTSsmf`
Linux	`rpm evv SYMClma` `rpm evv VRTSsmf`
Solaris	`pkgrm VRTSlma` `pkgrm VRTSsmf`

Later, you can reinstall the agent with the Symantec License Inventory Manager installation disc. This disc is available in the Symantec License Inventory Manager kit.

How to order the Symantec License Inventory Manager license and media kit

To order a Symantec License Inventory Manager license and media kit, contact your Symantec sales representative.

The installation media provides online documentation for the Symantec License Inventory Manager. You can contact your sales representative to order printed copies of the documentation. The documents you can order include:

- *Symantec License Inventory Manager Installation and Configuration Guide*
- *Symantec License Inventory Manager Administrator's Guide*
- *Symantec License Inventory Manager User's Guide*

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