

Veritas™ Cluster Server for NetApp SnapMirror Installation Guide

Windows 2000, Windows Server 2003

5.0 Release Update 1



Veritas Cluster Server Installation Guide

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Veritas Cluster Server

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Veritas Cluster Server is a licensed product. See the *Veritas Storage Foundation for Windows Installation and Upgrade Guide* for license installation instructions.

Technical support

For technical assistance, visit <http://entsupport.symantec.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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Preinstallation and planning

This chapter contains:

- [Prerequisites](#)
- [Installation requirements](#)
- [Licensing](#)
- [Planning the installation](#)

Prerequisites

Please review the following prerequisites.

- Review the release notes for your products.
- Review the requirements.
See “[Installation requirements](#)” on page 8.
- Exit all running applications.

Installation requirements

Veritas Cluster Server is supported on Windows-certified network servers containing one or more processors. Veritas Cluster Server supports clusters of up to 32 nodes.

Supported hardware

Refer to the Hardware Compatibility List on the Symantec Support Web site at <http://entsupport.symantec.com> to determine the approved hardware. The compatibility list contains information about supported hardware and is updated regularly. Before installing Veritas Cluster Server, review the current compatibility list to confirm the compatibility of your hardware and software.

Supported software

The requirements for operating system and application support shown below supersede those requirements listed in the product documentation.

Note: All VCS nodes must run the same Windows operating system and service pack level as well as the same VCS version and service pack level.

Microsoft Exchange servers and their operating systems

- Microsoft Exchange Server 2007 Standard Edition or Enterprise Edition
with
Windows Server 2003 x64 (Standard Edition, Enterprise Edition, Datacenter Edition) (SP1 required for all editions, SP2 supported)
or
Windows Server 2003 R2 x64 (Standard Edition, Enterprise Edition, Datacenter Edition)
- Microsoft Exchange Server 2003 Standard Edition or Enterprise Edition (SP2 supported)
with
Windows 2000 Server, Advanced Server, or Datacenter Server (all require Service Pack 4 with Update Rollup 1)
or
Windows Server 2003 (Standard Edition, Enterprise Edition, or Datacenter Edition) (SP1 required for all editions, SP2 supported)
or

Windows Server 2003 R2 (Standard Edition, Enterprise Edition, or Datacenter Edition)

or

- Microsoft Exchange 2000 Server or Microsoft Exchange 2000 Enterprise Server (SP3 with August 2004 rollup patch supported for both editions)

with

Windows 2000 Server, Advanced Server, or Datacenter Server (all require Service Pack 4 with Update Rollup 1)

Oracle versions and operating systems

- Oracle 10g, Release 1 (10.1.0.2) Standard Edition or Enterprise Edition

or

Oracle 10g, Release 2 (10.2.0.1.0) Standard Edition or Enterprise Edition

with

Windows 2000 Server, Advanced Server, or Datacenter Server (all require Service Pack 4 with Update Rollup 1)

or

Windows Server 2003 Standard Edition, Enterprise Edition, or Datacenter Edition (SP1 required, SP2 supported but not required for all editions)

Note: Support for Oracle is limited to 32-bit versions of the operating system.

Microsoft SQL servers and their operating systems

- Microsoft SQL Server 2000 Standard Edition or Enterprise Edition (SP4 required)

with

Windows Server 2003 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP1 required for all editions, SP2 supported)

or

Windows Server 2003 R2 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition

or

Windows 2000 Server, Windows 2000 Advanced Server, or Windows 2000 Datacenter Server (all require Service Pack 4 with Update Rollup 1)

or

- Microsoft SQL Server 2000 (64-bit) Enterprise Edition

with

Windows Server 2003 for Itanium-based systems: Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)

or

- Microsoft SQL Server 2000 Standard Edition or Enterprise Edition (SP4 required for all editions)

with

Windows Server 2003 x64 Editions: Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP1 required for all editions, SP2 supported)

or

Windows Server 2003 x64 R2 Editions: Standard x64 R2 Edition, Enterprise x64 R2 Edition, or Datacenter x64 R2 Edition (SP1 required for all editions, SP2 supported)

or

- Microsoft SQL Server 2005, (32-bit) Standard Edition or Enterprise Edition (SP1 required for all editions)

with

Windows Server 2003 (32-bit) Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)

or

Windows Server 2003 R2 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 supported for all editions)

or

Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP2 supported for all editions)

or

Windows Server 2003 x64 R2 Editions: Standard x64 R2 Edition, Enterprise x64 R2 Edition, or Datacenter x64 R2 Edition (SP2 supported for all editions)

or

- Microsoft SQL Server 2005, (64-bit) Standard Edition or Enterprise Edition (SP1 required for all editions)

with

Windows Server 2003 for Itanium-based systems: Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)

or

Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP2 supported for all editions)

or

Windows Server 2003 x64 R2 Editions: Standard x64 R2 Edition, Enterprise x64 R2 Edition, or Datacenter x64 R2 Edition (SP2 supported for all editions)

Note: Microsoft SQL Server 2000 and Microsoft SQL Server 2005 can exist in the same cluster and operate on or fail over to the same systems. However, only one default instance can exist on a system at one time. Additional instances that operate on or fail over to that system must be named instances. The number of named instances is limited only by the normal limit of instances for that version of SQL Server.

Supported Network Appliance applications

- Network Appliance SnapManager for Exchange 3.2 with Exchange 2000 and Exchange 2003
- Network Appliance SnapManager for Exchange 4.0 with Exchange 2007
- Network Appliance SnapManager for SQL 2.0
- Network Appliance Data ONTAP 7.2
- Network Appliance SnapDrive 4.1, 4.2, and 5.0
- Microsoft iSCSI software Initiator 2.02 and 2.05
- NetApp FCP Attach Kit 3.0, Windows Host Utilities 3.0

Hardware requirements

Memory

- Minimum required: 512 MB
- Recommended: 1GB

System processor

- Minimum required: 300 MHz Pentium II
- Recommended: 550 MHz Pentium III or higher

Display resolution

- Minimum required: 800 x 600 pixels
- Recommended: 1024 x 768 pixels or higher

VCS Cluster Manager (Java Console and Cluster Management Console) requires an 8-bit (256 color) display and a graphics card able to render 2D images.

Supported browsers

Veritas Cluster Server Management Console is supported on the following browsers:

- Microsoft Internet Explorer 6.0 with SP2 or newer
- Firefox 1.5 or newer

Veritas Cluster Management Console requires the Macromedia Flash Plugin v8.0.

Firewall and anti-spyware considerations

Disable spyware monitoring and removal software before installing this product. You must disable firewalls to enable discovery of the local client. On systems running Windows Server 2003 SP1, you must disable the Windows Firewall or configure it to allow exceptions to the Remote Administration and File and Printer Sharing services.

Licensing

Each copy of Veritas Cluster Server for NetApp SnapMirror including all options and agents, whether used on a physical Server or within a virtual machine, must be licensed according to the conditions set forth in the sections below. Each Licensed Software license specifies the number of instances of the Licensed Software you may run on a particular server at one time.

[Table 1-1](#) lists Veritas Cluster Server editions and the additional licensing terms that apply.

Table 1-1 Veritas Cluster Server licensing terms

Microsoft Operating System Edition	Veritas Cluster Server licensing terms
<ul style="list-style-type: none"> ■ Server Edition ■ Standard Edition ■ Web Edition 	A separate license for the licensed software is required for each virtual or physical server, where the software is installed.
<ul style="list-style-type: none"> ■ Advanced Edition ■ Enterprise Edition 	For each license, you may run one instance of the licensed software on one physical server and up to four simultaneous instances of the licensed software on virtual servers located on the physical server.
Datacenter Edition	For each license, you may run one instance of the licensed software on one physical server and an unlimited number of virtual servers located on the physical server.

Evaluation license key

An evaluation license key is embedded in the product. To use this key, click Next at the license key entry screen of the product installer. This license key is valid for a limited evaluation period only.

Virtual Server license policy

Each copy of the Veritas Cluster Server including all options and agents, whether used on a physical server or within a virtual machine must be separately licensed. Each Licensed Software license specifies the number of instances of the Licensed Software you may run on a particular server at one time.

License management

The product installer allows you to add and remove specific licenses. Adding a license for an option does not install the option. Use the Add/Remove function to install an option. License keys support installation on multiple systems.

Vxlicrep

Vxlicrep is a command line tool that generates a report of the licenses in use on your system.

To use Vxlicrep to display a license report:

Open the command prompt.

Enter **vxlicrep** without any options to generate a default report.

Optionally, use one of the following options to produce the type of report needed:

- g default report
- s short report
- e enhanced/detailed report
- h display this help

Planning the installation

During the installation, the product installer automatically installs Veritas Cluster Server. You may select other applicable options during the installation. You may also choose to install simultaneously on more than one system during the installation process. After the initial installation, run the VCS Configuration Wizard to complete the VCS cluster configuration. The VCS Configuration Wizard presents the opportunity to configure optional VCS features including security options, Cluster Management Console, notification, and the global cluster wide-area connection resource.

Depending on your environment you may choose to configure the Symantec Product Authentication Service and the Cluster Management Console on systems outside the cluster.

Review the following information and decide how you want to configure your environment:

- [About Symantec Product Authentication Service](#)
- [About Veritas Cluster Management Console](#)
- [About notification](#)
- [About global clusters](#)

About Symantec Product Authentication Service

Symantec Product Authentication Service allows the security administrator to configure authentication to provide a single sign-on service for Symantec applications. In this case, users need log-on only once to a single Symantec application, and other applications can then use the credentials acquired through the first logon.

Symantec Product Authentication Service provides the ability to configure a cluster in secure mode. Symantec Product Authentication Service secures communication between cluster nodes and clients, including the Java console, by using digital certificates for authentication and SSL to encrypt communication over the public network.

To configure the cluster in secure mode, Veritas Cluster Server requires you to specify and configure a system in your environment as a root broker and all nodes in the cluster as authentication brokers.

- Root broker

A root broker serves as the main registration and certification authority; it has a self-signed certificate and can authenticate other brokers.

- Authentication brokers

Authentication brokers serve as intermediate registration and certification authorities. Authentication brokers have certificates that are signed by the root. Each node in the cluster serves as an authentication broker.

The *Symantec Product Authentication Service Quick Start Guide* describes the best practices and options for configuring the root broker in your environment.

About Veritas Cluster Management Console

Veritas Cluster Management Console is a high availability management solution that enables monitoring and administering clusters from a single web console.

You can configure Cluster Management Console to manage a single cluster, multiple clusters, or both.

- If you want to use Cluster Management Console to manage multiple clusters, you must set up a standalone management server.
- If you want to use the Cluster Management Console to manage a single cluster, choose the option to configure the Cluster Management Console, also known as the Web console from the VCS Configuration Wizard.

Configuring the Cluster Management Console may be done during initial cluster configuration or at a later time.

Operational mode	Configuration description
Local management of one cluster (single-cluster mode)	The Cluster Management Console is installed on each node in the cluster and can be configured as part of the ClusterService service group by using the VCS Configuration Wizard to configure the Web console. The Cluster Management Console offers robust cluster management capability and can be run from any supported Web browser on any system.
Centralized, comprehensive, enterprise-wide administration of multiple clusters (multi-cluster mode)	One instance of the Cluster Management Console is installed outside all clusters on a standalone server. The console enables users to visually and intuitively input commands to the multi-cluster management engine, the <i>management server</i> . The management server initiates monitoring and management actions based upon those commands. The management server uses a database to store cluster configurations, cluster status, events, event policies, report jobs, report outputs, and more. If the management server and cluster nodes are separated by a firewall, a component called <i>cluster connector</i> is installed on each cluster node. Cluster connector enables communication with clusters through firewalls. Cluster connector also provides buffering for cluster data. If the console goes offline and then comes back online, it can retrieve data collected during the offline period from the cluster connector buffer. See the <i>Veritas Cluster Management Console Implementation Guide</i> .

The configurational differences between the operational modes mean that you cannot switch a single Cluster Management Console installation from one mode to the other. The modes are also incompatible on the same system. Consequently, one system cannot offer both operational modes. However, the modes *can* co-exist in the same multi-cluster environment, with single-cluster-mode installations on Veritas Cluster Server cluster nodes, and a multi-cluster-mode installation on a management server host. Such a deployment can be desirable if different IT administrators in your enterprise have different scopes of responsibility.

About notification

You can configure Veritas Cluster Server to send event notification either through SMTP email notification or SNMP traps.

Configuring the notifier process may be done during initial cluster configuration or at a later time using the VCS Configuration wizard.

See the *Veritas Cluster Server Administrator's Guide*.

About global clusters

A global cluster consists of two or more local clusters linked together. Global clusters provide the ability to fail over applications between geographically distributed clusters when disaster occurs.

Global clusters may be configured either through the Disaster Recovery Configuration Wizard available from the Solutions Configuration Center or through the Global Group Configuration Wizard. Both processes require a wide-area connector resource for inter-cluster communication. This resource is configured using the VCS Configuration Wizard.

The Global Group Configuration Wizard and VCS Configuration Wizard are described in the *Veritas Cluster Server Administrator's Guide*.

Installing Veritas Cluster Server

This chapter contains:

- [Installing the software using the product installer](#)
- [Installing the software from the command line](#)
- [Configuring Veritas Cluster Server](#)
- [License management](#)
- [Uninstalling using the product installer](#)
- [Uninstalling from the command line](#)

About installing Veritas Cluster Server

This chapter covers installing Veritas Cluster Server. It also covers licensing, adding features, and uninstalling information.

Installing the software using the product installer

Before installing the software on remote systems running Windows 2003, you must modify the driver signing options to ignore warning messages about software authentication.

Note: Before installing Veritas Cluster Server, make sure you have uninstalled any previous versions of SFW, SFW HA, or Veritas Cluster Server.

To modify driver signing options for Windows 2003

- 1 Open the Driver Signing Options dialog box by using either of the following methods:
 - From Windows Explorer, right-click **My Computer**, and click **Properties**. On the **Hardware** tab, click **Driver Signing** in the Device Manager box.
 - or
 - Open the Control Panel and double-click **System**. On the **Hardware** tab, click **Driver Signing** in the Device Manager box.
- 2 In the Driver Signing Options dialog box, check **Ignore**, and click **OK**.

To install the products using the installer

The examples in the following procedure are based on a Custom/Complete installation.

- 1 From Windows Explorer, navigate to the root directory of the Veritas Cluster Server installation media and double-click **Setup.exe**.
- 2 Click **Product Installation** in the left pane, then click the product name, **VCS 5.0 for Network Appliance SnapMirror Release Update**.
- 3 Click **Complete/Custom**.
The Complete/Custom installation installs server components and optional client components. Click **Administrative Console** if you wish to install only the client components. This will install the VCS Java Console.
- 4 Review the information on the Welcome panel and click **Next**.
- 5 Read the License Agreement by using the scroll arrows in the view window. If you agree to the license terms, click **I accept the terms of the license agreement** and then click **Next**.
- 6 In the Enter a license key field, type the license key, click **Add**, and then click **Next**. The License Key Details section displays more information about the selected key.

If you do not have a license key, click **Next** to use the embedded evaluation license key.

To delete a license key, select the key from the key list and click **Remove**.

- 7 On the Option Selection panel, check the following product options and click **Next**:
 - **VCS 5.0 for NetApp Snap Mirror Release Update (Server Components)**
 - **Global Clustering Option** - if you plan to configure a disaster recovery environment.
 - **High Availability Hardware Replication Agents**
 - **High Availability Application Agents**
 - **High Availability Database Agents**
 - **Veritas Cluster Server Database Agent for SQL**
 - **Veritas Cluster Server Database Agent for Oracle**
 - **Product Documentation**
 - **VCS 5.0 for NetApp Snap Mirror Release Update (Client Components)** - This will install the VCS Java Console on the same nodes where the server components are installed.

- 8 On the Computer Selection panel, specify the domain and nodes for the installation and click **Next**.

Domain	Select the domain from the drop-down list.
Computer	Select the computer name from the dropdown list. This may take some time to populate depending on the domain and network size, speed, and activity. Alternatively, if you know the computer name, type the name in the Computer field.
Add	Click Add to add the computer for installation.
Selected computers for installation	The Selected computers for installation section displays the list of computers that you have added for installation. To remove a computer, click a computer name and click Remove .

Install Path The Install Path field displays the default path for installation. To specify a different installation path for a computer:

- 1 Select the computer name from the Selected computers for installation list.
- 2 Type the path in the Install Path field.
- 3 Click **Change** and then click **Yes** to confirm the changes.

To restore the default installation path for a computer:
Select the computer name from the Selected computers for installation list and then click **Default**.

- 9 After the installer validates the systems for the installation, click **Next**. If an error occurs, address the problem described in the Details box, click **Validate Again**, and click **Next**.
- 10 Review the summary information and click **Install**. If necessary, click **Back** to make changes.
- 11 If an installation is not successful on any of the systems, the status screen shows a failed installation. If the installation is successful on all systems, click **Next** after the progress indicator shows the installation is completed. If a security alert asks you to accept the Veritas driver software, click **Yes**.
- 12 Review the installation report and click **Next**.
- 13 Click **Finish** to complete the installation.
- 14 Click **Yes** to reboot the local node.

Resetting the driver signing options

To ensure a secure system environment, after completing the installation sequence, reset the driver signing options on each computer to the original state of Warn or Block.

To reset the driver signing options

- 1 Open the Control Panel and click **System**.
- 2 Select the Hardware tab and click **Driver Signing**.
- 3 In the Driver Signing Options dialog box, reset the option to **Warn** or **Block**.
- 4 Click **OK** to close the Driver Signing Options dialog box, and then click **OK** again to close the System window.
- 5 Repeat for each computer.

Installing the software from the command line

You can perform a silent installation from the command prompt using the `Setup.exe` command. See the examples at the end of this section for reference.

To start the installation from the command window

- 1 Insert the product software disc into a drive connected to the system.
- 2 Click **Start > Run**.
- 3 Enter **cmd** in the Open field and click **OK**.
- 4 From the command window, navigate to the root directory of the product software disc.
- 5 Use the following command to install the software:

```
Setup.exe /s Solution=<Solution> Install_mode=<InstallMode>
InstallDir=<"InstallDirPath"> Reboot=<RebootMode>
target=<"machine name"> Licensekey=<"LicenseKey">
options=<"a,b,c,...">
```

Where the total length of the argument string is 512 characters.

Note: To install the server and matching client components, run the `Setup.exe /s` command twice, one with the `Solution` parameter set for the server component and the other set for the client component. If you use a script to install the server and client, consider first installing the client and then the server, so that the script can reboot the system after server installation.

Parameters for setup.exe

Information about the possible parameter values follows.

Table 2-1 Parameters for installing the product

Parameter	Use
<i>Solution</i>	<p>Set to the type of installation.</p> <p>6 = VCS for NetApp SnapMirror Release Update (Server Components)</p> <p>7 = VCS for NetApp SnapMirror Release Update (Client Components)</p> <p>The default setting is 6 for server components.</p> <p>Example: SOLUTION=6</p>

Table 2-1 Parameters for installing the product

Parameter	Use
<i>InstallMode</i>	<p>Set to indicate an installation or uninstallation.</p> <p>1 = To install</p> <p>5 = To uninstall</p> <p>The default setting is 1 to install.</p> <p>Example: INSTALL_MODE=1</p>
<i>InstallDir (optional)</i>	<p>Set the path of the installation directory. The path must start and end with a quotation mark (").</p> <p>The default setting is <i>SystemDrive:\Program files\Veritas</i></p> <p>Example: INSTALLDIR="C:\InstallationDirectory"</p>
<i>Reboot (optional)</i>	<p>Setting for the automatic reboot of the system at the completion of the installation.</p> <p>0 = No reboot</p> <p>1 = Reboot</p> <p>The default setting is 0 for no system reboot.</p> <p>Example: REBOOT=1</p>
<p>Note: Reboot the system at the end of installation to ensure that the software drivers for the server component are installed correctly. You do not have to reboot after installing the client.</p>	
<i>Target (optional)</i>	<p>Specify the machine name for the system where you want to install the software. Make sure you place the machine name between quotes.</p> <p>localnode is the default setting.</p> <p>Example: "PC177VM-3"</p>
<i>LicenseKey (optional)</i>	<p>Set the license key for the installation. Enter multiple keys by separating them with a comma (e.g. 123-345-567-789-123,321-543-765-789-321, etc.) The license key must start and end with a quotation mark (").</p> <p><i>LicenseKey</i> has no default setting.</p> <p>Example: LICENSEKEY="123-234-123-234-345"</p>

Table 2-1 Parameters for installing the product

Parameter	Use
<i>Options (optional)</i>	<p>Set the desired options, if any. The option must start and end with a quotation mark ("). Multiple options can be entered, use a comma as a separator.</p> <p>There are no default settings.</p> <p>The options for VCS for Network Appliance are:</p> <ul style="list-style-type: none">■ ntap■ GCO■ exchange■ sql <p>Example: OPTIONS="GCO"</p>

Example for Setup.exe: Client installation

This command installs the client components at the specified installation path and tells the system not to reboot at the end of the installation.

```
Setup.exe /s Solution=7 Install_mode=1  
Installldir="C:\InstallationDirectory"
```

Example for Setup.exe: Server installation

This command installs the server components in the directory `C:\InstallationDirectory` and tells the system to reboot at the end of the installation. It also installs with a license key of 123-234-123-234-345, and with the GCO option.

```
Setup.exe /s Solution=6 Install_mode=1  
INSTALLDIR="C:\InstallationDirectory" REBOOT=1  
licensekey="123-234-123-234-345" options="GCO"
```

Configuring Veritas Cluster Server

After installing the software, set up the components required to run Veritas Cluster Server. The VCS Configuration Wizard sets up the cluster infrastructure, including LLT and GAB, and provides an option of configuring the Symantec Product Authentication Service in the cluster. The wizard also configures the ClusterService group, which contains resources for Cluster Management Console (Single Cluster Mode) also referred to as Web Console, notification, and global clusters.

- If you plan to set up a disaster recovery environment, configure the wide-area connector process for global clusters.
- When configuring a user account for the VCS Helper service, choose the administrative account set up on the filer.

For instructions, see the chapter on Getting Started with VCS in the *Veritas Cluster Server Administrator's Guide*.

License management

The product installer allows you to add or remove license keys for options in your installation of Veritas Cluster Server client and server components.

To add or remove license keys

- 1 Open the Windows Control Panel and click **Add or Remove Programs**.
- 2 Select **VCS 5.0 for NetApp SnapMirror Release Update (Server Components)** and click **Change**.
- 3 The Symantec Product Installer screen appears. Select **License Management**. Click **Next**.
- 4 The license key screen appears. Enter the license key you want to add and click **Update**. If you want to remove a license key, select the license key in the Licenses field and click **Remove**.
- 5 Click **Finish**.

Uninstalling using the product installer

In order to uninstall the software from remote computers, the local computer where you uninstall must have Veritas Cluster Server installed on it.

The steps in the following procedure apply to a Veritas Cluster Server uninstallation of the server and client components from a Windows 2003 system. The steps for uninstalling the client components and high availability server are similar.

Note: You must unconfigure the cluster before uninstalling Veritas Cluster Server.

To uninstall using the product installer

- 1 In the Windows Control Panel, select **Add or Remove Programs**.
- 2 Click **VCS 5.0 for NetApp SnapMirror Release Update (Server Components)**.
- 3 Click **Remove**.
- 4 Review the Welcome screen and click **Next**.
- 5 Select both checkboxes to uninstall the client components in addition to the server components. Click **Next**.
- 6 Select the systems that you want to uninstall from the Domain and Computer drop-down menus and click **Add**. Optionally, type the computer's name in the Computer field. Repeat to uninstall from other systems.
To remove a system from the **Selected computers for uninstall** list, click the system and click **Remove**.
- 7 Click **Next**.
- 8 On the Validation screen, the installer checks the prerequisites for the selected systems and displays the results. Review the information and once the status is Accepted, click **Next**.
If a system fails validation, click the system in the systems list to display information about the failure. Address the problem and click **Validate Again** to repeat the validation process.
- 9 The Summary screen appears and displays the settings and systems selected for uninstallation. Review the summary and then click **Uninstall**.
- 10 The Uninstall Status screen displays status messages and the progress of the installation.
If an uninstallation fails, the status screen shows a failed uninstallation. Click **Next** to review the report, address the reason for failure, and retry this step on that computer.

- 11 When complete, review the uninstall summary and click **Next**.
- 12 Reboot the remote nodes. Note that you cannot reboot the local node now.
 - Click the check box next to the remote nodes that you want to reboot.
 - Click **Reboot**.
 - When the nodes have finished rebooting successfully, the Reboot Status shows Online and the **Next** button is available. Click **Next**.
 - Once the remote nodes have rebooted, click **Next**.
- 13 On the Thank You screen, click **Finish**.
- 14 Click **Yes** to reboot the local system.

Uninstalling from the command line

You can silently uninstall the Veritas Cluster Server software from the command prompt using the `setup.exe` command.

At the end of this section, two command examples show how to uninstall the client components.

See “[Setup.exe example: Uninstalling the client components](#)” on page 30. See “[Setup.exe example: Uninstalling the server components](#)” on page 30.

To start the uninstallation from the command prompt

- 1 Open a command window by clicking **Start > Run**.
- 2 Enter `cmd` in the Open field and click **OK**.
- 3 In the command window, navigate to the root directory of the product CD.
- 4 Use the following command syntax to silently uninstall Veritas Cluster Server:

```
Setup.exe /s Solution=<solution> Install_mode=InstallMode  
reboot=<RebootMode> [Node=PC177VM-3]
```

Information about the possible parameter values follows:

Table 2-2 Parameters for uninstalling the product

Parameter	Use
<code>/s</code>	Set for silent mode.
<code>Install_mode</code>	Set to indicate an install or uninstall. 1 = To install 5 = To uninstall The default setting is 1 to install. Set this parameter to 5 for uninstall. Example: <code>Install_mode=5</code>

Table 2-2 Parameters for uninstalling the product

Parameter	Use
Solution	<p>Set to the type of uninstallation.</p> <p>6 = VCS 5.0 for NetApp SnapMirror Release Update (Server Components)</p> <p>7 = VCS 5.0 for NetApp SnapMirror Release Update (Client Components)</p> <p>Example: Solution=6</p> <p>Note: To uninstall the server and matching client components, run two <code>setup.exe /s</code> commands, one with the Solution parameter set for the server component and the other set for the matching client component.</p>
Reboot	<p>Setting for the automatic reboot of the system at the completion of the installation.</p> <p>0 = No reboot</p> <p>1 = Reboot</p> <p>The default setting is 0 for no system reboot.</p> <p>Example: Reboot=1</p>
Node	<p>Set the node name. Specify only one node at a time.</p> <p>The local node is the default setting when the node is unspecified.</p> <p>Example: Node="PC177VM-3"</p>

Setup.exe example: Uninstalling the client components

This sample command completely uninstalls the client components, and tells the system not to reboot at the end of the uninstallation.

```
Setup.exe /s Solution=7 Install_mode=5 Reboot=0
```

Setup.exe example: Uninstalling the server components

This sample command completely uninstalls the server components, and tells the system to reboot at the end of the uninstallation.

```
Setup.exe /s Solution=6 Install_mode=5 Reboot=1
```

Microsoft Service Pack upgrades

This chapter contains:

- [Configuring Microsoft Exchange 2003 SP2 in a Veritas Cluster Server Environment](#)
- [Configuring Microsoft SQL 2000 SP4 in a Veritas Cluster Server environment](#)
- [Configuring Microsoft SQL 2005 Server SP1 in a Veritas Cluster Server environment](#)

Configuring Microsoft Exchange 2003 SP2 in a Veritas Cluster Server Environment

This section covers configuring Microsoft Exchange 2003 SP2 in a Veritas Cluster Server environment, if you already have Microsoft Exchange 2003 installed and you want to apply Exchange 2003 SP2.

Upgrading to Microsoft Exchange 2003 SP2

This section covers upgrading Microsoft Exchange installation in a VCS cluster.

Prerequisites

Before upgrading to Microsoft Exchange 2003 SP2, make sure to set the "DetailMonitor" attribute of all "ExchService" type resources to zero.

Perform the following steps to upgrade an Exchange 2003 installation on a node that is part of the Exchange service group. Make sure all the nodes, which are part of the Exchange service group, have the same version and service pack level as Microsoft Exchange.

To upgrade to Microsoft Exchange 2003 SP2

Make sure that you do not mount the Exchange databases on the failover nodes.

- 1 Bring the Exchange service group on the node where you are upgrading the Exchange installation online.
- 2 Stop HAD on the node where Exchange installation will be upgraded. At the command prompt, type:

```
C:\> hstop -local -force
```
- 3 Install Microsoft Exchange 2003 SP2 on the node where the service group is online. If prompted to install the hotfix for Internet Information Services (IIS) 6.0, refer to the Microsoft Knowledge Base Article: 831464.
- 4 Start HAD on the node. At the command prompt, enter:

```
C:\> hstart
```
- 5 Repeat [step 1](#) through [step 4](#) on all remaining nodes that are part of the Exchange service group.
- 6 Update the ExchConfig registry information on every system where Exchange is upgraded. To update the registry on the local system, navigate to the %vcs_home%\bin\ExchSetup folder and enter the following command at the command prompt:

```
Setup.exe /UpdateExchVersion
```

To update the registry on more than one system enter:

```
Setup.exe /UpdateExchVersion system_name1 system_name2
```

...

Configuring Microsoft SQL 2000 SP4 in a Veritas Cluster Server environment

This section outlines the procedure needed to install Microsoft SQL 2000 Server Service Pack 4 on a computer running Veritas Cluster Server.

Consider the following points before applying Microsoft SQL 2000 SP4 to a production server:

- Make sure that you have a recent backup of your system and user databases.
- Server down time is required for this procedure.

Note: This procedure assumes you have a recent flat-file backup of the MSSQL Data Files directory on the shared disk, in this example, S:\MSSQL\$SQL2000.SP3A, and that your current SQL directory is called S:\MSSQL\$SQL2000, in this example, on the same drive letter. If yours are named differently, substitute your directory names where appropriate.

To install Microsoft SQL 2000 Server SP4

- 1 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on all nodes.
- 2 On the node where the SQL Server Service Group was taken offline, online the MountV resource for the shared drive containing the SQL databases (for example, S:\MSSQL\$SQL2000).
- 3 On the shared disk, make a copy of your recent MSSQL data files directory (S:\MSSQL\$SQL2000) and rename it, for example to S:\MSSQL\$2000.SP3A.
- 4 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is now online, and select **Freeze >Persistent**.
- 5 Install Microsoft SQL 2000 Service Pack 4 on the active node (where the SQL Server Service Group is online), using the instructions provided by Microsoft.
- 6 Repeat [step 5](#) for each additional SQL instance in this service group, if you have more than one instance in this service group.
- 7 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is still online and select **Unfreeze**.
- 8 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on the node where it was online.
- 9 In a Disaster Recovery environment, switch the Replication Service Group to one of the other, additional or failover, nodes in this cluster.
- 10 On the failover node, online the MountV resource for the shared drive containing the SQL databases (for example, S:\MSSQL\$SQL2000).
- 11 On the shared disk, rename the S:\MSSQL\$SQL2000 directory to S:\MSSQL\$SQL2000.SP4. If S:\MSSQL\$SQL2000.SP4 already exists on the shared disk, then delete it before renaming the S:\MSSQL\$SQL2000 directory.
- 12 On the shared disk, rename the S:\MSSQL\$SQL2000.SP3A directory to S:\MSSQL\$SQL2000. If there are additional nodes in this cluster to be updated, copy the S:\MSSQL\$SQL2000.SP3A directory to S:\MSSQL\$SQL2000 instead of renaming the directory.

- 13 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is now online and select **Freeze >Persistent**.
- 14 Install Microsoft SQL 2000 Service Pack 4 on the active node (where the SQL Server Service Group is online), using the instructions provided by Microsoft.
- 15 Repeat [step 14](#) for each additional SQL instance in this service group, if you have more than one instance in this service group.
- 16 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is still online and select **Unfreeze**.
- 17 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on the node where it was online.
- 18 Repeat [step 9](#) through [step 17](#) on each additional node if more than two SQL 2000 nodes are in use.
- 19 For a Disaster Recovery environment, repeat this procedure at the secondary site.
- 20 When Microsoft SQL 2000 Server Service Pack 4 has been completely installed on all nodes, test user connectivity to the instances.
- 21 Test the SQL Server Service Group by bringing it online and failing it over from node to node. When testing is complete, the upgrade is complete.
- 22 If more than one SQL Server Service Group is present, repeat this entire procedure for each SQL Server Service Group.

Configuring Microsoft SQL 2005 Server SP1 in a Veritas Cluster Server environment

This section outlines the procedure needed to install Microsoft SQL 2005 Server SP1 on a computer running Veritas Cluster Server.

Consider the following points before applying Microsoft SQL 2005 Server SP1 to a production server:

- Make sure that you have a recent backup of your system and user databases.
- Server down time is required for this procedure.

Note: This procedure assumes you have a recent flat-file backup of the MSSQL Data Files directory on the shared disk, in this example, S:\Microsoft SQL Server, and that your current SQL directory is called S:\MSSQL\$SQL2000, in this example, on the same drive letter. If yours are named differently, substitute your directory names where appropriate.

To install Microsoft SQL 2005 Server SP1

- 1 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on all nodes.
- 2 On the node where the SQL Server Service Group was taken offline, online the SQL 2005 resource for the shared drive containing the SQL databases.
- 3 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is now online, and select **Freeze >Persistent**.
- 4 Verify that the VVR RVG service group is online on the node where Microsoft SQL 2005 Service Pack 1 is to be installed. Install Microsoft SQL 2005 Service Pack 1 on the active node (where the SQL Server Service Group is online), using the instructions provided by Microsoft.
 See the *Veritas Storage Foundation and High Availability Solutions HA and Disaster Recovery Solutions Guide for Microsoft SQL*.
- 5 Repeat [step 4](#) for each additional SQL instance in this service group, if you have more than one instance in this service group.
- 6 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is still online and select **Unfreeze**.
- 7 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on the node where it was online.
- 8 On the failover node, online the SQL 2005 resource for the shared drive containing the SQL databases.

- 9 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is now online and select **Freeze >Persistent**.
- 10 Install Microsoft SQL 2005 Service Pack 1 on the active node (where the SQL Server Service Group is online), using the instructions provided by Microsoft SQL Server 2005 Service Pack 1 Setup.
- 11 Repeat [step 10](#) for each additional SQL instance in this service group, if you have more than one instance in this service group.
- 12 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group which is still online and select **Unfreeze**.
- 13 From the Veritas Cluster Manager Console, right-click the SQL Server Service Group and select **Offline** on the node where it was online.
- 14 Optionally reboot and online each service group to verify the database connect for each node.
- 15 Repeat [step 8](#) through [step 14](#) on each additional node if more than two SQL 2005 nodes are in use.
- 16 For a Disaster Recovery environment, repeat this procedure at the secondary site.
- 17 When Microsoft SQL 2005 Server Service Pack 1 has been completely installed on all nodes, test user connectivity to the instances.
- 18 Test the SQL Server Service Group by bringing it online and failing it over from node to node. When testing is complete, the upgrade is complete.
- 19 If more than one SQL Server Service Group is present, repeat this entire procedure for each SQL Server Service Group.

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