

# Veritas™ Cluster Server Installation and Upgrade Guide

Windows Server 2003

5.1

# Veritas Cluster Server Installation and Upgrade Guide

Copyright © 2008 Symantec Corporation. All rights reserved.

Veritas Cluster Server

Symantec, the Symantec logo, Veritas, and Veritas Cluster Server are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

The product described in this document is distributed under licenses restricting its use, copying, distribution, and decompilation/reverse engineering. No part of this document may be reproduced in any form by any means without prior written authorization of Symantec Corporation and its licensors, if any.

THIS DOCUMENTATION IS PROVIDED “AS IS” AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID, SYMANTEC CORPORATION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING PERFORMANCE, OR USE OF THIS DOCUMENTATION. THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

The Licensed Software and Documentation are deemed to be “commercial computer software” and “commercial computer software documentation” as defined in FAR Sections 12.212 and DFARS Section 227.7202.

Symantec Corporation  
20330 Stevens Creek Blvd.  
Cupertino, CA 95014  
[www.symantec.com](http://www.symantec.com)

## Third-party legal notices

Third-party software may be recommended, distributed, embedded, or bundled with this Symantec product. Such third-party software is licensed separately by its copyright holder. All third-party copyrights associated with this product are listed in the accompanying release notes.

Windows is a registered trademark of Microsoft Corporation.

## Licensing and registration

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

## Technical support

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



# Contents

Chapter 1	Preinstallation and planning	
	Prerequisites .....	8
	Installation requirements .....	8
	Supported hardware .....	8
	Supported software .....	8
	Hardware requirements .....	12
	Network requirements .....	13
	Supported browsers .....	14
	Firewall and anti-spyware considerations .....	15
	Licensing .....	15
	Best practices .....	17
	Planning the installation .....	17
	About Symantec Product Authentication Service .....	18
	About Veritas Cluster Management Console .....	18
	About notification .....	19
	About global clusters .....	19
Chapter 2	Installing Veritas Cluster Server	
	About installing Veritas Cluster Server .....	22
	Installing the software using the product installer .....	22
	Resetting the driver signing options .....	24
	Installing the software from the command line .....	25
	Example for Setup.exe: Client installation .....	27
	Example for Setup.exe: Server installation .....	27
	Configuring Veritas Cluster Server .....	28
	License management .....	28
	Uninstalling using the product installer .....	29
	Uninstalling from the command line .....	31
	Setup.exe example: Uninstalling the client components .....	32
	Setup.exe example: Uninstalling the server components .....	32
Chapter 3	Upgrades	
	Upgrading to Veritas Cluster Server 5.1 .....	34
	Preparing to upgrade to VCS 5.1 .....	34
	Upgrading to VCS 5.1 .....	36
	Tasks after upgrading to VCS 5.1 .....	39

Microsoft Service Pack upgrades .....	41
Configuring Microsoft Exchange 2003 SP2 in a VCS environment .....	41
Configuring Microsoft Exchange 2007 SP1 in a VCS environment .....	42
Configuring Microsoft SQL 2000 SP4 in a VCS environment .....	45
Configuring Microsoft SQL 2005 SP2 in a VCS environment .....	47
Upgrading an Exchange Server cluster .....	49
Upgrade scenarios .....	49
Upgrade tasks .....	49
Upgrading a SQL Server cluster .....	50
Upgrade scenarios .....	50
Upgrade tasks .....	50
Upgrading from Microsoft SQL Server 2000 to SQL Server 2005 .....	51

## Appendix A Services and ports used by VCS

### Index

# Preinstallation and planning

This chapter contains the following topics:

- [“Prerequisites”](#) on page 8
- [“Installation requirements”](#) on page 8
- [“Licensing”](#) on page 15
- [“Planning the installation”](#) on page 17

## Prerequisites

Review the following prerequisites:

- Review the *Veritas Cluster Server Release Notes*.
- 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://www.symantec.com/business/support/index.jsp> 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

Supported application versions and the operating systems are listed below. You must install the operating system in the same path on all systems. For example, if you install Windows 2003 on C:\WINDOWS of one node, installations on all other nodes must be on C:\WINDOWS. Make sure that the same drive letter is available on all nodes and that the system drive has adequate space for the installation.

---

**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

**Table 1-1** Microsoft Exchange servers and operating systems

Microsoft Exchange servers	operating systems
<ul style="list-style-type: none"> <li>■ Microsoft Exchange Server 2007 Standard Edition or Enterprise Edition (SP1 supported)</li> </ul>	<ul style="list-style-type: none"> <li>■ Windows Server 2003 x64 (Standard Edition, Enterprise Edition, Datacenter Edition) (SP1 required for all editions, SP2 supported)</li> <li>■ Windows Server 2003 R2 x64 (Standard Edition, Enterprise Edition, Datacenter Edition)</li> </ul>
Microsoft Exchange Server 2003 Standard Edition or Enterprise Edition (SP2 supported)	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (Standard Edition, Enterprise Edition, or Datacenter Edition) (SP1 required for all editions, SP2 supported)</li> <li>■ Windows Server 2003 R2 (Standard Edition, Enterprise Edition, or Datacenter Edition)</li> </ul>

## Oracle versions and their operating systems

**Table 1-2** Oracle versions and operating systems

Oracle versions	Windows Server versions
Oracle 9i, Release 2 (9.2.0.2) Standard Edition, Enterprise Edition	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 (32-bit) R2 Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 for Itanium-based Systems Enterprise Edition or Datacenter Edition (SP2 required for both)</li> </ul>
Oracle 10g, Release 1 (10.1.0.2) Standard Edition, Enterprise Edition	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 for Itanium-based Systems Enterprise Edition or Datacenter Edition (SP2 required for both)</li> </ul>

Oracle versions	Windows Server versions
Oracle 10g, Release 2 (10.2.0.1.0) Standard Edition, Enterprise Edition	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 (32-bit) R2 Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 for Itanium-based Systems Enterprise Edition or Datacenter Edition (SP2 required for both)</li> <li>■ Windows Server 2003 (64-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> <li>■ Windows Server 2003 (64-bit) R2 Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 required for all editions)</li> </ul>

## Microsoft SQL Servers and their Microsoft SQL Servers and their operating systems

**Table 1-3** Microsoft SQL Servers and operating systems

Microsoft SQL Servers	operating systems
Microsoft SQL Server 2000 Standard Edition or Enterprise Edition (SP4 required)	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP1 required for all editions, SP2 supported)</li> <li>■ Windows Server 2003 R2 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition</li> </ul>
Microsoft SQL Server 2000 (64-bit) Enterprise Edition	Windows Server 2003 for Itanium-based systems: Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)
Microsoft SQL Server 2000 Standard Edition or Enterprise Edition (SP4 required for all editions)	<ul style="list-style-type: none"> <li>■ Windows Server 2003 x64 Editions: Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP1 required for all editions, SP2 supported)</li> <li>■ 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)</li> </ul>

**Table 1-3** Microsoft SQL Servers and operating systems

Microsoft SQL Servers	operating systems
Microsoft SQL Server 2005, (32-bit) Standard Edition or Enterprise Edition (SP1 required for all editions)	<ul style="list-style-type: none"> <li>■ Windows Server 2003 (32-bit) Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)</li> <li>■ Windows Server 2003 R2 (32-bit) Standard Edition, Enterprise Edition, or Datacenter Edition (SP2 supported for all editions)</li> <li>■ Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP2 supported for all editions)</li> <li>■ Windows Server 2003 x64 R2 Editions: Standard x64 R2 Edition, Enterprise x64 R2 Edition, or Datacenter x64 R2 Edition (SP2 supported for all editions)</li> </ul>
Microsoft SQL Server 2005, (64-bit) Standard Edition or Enterprise Edition (SP1 required for all editions)	<ul style="list-style-type: none"> <li>■ Windows Server 2003 for Itanium-based systems: Enterprise Edition or Datacenter Edition (SP1 required for all editions, SP2 supported)</li> <li>■ Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition (SP2 supported for all editions)</li> <li>■ Windows Server 2003 x64 R2 Editions: Standard x64 R2 Edition, Enterprise x64 R2 Edition, or Datacenter x64 R2 Edition (SP2 supported for all editions)</li> </ul>

**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 Server 2003
- Network Appliance SnapManager for Exchange 4.0 with Exchange Server 2007
- Network Appliance SnapManager for SQL 2.0

- Network Appliance Data ONTAP 7.2
- Network Appliance SnapDrive 4.1, 4.2, and 5.0  
When installing SnapDrive, you must specify a user account in the SnapDrive Service Credentials dialog box. The user account must be a domain user and part of the Administrators group of the local system and the filer.
- Microsoft iSCSI software Initiator 2.02 and 2.05
- NetApp FCP Attach Kit 3.0, Windows Host Utilities 3.0  
If you plan to use Fibre Channel (FC) for connecting the LUNs, ensure that you install the NetApp FCP Attach Kit or Windows Host Utilities on all the cluster nodes. Refer to NetApp documentation for more details.  
If you are setting up a failover environment over Fibre Channel (FC), install the following Microsoft Windows hotfixes required for NetApp SnapDrive version 4.1, on each node in the VCS One server farm:
  - Q903081\_W2K3\_SP1 - Storport.sys (Required: 5.2.3790.2497)
  - Q898790 - mountmgr.sys (Required: 5.2.3790.2443)
  - Q902837 - Classpnp.sys (Required: 5.2.3790.2473)
  - Q891957 - Volsnap.sys (Required: 5.2.3790.2476)
  - Q912848 - ftdisk.sys (Required: 5.2.3790.2607)
  - Q908249 - Ntoskrnl.exe (Required: 5.2.3790.2534)Depending on your setup environment, the NetApp SnapDrive 4.1 installer may still display a list of Microsoft hotfixes that are required to install, before installing SnapDrive 4.1. Ensure that you download and install all the required Microsoft hotfixes.

---

**Note:** After installing the Microsoft hotfixes required for SnapDrive 4.1, you may not be able to uninstall these hotfixes.

---

## Hardware requirements

### Memory

- Minimum required: 1GB
- Recommended: 2GB

### System processor

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

## Display resolution

- 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.

## System requirements

- Shared disks to support applications that migrate between nodes in the cluster. Campus clusters require more than one array for mirroring. Disaster recovery configurations require one array for each site.
- SCSI or Fibre Channel Host Bus Adapters (HBAs), or iSCSI Initiator supported NICs to access shared storage.
- Two NICs: one shared public and private, and one exclusively for the private network; Symantec recommends three NICs: one public and two for the VCS private network.

## Network requirements

- Verify the systems on which you install the software are part of a Windows Active Directory domain.
- Static IP addresses for the following purposes:
  - One IP address per site for each virtual server
  - One IP address for each physical node in the cluster
  - One IP address per cluster when configuring Notification, VCS Web Console. The same IP address can be used for all options.
- Configure name resolution for each node.
- Verify the availability of DNS Services. AD-integrated DNS or BIND 8.2 or higher are supported. Make sure a reverse lookup zone exists in the DNS. Refer to the application documentation for instructions on creating a reverse lookup zone.
- DNS scavenging affects virtual servers configured in VCS because the Lanman agent uses Dynamic DNS (DDNS) to map virtual names with IP addresses. If you use scavenging, then you must set the `DNSRefreshInterval` attribute for the Lanman agent. This will enable the Lanman agent to refresh the resource records on the DNS servers. See the Lanman agent description in the *Veritas Cluster Server Bundled Agents Reference Guide* for more information.
- Make sure that the NetApp filers reside in the same domain as the systems.

- Make sure that the NetApp filers are reachable; ensure that you can ping the filers using the DNS name.
- If you plan to set up a disaster recovery configuration, make sure that:
  - The volumes at both sites are of the same size.
  - The NetApp filers can replicate in both directions.
- Configure the Common Internet File System (CIFS) for each volume. See the Network Appliance documentation for instructions.
- If you plan to use Fibre Channel (FC) for connecting the LUNs, type `hba_info` on the command prompt, and verify that the FC initiators are displayed.  
If FC initiators are not displayed, install the mini port driver provided by your vendor and run the command again to verify that the FC initiators are displayed.
- Ensure that the LUNs are mounted. In case of MPIO, ensure that the LUNs are mounted using the required initiators.

---

**Note:** MPIO support is available only with FC.

---

- If the domain controller and the computer running the installation program are on different subnets, the installer may be unable to locate the computers selected for installation. In this situation, after the installation program displays an error message, type the host names and the IP addresses of the missing computers manually.

## 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.

- If you have configured Windows Firewall, add the following to the Firewall Exceptions list:
  - Port 14150 or the VCS Command Server service, %vcs\_home%\bin\CmdServer.exe.  
Here, %vcs\_home% is the installation directory for VCS, typically C:\Program Files\Veritas\Cluster Server.
  - Port 14141

Ensure that the firewall settings allow access to the services and ports used by VCS. See [Appendix A, “Services and ports used by VCS”](#) on page 55 for a list of services and ports used by VCS.

## Licensing

Each copy of Veritas Cluster Server 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 1-4](#) lists Veritas Cluster Server editions and the additional licensing terms that apply.

**Table 1-4** Veritas Cluster Server licensing terms

Microsoft Operating System Edition	Veritas Cluster Server licensing terms
<ul style="list-style-type: none"> <li>■ Server Edition</li> <li>■ Standard Edition</li> <li>■ Web Edition</li> </ul>	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"> <li>■ Advanced Edition</li> <li>■ Enterprise Edition</li> </ul>	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.



## Best practices

- Symantec recommends that you configure Microsoft Exchange Server and Microsoft SQL Server on separate failover nodes within a cluster.
- Symantec recommends three network adapters (two NICs exclusively for the private network and one for the public network).  
When using only two NICs, implement the second private link as a low-priority link over a public interface.
- Route each private NIC through a separate hub or switch to avoid single points of failure.
- Verify that you have set the Dynamic Update option for the DNS server to Secure Only.

## 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 Cluster Configuration Wizard (VCW) to complete the VCS cluster configuration. The VCW 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.

For more information, see the *Veritas Cluster Server Management Console Implementation Guide*.

## 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 Cluster Configuration Wizard (VCW) are described in the *Veritas Cluster Server Administrator's Guide*.



# Installing Veritas Cluster Server

This chapter contains the following topics:

- [“Installing the software using the product installer”](#) on page 22
- [“Installing the software from the command line”](#) on page 25
- [“Configuring Veritas Cluster Server”](#) on page 28
- [“License management”](#) on page 28
- [“Uninstalling using the product installer”](#) on page 29
- [“Uninstalling from the command line”](#) on page 31

## 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, **Veritas Cluster Server 5.1 for Windows**.
- 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**:
  - **Veritas Cluster Server 5.1 for Windows (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**
  - **Enterprise Vault (EV) Cluster Setup Wizard**
  - **Product Documentation**
  - **Veritas Cluster Server 5.1 for Windows (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 <b>Add</b> 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 <b>Remove</b> .

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. A silent installation can be performed only on one node at a time. 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 maximum length of the argument string is 512 characters.

---

**Note:** To install the server and matching client components, run the `Setup.exe /s` command twice, once with the `Solution` parameter set for the server component and the next 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>	Set to the type of installation. 6 = VCS (Server Components) 7 = VCS (Client Components) The default setting is 6 for server components. Example: <b>SOLUTION=6</b>

**Table 2-1** Parameters for installing the product

Parameter	Use
<i>InstallMode</i>	<p>Set to indicate an installation or uninstallation.</p> <p><b>1</b> = To install</p> <p><b>5</b> = To uninstall</p> <p>The default setting is <b>1</b> to install.</p> <p>Example: <b>INSTALL_MODE=1</b></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:  <b>INSTALLDIR="C:\InstallationDirectory"</b></p>
<i>Reboot (optional)</i>	<p>Setting for the automatic reboot of the system at the completion of the installation.</p> <p><b>0</b> = No reboot</p> <p><b>1</b> = Reboot</p> <p>The default setting is 0 for no system reboot.</p> <p>Example: <b>REBOOT=1</b></p>
<p><b>Note:</b> 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: <b>"PC177VM-3"</b></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: <b>LICENSEKEY="123-234-123-234-345"</b></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 are:</p> <ul style="list-style-type: none"><li>■ <b>ntap</b></li><li>■ <b>GCO</b></li><li>■ <b>exchange</b></li><li>■ <b>sql</b></li></ul> <p>Example: <b>OPTIONS="GCO"</b></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,SQL"
```

## 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 **Veritas Cluster Server 5.1 for Windows (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 **Veritas Cluster Server 5.1 for Windows (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 uninstallation** 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 uninstallation.  
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 remote 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 32. See “[Setup.exe example: Uninstalling the server components](#)” on page 32.

### 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. <b>1</b> = To install <b>5</b> = To uninstall The default setting is <b>1</b> to install. Set this parameter to <b>5</b> for uninstall. Example: <b>Install_mode=5</b>
<code>Solution</code>	Set to the type of uninstallation. <b>6</b> = VCS 5.1 (Server Components) <b>7</b> = VCS 5.1 (Client Components) Example: <b>Solution=6</b> <b>Note:</b> To uninstall the server and matching client components, run two <code>setup.exe /s</code> commands, one with the <code>Solution</code> parameter set for the server component and the other set for the matching client component.

**Table 2-2** Parameters for uninstalling the product

Parameter	Use
Reboot	Setting for the automatic reboot of the system at the completion of the installation.  <b>0</b> = No reboot <b>1</b> = Reboot  The default setting is <b>0</b> for no system reboot.  Example: <b>Reboot=1</b>
Node	Set the node name. Specify only one node at a time.  The local node is the default setting when the node is unspecified.  Example: <b>Node="PC177VM-3"</b>

## 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
```



# Upgrades

This chapter contains the following topics:

- [“Upgrading to Veritas Cluster Server 5.1”](#) on page 34
- [“Microsoft Service Pack upgrades”](#) on page 42
- [“Upgrading an Exchange Server cluster”](#) on page 50
- [“Upgrading a SQL Server cluster”](#) on page 51

## Upgrading to Veritas Cluster Server 5.1

This section describes the tasks to be carried out when upgrading to Veritas Cluster Server 5.1.

---

**Note:** If you are upgrading from VCS 4.3 to VCS 5.1, verify the version of Snapdrive installed. If you have Snapdrive 3.2 installed and you upgrade to VCS 5.1, all the wizards that were working before the upgrade, will stop working. You must upgrade to VCS 5.1 first and then upgrade the Snapdrive installation to version 4.1 or above.

---

### Preparing to upgrade to VCS 5.1

When upgrading the product, perform the following general pre-upgrade tasks:

- Back up all your data.
- Back up the system state.
- Check the hardware requirements for the software upgrade.
- Check to see if you need to update the Microsoft Active Directory to support the upgraded software.
- Test the system after each upgrade, especially after applying product upgrades to meet the minimum version required. An incremental upgrade eases the troubleshooting process.

### Removing VCS Management Console 5.1

If one or more nodes in the cluster have Veritas Cluster Server Management Console 5.1 installed, you must remove the management console before upgrading VCS. You can reinstall the management console after the upgrade.

See “[Re-installing VCS Management Console 5.1](#)” on page 40.

#### To remove VCS Management Console 5.1

- 1 Stop the VCS Management Console. If the management console is clustered, take the CMC\_MS service group offline.
- 2 Back up the console’s data directory and datadir.conf files. Typically, the files are located at the following paths:
  - C:\Program Files\Symantec\VRTScmcm
  - or
  - C:\Program Files (x86)\Symantec\VRTScmcm

- 3 Remove VCS Management Console 5.1 from all nodes in the cluster using Windows Add/Remove Programs.

## Saving and closing the cluster configuration

Before starting the upgrade process, use the VCS Java Console to “save and close” the configuration. This operation involves saving the latest configuration to disk and changing the configuration state to read-only mode. You must also stop VCS before attempting the upgrade process.

### To save and close the configuration

- 1 Open the VCS Java Console.
- 2 Click **Save and Close Configuration** on the Cluster Explorer toolbar.

### To take the service groups offline

- 1 From the command prompt, type the following on the command prompt:  

```
C:\>hagrp -offline group_name -sys system_name
```

where `group_name` is the name of the service group and `system_name` is the node on which the group is online.
- 2 Repeat this command for all service groups that are online.

### To stop VCS GUIs

- 1 From the Cluster Manager (Java Console), click **File > Logout** on the Cluster Explorer window and then click **File > Exit** on the Cluster Monitor window.
- 2 For Cluster Management Console (CMC), click **Logout** on the title bar of the Cluster Management Console.

### To stop VCS services

- 1 Stop HAD on all the cluster nodes. Type the following on the command prompt:  

```
C:\>hastop -all -force
```
- 2 Stop the Veritas Command Server service on all the cluster nodes. Type the following on the command prompt:  

```
C:\>net stop cmdserver
```
- 3 Stop GAB and LLT on all the cluster nodes. Type the following on the command prompt:  

```
C:\>net stop gab  
C:\>net stop llt
```

## Backing up customized type definitions

The cluster type definitions are reset to their default values after the upgrade. If you have modified the values of type definitions in the cluster, make a backup copy of the `types.cf` file before the upgrade. You will have to update the type definition default values after the upgrade.

The `types.cf` file is located at `%VCS_HOME%\conf\config`.

The variable `%VCS_HOME%` is the default installation directory for VCS, typically `C:\Program Files\VERITAS\Cluster Server`.

## Upgrading to VCS 5.1

Make sure to select the same agents and options while upgrading the software. If you do not want to include the enterprise agents and options in the upgraded cluster, uninstall the agents from the cluster before proceeding.

### Changing driver signing options

When upgrading on systems running Windows Server 2003, you must set the Windows driver signing option to ignore software authentication warning messages.

#### To change the driver signing options

- 1 Open the Control Panel and click **System**.
- 2 Click the **Hardware** tab and click **Driver Signing**.
- 3 In the Driver Signing Options dialog box, note the current setting, and select **Ignore**.
- 4 Click **OK**.
- 5 Repeat for each node in the cluster.

If you do not change these options, the installer rejects the node at validation and halts the upgrade. After you complete the upgrading, you should reset the driver signing options to their previous state.

#### To upgrade the product using the installer

- 1 Allow the autorun feature to start the installation or double-click **Setup.exe**.
- 2 Choose the default language for your installation and click **OK**. The product selection screen appears.
- 3 Click **Veritas Cluster Server 5.1 for Windows**.
- 4 If asked, click **Complete/Custom** to begin installation, otherwise continue to the next step.
- 5 Review the welcome message and click **Next**.
- 6 If you agree to the terms of the license agreement, click **Next**.
- 7 Enter the product license key before adding license keys for features.
  - Enter the license key in the top field and click **Add**.
  - Repeat for additional license keys.
    - To remove a license key, click the key to select it and click **Remove**.
    - To see the license key's details, click the key.

- Click **Next**.
- 8 Select the appropriate product options and click **Next**.
  - 9 Select the appropriate installation options and click **Next**.  
If any previous VCS agents and options are installed on the node, make sure you select the same agents and options while upgrading. If you do not want to include the agents and options in the upgraded cluster, uninstall them from the cluster before proceeding.
  - 10 To install the client components on all the nodes in your installation, verify that the check box is checked.  
Click **Next**.
  - 11 Specify the domain and nodes for the upgrade.
    - Select the domain and the node. These lists can take some time to populate depending on domain and network size, speed, and activity.
    - To add a computer for installation, click **Add**. You can also type the computer's name in the Computer field.  
To remove a computer, click the computer in the Selected Computers for Installation field, and click **Remove**.
    - Repeat the above steps for each node.  
Click a computer's name to see its description.
    - Click **Next**.
  - 12 The installer checks the prerequisites for the selected computers and displays the results. Review the information and click **Next**.  
Note that the Install Type for the nodes is listed as **Upgrade**. If an error occurs, address the problem described in the **Details** box.
  - 13 If the installer has detected problems, review the messages, taking action where necessary, and click **Yes**.
  - 14 Review the information and click **Install**. Click **Back** to make changes.
  - 15 If the installation is successful on all nodes, the installer automatically proceeds to the installation report. Click **Next**.  
If an installation fails, click **Next** to review the report and address the reason for failure. You may have to either repair the upgrade or uninstall and re-install the upgrade to continue.  
If a security alert asks you to accept the Veritas driver software, click **Yes**.
  - 16 Reboot the remote nodes. Note that you cannot reboot the local node now, and that failed nodes are unchecked by default.
    - 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**.
- 17 Review the log files and click **Finish**.
  - 18 Click **Yes** to reboot the local node.

To ensure a secure system environment, change the driver signing options for the remote Windows Server 2003 systems to the original state of **Warn** or **Block**.

#### To reset the driver signing options

- 1 Open the Control Panel, and click **System**.
- 2 Click 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** and repeat for each upgraded system.

After upgrading to VCS 5.1 run the following command to check the state of the cluster:

```
C:\> hasys -state
```

If the cluster goes to "stale admin wait" state, then modify the main.cf file as per the following procedure.

- 1 Stop the Veritas High Availability Engine (HAD) on all the cluster nodes.  
Type the following on the command prompt:  

```
C:\>hastop -all -force
```
- 2 On a cluster node, open the cluster configuration file main.cf from the %VCS\_HOME%\conf\config directory and modify it as follows:  
Add curly brackets enclosing the Initiator entry. The Initiator entry should be as follows:  

```
Initiator @THORPC126 = {"iqn.1991-05.com.microsoft:  
THORPC126.veritas.com"}
```
- 3 Start the Veritas High Availability engine (HAD) on the node where main.cf was modified.  
Type the following on the command prompt:  

```
C:\> hastart
```

  
Make sure that HAD is in the RUNNING state on the node.
- 4 Start the Veritas High Availability engine (HAD) on the remaining cluster nodes.  
Type the following on the command prompt:

```
C:\> hastart -all
```

You can now bring the service groups online.

## Tasks after upgrading to VCS 5.1

Tasks after upgrading VCS may include the following tasks, depending on the environment at the site:

- [“Re-installing VCS Management Console 5.1”](#) on page 40
- [“Modifying PrintShare service groups after upgrading VCS”](#) on page 40
- [“Importing the VCS Management Pack”](#) on page 41
- [“Changing the type definition default values”](#) on page 41

### Re-installing VCS Management Console 5.1

#### To re-install VCS Management Console

- 1 Install VCS Management Console 5.1.  
Refer to the *Veritas Cluster Server Management Console Implementation Guide*.
- 2 Restore the backed up VCS Management Console 5.1 data files.  
See [“Removing VCS Management Console 5.1”](#) on page 34.
- 3 Start the VCS Management Console. If the management console is clustered, bring the CMC\_MS service group online.

### Modifying PrintShare service groups after upgrading VCS

The PrintShare agent is modified to address performance issues in cases where a large number of printshare resources are configured in a service group. A new process, PrintMonitor.exe, handles the printer addition notifications and configures regrep resources for them.

If you have PrintShare service groups in the cluster, you must run the Print Share Configuration wizard after upgrading VCS. The wizard modifies existing PrintShare service groups per the new changes to the PrintShare agent.

---

**Note:** Do not add or remove any resources, or modify any other attributes in the print share service group for the first time you run the Print Share Configuration Wizard to modify the service group.

---

Before you modify the existing print share service group:

- Make sure that the VCS engine (HAD) is running on the cluster node.



- Mount the drives or LUNs that contain the spooler and the registry replication directories on the system on which you will run the wizard.

#### To modify the print share service group after an upgrade

- 1 Start the Print Share Configuration Wizard. (**Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Print Share Configuration Wizard**)
- 2 Read the information on the Welcome panel and click **Next**.
- 3 On the Wizard Options panel, click **Modify service group**, select your existing print share service group, and then click **Next**.
- 4 Click **Next** on the subsequent wizard panels and complete the wizard steps. You can now bring the printshare service group online.

### Importing the VCS Management Pack

This rollup patch contains fixes for the VCS Management Pack. If you have deployed the VCS Management Pack for Microsoft Operations Manager 2005 in your cluster environment, you can re-import the updated VCS Management Pack after installing the rollup patch.

The updated VCS Management Pack is included with the rollup patch software. Import the appropriate VCS Management Pack (.akm file) using the MOM 2005 SP1 Administrator Console.

While importing the management pack, ensure that you select the **Update existing Management Pack** option in the Management Pack Import/Export Wizard.

### Changing the type definition default values

The cluster type definitions are reset to their default values after the upgrade. Refer to the backup copy of the types.cf file. Use the Cluster Manager (Java Console) to change the type definition default values with the values from the types.cf backup file.

---

**Note:** Do not replace the types.cf file with the backup copy after the upgrade. The backup copy must be used only as a reference for the customized type definition values in the cluster.

---

## Microsoft Service Pack upgrades

This section covers:

- [Configuring Microsoft Exchange 2003 SP2 in a VCS environment](#)
- [Configuring Microsoft Exchange 2007 SP1 in a VCS environment](#)
- [Configuring Microsoft SQL 2000 SP4 in a VCS environment](#)
- [Configuring Microsoft SQL 2005 SP2 in a VCS environment](#)

### Configuring Microsoft Exchange 2003 SP2 in a VCS environment

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

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

```
C:\> hastop -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:\> hastart
```
- 5 Take offline the Exchange service group on the node after the installation.
- 6 Restart WMI services on the node.
- 7 Repeat [step 1](#) through [step 6](#) on all remaining nodes that are part of the Exchange service group.

- 8 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 Exchange 2007 SP1 in a VCS environment

This section describes the steps to configure Exchange 2007 SP1 using the Exchange 2007 Upgrade Wizard. It is applicable only if you already have Exchange 2007 set up in a VCS cluster environment.

### Prerequisites

Before you proceed with the Exchange 2007 upgrade, do the following:

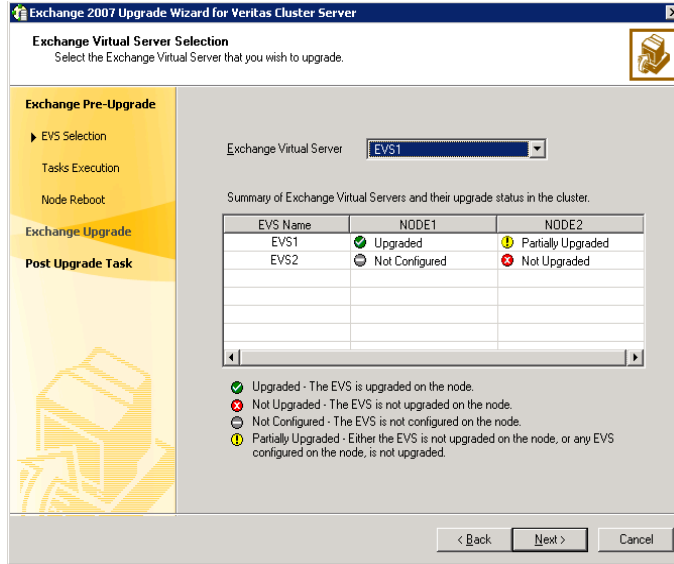
- Ensure that the Exchange 2007 service group is offline in the cluster. While performing the upgrade the Exchange 2007 Upgrade Wizard renames and then restarts the cluster node.
- Exit all other programs before you run the wizard on a cluster node.

Complete the following steps on all cluster nodes that are part of the Exchange 2007 service group, one node at a time.

#### To upgrade Exchange 2007 to Exchange 2007 SP1

- 1 On one of the cluster nodes, click **Start > Programs > Symantec > Veritas Cluster Server > Configuration Tools > Exchange 2007 Upgrade Wizard** to start the Exchange 2007 Upgrade wizard.
- 2 Review the information on the Welcome panel and click **Next**.
- 3 On the Exchange Virtual Server Selection panel, select the Exchange virtual server that you wish to upgrade and then click **Next**.

The Summary table provides the details of the Exchange virtual servers in the cluster and their upgrade status on each cluster node.



- 4 The wizard performs the tasks required to set up the VCS environment for the Exchange upgrade. The Tasks table displays the progress of the various tasks. After all the tasks are completed, click **Next**.
- 5 Review the information on the Cluster Node Reboot panel and then click **Reboot**. The wizard prompts you to reboot the node. Click **Yes** to reboot the node.

The Exchange virtual server name is temporarily assigned to the cluster node. On rebooting the node, the Exchange 2007 Upgrade Wizard is launched automatically with a message that the Exchange pre-upgrade tasks are complete. Do *not* click **Continue** at this time. Wait until after the Exchange upgrade is complete.

- 6 Run the Exchange 2007 SP1 installer to upgrade Exchange 2007 on the node. Type the following at the command prompt:  

```
<drive letter>:\setup.com /mode:Upgrade
```

 Here <drive letter> is the drive where the Exchange SP1 installer is located.

---

**Note:** You can also run Setup.exe to launch the installer GUI for upgrading Exchange. If using the installer GUI, ensure that you do not select any other Exchange 2007 server role. Only the Mailbox server role must be upgraded.

---

Verify that the upgrade has completed successfully. In case the upgrade has partially succeeded or has failed, resolve the error and ensure that the upgrade is successful. Refer to the Microsoft Exchange documentation for more information.

- 7 Return to the Exchange 2007 Upgrade Wizard and click **Continue**.  
If the wizard is not running, click **Start > Programs > Symantec > Veritas Cluster Server > Configuration Tools > Exchange 2007 Upgrade Wizard** to start the wizard and then click **Next**.
- 8 The wizard performs the tasks required to set up the VCS environment after the Exchange upgrade. The Tasks table displays the progress of the various tasks. After all the tasks are completed, click **Next**.
- 9 Review the information on the completion panel and then click **Finish**.  
The wizard displays the status of the Exchange virtual server upgrade. The Summary table provides the details of the Exchange virtual servers in the cluster and their upgrade status on each cluster node.
- 10 Repeat these steps on the remaining cluster nodes. After you have upgraded all the cluster nodes that are configured to host the Exchange virtual server, bring the Exchange 2007 service group online in the cluster.

---

**Note:** Do not bring the Exchange 2007 service group online until you have completed the upgrade on all the cluster nodes that are part of the service group.

---

### Upgrade considerations in case of multiple Exchange virtual servers

Consider the scenario where there are multiple Exchange virtual server instances in the cluster (an any-to-any configuration).

[Table 3-1](#) describes the configuration objects.

**Table 3-1** Exchange 2007 SP1 upgrade configuration objects

Object	Description
Node1, Node2, Node3	Physical node names
EVS1, EVS2	Exchange virtual servers

The configuration is such that:

- EVS1 can fail over on Node1 and Node2.
- EVS2 can fail over on Node3 and Node2.

So, Node2 is the common failover node for EVS1 and EVS2.

In this case, upgrade the Exchange virtual servers as follows:

- Upgrade EVS1 on Node1.
- Upgrade EVS2 on Node3.
- And then upgrade either EVS1 or EVS2 on Node2.  
You must upgrade Node2 (common failover node) only once; the Exchange virtual server (whether EVS1 or EVS2) does not matter.

In general, for multiple Exchange virtual servers, upgrade each Exchange virtual server on one cluster node first, and then upgrade any one of the Exchange virtual servers on the common failover nodes.

## Configuring Microsoft SQL 2000 SP4 in a VCS environment

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

### Prerequisites

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 NetAppSnapDrive 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 partially online, and select **Freeze >Persistent**.
- 5 Install Microsoft SQL 2000 Service Pack 4 on the active node (where the SQL Server Service Group is partially 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 NetAppSnapDrive 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 SP2 in a VCS environment

This section outlines the procedure needed to install Microsoft SQL 2005 Server SP2 on a computer running Veritas Cluster Server.

### Prerequisites

Before applying Microsoft SQL 2005 Server SP2 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 SP2

- 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 partially online, and select **Freeze > Persistent**.
- 4 Verify that the SQL Server service group is partially online on the node where Microsoft SQL 2005 Service Pack 2 is to be installed. Install Microsoft SQL 2005 Service Pack 2 on the active node (where the SQL Server Service Group is partially online), using the instructions provided by Microsoft.
- 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 2 on the active node (where the SQL Server Service Group is online), using the instructions provided by Microsoft SQL Server 2005 Service Pack 2 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 2 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.

## Upgrading an Exchange Server cluster

This section describes the upgrade scenarios and upgrade tasks for upgrading to VCS 5.1 in an Exchange 2003 cluster.

If you have an Exchange 2007 setup you may want to update Exchange with a service pack after upgrading VCS. For information on updating Exchange service packs, see “[Configuring Microsoft Exchange 2007 SP1 in a VCS environment](#)” on page 43.

### Upgrade scenarios

The following table presents possible scenarios for upgrading to a VCS 5.1 cluster with Microsoft Exchange.

**Table 3-2** Upgrade scenarios

Upgrade From			Upgrade To		
VCS Version	Operating System	Exchange Version	VCS Version	Operating System	Exchange Version
4.3, 5.0 or 5.0 RP1a	Windows Server 2003	Exchange 2003	5.1	Windows Server 2003	Exchange 2003

### Upgrade tasks

- Stop VCS Services before upgrading.  
 See “[Preparing to upgrade to VCS 5.1](#)” on page 34.
- Upgrade VCS to version 5.1.  
 See “[Upgrading to VCS 5.1](#)” on page 37.

# Upgrading a SQL Server cluster

This section provides information about upgrading to VCS 5.1 in a SQL Server cluster.

This section also provides information about upgrading from Microsoft SQL Server 2000 to SQL Server 2005. To upgrade SQL Server 2000 to SQL Server 2005, see [“Upgrading from Microsoft SQL Server 2000 to SQL Server 2005”](#) on page 52.

---

**Note:** If you are upgrading both Microsoft SQL Server and VCS, then you must upgrade SQL Server first and then proceed with upgrading VCS.

---

## Upgrade scenarios

The following table presents possible scenarios for upgrading to a VCS 5.1 cluster with SQL Server.

**Table 3-3** Upgrade scenarios

Upgrade From			Upgrade To		
VCS version	Operating System	SQL Server version	VCS version	Operating System	SQL Server version
■ 4.3, 5.0 or 5.0RP1a	Windows Server 2003	SQL 2000	5.1	Windows Server 2003	SQL 2000
■ 4.3, 5.0 or 5.0RP1a	Windows Server 2003	SQL 2005	5.1	Windows Server 2003	SQL 2005

## Upgrade tasks

- Stop VCS Services before upgrading.  
See [“Preparing to upgrade to VCS 5.1”](#) on page 34.
- Upgrade VCS to version 5.1.  
See [“Upgrading to VCS 5.1”](#) on page 37.

## Upgrading from Microsoft SQL Server 2000 to SQL Server 2005

The sequence for upgrading SQL Server and VCS is as follows:

- Upgrade SQL Server on the first node
- Upgrade SQL Server on each additional node
- Create the SQL Server 2005 service group
- Upgrade VCS 4.3, 5.0 or 5.0RP1a to VCS 5.1

Additionally you may want to upgrade SQL Server service pack. For information on upgrading service packs, see “[Configuring Microsoft SQL 2005 SP2 in a VCS environment](#)” on page 48.

### To upgrade SQL Server on the first node

- 1 Bring online the SQL 2000 service group resources up to the SQL Server 2000 resource. Right-click each resource and select **Online**. Click **Yes** in the confirmation pop-up to bring the resource online. This action brings online the disks, volumes, and IP address associated with SQL Server.
- 2 Right-click the SQL Server service group in treeview and click **Freeze > Persistent**.
- 3 Back up the SQL Server 2000 (MSSQL) and Registry (RegRep) folders on the shared disk by making a copy of each.
- 4 Start SQL Server 2000 under a local node context. Click **Start > Run** and type services.msc.
- 5 In the Services panel, find **MSSQLServer**, right-click it, and select **Start**.
- 6 Launch the Microsoft SQL Server 2005 installer and proceed through the installation process.  
Make sure that you select the option to upgrade the existing instance(s) when prompted to do so. This action automatically places the data files in the proper location.

---

**Note:** Depending on the circumstances, an in-place upgrade may not be suitable for your environment. Refer to Microsoft documentation before beginning any SQL Server upgrade.

---

- 7 Reboot the node if requested to do so when the installation completes.
- 8 Unfreeze and take offline the service group on the first node if you did not reboot. (Rebooting automatically takes the service group offline.)

Once you have completed the upgrade procedure on the first node, you must perform the following steps on each additional node in the cluster.

**To upgrade SQL Server on each additional node**

- 1 Bring online the SQL 2000 service group resources up to the SQL Server 2000 resource, but do not online the regrep resources. Right-click each resource and select **Online**. Click **Yes** in the confirmation pop-up to bring the resource online.
- 2 Restore the copies of the SQL Server 2000 (MSSQL) and Registry (RegRep) folders on the shared disk. Delete the original MSSQL and RegRep folders.
- 3 Bring online the regrep resources (right-click and select **Online**).
- 4 In the treeview, freeze the service group (right-click and select **Freeze > Persistent**).
- 5 Start SQL Server 2000 under a local node context. Click **Start > Run** and type services.msc.
- 6 In the Services panel, find **MSSQLServer**, right-click it, and select **Start**.
- 7 Launch the Microsoft SQL Server 2005 installer and proceed through the installation process.  
Make sure that you select the option to upgrade the existing instance(s) when prompted to do so. This action automatically places the data files in the proper location.  
Refer to your Microsoft SQL Server 2005 documentation for more detailed instructions on installing Microsoft SQL Server.
- 8 Reboot the node if requested to do so when the installation completes.
- 9 Unfreeze and take offline the service group on the secondary or additional node if you did not reboot. (Rebooting automatically takes the service group offline.)

Once you have completed upgrading all of the nodes in the SQL Server cluster, continue with creating the service group.

**To create the SQL Server 2005 service group**

- 1 On the first node, bring online the SQL Server resources from the SQL2000 service group. Right-click the resource, select **Online**, and select the first node.
- 2 Delete the existing SQL2000 service group (in treeview). Right-click the service group and select **Delete**. Click **Yes** when asked to confirm if you want to delete the service group.
- 3 Create the SQL2005 service group using the SQL Server Configuration Wizard. Click **Start > All Programs > Symantec > SQL Server Configuration Wizard**.

- 4 Test switch the service group to another node in the cluster. Right-click the service group in treeview, select **Switch To**, and select any additional node in the cluster.

Proceed with upgrading VCS. See “[Upgrading to VCS 5.1](#)” on page 37 for detailed steps on using the installer to upgrade to VCS 5.1.

# Services and ports used by VCS

If you have configured the Windows firewall, ensure that the firewall settings allow access to the services or ports used by VCS.

[Table A-1](#) displays the services and ports used by VCS.

---

**Note:** Port numbers appearing in bold are mandatory for configuring VCS.

---

**Table A-1** VCS services and ports

Port Number	Protocol	Description
<b>2148</b> , 3207	TCP/UDP	Veritas Enterprise Administrator (VEA) Server (vxsvc.exe)
<b>14150</b>	TCP	VCS Command Server (CmdServer.exe)
<b>14141</b>	TCP	Veritas High Availability Engine (had.exe) Veritas Cluster Manager (Java console) (ClusterManager.exe) VCS Agent driver (VCSAgDriver.exe)
<b>7419</b>	TCP	Solutions Configuration Center (SFWConfigPanel.exe) CCF Engine (CEngineDriver.exe) CCF Plugin Host (PluginHost.exe)
1099	TCP/UDP	Provider Access Layer (VxPAL.exe)
1556	TCP/UDP	Private Branch Exchange (pbx_exchange.exe)
2821	TCP/UDP	Veritas Security Services (VxSS)
8181, 14145	TCP/UDP	Veritas Cluster Management Console (CMC)

**Table A-1** VCS services and ports (Continued)

Port Number	Protocol	Description
14443	TCP	Veritas CMC Management Server. Used as SSL port for VRTSWeb.
4145	UDP	VCS Cluster Heartbeats
8443	TCP	VCS Secure Web Server
14144	TCP/UDP	VCS Notification
14153, 15550 - 15558	TCP/UDP	VCS Cluster Simulator
14155	TCP/UDP	VCS Global Cluster Option (GCO)
14300	TCP/UDP	VRTSWeb Admin



# Index

## A

Administrative Console 22

## C

command line installation 25

Complete/Custom 22, 36

configuration

    Microsoft Exchange 2007 SP1 42

    Microsoft SQL 2000 SP4 45

    Microsoft SQL 2005 SP1 47

## D

driver signing options

    changing for VCS 5.1 36

    resetting 38

## G

Global clusters

    about 19

## H

Hardware

    requirements 12

Hardware Compatibility List 8

## I

installation

    example

        client install 27

        server install 27

    license management 16

    Microsoft SQL 2000 SP4 45

    Microsoft SQL 2005 Server SP1 47

    prerequisites 8

    requirements 8

## L

licensing 15

    adding or removing 16

    adding or removing license keys 28

    evaluation key 16

    management 16, 28

    Virtual Server license policy 16

## M

Microsoft Exchange 2003 SP2 41

Microsoft Exchange 2007 SP1 42

Microsoft SQL 2000 SP4

    installing 45

Microsoft SQL 2005 Server SP1

    installation 47

## N

notification

    about 19

## P

planning for installation

    Veritas Cluster Server 17

ports

    used by VCS 55

product installer

    uninstalling 29

    upgrading to VCS 5.1 36

## R

requirements

    hardware 12

    installation 8

requirements for installation

    prerequisites 8

## S

setup.exe example

- client installation 27
- server installation 27
- uninstalling client 32
- uninstalling server 32
- setup.exe parameters
  - licenseKey 26
  - Node 32
  - options 27
  - Reboot 32
  - Solution 31
  - solution 26
- silent installation 25
- supported hardware 8
- supported software 8
- Symantec Product Authentication Service 18

## U

- uninstalling
  - using command line 31
  - using product installer 29
- upgrading
  - Microsoft Exchange 2003 SP2 41
- upgrading to VCS 5.1
  - changing driver signing options 36
  - using product installer 36

## V

- VCS
  - services and ports used 55
- VCS Configuration Wizard
  - configuring Veritas Cluster Server 28
- Veritas Cluster Management Console 18
- Veritas Cluster Server
  - configuring 28
  - configuring Microsoft Exchange 2003 SP2 41
  - configuring Microsoft SQL 2000 SP4 45
  - configuring Microsoft SQL 2005 SP1 42, 47
  - planning for installation 17
  - using the VCS Configuration Wizard 28, 57