

Symantec™ ApplicationHA Configuration Guide for VMware vCenter Server

Windows on VMware

6.1

Symantec™ ApplicationHA Configuration Guide for VMware vCenter Server

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Contents

Technical Support	4
Chapter 1	Introducing VMware vCenter Server 8
	About VMware vCenter Server 8
	About intelligent monitoring framework 8
	How IMF works 9
	How vCenter Server works with Symantec ApplicationHA 9
	GenericService agent 10
	vCenter Server services 10
	How Symantec ApplicationHA monitors vCenter Server 11
Chapter 2	Configuring application monitoring with Symantec ApplicationHA 12
	About configuring application monitoring with Symantec ApplicationHA 12
	Before configuring application monitoring 14
	Configuring application monitoring for vCenter Server 15
	Administering application monitoring using the Symantec High Availability tab 18
	To configure or unconfigure application monitoring 19
	To view the status of configured applications 20
	To start or stop applications 21
	To enable or disable application heartbeat 21
	To suspend or resume application monitoring 22

Introducing VMware vCenter Server

This chapter includes the following topics:

- [About VMware vCenter Server](#)
- [About intelligent monitoring framework](#)
- [How vCenter Server works with Symantec ApplicationHA](#)
- [How Symantec ApplicationHA monitors vCenter Server](#)

About VMware vCenter Server

VMware vCenter Server, formerly known as VMware VirtualCenter, is the centralized management tool for the vSphere suite that provides centralized control and visibility at every level of virtual infrastructure. VMware vCenter Server allows for the management of multiple ESX servers and virtual machines (VMs) from different ESX servers through a single console application. VMware vCenter Server delivers centralized management, operational automation, resource optimization and high availability to IT environments.

Symantec ApplicationHA for VMware vCenter Server provides monitoring for vCenter Server running on a virtual machine.

For this release, Symantec ApplicationHA supports VMware vCenter Server versions 4.1, 5.0, and 5.1 only.

About intelligent monitoring framework

ApplicationHA provides Intelligent Monitoring Framework (IMF) to determine the status of the configured application and its components. IMF employs an

event-based monitoring framework that is implemented using custom as well as native operating system-based notification mechanisms.

IMF provides instantaneous state change notifications. ApplicationHA agents detect this state change and then trigger the necessary actions.

IMF provides the following key benefits:

- Instantaneous notification
Faster fault detection resulting in faster fail over and thus less application down time.
- Ability to monitor large number of components
With reduced CPU consumption, IMF effectively monitors a large number of components.
- Reduction in system resource utilization
Reduced CPU utilization by ApplicationHA agent processes when number of components being monitored is high. This provides significant performance benefits in terms of system resource utilization.

How IMF works

The following steps outline how IMF-based monitoring works:

1. When IMF is enabled, the ApplicationHA agent waits for the components to report the same steady state (whether online or offline) for two consecutive monitor cycles and then registers the components for IMF-based monitoring.
2. The agent then registers itself for receiving specific custom or operating system specific event notifications.
3. In case of an application failure, the agent determines the affected component and then executes a monitor cycle for that component. The monitor cycle determines the component status. If the component state is offline, then ApplicationHA takes the necessary corrective action, depending on the configuration.
4. If the component state remains the same, then the agent moves to a wait state and then waits for the next event to occur.

How vCenter Server works with Symantec ApplicationHA

With the help of the GenericService agent, Symantec ApplicationHA primarily monitors the services that are installed along with VMware vCenter Server. However, if configured on the same machine as vCenter Server, ApplicationHA also monitors

the SQL Server or Oracle database. ApplicationHA automatically discovers and monitors these resources.

During the vCenter Server installation, you can choose to install the embedded version of SQL Server (SQL Server Express) to host vCenter Server’s information. If you install it, then ApplicationHA monitors it.

This section will provide you information about the GenericService agent and the vCenter Server services.

You can configure application monitoring for vCenter Server on a virtual machine using the Symantec ApplicationHA Configuration Wizard. For information on configuring monitoring for vCenter Server, See [“Configuring application monitoring for vCenter Server”](#) on page 15.

GenericService agent

The GenericService agent brings services online, takes them offline, and monitors their status. With the help of the GenericService agent, Symantec ApplicationHA monitors the vCenter Server services.

For more information about the GenericService agent, see the *Symantec™ ApplicationHA Generic Agents Guide*.

vCenter Server services

When you install VMware vCenter Server, some services are installed along with it. Symantec ApplicationHA discovers and configures the required services for monitoring.

For vCenter version 4.1, 5.0, 5.1, and 5.5 ApplicationHA selects the VMware VirtualCenter Management Webservices, VMware VirtualCenter Server, and VMwareVCMSDS services for monitoring by default because they are required for monitoring vCenter Server. For the remaining services, you can choose to monitor the services that you need.

The following services are installed and configured for monitoring for the respective version of vCenter Server:

Service Name	Supported vCenter Server Version
VMwareVCMSDS	4.1, 5.0, 5.1, and 5.5
VMware vSphere Profile-Driven Storage Service	5.0, 5.1, and 5.5
vCenter Inventory Service	5.0, 5.1, and 5.5

Service Name	Supported vCenter Server Version
VMware VirtualCenter Management Webservices	4.1, 5.0, 5.1, and 5.5
VMware VirtualCenter Server	4.1, 5.0, 5.1, and 5.5
vSphere Web Client	5.0, 5.1, and 5.5
SQL Server	4.1, 5.0, 5.1, and 5.5

How Symantec ApplicationHA monitors vCenter Server

With the help of the GenericService agent, Symantec ApplicationHA primarily monitors the services that are installed along with VMware vCenter Server. However, if configured on the same machine as vCenter Server, ApplicationHA also monitors the SQL Server or Oracle database. Apart from monitoring these resources, ApplicationHA determines the status of the resources, brings them online, and takes them offline.

ApplicationHA detects an application failure if the configured resources become unavailable, and tries to start the resources. If the resources do not start after a configurable number of attempts, then the Heartbeat agent reports the status to VMware HA.

Depending on the configuration, VMwareHA then restarts the virtual machine. After the machine restarts, ApplicationHA starts the configured resources and brings them online.

Configuring application monitoring with Symantec ApplicationHA

This chapter includes the following topics:

- [About configuring application monitoring with Symantec ApplicationHA](#)
- [Before configuring application monitoring](#)
- [Configuring application monitoring for vCenter Server](#)
- [Administering application monitoring using the Symantec High Availability tab](#)

About configuring application monitoring with Symantec ApplicationHA

This chapter describes the steps to configure application monitoring for VMware vCenter Server with Symantec ApplicationHA in a VMware virtualization environment.

Consider the following before you proceed:

- You can configure application monitoring on a virtual machine using the Symantec ApplicationHA Configuration Wizard. The wizard is launched when you click **Configure Application Monitoring** on the Symantec High Availability tab in VMware vSphere Client.
- Apart from the Symantec ApplicationHA Configuration Wizard, you can also configure application monitoring using the Veritas Cluster Server (VCS) commands. For more information, refer to the following Technote: <http://www.symantec.com/docs/TECH159846>

- Symantec recommends that you first configure application monitoring using the wizard before using VCS commands to add additional components or modify the existing configuration.

Apart from the application monitoring configuration, the wizard also sets up the other components required for Symantec ApplicationHA to successfully monitor the applications.

- You can use the wizard to configure monitoring for only one application per virtual machine.

To configure another application using the wizard, you must first unconfigure the existing application monitoring configuration. Or, you can use the command-line interface (CLI) to configure more than one applications.

- If you configure application monitoring for VMware vCenter Server in an environment where Symantec High Availability Console is already registered with the same vCenter Server, then you can configure and control application monitoring from the vSphere Client (if vCenter Server is running) or by using the following URL in a browser:

```
https://<VirtualMachineNameOrIPAddress>:5634/vcs/admin/  
application_health.html?priv=ADMIN
```

Note: While using a browser to perform application monitoring operations, if the Symantec ApplicationHA version displayed in the application health view is not correct, it may be because older version information is cached by the browser. To correct this, clear the browser cache and try again. If this is also observed while using the vSphere Client, then re-launch the vSphere Client and try again.

- After configuring vCenter Server services and other optional components (SQL Server/Oracle database) for monitoring, if you select another service or optional component, then these new components are not monitored as part of the existing configuration.

In this case, you can either use the VCS commands to add the components to the configuration or unconfigure the existing configuration and then run the wizard again to configure the required services and other components.

- If a configured application fails, Symantec ApplicationHA attempts to start the application on the computer. If the application does not start, Symantec ApplicationHA communicates with VMware HA to take corrective action. Symantec ApplicationHA tries to stop the other configured applications in a predefined order before communicating with VMware HA. This avoids the other applications from getting corrupted due to a computer restart.

A single failed application can bring down other healthy applications running on the virtual machine. You must take this behavior into consideration while configuring application monitoring on a virtual machine.

Before configuring application monitoring

Note the following prerequisites before configuring application monitoring for vCenter Server on a virtual machine:

- Verify that you have installed Symantec ApplicationHA in your VMware environment.
For information about installing Symantec ApplicationHA, refer to the *Symantec™ ApplicationHA Installation and Upgrade Guide*.
- Verify that VMware Tools is installed on the virtual machine.
Install the version that is similar to or later than that available with VMware ESX 4.1.
- Verify that you have installed VMware vSphere Client. The vSphere Client is used to configure and control application monitoring.
You can also perform the application monitoring operations directly from a browser window using the following URL:

```
https://<virtualmachineNameorIPAddress>:5634/vcs/admin/  
application_health.html?priv=ADMIN
```

Note: While using a browser to perform application monitoring operations, if the Symantec ApplicationHA version displayed in the application health view is not correct, it may be because older version information is cached by the browser. To correct this, clear the browser cache and try again. If this is also observed while using the vSphere Client, then re-launch the vSphere Client and try again.

- If the application data is stored on nested mount points, then it is required to set the dependency between these mount points. This enables ApplicationHA to monitor all the nested mount points.
To define the dependency between the nested mount points, you must set the value for MountDependsOn attribute of the MountMonitor agent. The value of this attribute must be specified as a key-value pair.
Where,
Key= mount path
Value= volume name

- Verify that the logged-on user has administrative privileges on the virtual machine where you want to configure application monitoring.
- If you want to monitor storage managed using Storage Foundation for Windows (SFW), ensure that the volumes and mount points are created on dynamic disk groups.
Symantec ApplicationHA does not support monitoring for volumes and mount points created on cluster disk groups.
- If you have configured a firewall, ensure that your firewall settings allow access to ports used by Symantec ApplicationHA installer, wizard, and services.
For information about the ports that are used, refer to the *Symantec™ ApplicationHA Installation and Upgrade Guide*.
- If you are configuring application monitoring in a disaster recovery environment, ensure that you are using the VMware disaster recovery solution, VMware vCenter Site Recovery Manager (SRM). For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

Configuring application monitoring for vCenter Server

To configure application monitoring for vCenter Server

- 1 Launch the vSphere Client and connect to the vCenter Server that manages the virtual machine.
- 2 From the vSphere Server's Inventory view in the left pane, select the virtual machine where you want to configure application monitoring, and then in the right pane select the **Symantec High Availability** tab.
- 3 Skip this step if you have already configured the single sign-on during the guest installation.

On the Symantec High Availability tab, specify the credentials of a user account that has administrative privileges on the virtual machine and then click **Configure**. The Symantec High Availability Console sets up a permanent authentication for the user account.

For more information about single sign-on, refer to the *Symantec™ ApplicationHA User's Guide*.

After the authentication is successful, the Symantec High Availability tab refreshes and displays the application health view.

- 4 Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard.
- 5 Review the information on the Welcome panel and then click **Next**.

- 6 On the Application Selection panel, click **VMware vCenter Server** in the Supported Applications list.

You can use the Search box to find the application and then click **Next**.

If you want to download any of the Symantec ApplicationHA agents, click the **Download Application Agents (SORT)** link to download the agents from the Symantec Operations Readiness Tools (SORT) site.

- 7 On the vCenter Server Services Selection panel, select the vCenter Server services and, optionally, SQL Server or Oracle database, that you want to configure for monitoring, and then click **Configure**.

Note: The VMware VirtualCenter Management Webservices, VMware VirtualCenter Server, and VMwareVCMSDS services that are selected by default are required for monitoring vCenter Server. You cannot cancel the selection.

If you have installed SQL Server or Oracle database on the same virtual machine as vCenter Server, then the wizard automatically discovers and lists it here. If needed, you can select the installed database to configure for monitoring.

To configure monitoring for a SQL Server or Oracle database instance, do the following:

- Select **Configure monitoring for <SQL or Oracle, whichever is configured> database instance <instance name>**.
- To enable detail monitoring for the selected instance and associated services, select **Configure detail monitoring**, and then provide the following required details:
 - Enter a non-zero value in the **Monitor after every... cycles** box. This value indicates the number of online monitor cycles that the ApplicationHA must wait before performing detail monitoring. The numeric value specifies how often the monitoring check must run. 1 means, run a detail check every single monitor interval, 2 means run the detail check every second monitor interval. This interpretation may be extended to other values. Symantec recommends that you set this value between 1 and 12. The default value is 5.
 - To enable detail monitoring by using a user-defined SQL script, enter the script path in the **Script path** box.
 - Enter the valid user name in the **User Name** box and the password for the user account in the **Password** box.

Note: The user account must have rights to run the script and execute the SQL commands specified in the script.

- **Note:** This option is not available for an Oracle database.
-

Select **Restart the database instance if detail monitoring fails** if you want the agent to detect an application failure in case detail monitoring has failed.

- 8 On the ApplicationHA Configuration panel, the wizard performs the application monitoring configuration tasks, creates the required resources, and enables the application heartbeat that communicates with VMware HA.

The panel displays the status of each task. After all the tasks are complete, click **Next**.

If the configuration tasks fail, click **View Logs** to check the details of the failure. Rectify the cause of the failure and run the wizard again to configure the application monitoring.

- 9 On the Finish panel, click **Finish** to complete the wizard.

This completes the application monitoring configuration. You can view the application status in the Symantec High Availability tab.

The view displays the application as configured and running on the virtual machine. The Description box displays the details of the configured components.

If the application status shows as not running, click **Start Application** to start the configured components on the computer.

Administering application monitoring using the Symantec High Availability tab

Note: You can administer application monitoring in two ways. One, using the Symantec High Availability tab as described below and two, using the Symantec High Availability Dashboard. Using the Symantec High Availability dashboard, you can administer application monitoring in a graphical user interface (GUI). For information about the latter, refer to the *Symantec™ ApplicationHA User's Guide*.

Symantec ApplicationHA provides an interface, the Symantec High Availability tab, to configure and control application monitoring. The Symantec High Availability tab is integrated with the VMware vSphere Client.

Use the Symantec High Availability tab to perform the following tasks:

- configure and unconfigure application monitoring
- start and stop configured applications
- enable and disable application heartbeat
- enter and exit maintenance mode

Using the Symantec High Availability tab, you can also manage the Symantec ApplicationHA licenses by clicking the **Licenses** link. For more information, refer to the *Symantec™ ApplicationHA Installation and Upgrade Guide*.

To view the Symantec High Availability tab, launch the VMware vSphere Client, select a virtual machine from the Inventory pane, and in the Management pane on the right, click the **Symantec High Availability** tab.

If you have not configured single sign-on for the virtual machine, specify the user credentials of a user that has administrative privileges on the virtual machine.

You can also perform the application monitoring operations directly from a browser window using the following URL:

```
https://<VMNameorIPAddress>:5634/vcs/admin/application_health.html?priv=ADMIN
```

Note: While using a browser to perform application monitoring operations, if the Symantec ApplicationHA version displayed in the application health view is not correct, it may be because older version information is cached by the browser. To correct this, clear the browser cache and try again. If this is also observed while using the vSphere Client, then re-launch the vSphere Client and try again.

To configure or unconfigure application monitoring

Use the Symantec High Availability tab to configure or delete an application monitoring configuration from the virtual machine. This may be required in case you want to re-create the configuration or configure another application using the wizard.

You can use the following buttons:

- Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard. Use the wizard to configure application monitoring.
- Click **Unconfigure Application Monitoring** to delete the application monitoring configuration from the virtual machine.

Symantec ApplicationHA removes all the configured resources for the application and its services.

Note that this does not uninstall Symantec ApplicationHA from the virtual machine. This only removes the configuration. The unconfigure option removes all the application monitoring configuration resources from the virtual machine. To monitor the application, you have to configure them again.

To view the status of configured applications

Note: To view applications at a component level and their dependencies, see the Component Dependency tab under the Symantec High Availability tab. For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

Under the Symantec High Availability tab, the Component List tab displays the status of the configured vCenter Server services and, if configured, SQL Server or Oracle database on the virtual machine.

Applications: VMware vCenter Server

Status: Online (Status refreshes every 60 seconds) [Refresh](#) [Settings](#) [Licenses](#)

- Configure Application Monitoring
- Unconfigure Application Monitoring
- Enable Application Heartbeat
- Disable Application Heartbeat
- Start Application
- Stop Application
- Enter Maintenance Mode
- Exit Maintenance Mode

Component List

Component Dependency

✓	The [VMware VirtualCenter Management Webservices] service is running.
✓	The [VMware VirtualCenter Server] service is running.
✓	The [vCenter Inventory Service] service is running.
✓	The [vSphere Web Client] service is running.
✓	The [VMwareVCMDS] service is running.
✓	The [VMware vSphere Profile-Driven Storage Service] service is running.
✓	Microsoft SQL Server 2008 instance [VIM_SQLEXP] is running.

ApplicationHA (Version 6.0.00000.349) | [View log](#)

For example, if you have configured monitoring for vCenter Server services and SQL Server 2008 database, then the Component List tab displays the following information:

The [service name] service is running.

Microsoft SQL Server 2008 instance [instance name] is running.

Where, *service name* and *instance name* are, respectively, the names of the vCenter Server service and SQL Server 2008 database instance configured on the virtual machine.

The Component List tab also displays the state of the configured application and its components. The following states are displayed:

online Indicates that the vCenter Server is accessible on the virtual machine.

offline Indicates that the vCenter Server is not accessible on the virtual machine.

partial	Indicates that either the components are being started on the virtual machine or Symantec ApplicationHA was unable to start one or more of the configured components.
faulted	Indicates that the configured components have unexpectedly stopped running.

Click **Refresh** to see the most current status of the configured components. The status is refreshed every 60 seconds by default.

Click **Settings** to change ApplicationHA settings for the configured application and the virtual machine. For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

To start or stop applications

Use the following options on the Symantec High Availability tab to control the status of the configured application and the associated components:

- Click **Start Application** to start the configured VMware vCenter Server application and the configured resources on the virtual machine.
Symantec ApplicationHA attempts to start the configured vCenter Server services in the required order. The configured resources are also brought online in the appropriate hierarchy.
- Click **Stop Application** to stop the configured VMware vCenter Server application and the configured resources on the virtual machine.
Symantec ApplicationHA begins to stop the configured vCenter Server services gracefully. The configured resources are also taken offline in the appropriate hierarchy.

To enable or disable application heartbeat

The VMware virtual machine monitoring feature uses the heartbeat information that VMware Tools captures as a proxy for guest operating system availability. This allows VMware HA to automatically reset or restart individual virtual machines that have lost their ability to send a heartbeat. You can select VM and Application Monitoring if you also want to enable application monitoring.

Symantec High Availability tab lets you control the application heartbeat on the virtual machines.

Use the following options on the Symantec High Availability tab to control the status of the configured application heartbeat:

- Click **Enable Application Heartbeat** to enable the heartbeat communication between the configured applications running on the virtual machine and VMware HA.
 The application heartbeat is enabled by default when an application is configured for monitoring.
- Click **Disable Application Heartbeat** to disable the heartbeat communication between the configured applications running on the virtual machine and VMware HA.
 Disabling the application heartbeat does not instruct VMware HA to restart the virtual machine. This option disables the application monitoring feature in the VMware virtual machine monitoring settings.

To suspend or resume application monitoring

After configuring application monitoring you may want to perform routine maintenance tasks on those applications. These tasks may or may not involve stopping the application but may temporarily affect the state of the applications and its dependent components. If there is any change to the application status, Symantec ApplicationHA may try to restore the application state. This may potentially affect the maintenance tasks that you intend to perform on those applications.

If stopping the application is not an option, you can suspend application monitoring and create a window for performing such maintenance tasks. When application monitoring is suspended, ApplicationHA freezes the application configuration, disables the application heartbeat, and stops sending the heartbeat to VMware HA.

The Symantec High Availability tab provides the following options:

- Click **Enter Maintenance Mode** to suspend the application monitoring for the applications that are configured on the virtual machine. During the time the monitoring is suspended, Symantec ApplicationHA does not monitor the state of the application and its dependent components. The Symantec High Availability tab does not display the current status of the application. If there is any failure in the application or its components, ApplicationHA takes no action.
- Click **Exit Maintenance Mode** to resume the application monitoring for the applications configured on the virtual machine. You may have to click the **Refresh** link in the Symantec High Availability tab to see the current status of the application.
 When application monitoring is restarted from a suspended state, ApplicationHA does not enable the application heartbeat. Click **Enable Application Heartbeat** to enable it.
 If you have made changes that include database addition or change in the underlying storage mount point that was being monitored, then those changes

may not reflect in the application monitoring configuration. In such cases, you may have to unconfigure and reconfigure the application monitoring.