

# Symantec™ ApplicationHA Generic Agent Configuration Guide

Linux

5.1 Service Pack 2

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# Generic Application agent for Symantec ApplicationHA

This chapter includes the following topics:

- [About the Application agent](#)

## About the Application agent

The Application agent brings applications online, takes them offline, and monitors their status. Use it to specify different executables for the online, offline, and monitor routines for different programs. The executables must exist locally on the virtual machine. You can use this agent to provide high availability for applications that are not by default supported by ApplicationHA. For the list of supported applications, see *Symantec ApplicationHA Installation and Upgrade Guide*.

An application runs in the default context of root.

You can monitor the application in the following ways:

- Use the monitor program
- Specify a list of processes
- Specify a list of process ID files
- Any combination of the above

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**Note:** ApplicationHA Custom Application wizard configures only the monitor program. For more details on how to specify the list of processes or process ID files, refer VCS documentation.

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## Agent functions

Online	<p>Runs the command or script that you specify in the value of the <code>StartProgram</code> attribute. Runs the command with the specified parameters in the context of the specified user.</p> <p>To bring the resource online, the agent function performs the command:</p> <pre>su - user - c <i>command_to_online</i></pre>
Offline	<p>Runs the command or script that you specify in the value of the <code>StopProgram</code> attribute. Runs the command with the specified parameters in the context of the specified user.</p> <p>To take the resource offline, the agent function performs the command:</p> <pre>su - user - c <i>command_to_offline_resource</i></pre>
Monitor	<p>If you specify the <code>MonitorProgram</code> attribute, the agent executes the userdefined <code>MonitorProgram</code> in the user-specified context. If you specify the <code>PidFiles</code> attribute, the routine verifies that the process ID that is found in each listed file is running. If you specify the <code>MonitorProcesses</code> attribute, the routine verifies that each listed process is running in the context you specify.</p> <p>Use any combination among these attributes (<code>MonitorProgram</code>, <code>PidFiles</code>, or <code>MonitorProcesses</code>) to monitor the application.</p> <p>If any of the processes that are specified in either <code>PidFiles</code> or <code>MonitorProcesses</code> is determined not to be running, the monitor returns <code>OFFLINE</code>. If the process terminates ungracefully, the monitor returns <code>OFFLINE</code> and failover occurs.</p> <p>To monitor the resource, the agent function performs the command:</p> <pre>su - user -c <i>command_to_monitor_resource</i></pre>
Clean	<p>Terminates processes specified in <code>PidFiles</code> or <code>MonitorProcesses</code>. Ensures that only those processes (that are specified in the <code>MonitorProcesses</code> attribute) running with the user ID specified in the <code>User</code> attribute are killed. If the <code>CleanProgram</code> is defined, the agent executes the <code>CleanProgram</code>.</p> <p>To forcefully stop the resource, the agent function performs the command:</p> <pre>su - <i>command_to_offline_resource</i></pre>

## State definitions

ONLINE	Indicates that all processes that are specified in the PidFiles and the MonitorProcesses attribute are running and that the MonitorProgram returns ONLINE.
OFFLINE	Indicates that at least one process that are specified in the PidFiles attribute or MonitorProcesses is not running, or that the MonitorProgram returns OFFLINE.
UNKNOWN	Indicates an indeterminable application state or invalid configuration.



# Configuring the generic Application agent

This chapter includes the following topics:

- [About configuring application monitoring with ApplicationHA](#)
- [Before configuring application monitoring for Application agent](#)
- [Configuring application monitoring for Application agent](#)

## About configuring application monitoring with ApplicationHA

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

Consider the following points before you proceed:

- You configure an application for monitoring on a virtual machine using the Application Monitoring Configuration Wizard.
- The Application Monitoring Configuration Wizard is launched when you click the **Configure Application Monitoring** link on the ApplicationHA tab in the VMware vSphere Client.
- In this release, the wizard allows you 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.
- After you have configured monitoring for an application using the wizard, you can configure monitoring for other applications residing in the same virtual machine, using Veritas Cluster Server (VCS) commands.

For more information read the following technote:

<http://www.symantec.com/docs/TECH159846>

- After configuring Application agent for monitoring, if you create another instance, these new components are not monitored as part of the existing configuration.

In such a case, you must first unconfigure the existing monitoring configuration and then reconfigure the application using the wizard. You can then select all the instances for monitoring.

## Before configuring application monitoring for Application agent

Ensure that you complete the following tasks before configuring application monitoring for Application agent on a virtual machine:

- Install ApplicationHA Console.
- Install ApplicationHA guest components on the virtual machine that you need to monitor.
- Install VMware Tools on the virtual machine. Install a version that is compatible with VMware ESX 4.1
- Install the VMware vSphere Client.
- Assign ApplicationHA - Configure Application Monitoring (Admin) privileges to the logged-on user on the virtual machine where you want to configure application monitoring.
- Install Application agent and associated components that you wish to monitor on the virtual machine.
- If you have configured a firewall, ensure that your firewall settings allow access to ports used by ApplicationHA installer, wizards, and services.  
Refer to the *Symantec ApplicationHA Installation and Upgrade Guide* for a list of ports and services used.

## Configuring application monitoring for Application agent

Perform the following steps to configure monitoring for Application agent on a virtual machine hosted on a VMware vCenter Server managed ESX 4.1 Server.

**To configure application monitoring for Application agent**

- 1 Launch the VMware vSphere Client and connect to the VMware vCenter Server that hosts the virtual machine.  
 The vSphere Client is used to configure and control application monitoring.
- 2 From the vSphere Client's Inventory view in the left pane, select the virtual machine where you want to configure application monitoring for Application agent.
- 3 From the vSphere Client's Management view in the right pane, click the **ApplicationHA** tab.  
 The ApplicationHA view displays the status of all the supported applications that are installed on the selected virtual machine.
- 4 In the ApplicationHA view, click **Configure Application Monitoring**.  
 This launches the Application Monitoring Configuration Wizard.
- 5 Review the information on the Welcome screen and then click **Next**.  
 The wizard lists all the supported applications for the system.
- 6 Select **Custom Application**, and then click **Next**.  
 The Linux Program Selection screen appears.
- 7 To specify the application components to monitor, click **Add Component**.  
 The **Application Component Parameters** dialog box appears.
- 8 Specify the names of the program scripts and the user name by using which the application must be administered.

---

**Note:** The wizard automatically populates the **Display Name** for the specified component. You can, however, edit the information in this field. Also, ensure that you specify a user with valid credentials and adequate privileges on the virtual machine (guest) where you configure the generic agent. Else, application monitoring may fail.

---

- 9 Click **OK**.  
 The specified component appears on the Linux Program Selection screen.
- 10 To specify more application components for monitoring, repeat step 7 to step 9. Else, click **Next**.  
 The Define Start Stop Order screen appears. The screen lists the previously selected components.

- 11** In the Parent Component list, click a component.

The other components you specified in steps 7 to 10 appear in the Components list.

- 12** To set up dependency with the specified parent component, in the Components list, click a component. Repeat this step for all parent components.

- 13** Click **Configure**.

The wizard performs the application monitoring configuration tasks. The ApplicationHA Configuration screen displays the status of each task.

After all the tasks are complete, click **Next**.

---

**Note:** If the configuration tasks fail, click **View Logs** to check the details of the failure.

You then have to run the wizard again to configure the application monitoring.

---

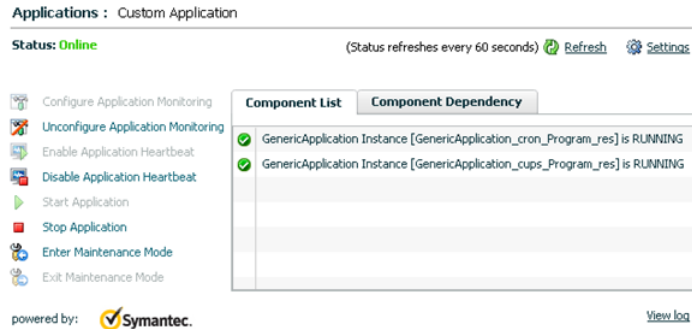
- 14** Click **Finish** to complete the wizard.

This completes the application monitoring configuration. See “[Sample configuration for init and custom processes](#)” on page 23.



- 15 To view the status of the configured application on a virtual machine, in the inventory view of the vSphere Client, click the appropriate virtual machine, and then click the **ApplicationHA** tab.

The ApplicationHA view appears.

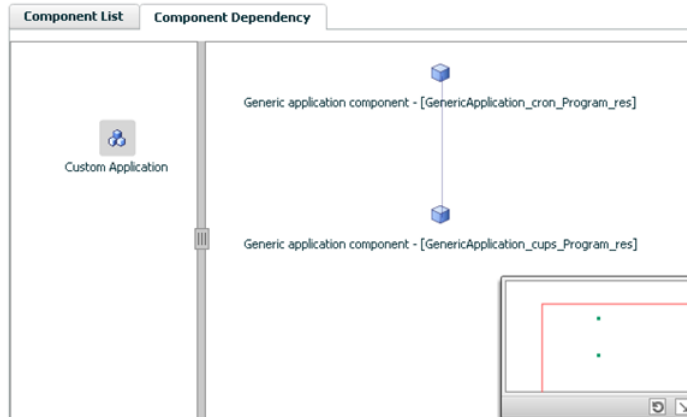


By default, the Component List tab appears. The tab lists each component of the configured application and the status description of each component.

For more information on viewing and administering applications by using the vSphere Client, see the *Symantec ApplicationHA User's Guide*.

- 16** To view component dependency for the monitored application, click the **Component Dependency** tab.

The component dependency graph appears.



The graph illustrates the dependencies between a selected component group (an application or a group of inter-related components) and its components for the configured application. The left pane displays component groups and/or configured applications. The right pane displays components of the selected component group or application.

For more information on viewing component dependency for any configured application, see the *Symantec ApplicationHA User's Guide*.

# Resource type definitions

This appendix includes the following topics:

- [Resource type definition](#)
- [Attributes](#)

## Resource type definition

```
type Application (  
    static keylist SupportedActions = { "program.vfd", "user.vfd",  
    "cksum.vfd", getcksum }  
    static str ArgList[] = { User, StartProgram, StopProgram,  
    CleanProgram, MonitorProgram, PidFiles, MonitorProcesses }  
    str User  
    str StartProgram  
    str StopProgram  
    str CleanProgram  
    str MonitorProgram  
    str PidFiles[]  
    str MonitorProcesses[]  
)
```

# Attributes

**Table A-1** Required attributes

Required attribute	Description
StartProgram	<p>The executable, created locally on each node, which starts the application. Specify the complete path of the executable. Applicable command line arguments follow the name of the executable and have spaces separating them.</p> <p><b>Note:</b> Do not use the opening and closing ({} ) brace symbols in this string.</p> <p>Type and dimension: string-scalar Example: "/usr/sbin/samba start"</p>
StopProgram	<p>The executable, created locally on each node, which stops the application. Specify the complete path of the executable. Applicable command line arguments follow the name of the executable and have spaces separating them.</p> <p><b>Note:</b> Do not use the opening and closing ({} ) brace symbols in this string.</p> <p>Type and dimension: string-scalar Example: "/usr/sbin/sample_app stop"</p>
At least one of the following attributes: <ul style="list-style-type: none"> <li>■ MonitorProcesses</li> <li>■ MonitorProgram</li> <li>■ PidFiles</li> </ul>	See <a href="#">Table A-2</a> on page 20.

**Table A-2** Optional attributes

Optional attribute	Description
CleanProgram	<p>The executable, created locally on a virtual machine, which forcibly stops the application. Specify the complete path of the executable. Applicable command line arguments follow the name of the executable and have spaces separating them.</p> <p>Type and dimension: string-scalar</p>

Table A-2 Optional attributes (*continued*)

Optional attribute	Description
MonitorProcesses	<p>A list of processes that you want monitored and cleaned. Each process name is the name of an executable. Qualify the executable name with its complete path if the path starts the executable.</p> <p>The process name must be the name that the <code>ps -ef</code> command displays for the process.</p> <p>Type and dimension: string-vector</p> <p>Example: "nmbd"</p>
MonitorProgram	<p>The executable, created locally on the virtual machine. It monitors the application. Specify the complete path of the executable. Applicable command line arguments follow the name of the executable and have spaces separating them.</p> <p>MonitorProgram can return the following values: OFFLINE value is 100; ONLINE values range from 101 to 110 (depending on the confidence level); 110 equals confidence level of 100%. Any other value = UNKNOWN.</p> <p><b>Note:</b> Do not use the opening and closing ({} ) brace symbols in this string.</p> <p>Type and dimension: string-scalar</p> <p>init processes such as httpd, do not require special monitor scripts. ApplicationHA uses the status option of the init script for monitoring.</p>
PidFiles	<p>A list of PID (process ID) files that contain the PID of the processes that you want monitored and cleaned. These are application generated files. Each PID file contains one monitored PID. Specify the complete path of each PID file in the list.</p> <p>The process ID can change when the process restarts. If the application takes time to update the PID file, the agent's Monitor function may return an incorrect result. If incorrect results occur, increase the ToleranceLimit in the resource definition.</p> <p>Type and dimension: string-vector</p>
User	<p>The user ID for running StartProgram, StopProgram, MonitorProgram, and CleanProgram. The processes that are specified in the MonitorProcesses list must run in the context of the specified user. Monitor checks the processes to make sure they run in this context.</p> <p>Type and dimension: string-scalar</p> <p>Default: root</p>



# Sample configurations

This appendix includes the following topics:

- [Sample configuration for init and custom processes](#)

## Sample configuration for init and custom processes

This section describes steps to configure init processes, such as httpd and sendmail, as well as to configure custom processes for high availability by using Symantec ApplicationHA.

### To configure application monitoring for an init process

- 1 Launch the VMware vSphere Client and connect to the VMware vCenter Server that hosts the virtual machine.

The vSphere Client is used to configure and control application monitoring.

- 2 From the vSphere Client's Inventory view in the left pane, select the virtual machine where you want to configure application monitoring for the customized application.

- 3 From the vSphere Client's Management view in the right pane, click the **ApplicationHA** tab.

The ApplicationHA view displays the status of applications that are installed and configured for monitoring on the selected virtual machine.

- 4 In the ApplicationHA view, click **Configure Application Monitoring**. This launches the Application Monitoring Configuration Wizard.

- 5 Review the information on the Welcome screen and then click **Next**.

The wizard lists all the supported applications for the system.

- 6 Select **Custom Application**, and then click **Next**.

The Linux Program Selection screen appears.

- 7 To specify the httpd details to monitor, click **Add Component**.  
The **Application Component Parameters** dialog box appears.

---

**Note:** init processes such as httpd, do not require special monitor scripts. ApplicationHA uses the status option of the init script for monitoring. However you can also use your own program scripts to monitor such processes.

---

- 8 Enter the following values in the respective fields and then click **OK**:

Program to start the application    `/etc/init.d/httpd start`

Program to stop the application    `/etc/init.d/httpd stop`

Program to monitor the application    `/etc/init.d/httpd status`

---

**Note:** If you do not select the 'forcestop' option, then ApplicationHA uses the program script that you selected for stopping the application.

---

- 9 To specify a custom application process (that is, a process specific to the application that you want to configure) to monitor, say MyProgram, click **Add Component**.

The Application Component Parameters dialog box appears.

---

**Note:** Let us assume that the sample custom application process, MyProgram, can be started, stopped, forcibly stopped, and monitored by using the following scripts, respectively: `startMyProgram`, `stopMyProgram`, `forcestopMyProgram`, and `monitorMyProgram`. The `monitorMyProgram` script is written to comply with the MonitorProgram attribute of Application agent. For more information, See [“Attributes”](#) on page 20.

---



**10** Enter the following values in the respective fields and then click **OK**:

Program to start the application	<code>/home/user1/myprogram/bin/startMyProgram</code>
Program to stop the application	<code>/home/user1/myprogram/bin/stopMyProgram</code>
Program to monitor the application	<code>/home/user1/myprogram/bin/monitorMyProgram</code>
Program to forcibly stop the application	<code>/home/user1/myprogram/bin/forcestopMyProgram</code>
User name to use when administering the application	<i>username</i> The default user name is 'root'

**11** To define the relationship between httpd and MyProgram components, click **Next**.

The Define Start-Stop Order screen appears. You can use this screen to define the order in which inter-related programs must come online.

**12** To bring the httpd program online first and then the MyProgram program, in the Parent Component list, click on startMyProgram\_Program.

**13** In the Component list, click to check httpd\_Program and then click **Configure**.

The wizard performs the application monitoring configuration tasks. The ApplicationHA Configuration screen displays the status of each task. After all the tasks are complete, click **Next**.

**14** Click **Finish** to complete the wizard. This completes the application monitoring configuration.



# Custom monitor programs

This appendix includes the following topics:

- [Writing custom monitor programs for multiple processes](#)
- [Writing custom monitor programs for multiple processes using PID files](#)

## Writing custom monitor programs for multiple processes

The **Custom Application** option of the Application Monitoring Configuration Wizard does not allow you to monitor multiple processes. Perform the following steps to write a monitor program that can be used to monitor multiple processes using ApplicationHA.

### To write a custom monitor program with process path names

- 1 Verify if each process is running by executing the following command:

```
ps -ef | grep ProcessName
```

- 2 If all the processes are running, exit the monitor program with 110 as the return code.

If any of the processes is not running, exit the monitor program with 100 as the return code.

- 3 Save this process in a shell script and assign execute permissions to the script.
- 4 In the **Application Component Parameters** dialog box of the Application Monitoring Configuration Wizard, enter the absolute path of the script in the **Monitor Program** field followed by the list of processes to monitor.

## Writing custom monitor programs for multiple processes using PID files

The **Custom Application** option of the Application Monitoring Configuration Wizard does not allow you to monitor multiple processes by using PID files. Perform the following steps to write a monitor program that can be used to monitor multiple processes using PID files in ApplicationHA.

### To write a custom monitor program with PID files

- 1 Verify if process specified in each PID file is running by executing the following command:

```
ps -ef | grep ProcessID
```

Here, *ProcessID* is the content of the PID file.

- 2 If all the processes are running, exit the monitor program with 110 as the return code.

If any of the processes is not running, exit the monitor program with 100 as the return code.

- 3 Save this process in a shell script and assign execute permissions to the script.
- 4 In the **Application Component Parameters** dialog box of the Application Monitoring Configuration Wizard, enter the absolute path of the script in the **Monitor Program** field followed by the list of PID files separated by a space.