

Symantec™ ApplicationHA Generic Agent Installation and Configuration Guide

Linux

5.1

Symantec™ ApplicationHA Generic Agent Installation and Configuration Guide

The software described in this book is furnished under a license agreement and may be used only in accordance with the terms of the agreement.

Product version: 5.1

Document version: 5.1.1

Legal Notice

Copyright © 2010 Symantec Corporation. All rights reserved.

Symantec, the Symantec logo, Veritas, Veritas Storage Foundation, CommandCentral, NetBackup, and Enterprise Vault 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.

THE 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 as defined in FAR 12.212 and subject to restricted rights as defined in FAR Section 52.227-19 "Commercial Computer Software - Restricted Rights" and DFARS 227.7202, "Rights in Commercial Computer Software or Commercial Computer Software Documentation", as applicable, and any successor regulations. Any use, modification, reproduction release, performance, display or disclosure of the Licensed Software and Documentation by the U.S. Government shall be solely in accordance with the terms of this Agreement.

Symantec Corporation
350 Ellis Street
Mountain View, CA 94043
<http://www.symantec.com>

Technical Support

Symantec Technical Support maintains support centers globally. Technical Support's primary role is to respond to specific queries about product features and functionality. The Technical Support group also creates content for our online Knowledge Base. The Technical Support group works collaboratively with the other functional areas within Symantec to answer your questions in a timely fashion. For example, the Technical Support group works with Product Engineering and Symantec Security Response to provide alerting services and virus definition updates.

Symantec's support offerings include the following:

- A range of support options that give you the flexibility to select the right amount of service for any size organization
- Telephone and/or Web-based support that provides rapid response and up-to-the-minute information
- Upgrade assurance that delivers software upgrades
- Global support purchased on a regional business hours or 24 hours a day, 7 days a week basis
- Premium service offerings that include Account Management Services

For information about Symantec's support offerings, you can visit our Web site at the following URL:

www.symantec.com/business/support/index.jsp

All support services will be delivered in accordance with your support agreement and the then-current enterprise technical support policy.

Contacting Technical Support

Customers with a current support agreement may access Technical Support information at the following URL:

www.symantec.com/business/support/contact_techsupp_static.jsp

Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level

- Hardware information
- Available memory, disk space, and NIC information
- Operating system
- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
 - Error messages and log files
 - Troubleshooting that was performed before contacting Symantec
 - Recent software configuration changes and network changes

Licensing and registration

If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

www.symantec.com/business/support/

Customer service

Customer service information is available at the following URL:

www.symantec.com/business/support/

Customer Service is available to assist with non-technical questions, such as the following types of issues:

- Questions regarding product licensing or serialization
- Product registration updates, such as address or name changes
- General product information (features, language availability, local dealers)
- Latest information about product updates and upgrades
- Information about upgrade assurance and support contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs or manuals

Documentation feedback

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions. Include the title and document version (located on the second page), and chapter and section titles of the text on which you are reporting. Send feedback to:

docs@symantec.com

Support agreement resources

If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

Asia-Pacific and Japan

customercare_apac@symantec.com

Europe, Middle-East, and Africa

semea@symantec.com

North America and Latin America

[supportolutions@symantec.com](mailto:supportsolutions@symantec.com)

Contents

Technical Support	4	
Chapter 1	Generic Application agent for Symantec	
	ApplicationHA	9
	About the Application agent	9
	Agent functions	10
	State definitions	11
Chapter 2	Configuring the generic Application agent	13
	About configuring application monitoring with ApplicationHA	13
	Before configuring application monitoring for Application agent	14
	Configuring application monitoring for Application agent	14
Appendix A	Resource type definitions	19
	Resource type definition	19
	Attributes	20
Appendix B	Sample Configurations	23
	Sample configuration for init and custom processes	23
Appendix C	Custom monitor programs	27
	Writing custom monitor programs for multiple processes	27
	Writing custom monitor programs for multiple processes using PID files	28

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 Configuration 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

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.

Agent functions

Online	<p>Runs the command or script that you specify in the value of the StartProgram 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 StopProgram 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 MonitorProgram attribute, the agent executes the userdefined MonitorProgram in the user-specified context. If you specify the PidFiles attribute, the routine verifies that the process ID that is found in each listed file is running. If you specify the MonitorProcesses attribute, the routine verifies that each listed process is running in the context you specify.</p> <p>Use any combination among these attributes (MonitorProgram, PidFiles, or MonitorProcesses) to monitor the application.</p> <p>If any of the processes that are specified in either PidFiles or MonitorProcesses is determined not to be running, the monitor returns OFFLINE. If the process terminates ungracefully, the monitor returns OFFLINE 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 PidFiles or MonitorProcesses. Ensures that only those processes (that are specified in the MonitorProcesses attribute) running with the user ID specified in the User attribute are killed. If the CleanProgram is defined, the agent executes the CleanProgram.</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, from the command line.

Use the VCS commands to configure application service groups. You must ensure that the resource names are unique. Refer to the *Veritas Cluster Server Administrator's Guide* for information on commands. You can find it here:

https://vos.symantec.com/documents/doc_details/sfha/5.1/Linux/ProductGuides/

- 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 Configuration 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 Application**.
 The **Application Parameters** dialog box appears.
- 8 Specify the names of the program scripts in the appropriate fields.

Note: The wizard automatically populates the **Display Name** for the specified component. You can, however, edit the information in this field.

- 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.

Note: See “[Sample configuration for init and custom processes](#)” on page 23.

- 15 To view the application status, click **Refresh**, and then open the ApplicationHA view in vSphere Client. The view displays the application as configured and running on the virtual machine.

The screenshot shows the vSphere Client interface for the 'ApplicationHA' view of a custom application. The status is 'Online' and refreshes every 60 seconds. A table lists two running instances: 'GenericApplication Instance [GenericApplication_sendmail_Program_res] is RUNNING' and 'GenericApplication Instance [GenericApplication_httpd_Program_res] is RUNNING'. The interface includes various control buttons like 'Configure Application Monitoring', 'Unconfigure Application Monitoring', 'Start Application', and 'Stop Application'.

	Description
✓	GenericApplication Instance [GenericApplication_sendmail_Program_res] is RUNNING
✓	GenericApplication Instance [GenericApplication_httpd_Program_res] is RUNNING

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>Note: 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>Note: 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:	See Table A-2 on page 20.
<ul style="list-style-type: none"> ■ MonitorProcesses ■ MonitorProgram ■ PidFiles 	

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>Note: 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 Application**.

The **Application 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.

- 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

- 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 Application**.

The Application Parameters dialog box appears.

Note: Let us assume that the sample custom application process, MyProgram, can be started, stopped, and monitored using the following scripts, respectively: startMyProgram, stopMyProgram, 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 /home/user1/myprogram/bin/startMyProgram

Program to stop the application /home/user1/myprogram/bin/stopMyProgram

Program to monitor the application /home/user1/myprogram/bin/monitorMyProgram

- 11 To define the relationship between httpd and MyProgram programs, 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 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 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.