Symantec™ ApplicationHA Agent for Microsoft SQL Server 2012 Configuration Guide

Windows Server 2008 and 2008 R2

6.0

March 2013

Symantec

Symantec™ ApplicationHA Agent for Microsoft SQL Server 2012 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: 6.0

Document version: 6.0 Rev 0

Legal Notice

Copyright © 2013 Symantec Corporation. All rights reserved.

Symantec, the Symantec Logo, the Checkmark Logo, Veritas, Veritas Storage Foundation, CommandCentral, NetBackup, Enterprise Vault, and LiveUpdate 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 website 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

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	supportsolutions@symantec.com

About Symantec Connect

Symantec Connect is the peer-to-peer technical community site for Symantec's enterprise customers. Participants can connect and share information with other product users, including creating forum posts, articles, videos, downloads, blogs and suggesting ideas, as well as interact with Symantec product teams and Technical Support. Content is rated by the community, and members receive reward points for their contributions.

http://www.symantec.com/connect/storage-management

Documentation

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:

doc_feedback@symantec.com

For information regarding the latest HOWTO articles, documentation updates, or to ask a question regarding product documentation, visit the Storage and Clustering Documentation forum on Symantec Connect.

https://www-secure.symantec.com/connect/storage-management/forums/storage-and-clustering-documentation

Contents

Technical Support 4

Chapter 1 Introducing the Symantec ApplicationHA agents for Microsoft SQL Server 2012 9

About the Symantec ApplicationHA agents 9
About the Symantec ApplicationHA agents for SQL Server 2012 10
About the SQL Server 2012 Database Engine agent 11
SQL Server 2012 Database Engine agent functions 11
SQL Server 2012 Database Engine agent resource type definition 11
SQL Server 2012 Database Engine agent attributes 12
About the SQL Server FILESTREAM agent 15
SQL Server FILESTREAM agent functions 15
SQL Server FILESTREAM agent resource type definition 15
SQL Server FILESTREAM agent attributes 16
How Symantec ApplicationHA agents monitor SQL Server 2012 16

Chapter 2 Configuring application monitoring with Symantec ApplicationHA 19

About configuring application monitoring with Symantec ApplicationHA 19
Before configuring application monitoring 20
Configuring application monitoring for SQL Server 2012 22
Configuring detail monitoring for SQL Server 2012 using the command line 25
Administering application monitoring using the ApplicationHA tab 27
To configure or unconfigure application monitoring 28
To view the status of configured applications 29
To start or stop applications 30
To enable or disable application heartbeat 30
To suspend or resume application monitoring 31

Chapter 1

Introducing the Symantec ApplicationHA agents for Microsoft SQL Server 2012

This chapter includes the following topics:

- About the Symantec ApplicationHA agents
- About the Symantec ApplicationHA agents for SQL Server 2012
- About the SQL Server 2012 Database Engine agent
- About the SQL Server FILESTREAM agent
- How Symantec ApplicationHA agents monitor SQL Server 2012

About the Symantec ApplicationHA agents

Agents are the processes that manage applications and resources of the predefined resource types which are configured for applications and components on a system. The agents are installed when you install Symantec ApplicationHA. These agents start, stop, and monitor the corresponding resources that are configured for the applications and report state changes.

Symantec ApplicationHA agents are classified as follows:

- Infrastructure agents
  Infrastructure agents are packaged (bundled) with the base software and include agents for mount points, generic services, and processes. These agents are immediately available for use after you install Symantec ApplicationHA. For more details about the infrastructure agents, refer to the *Symantec™ ApplicationHA Generic Agents Guide*.

- Application agents
  Application agents are used to monitor third party applications such as Oracle, Microsoft SQL Server, and Microsoft Exchange. These agents are packaged separately and are available in the form of an agent pack that gets installed when you install Symantec ApplicationHA.
  An agent pack is released on a quarterly basis. The agent pack includes support for new applications as well as fixes and enhancements to existing agents. You can install the agent pack on an existing ApplicationHA guest components installation.
  Refer to the Symantec Operations Readiness Tools (SORT) Web site for information on the latest agent pack availability.
  https://sort.symantec.com
  The following sections provide details about the agent for Microsoft SQL Server 2012.
  For more details about other application agents, refer to the application-specific configuration guide.

About the Symantec ApplicationHA agents for SQL Server 2012

The Symantec ApplicationHA agents for Microsoft SQL Server 2012 provide monitoring support for the following SQL Server versions:

- Microsoft SQL Server 2012
- Microsoft SQL Server 2012 SP1

The agents monitor the SQL Server databases and the associated services on the virtual machine.

The SQL Server 2012 agents include the following:

- SQL Server 2012 Database Engine agent
  Provides monitoring for SQL Server Database Engine service. The agent monitors the status of the service and if the service is not running, the agent declares the service resource as offline.
  See "About the SQL Server 2012 Database Engine agent" on page 11.
- SQL Server FILESTREAM agent
  Provides monitoring for SQL Server FILESTREAM component. The agent monitors the Windows FILESTREAM configuration settings for the SQL Server instance.
  See "About the SQL Server FILESTREAM agent" on page 15.

About the SQL Server 2012 Database Engine agent

The Symantec ApplicationHA SQL Server 2012 Database Engine agent monitors the Database Engine service. The agent brings the service online, monitors the status, and takes it offline. If the service is not running, the agent declares the state as offline.

If detail monitoring is configured, the agent checks the health of critical SQL databases or executes a monitoring script. If detail monitoring is successful, the agent declares the application as available.

This agent is represented by the SQLServer resource type.

SQL Server 2012 Database Engine agent functions

Online	Brings the SQL Server 2012 service online.
Offline	Takes the SQL Server 2012 service offline.
Monitor	Queries the Service Control Manager (SCM) for the status of SQL Server 2012 service. Also, if detail monitoring is configured, the agent performs a database health check depending on the configuration.
Clean	Forcibly stops the SQL Server service.

SQL Server 2012 Database Engine agent resource type definition

```
type SQLServer (
 static i18nstr ArgList[] = { Instance,
 "LanmanResName:VirtualName",SQLOnlineTimeout,
 SQLOfflineTimeout, DetailMonitorInterval,
 SQLDetailMonitorTimeout, Username, Domain, Password, DBList,
 SQLFile, FaultOnDMFailure, "LanmanResName:IPResName" }
 i18nstr DBList[]
 int DetailMonitorInterval
 i18nstr Domain
 boolean FaultOnDMFailure = 1
 str Instance
 str LanmanResName
 str Password
 int SQLDetailMonitorTimeout = 30
 i18nstr SQLFile
 int SQLOfflineTimeout = 90
 int SQLOnlineTimeout = 90
```

```
i18nstr Username
)
```

SQL Server 2012 Database Engine agent attributes

Table 1-1 describes the SQL Server 2012 Database Engine required attributes.

Table 1-1 SQL Server 2012 Database Engine required attributes

Required attributes	Description
Instance	Name of the SQL Server instance to monitor. If the attribute is blank the agent monitors the default instance (MSSQLSERVER). Type and dimension: string-scalar
LanmanResName	This attribute is not applicable for Symantec ApplicationHA.
SQLOnlineTimeout	Number of seconds that can elapse before the agent online function aborts. Default = 90 Type and dimension: integer-scalar
SQLOfflineTimeout	Number of seconds that can elapse before the agent offline function aborts. Default = 90 Type and dimension: integer-scalar

Table 1-2 describes the SQL Server 2012 Database Engine optional attributes.

Table 1-2 SQL Server 2012 Database Engine optional attributes

Optional attributes	Description
DetailMonitorInterval	Defines whether the agent performs detail monitoring of SQL Server. The default value 0 means that the agent does not monitor SQL Server in detail. A non-zero value indicates the number of online monitor cycles that the agent must wait before performing detail monitoring. Symantec recommends that you set this value to between 1 and 12. 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. **Note:** If this attribute is set to a non-zero value, then the following attributes must be assigned appropriate values: Username, Password, Domain, DBList (for database list based monitoring), and SQLFile and SQLDetailMonitorTimeOut (for script-based monitoring). Default: 5 Type and dimension: integer-scalar
FaultOnDMFailure	Defines whether the agent faults the SQL Server resource if the detail monitoring fails. If the value is set to True, the agent faults the configured SQL Server resource if detail monitoring fails. If the value is set to False, the agent does not fault the SQL Server resource if detail monitoring fails. In such a case, the SQL Server resource goes into the unknown state. **Note:** The value set gets operational only after the SQL Server resource under consideration comes online. Default = True Type and dimension: boolean
SQLDetailMonitor Timeout	Number of seconds that can elapse before script-based detail monitor routine aborts. Default = 30 Type and dimension: integer-scalar

Table 1-2 SQL Server 2012 Database Engine optional attributes *(continued)*

Optional attributes	Description
Username	The user account in whose context the detail monitoring is performed. The agent uses this account context for both database list based and script-based detail monitoring. This attribute must not be null if DetailMonitorInterval attribute is set to a non-zero value and script-based detail monitoring is configured. **Note:** This attribute can take localized values. Type and dimension: string-scalar
Domain	Domain of the user account specified in the Username attribute. **Note:** This attribute can take localized values. Type and dimension: string-scalar
Password	Password for the user account specified in the Username attribute. Type and dimension: string-scalar
SQLFile	The location of the SQL file executed during a monitor cycle. This attribute must not be null if script-based detail monitoring is configured and the DetailMonitorInterval attribute is set to a non-zero value. This attribute is related only to script-based Detail Monitoring. This attribute can be null if DBList based detail monitoring is configured. Note that if both script-based (SQLFile attribute) and database list based (DBList attribute) detail monitoring are configured, then the DBList attribute takes precedence. The agent performs database list based (DBList attribute) detail monitoring. **Note:** This attribute can take localized values. Type and dimension: string-scalar

Table 1-2 SQL Server 2012 Database Engine optional attributes *(continued)*

Optional attributes	Description
DBList	List of databases for which the agent will perform detail monitoring. Note that if both script-based (SQLFile attribute) and database list based (DBList attribute) detail monitoring are configured, then the DBList attribute takes precedence. The agent performs database list based (DBList attribute) detail monitoring. **Note:** This attribute can take localized values. Type and dimension: string-vector

About the SQL Server FILESTREAM agent

The Symantec ApplicationHA agent for SQL Server FILESTREAM enables FILESTREAM for the specified SQL Server instance, monitors its status, and disables it.

FILESTREAM in SQL Server enables SQL Server-based applications to store unstructured data, such as documents and images, on the file system.

This agent is represented by the FILESTREEAM resource type.

SQL Server FILESTREAM agent functions

Online	Enables FILESTREAM on the system.
Offline	Disables FILESTREAM on the system.
Monitor	Monitors FILESTREAM status on the system. If the agent is unable to query the status of FILESTREAM or if FILESTREAM is disabled on the system, the FILESTREAM resource in the service group faults.
Clean	Forcibly stops the configured FILESTREAM services.

SQL Server FILESTREAM agent resource type definition

```
type SQLFilestream (
static i18nstr ArgList[] = { InstanceName }
i18nstr InstanceName
)
```

SQL Server FILESTREAM agent attributes

Table 1-3 describes the SQL Server FILESTREAM required attribute.

Table 1-3 SQL Server FILESTREAM required attribute

Required attribute	Description
InstanceName	Name of the SQL Server instance to which the FILESTREAM is bound. If the attribute is blank the agent monitors the default instance (MSSQLSERVER). Type and dimension: string-scalar

How Symantec ApplicationHA agents monitor SQL Server 2012

The SQL Server 2012 agents monitor the configured resources, determine the status of these resources, bring them online, and take them offline. The agents detect an application failure if the configured SQL Server instance or associated services become unavailable. The agents try to start the application services for a configurable number of attempts. If the application services fail to start, the agents consider this as an application failure and report the status to VMware HA. Depending on the configuration, VMware HA can then restart the virtual machine. After the computer restarts, the agents start the application services and bring the configured resources online on the system.

The agent provides the following levels of monitoring support:

- Basic monitoring
  In the basic level monitoring, the agent monitors and determines if the configured resources are online and the corresponding SQL Server instance and associated services are running.
- Detail monitoring
  In detail monitoring, the agent runs a user defined SQL script or connects to the database to verify the status of SQL instances. It detects an application failure if the monitoring routine reports an improper function of the SQL instance processes.
  Following exit codes highlight if the database is up and functional:

Exit code	Status
0	Online

Any other	Depending on the FaultOnDMFailure attribute value set, the resource may go into Offline or Unknown state. If the value is set to True, the SQL Server resource goes into offline state. If the value is set to False, the SQL Server resource goes into the unknown state.

You can configure detail monitoring in either of the following ways:

- Follow the wizard steps while you configure application monitoring
  See "Configuring application monitoring for SQL Server 2012" on page 22.
- Set the detail monitoring attributes and configure it using the command line
  See "Configuring detail monitoring for SQL Server 2012 using the command line" on page 25.

Chapter 2

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 SQL Server 2012
- Administering application monitoring using the ApplicationHA tab

About configuring application monitoring with Symantec ApplicationHA

This chapter describes the steps to configure application monitoring for Microsoft SQL Server 2012 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 ApplicationHA 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.
- After configuring SQL Server 2012 databases for monitoring, if you create another database or service, 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 components.

Note: When you configure or unconfigure application monitoring, it does not affect the state of the application. The application runs unaffected on the virtual machine. This also does not require any additional steps on the vCenter Server.

- 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 SQL Server 2012 on a virtual machine:

- Verify that you have installed Symantec ApplicationHA (console and guest components) 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.

- Verify that you have installed SQL Server 2012 and the associated components (FILESTREAM, SQL Server Agent, Analysis Service) that you want to monitor on the virtual machine.
- Verify that the SQL Server instances that you want to configure for monitoring are running.
- 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 disaster recovery solution VMware vCenter Site Recovery Manager (SRM). For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

Configuring application monitoring for SQL Server 2012

Perform the following steps to configure monitoring for SQL Server 2012 on a virtual machine using the Symantec ApplicationHA Configuration Wizard.

To configure application monitoring for SQL Server 2012

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 **ApplicationHA** tab.
3. Skip this step if you have already configured the single sign-on during the guest installation.

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

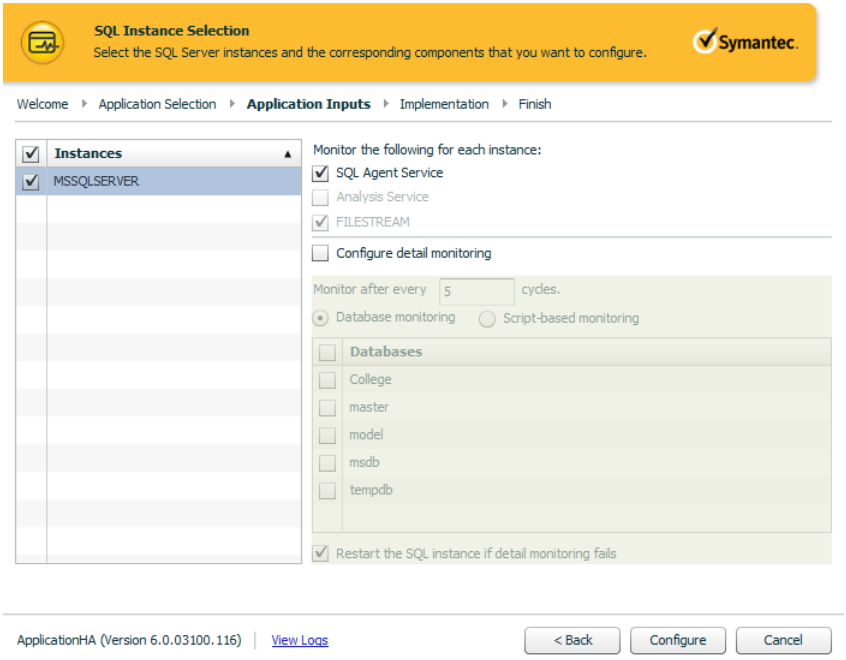
   For more information about single sign-on, refer to the *Symantec™ ApplicationHA User's Guide*.

   After the authentication is successful, the ApplicationHA 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 **Microsoft SQL Server 2012** 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 Application Inputs panel, provide the valid user credentials of a Windows administrative user (SYSADMIN) for SQL Server and then click **Next**. These credentials are also used for database listing and detail monitoring.

8 On the SQL Instance Selection panel, choose the SQL Server instances and the associated components that you want to monitor and then click **Next**.



Instances	Select the SQL Server instances to monitor.
SQL Agent Service	Select **SQL Agent Service** to configure monitoring for SQL Server 2012 Agent service for the selected instance. You must select this for each selected SQL Server instance separately.
Analysis Service	Select **Analysis Service** to configure monitoring for SQL Server 2012 Analysis service for the selected instance. You must select this for each selected SQL Server instance separately.
FILESTREAM	The **FILESTREAM** check box cannot be modified. If FILESTREAM is enabled on the computer, this option is selected by default.

9 To enable detail monitoring for the selected instances and associated services, select **Configure detail monitoring** and 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 agent 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.
  The user account credentials that you provided on the Application Inputs panel are used for configuring detail monitoring.
- Select one of the following mode for detail monitoring.
  - **Database monitoring**
    Select this mode to enable detail monitoring by connecting to the database and choose the desired databases from the **Databases** list.
  - **Script-based monitoring**
    Select this mode to enable detail monitoring by using a user defined SQL script.
    Enter the script location on the virtual machine to configure script-based monitoring.
- Select **Restart the SQL instance if detail monitoring fails** if you want the agent to detect an application failure in case detail monitoring has failed.

10 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.

11 On the Finish panel, click **Finish** to complete the wizard.

This completes the application monitoring configuration. You can view the application status in the ApplicationHA 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.

Configuring detail monitoring for SQL Server 2012 using the command line

You can configure the Symantec ApplicationHA SQL agents to perform detail monitoring of the configured SQL instances by defining the DetailMonitorInterval, SQLFile and DBList attributes from the command line.

Refer to the SQL Server agent attributes for more details.

Note: This procedure is optional. It is not essential for the functioning of application monitoring for the SQL Server instances.

Note the following before you proceed:

- If you want to configure detail monitoring, you must have a user account that has the permissions to log on to the respective SQL instance.
- If you want to use a script for detail monitoring, for example, to create a table and write data to it, note the location(s) of the script to use.
  A sample script is supplied in the following directory:
  `%vcs_home%\bin\SQLServer\sample_script.sql`
  Here, %vcs_home% typically expands to `C:\Program Files\Veritas\cluster server`.
- If you configure the DetailMonitor interval, then you must specify a value for the SQLFile or the DBList attribute.
  If you set both the SQLFile and DBList attributes for detail monitoring, the DBList attribute takes precedence.
  If you are specifying a script for detail monitoring, ensure that the script is accessible to the agent.

To configure detail monitoring for SQL

1. From the ApplicationHA tab in the vSphere Client, click **Stop Application**.
   This stops the configured SQL instances on the virtual machine. This is required for the attribute changes to take effect.
2. On the virtual machine where you have configured the SQL instances, open the command prompt, and then perform the following steps. In each step, type the provided command, and then press **Enter**.
3. To set the configuration mode to read/write, type `haconf -makerw`.

4 To get the SQL Server agent resource name, type `hares -state`.

The output of this command displays the resources configured on the virtual machine.

The SQL Server resource name is of the format `SQLServer2012_<SQLinstancename>`.

Make a note of the SQL resource name as it is required in the subsequent steps.

5 To set the DetailMonitorInterval attribute of the SQL Server resource, type `hares -modify <resourcename> DetailMonitorInterval 5`.

Where, *<resourcename>* is the name of the SQL Server resource.

A non-zero value for the DetailMonitorInterval attribute enables detail monitoring. In this case, it indicates that the agent waits for 5 monitor cycles before performing the detail monitoring.

Symantec recommends that you set this value between 1 and 12.

6 To set up script-based detail monitoring, you need to modify the SQLFile attribute. To do so, type `hares -modify <resourcename> SQLFile "<scriptfilepath>"`.

Where, *<scriptfilepath>* is the full path of the script that you wish the agent to run as part of the detail monitoring. Enclose the path of the script in doublequotes.

7 To set up detail monitoring for specific databases, you need to set the DBList attribute. To do so, type `hares -modify <resourcename> DBList <database1><database2> ...`.

Where, *<database1>* and *<database2>* are the names of the databases for which you want to configure detail monitoring.

In this mode, the agent monitors the health by connecting to the databases specified.

8 To set the Username attribute, type `hares -modify <resourcename> Username <username>`.

Where, *<username>* is the user account that has permissions to log on to the SQL Server.

9 You must now encrypt the password for the user that you specified in the earlier step.

Perform the following steps to encrypt the password:

- Type the following on the command prompt and press **Enter**:

```
vcsencrypt -agent
```

- Type the password when prompted.
- The output displays some characters. These represent the password in an encrypted form.
- Copy the encrypted password, which is required in the next step.

The password is encrypted using the VCSEncrypt utility. For more information, refer to the *Veritas Cluster Server 5.1 SP1 Administrator's Guide*.

10 To set the Password attribute, type `hares -modify <resourcename> Password <password>`.

Where, *<password>* is the encrypted password that you created in the previous step.

11 To set the Domain attribute, type `hares -modify <resourcename> Domain <domain>`.

Where, *<domain>* is the name of the domain to which the specified user belongs.

12 As required, use the `hares` command to modify other SQL Server agent attributes.

13 Save the configuration. To set the configuration mode to read-only, type `haconf -dump -makero`

14 From the ApplicationHA tab in the vSphere Client, click **Start Application**.

The specified attributes take effect and Symantec ApplicationHA monitors the SQL Server instances using the configured parameters.

Administering application monitoring using the ApplicationHA tab

Note: You can administer application monitoring in two ways. One, using the ApplicationHA tab as described below and two, using the Symantec ApplicationHA Dashboard. Using the ApplicationHA 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 ApplicationHA tab, to configure and control application monitoring. The ApplicationHA tab is integrated with the VMware vSphere Client.

Use the ApplicationHA 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 ApplicationHA 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 ApplicationHA tab, launch the VMware vSphere Client, select a virtual machine from the Inventory pane, and in the Management pane on the right, click the **ApplicationHA** 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 ApplicationHA 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:

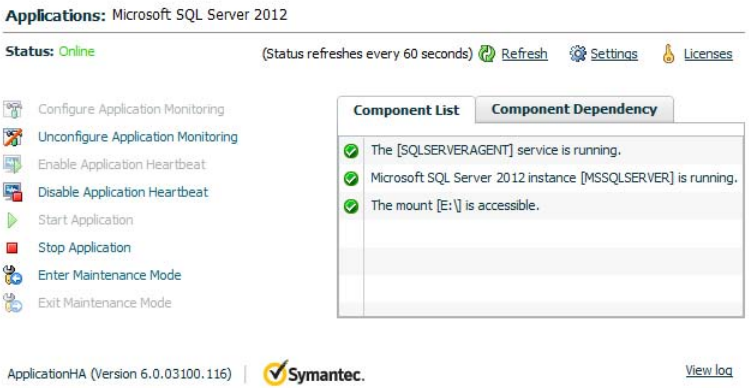
- Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard. Use the wizard to configure application monitoring.
- Click **Unconfigure Application Monitoring** to delete the application monitoring configuration from the virtual machine.
  Symantec ApplicationHA 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 ApplicationHA tab. For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

Under the ApplicationHA tab, the Component List tab displays the status of the configured application and the associated services.



For example, if you have configured monitoring for SQL Server 2012, the Component List tab displays the following information:

```
The [service] service is running.

Microsoft SQL Server 2012 instance [instance] is running.

The mount [mount point] is accessible.
```

Where, *service*, *instance*, and *mount point* are, respectively, the names of the service configured on the virtual machine, SQL Server 2012 service, and mount point.

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

online	Indicates that the application and its services are running on the virtual machine.
offline	Indicates that the application and its associated services are not running on the virtual machine.
partial	Indicates that either the services are being started on the virtual machine or Symantec ApplicationHA was unable to start one or more of the configured application services.
faulted	Indicates that the configured services or 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 ApplicationHA tab to control the status of the configured application and the associated components:

- Click **Start Application** to start a configured application.
  Symantec ApplicationHA attempts to start the configured application and its services in the required order. The configured resources are also brought online in the appropriate hierarchy.
- Click **Stop Application** to stop a configured application that is running on the virtual machine.
  Symantec ApplicationHA begins to stop the configured application and its 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.

ApplicationHA tab lets you control the application heartbeat on the virtual machines.

Use the following options on the ApplicationHA 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 ApplicationHA 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 ApplicationHA 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 ApplicationHA 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.