Symantec™ ApplicationHA Agent for Microsoft Exchange Server 2010 Configuration Guide

Windows on VMware

6.1

✔Symantec™

Symantec™ ApplicationHA Agent for Microsoft Exchange Server 2010 Configuration Guide

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

Contents

Introducing the Symantec ApplicationHA agent for Microsoft Exchange Server 2010

This chapter includes the following topics:

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 Exchange Server 2010.

For more details about other application agents, refer to the application-specific configuration guide.

About intelligent monitoring framework

ApplicationHA provides Intelligent Monitoring Framework (IMF) to determine the status of the configured application and its components. IMF employs an event-based monitoring framework that is implemented using custom as well as native operating system-based notification mechanisms.

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

IMF provides the following key benefits:

■ Instantaneous notification
Faster fault detection resulting in faster fail over and thus less application down time.

■ Ability to monitor large number of components
With reduced CPU consumption, IMF effectively monitors a large number of components.

■ Reduction in system resource utilization
Reduced CPU utilization by ApplicationHA agent processes when number of components being monitored is high. This provides significant performance benefits in terms of system resource utilization.

How IMF works

The following steps outline how IMF-based monitoring works:

1. When IMF is enabled, the ApplicationHA agent waits for the components to report the same steady state (whether online or offline) for two consecutive monitor cycles and then registers the components for IMF-based monitoring.

2. The agent then registers itself for receiving specific custom or operating system specific event notifications.

3. In case of an application failure, the agent determines the affected component and then executes a monitor cycle for that component. The monitor cycle determines the component status. If the component state is offline, then ApplicationHA takes the necessary corrective action, depending on the configuration.

4. If the component state remains the same, then the agent moves to a wait state and then waits for the next event to occur.

About the Exchange Server 2010 database agent

The Symantec ApplicationHA database agent for Microsoft Exchange 2010 provides monitoring support for Exchange 2010 databases. The agent monitors the Exchange 2010 mailbox databases, brings them online, and takes them offline.

The agent also starts the following Exchange services if they are not running already, and monitors their status:

- Microsoft Exchange AD Topology service (MSExchangeADTopology)
  This service provides Active Directory topology information to the Exchange services. If this service is stopped, most Exchange services cannot start.

- Microsoft Exchange Replication Service (MSExchangeRepl)
  This service provides replication functionality for Mailbox Server role databases and is used by Local Continuous Replication (LCR) and Cluster Continuous Replication (CCR).

- Microsoft Exchange System Attendant (MSExchangeSA)
  The Exchange component responsible for monitoring, maintenance, and Active Directory lookup services, and ensuring that operations run smoothly.

- Microsoft Exchange Information Store (MSExchangeIS)
  The Exchange storage used to hold messages in users' mailboxes and in public folders.

- Microsoft Exchange Mail Submission (MSExchangeMailSubmission)

This service submits messages from the Mailbox Server to the Hub Transport Server.

The agent internally monitors these services; the Exchange 2010 application monitoring configuration does not contain separate resources for these services.

Exchange Server 2010 database agent functions

Online	The agent performs the following actions as part of its online function:
	▪ Checks if the mailbox database file is available on the configured volume.
	▪ Checks the status of the Microsoft Exchange Information Store (MSExchangeIS) service and starts the service if it is not running.
	▪ Starts the MSExchangeADTopology, MSExchangeRepl, MSExchangeSA, and MSExchangeMailSubmission Exchange services.
	▪ Mounts the Exchange mailbox database on the system.
Offline	Dismounts the Exchange mailbox database from the system.
Monitor	The agent performs the following actions as part of its monitor function:
	▪ Verifies the status of the mailbox database on the system. If the database is mounted, the agent reports the resource as ONLINE. If the database is dismounted, the agent resource is marked as OFFLINE.
	▪ If the agent cannot retrieve the database status, the agent queries the Service Control Manager (SCM) for the status of the Microsoft Exchange Information Store (MSExchangeIS) service. If the service is running, the agent reports the resource as UNKNOWN; otherwise the resource is marked as OFFLINE.
Clean	Forcibly dismounts the Exchange mailbox database from the system.

Exchange Server 2010 database agent state definition

ONLINE	Indicates that the configured mailbox database is mounted and active on the system.
OFFLINE	Indicates that the configured mailbox database is dismounted from the system.
UNKNOWN	Indicates that the agent is unable to determine the status of the configured mailbox database on the system

Exchange Server 2010 database agent resource type definition

The Exchange 2010 database agent is represented by the Exch2010DB resource type.

```
type Exch2010DB (
    static int IMF{} = { Mode=2, MonitorFreq=1, RegisterRetryLimit=3 }
    static i18nstr ArgList[] = { DBName, MonitorService }
    i18nstr DBName
    boolean MonitorService = 1
    )
```

Exchange Server 2010 database agent attributes

Table 1-1 describes the Exchange 2010 database agent required attributes.

Table 1-1   Exchange 2010 database agent required attributes

Required attributes	Description
DBName	Name of the Exchange 2010 mailbox databases to be monitored.
MonitorService	Defines whether the agent should monitor the critical Exchange 2010 services.
	The value 1 (True) indicates that the agent monitors the critical services. The value 0 (False) indicates that it does not.
	Default is 1 (True).
	If this attribute is set to 1 (True), the agent monitors the following Exchange 2010 services internally:
	■ Microsoft Exchange System Attendant (MSExchangeSA)
	■ Microsoft Exchange Mail Submission (MSExchangeMailSubmission)
	■ Microsoft Exchange AD Topology service (MSExchangeADTopology)
	■ Microsoft Exchange Replication Service (MSExchangeRepl)
	■ Microsoft Exchange Information Store (MSExchangeIS)
	Note: You cannot define which Exchange 2010 services should be monitored by the agent.

How Symantec ApplicationHA agent monitors Exchange Server 2010

The Exchange Server 2010 agent monitors the configured application, determines the status of the configured resources, brings them online, and takes them offline. The agent detects an application failure if the configured Exchange databases or service becomes unavailable. The agent attempts to start the service and mount the database for a configurable number of attempts. If the database cannot be mounted and the services do not start, the agent considers this as an application failure and reports the status to VMware HA.

Depending on the configuration, VMware HA can then restart the virtual machine. After the computer restarts, the agent starts the application services, mounts the databases, and brings the configured resources online on the system.

Configuring application monitoring with Symantec ApplicationHA

This chapter includes the following topics:

About configuring application monitoring with Symantec ApplicationHA

This chapter describes the steps to configure application monitoring for Microsoft Exchange 2010 databases with Symantec ApplicationHA in a VMware virtualization environment.

Consider the following before you proceed:

- You can configure application monitoring on a virtual machine using the Symantec ApplicationHA Configuration Wizard. The wizard is launched when you click **Configure Application Monitoring** on the Symantec High Availability tab in VMware vSphere Client.

- Apart from the Symantec ApplicationHA Configuration Wizard, you can also configure application monitoring using the Veritas Cluster Server (VCS) commands. For more information, refer to the following Technote:

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

- Symantec recommends that you first configure application monitoring using the wizard before using VCS commands to add additional components or modify the existing configuration.
  Apart from the application monitoring configuration, the wizard also sets up the other components required for Symantec ApplicationHA to successfully monitor the applications.

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

- After configuring Exchange 2010 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 roles.

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 Exchange Server 2010 on a virtual machine:

- Verify that you have installed Symantec ApplicationHA in your VMware environment.

For information about installing Symantec ApplicationHA, refer to the *Symantec™ ApplicationHA Installation and Upgrade Guide*.

■ Verify that VMware Tools is installed on the virtual machine.
Install the version that is similar to or later than that available with VMware ESX 4.1.

■ Verify that you have installed VMware vSphere Client. The vSphere Client is used to configure and control application monitoring.
You can also perform the application monitoring operations directly from a browser window using the following URL:

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

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

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

■ Verify that Microsoft Exchange Server 2010 Mailbox Server role is installed and the databases that you want to monitor are created on the virtual machine.

■ If you have configured a firewall, ensure that your firewall settings allow access to ports used by Symantec ApplicationHA installer, wizard, and services.
For information about the ports that are used, refer to the *Symantec™ ApplicationHA Installation and Upgrade Guide*.

■ If you are configuring application monitoring in a disaster recovery environment, ensure that you are using the VMware disaster recovery solution, VMware vCenter Site Recovery Manager (SRM). For more information, refer to the *Symantec™ ApplicationHA User's Guide*.

Configuring application monitoring for Exchange Server 2010

Perform the following steps to configure monitoring for Exchange Server 2010 databases on a virtual machine using the Symantec ApplicationHA Configuration Wizard.

Note: You can configure monitoring for only one application in a single wizard workflow.

To configure application monitoring for Exchange Server 2010

1   Launch the vSphere Client and connect to the vCenter Server that manages the virtual machine.

2   From the vSphere Server's Inventory view in the left pane, select the virtual machine where you want to configure application monitoring, and then in the right pane select the **Symantec High Availability** tab.

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

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

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

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

4   Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard.

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

6   On the Application Selection panel, click **Microsoft Exchange Server 2010** 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 Exchange Database Selection panel, select the Exchange databases that you want to monitor and then click **Next**.

The Databases box displays the databases discovered on the local system.

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

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

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

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

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

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

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

Administering application monitoring using the Symantec High Availability tab

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

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

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

- configure and unconfigure application monitoring

- start and stop configured applications

- enable and disable application heartbeat

- enter and exit maintenance mode

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

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

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

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

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

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

To configure or unconfigure application monitoring

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

You can use the following buttons:

- Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard. Use the wizard to configure application monitoring.

- Click **Unconfigure Application Monitoring** to delete the application monitoring configuration from the virtual machine.
  Symantec ApplicationHA removes all the configured resources for the application and its services.
  Note that this does not uninstall Symantec ApplicationHA from the virtual machine. This only removes the configuration. The unconfigure option removes all the application monitoring configuration resources from the virtual machine. To monitor the application, you have to configure them again.

To view the status of configured applications

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

Under the Symantec High Availability tab, the Component List tab displays the status of the configured application and the associated services.

For example, if you have configured monitoring for Exchange Server 2010, the Component List tab displays the following information:

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

```
Microsoft Exchange Server 2010 database [database] is accessible.
```

Where, *mount point* and *database* are, respectively, the names of the mount point and the Exchange Server 2010 database that is configured.

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

online	Indicates that the Exchange databases are accessible on the virtual machine.
offline	Indicates that the Exchange databases are not accessible on the virtual machine
partial	Indicates that either the services and databases are being started on the virtual machine or Symantec ApplicationHA was unable to start one or more services or mount one or more databases

| 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 Symantec High Availability 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 databases in the required order. The configured resources are also brought online in the appropriate hierarchy.

- Click **Stop Application** to stop a configured application and the databases that are running on the virtual machine.
  Symantec ApplicationHA begins to stop the configured application and dismount its databases gracefully. The configured resources are also taken offline in the appropriate hierarchy.

To enable or disable application heartbeat

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

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

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

- Click **Enable Application Heartbeat** to enable the heartbeat communication between the configured applications running on the virtual machine and VMware HA.
  The application heartbeat is enabled by default when an application is configured for monitoring.

- Click **Disable Application Heartbeat** to disable the heartbeat communication between the configured applications running on the virtual machine and VMware HA.

  Disabling the application heartbeat does not instruct VMware HA to restart the virtual machine. This option disables the application monitoring feature in the VMware virtual machine monitoring settings.

To suspend or resume application monitoring

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

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

The Symantec High Availability tab provides the following options:

- Click **Enter Maintenance Mode** to suspend the application monitoring for the applications that are configured on the virtual machine. During the time the monitoring is suspended, Symantec ApplicationHA does not monitor the state of the application and its dependent components. The Symantec High Availability tab does not display the current status of the application. If there is any failure in the application or its components, ApplicationHA takes no action.

- Click **Exit Maintenance Mode** to resume the application monitoring for the applications configured on the virtual machine. You may have to click the **Refresh** link in the Symantec High Availability tab to see the current status of the application.

  When application monitoring is restarted from a suspended state, ApplicationHA does not enable the application heartbeat. Click **Enable Application Heartbeat** to enable it.

  If you have made changes that include database addition or change in the underlying storage mount point that was being monitored, then those changes may not reflect in the application monitoring configuration. In such cases, you may have to unconfigure and reconfigure the application monitoring.