

Symantec™ ApplicationHA Agent for Oracle Configuration Guide

Windows Server 2003 (x64), Windows
Server 2008 (x64), Windows Server
2008 R2 (x64)

6.0

Symantec™ ApplicationHA Agent for Oracle Configuration Guide

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Introducing the Symantec ApplicationHA agents for Oracle

This chapter includes the following topics:

- [About the Symantec ApplicationHA agents](#)
- [About the Symantec ApplicationHA agents for Oracle](#)
- [About Oracle agent](#)
- [About the GenericService agent](#)
- [How the Symantec ApplicationHA agent makes Oracle highly available](#)

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 Oracle.

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

About the Symantec ApplicationHA agents for Oracle

The Symantec ApplicationHA agents for Oracle monitor the Oracle database and listener services, bring them online, and take them offline.

The solution contains the following agents:

- The Oracle agent, which monitors the Oracle databases.
- The GenericService agent, which monitors the listener services.

Both agents work together to provide high availability for Oracle.

About Oracle agent

The Oracle agent monitors the databases. The agent brings the Oracle databases online, monitors their status, and takes them offline.

The Oracle agent is configured as a resource of type Oracle.

Oracle agent functions

Online	Starts the Oracle service.
Offline	Stops the Oracle service, it also stops all the services that are dependent on the Oracle service.

Monitor	<p>Verifies the status of Oracle services. The agent provides two levels of application monitoring as follows:</p> <ul style="list-style-type: none"> ■ Basic monitoring <p>The agent queries the Service Control Manager (SCM) to verify that Oracle services are continuously active.</p> ■ Detail monitoring <p>The agent runs a SQL script to verify the status of the database. It updates a temporary table in the Oracle database to verify the availability of the database.</p>
Clean	Forcibly stops the Oracle database.
Info	<p>Provides the static information and dynamic information about the state of the database.</p> <p>See “About the Info function” on page 11.</p>
Action	<p>Performs the predefined actions on a resource.</p> <p>See “About the Action function” on page 12.</p>

About the Info function

The Info function provides static and dynamic information about the state of the database.

The function retrieves the following static information:

Version	InstanceNo
HostName	StartupTime
Parallel	Thread
InstanceRole	InstanceName

The entry point retrieves the following dynamic information:

InstanceStatus	Logins
DatabaseStatus	ShutdownPending

You can add additional attributes by adding SQL statements to the file

```
%VCS_HOME%\bin\Oracle\scripts\info\db_info.sql
```

Where, %VCS_HOME% typically expands to:

```
C:\Program Files\Veritas\Cluster Server
```

For example:

```
select 'static:HostName:'||host_name from v$instance;

select 'dynamic:ShutdownPending:'||shutdown_pending from v$instance;
```

The format of the selected record must be as follows:

```
attribute_type:userkey_name:userkey_value
```

The variable *attribute_type* can take the value static and/or dynamic.

About the Action function

The Action function enables you to perform predefined actions on a resource.

To perform an action on a resource, type the following command:

```
C:\> hares -action resource_name token [-actionargs arg1 ...] [-sys
system] [-clus cluster]
```

[Table 1-1](#) includes the actions that the agent supports.

Table 1-1 Actions supported by Oracle agent

Token for Action	Description
DBRestrict	Changes the database session to enable the RESTRICTED mode.
DBUndoRestrict	Changes the database session to disable the RESTRICTED mode.
DBSuspend	Suspends a database.
DBResume	Resumes a suspended database.
DBQuiesce	Places the database into a quiesced state. Note: You must set the <i>resource_manager_plan</i> parameter and restart the database before quiescing a database.
DBUnQuiesce	Restores the database from a quiesced state to a normal operation state.

Oracle agent resource type definition

The following section describes the resource type definition of Oracle agent:

```
type Oracle
(
  static keylist SupportedActions = { DBRestrict, DBUndoRestrict,
  DBResume, DBSuspend, DBQuiesce }
```

```

static i18nstr ArgList[] = { ServiceName, DelayAfterOnline,
DelayAfterOffline, DetailMonitor, IndepthMonitorCount, SID, Domain,
UserName, EncryptedPasswd, SQLFile, SQLTimeOut }

str ServiceName

int DelayAfterOnline = 20

int DelayAfterOffline = 20

boolean DetailMonitor = 0

int IndepthMonitorCount = 5

str SID

str Domain

str UserName

str EncryptedPasswd

str SQLFile

int SQLTimeOut = 20

)

```

Oracle agent attributes

[Table 1-2](#) lists the required attributes of the Oracle agent.

Table 1-2 Oracle agent required attributes

Required Attribute	Definition
ServiceName	The name of the Oracle service that is set during the installation of Oracle. The service name is specified in the format OracleService <i>SID</i> , where <i>SID</i> represents the database. Type and dimension: string-scalar
Domain	The name of the domain or host to which the user belongs in whose context Oracle was installed. Type and dimension: string-scalar
SID	A system identifier that uniquely identifies the Oracle database to be monitored in detail. Type and dimension: string-scalar

Table 1-2 Oracle agent required attributes (*continued*)

Required Attribute	Definition
UserName	The name of the Windows domain user or local user who has Database Administrator privileges for Oracle. Type and dimension: string-scalar
EncryptedPasswd	The encrypted password for the user that is identified by UserName. The password must be encrypted with the VCSEncrypt utility. Type and dimension: string-scalar

Table 1-3 lists the optional attributes of the Oracle agent.

Table 1-3 Oracle agent optional attributes

Optional Attributes	Definition
DelayAfterOffline	Number of seconds the agent waits to start the monitoring routine after Oracle is taken offline. Default = 20 seconds Type and dimension: integer-scalar
DelayAfterOnline	Number of seconds the agent waits to start the monitoring routine after Oracle is brought online. Default = 20 seconds Type and dimension: integer-scalar
DetailMonitor	A flag that defines whether the agent monitors Oracle in detail by trying to verify access to the database by running a SQL script. The value 1 indicates that the agent monitors Oracle in detail. The value 0 indicates that the agent does not monitor Oracle in detail. Default = 0 If the DetailMonitor flag is set to 1, the following attributes must be defined: <ul style="list-style-type: none"> ■ SID ■ SQLFile Type and dimension: boolean-scalar

Table 1-3 Oracle agent optional attributes (*continued*)

Optional Attributes	Definition
<p>IndepthMonitorCount</p>	<p>An integer that defines the monitor interval between two consecutive detail monitoring cycles. If this attribute is set to 5, the agent monitors the application in detail after every five monitor intervals.</p> <p>Default = 5</p> <p>Note: Ensure that the value of this attribute is set to be greater than or equal to 1.</p> <p>Type and dimension: integer-scalar</p>
<p>SQLTimeOut</p>	<p>The number of seconds the agent waits for the SQL script to return a value during detail monitoring. If this limit exceeds, the resource is declared faulted.</p> <p>Default = 20 seconds</p> <p>Type and dimension: integer-scalar</p>
<p>SQLFile</p>	<p>The name of SQL script to be used for detail monitoring, along with its complete path. The agent verifies the existence of this file.</p> <p>A sample file, check.sql, is located at %VCS_HOME%\bin\Oracle\</p> <p>Where, %VCS_HOME% typically expands to</p> <p>C:\Program Files\Veritas\cluster server</p> <p>The sample file contents are:</p> <pre>select * from v\$database;</pre> <p>Do not include any spool commands within the SQL script.</p> <p>If an Oracle error occurs during execution, the error is logged in the agent log. If debug logging is also enabled for the resource, the output of the SQL script is also logged in the agent log.</p> <p>Type and dimension:string-scalar</p>

About the GenericService agent

The GenericService agent monitors the listener services. The agent controls the listener for the database. The listener is a server process that listens to incoming client connection requests and manages traffic to the database.

The GenericService agent brings the listener services online, takes them offline, and monitors their status.

The GenericService agent is configured as resource of type GenericService.

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

How the Symantec ApplicationHA agent makes Oracle highly available

In the basic monitoring mode, the Oracle agent for Oracle database detects a failure if the database is not running and the GenericService agent detects a failure if a listener service is not running. In the detail monitoring mode, the agents detect failure if a preconfigured SQL script cannot execute or access the database or if the listener service is not running.

The detail monitoring interval can be defined using the **IndepthMonitorCount** attribute.

If a database or listener service fails, a configurable number of attempts are made to restart it on the virtual machine. If it does not start, the virtual machine itself can be restarted by VMware HA, depending on the configuration settings.

Configuring application monitoring with Symantec ApplicationHA

This chapter includes the following topics:

- [About configuring application monitoring with Symantec ApplicationHA](#)
- [Supported Oracle versions](#)
- [Before configuring application monitoring](#)
- [Configuring application monitoring for Oracle](#)
- [Administering application monitoring using the ApplicationHA tab](#)

About configuring application monitoring with Symantec ApplicationHA

This chapter describes the steps to configure application monitoring for Oracle 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>

If you want to configure application monitoring using the VCS commands, verify that the logged-on user has Oracle database administrator privileges.

- 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.
- After configuring Oracle for monitoring, if you create another Oracle database or listener service, 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 databases for monitoring.
- 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 then stops the other configured applications in a predefined order. 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.

Supported Oracle versions

Table 2-1 lists the supported Oracle versions and the operating systems.

Table 2-1 Supported application software for Oracle

Oracle versions	Windows Server versions
Oracle 10g, Release 2 (10.2.0.1.0)	■ Windows Server 2003 (64-bit)
Oracle 10g, Release 2 (10.2.0.2.0, 10.2.0.3.0)	■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2

Table 2-1 Supported application software for Oracle (*continued*)

Oracle versions	Windows Server versions
Oracle 10g, Release 2 (10.2.0.4.0)	<ul style="list-style-type: none"> ■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2 ■ Windows Server 2008 (64-bit)
Oracle 10g, Release 2 (10.2.0.5.0)	<ul style="list-style-type: none"> ■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2 ■ Windows Server 2008 (64-bit) ■ Windows Server 2008 (64-bit) R2
Oracle 11g, Release 1 (11.1.0.6.0)	<ul style="list-style-type: none"> ■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2
Oracle 11g, Release 1 (11.1.0.7.0)	<ul style="list-style-type: none"> ■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2 ■ Windows Server 2008 (64-bit)
Oracle 11g, Release 2 (11.2.0.1.0, 11.2.0.2.0)	<ul style="list-style-type: none"> ■ Windows Server 2003 (64-bit) ■ Windows Server 2003 (64-bit) R2 ■ Windows Server 2008 (64-bit) ■ Windows Server 2008 (64-bit) R2

Before configuring application monitoring

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

- Verify that you have installed Symantec ApplicationHA (console and guest components) in your VMware environment.
- 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
```

- Verify that the logged-on user has administrative privileges on the virtual machine where you want to configure application monitoring.
- If you want to use the Configuration Wizard to configure application monitoring, verify that the system user has Oracle database administrator privileges.
- Verify that the user to be configured for application monitoring has Oracle database privileges.
- Install Oracle and associated components that you want to monitor 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.

Configuring application monitoring for Oracle

Perform the following steps to configure application monitoring for Oracle databases and listener services on a virtual machine using the Symantec ApplicationHA Configuration Wizard.

Note: Verify that the system user has Oracle database administrator privileges if you want to use the Configuration Wizard to configure application monitoring.

To configure application monitoring for Oracle

- 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 the ApplicationHA 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.

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 **Oracle** in the Supported Applications list.


Ensure that the Oracle databases and the associated listener services are running.

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 Oracle Database Selection panel, choose the Oracle database that you want to monitor.

Note: On selecting Database SID, all the listed databases are selected. Enter the details for each database individually.



Oracle Database Selection

Select the Database SIDs and specify the associated parameters.



Welcome > Application Selection > **Application Inputs** > Implementation > Finish

<input type="checkbox"/> Database SID	Database SID: TEST3
<input type="checkbox"/> TEST1	Domain or Host Name: OracleHost
<input type="checkbox"/> TEST2	User Name: Administrator
<input checked="" type="checkbox"/> TEST3	Password: *****
	<input checked="" type="checkbox"/> Enable detail monitoring
	Script Location: C:\check.sql
	Monitor after every 5 cycles

Configured Listeners

TEST_1_LISTENER

TEST_2_LISTENER

ApplicationHA (Version 6.0.00000.407) | [View Logs](#)

< Back
Configure
Cancel

Enter the following details and then click **Configure**:

- Domain or Host Name The name of the domain or host to which the user belongs in whose context Oracle was installed.
- User Name The name of the domain user or local user who has Database Administrator privileges for Oracle.
- Password Enter the password for the user account.

- To enable script-based detail monitoring for the selected database using the Configuration Wizard, select **Enable detail monitoring** and provide the following required details:

- Script Path Enter the SQL script location on the virtual machine.
- Monitor after every ... cycles Enter a non-zero value.
 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. For example, to run a detail check every single monitor interval, enter the numeric value 1. To run the detail check every second monitor interval, enter the numeric value 2. This interpretation may be extended to other values.
 Symantec recommends that you set this value between 1 and 12. The default value is 5.

Note: You can also use the VCS commands to configure detail monitoring later.

See [“Configuring detail monitoring for Oracle using the command line”](#) on page 23.

- 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 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 Oracle using the command line

You can configure the Symantec ApplicationHA Oracle agents to perform detail monitoring of the configured Oracle database by setting the DetailMonitor flag to 1 and defining the IndepthMonitorCount and SQLFile attributes from the command line.

See “[Oracle agent attributes](#)” on page 13.

Note the following before you proceed:

- A sample script is supplied in the following directory:

```
%vcs_home%\bin\Oracle\Check.sql
```

Where, %vcs_home% typically expands to

```
C:\Program Files\Veritas\cluster server
```

- If you want to perform detail monitoring, ensure that the script is accessible from the virtual machine.

To configure detail monitoring for Oracle

- 1 From the ApplicationHA tab in the vSphere Client, click **Stop Application**.

This stops the configured Oracle database on the virtual machine. This is required for the attribute changes to take effect.

- 2 On the virtual machine where you have configured the Oracle databases, type the following on the command prompt and then press **Enter**:

```
haconf -makerw
```

This command sets the configuration mode to read/write.

- 3 To set the detail monitoring flag to 1, type the following on the command prompt and then press **Enter**:

```
hares -modify Oracle_database_SID DetailMonitor 1
```

Where *database_SID* is the name of the Oracle resource.

- 4 To set up script-based detail monitoring, you need to modify the SQLFile attribute. To do so, type the following on the command prompt and then press **Enter**:

```
hares -modify Oracle_database_SID SQLFile SQL_File_Path
```

Where *SQL_File_Path* is the full path of the script that you want the agent to run as part of the detail monitoring. Enclose the path of the script in double-quotes.

- 5 To set the IndepthMonitorCount attribute of the Oracle resource, type the following on the command prompt and then press **Enter**:

```
hares -modify Oracle_database_SID IndepthMonitorCount 5
```

A non-zero value for the IndepthMonitorCount 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 As required, use the `hares` command to modify other Oracle agent attributes.

- 7 Save and close the configuration. To set the configuration mode to read-only, type the following on the command prompt and then press **Enter**:

```
haconf -dump -makero
```

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

The specified attributes take effect and Symantec ApplicationHA monitors the Oracle database 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.

Note: 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

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.

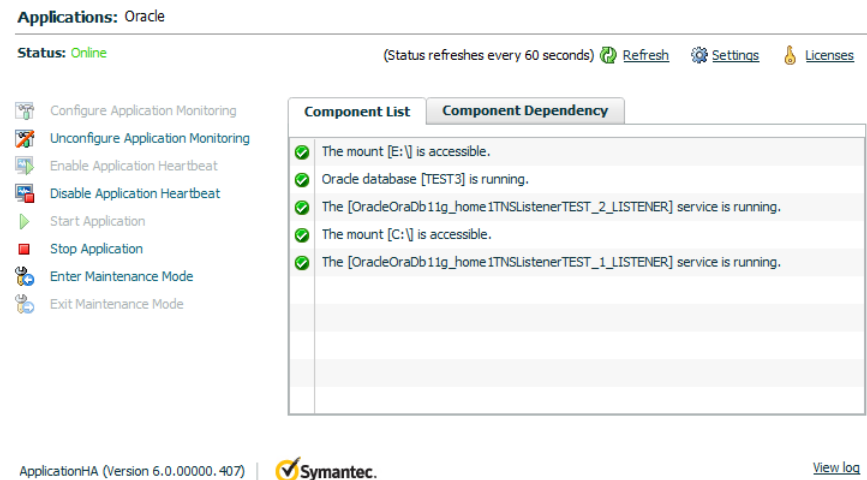
You can use the following buttons:

- 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.




Applications: Oracle

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

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

Component List	Component Dependency
✓	The mount [E:\] is accessible.
✓	Oracle database [TEST3] is running.
✓	The [OracleOraDb11g_home1TNSListenerTEST_2_LISTENER] service is running.
✓	The mount [C:\] is accessible.
✓	The [OracleOraDb11g_home1TNSListenerTEST_1_LISTENER] service is running.

ApplicationHA (Version 6.0.00000.407) |  [View log](#)

For example, if you have configured monitoring for Oracle agent, the Component List tab displays the following information:

```
Oracle database [Oracle_database] is running.
```

The mount [mount point] is accessible.

Where, *Oracle_database* and *mount point* are, respectively, the names of the Oracle database and the mount point configured on the virtual machine.

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

online	Indicates that the Oracle database is running on the virtual machine.
offline	Indicates that the Oracle database is not running on the virtual machine.
partial	Indicates that either the components are being started on the virtual machine or Symantec ApplicationHA was unable to start one or more of the configured Oracle databases.
faulted	Indicates that the configured components have unexpectedly stopped running.

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

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

To start or stop applications

Use the following options on the 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.

