

Symantec™ ApplicationHA agent for SAP Web Application Server Configuration Guide

Windows on Hyper-V

6.1

Symantec™ ApplicationHA agent for SAP Web Application Server Configuration Guide

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Product_version: 6.1

Document_version: 6.1 Rev 0

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Introducing ApplicationHA agents

This chapter includes the following topics:

- [About ApplicationHA agents](#)
- [About intelligent monitoring framework](#)
- [About the ApplicationHA agents for SAP](#)
- [How ApplicationHA agents monitor SAP Web Application Server](#)

About ApplicationHA agents

Agents are application-specific modules that plug into the ApplicationHA framework that manages the components of the configured applications.

The agents are installed when you install ApplicationHA. These agents start, stop, and monitor the components of the configured applications and report its state changes. If an application or its components fail, these agents restart the application and its components on the virtual machine.

A virtual machine has one agent per component that monitors all the components of that type. For example, a single GenericService agent manages all services that are configured using the GenericService components. When the agent starts, it obtains the necessary configuration information from these components and then monitors the configured applications. The agent then periodically updates ApplicationHA with the component and application status.

Agents perform the following operations:

- Bring the components online
- Take the components offline

- Monitor the components and report the state changes

ApplicationHA agents are classified in the following categories:

- Infrastructure agents (bundled 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 ApplicationHA.

- Application agents
Application agents are used to monitor third party applications such as Microsoft SQL Server, Microsoft Exchange and so on. These agents are packaged separately and are available in the form of an agent pack that gets installed when you install ApplicationHA.

The 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 installation.

Refer to the Symantec Operations Readiness Tools (SORT) Website for information on the latest agent pack availability:

<https://sort.symantec.com>

This document describes the ApplicationHA bundled agents along with their resource type definitions, attribute definitions, and sample configurations.

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.

About the ApplicationHA agents for SAP

The Symantec ApplicationHA agents monitor specific resources within an enterprise application, determine the status of these resources, and start or stop them according to external events.

The ApplicationHA agent for SAP Web Application Server provides monitoring and control for SAP NetWeaver 7.4, SAP NetWeaver 7.3, SAP NetWeaver 7.1 in a virtual machine.

The agent for SAP Web Application Server brings SAP instances online, monitors the instances, and takes the instances offline. The agent monitors the system processes and server states, and can shut down the instance in case of a fault.

The supported SAP instance types are as follows:

- Central Services Instance
- Application Server Instance

The agent supports the following SAP Web Application Server Usage Types:

- ABAP
- Java
- Add-In (ABAP + Java)

Agent functions

The functions of the ApplicationHA agent for SAP Web Application Server include the following:

- | | |
|--------|---|
| Online | <ul style="list-style-type: none"> ■ Validates the values of the agent attributes required to bring the SAP instance online. ■ Performs a preliminary check to ensure that the SAP instance is not running. ■ Starts the SAP Windows service <code>SAPSAPSID_InstID</code>, where <i>InstID</i> is the last two characters of the <code>InstName</code> attribute. ■ Starts the SAP instance using the <code>startsap.exe</code> utility. ■ Ensures that the instance is initialized successfully. |
|--------|---|

| | |
|---------|---|
| Offline | <ul style="list-style-type: none"> ■ Validates the values of the agent attributes required to bring the SAP instance offline. ■ Performs a preliminary check to ensure that the SAP instance is not already offline. ■ Stops the SAP instance using the stopsap.exe utility. ■ Stops the SAP Windows service. SAPSAPSID_<i>InstID</i>, where <i>InstID</i> is the last two characters of the InstName attribute. ■ Kills any remaining SAP instance processes to ensure that the instance processes are removed completely. |
| Monitor | <ul style="list-style-type: none"> ■ Validates the values of the agent attributes required to monitor the SAP instance. ■ Performs a first-level monitor check as follows: <ul style="list-style-type: none"> ■ The function verifies that the SAP Windows service SAPSAPSID_<i>InstID</i> is running, where <i>InstID</i> is the last two characters of the InstName attribute. ■ Verifies that all processes that the ProcMon attribute lists are running. ■ If the MonitorProgram attribute specifies a custom monitor program, the monitor function executes the specified program. |
| Clean | <p>In case of a fault event or an unsuccessful attempt to bring a resource online or offline, the clean function removes any remaining SAP instance processes. The clean function performs the following tasks:</p> <ul style="list-style-type: none"> ■ Uses SAP's sapsrvkill.exe utility to stop all processes of the particular SAP instance. ■ Stops SAPSAPSID_<i>InstID</i>, the SAP Windows service for the instance. ■ The clean function identifies and kills any remaining SAP instance processes using the unique combination of the SAPSID attribute and <i>InstID</i>, that is the last two characters of the InstName attribute. All these processes must also belong to the SAPServiceSAPSID or <i>sapsidadm</i> user. |

Resource type definition

The resource type definition for the ApplicationHA agent for SAP Web Application Server is as follows:

```
type SAPWebAS (
    static il8nstr ArgList[] = { ResLogLevel, SAPAdmin, SAPAdminDomain,
    SAPAdminPassword, SAPHome, SAPHost, SAPMonHome, SAPServiceUser,
    SAPSID, InstName, InstProfile, InstType, ProcMon, EnqSrvResName,
    MonitorProgram, SecondLevelMonitor}
    str ResLogLevel = INFO
    str SAPAdmin
```

```
str SAPAdminDomain
str SAPAdminPassword
str SAPHome
str SAPHost
str SAPMonHome
str SAPServiceUser
str SAPSID
str InstName
str InstProfile
str InstType = APPSERV
str ProcMon[]
str EnqSrvResName
str MonitorProgram
int SecondLevelMonitor = 0
)
```

Agent attribute definitions

Review the following information to familiarize yourself with the agent attributes for an SAP Web Application Server instance. This information will assist you during the agent configuration.

[Table 1-1](#) lists the attributes that are required for configuring an SAP Web Application Server instance.

Table 1-1 Required Attributes

| Required attributes | Description |
|---------------------|---|
| InstName | <p>Uniquely identifies an SAP server instance, along with the SAPSID attribute. The last two characters of this attribute specify the value of the InstID attribute. The InstID and SAPSID attributes together uniquely identify an SAP instance.</p> <p>Some examples include the following:</p> <ul style="list-style-type: none">■ ASCS03: SAP Central Services (ABAP)■ SCS07: SAP Central Services (Java)■ DVEBMGS00: SAP Primary Application Server (ABAP)■ D05: SAP Additional Application Server (ABAP)■ J06: SAP (Primary/Additional) Application Server (Java) <p>Type and dimension: string-scalar</p> <p>Example: DVEBMGS00</p> <p>Default: ""</p> |

Table 1-1 Required Attributes (*continued*)

| Required attributes | Description |
|---------------------|--|
| InstProfile | <p>Full path to the instance profile of the SAP server instance.</p> <p>Typically, the instance profile is located in the <drive>:\usr\sap\SAPSID\SYS\profile directory. The format of the profile name is <i>SAPSID_InstName_HOSTNAME</i>. Path names following the Unified Naming Convention (UNC) are also valid for this attribute.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: c:\usr\sap\EP1\SYS\profile\EP1_SCS02_SAPEP1SCS</p> |
| InstType | <p>String identifier that classifies and describes the SAP server instance type. The InstType values are not case sensitive. The valid values are:</p> <ul style="list-style-type: none"> ■ APPSERV: SAP Application Server ■ ENQUEUE: SAP Central Services ■ SMDA: Solution Manager Diagnostics Agent <p>Type and dimension: string-scalar</p> <p>Default: APPSERV</p> <p>Example: ENQUEUE</p> |
| ProcMon | <p>The list of SAP processes that the monitor function must monitor during a first-level check of an SAP instance.</p> <p>Type and dimension: vector</p> <p>Default: ""</p> <p>Example: disp+work.exe msg_server.exe</p> |

Table 1-1 Required Attributes (*continued*)

| Required attributes | Description |
|---------------------|---|
| ResLogLevel | <p>The logging detail performed by the agent for SAP Web Application Server for the resource. Valid values include the following:</p> <p>INFO: Logs error messages.</p> <p>TRACE: Logs error and trace messages. TRACE is very verbose and should only be used during initial configuration or for troubleshooting and diagnostic operations.</p> <p>Type and dimension: string-scalar</p> <p>Default: INFO</p> <p>Example: TRACE</p> |
| SAPAdmin | <p>Windows user name used to start the SAP instance. This user must be dedicated to all the SAP instances within an SAP system. The format is <i>sapsidadm</i>.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: ec4adm</p> |
| SAPAdminDomain | <p>Windows domain name to which the SAPAdmin user belongs.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: VRTSGPS</p> |
| SAPAdminPassword | <p>Password for the SAPAdmin user.</p> <p>Use the <code>vcseencrypt -agent</code> command to encrypt the password.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: vxfgh28skbsj</p> |
| SAPHost | <p>Hostname under which the SAP instance is to run.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: sap04smscsaw</p> |

Table 1-1 Required Attributes (*continued*)

| Required attributes | Description |
|---------------------|---|
| SAPHome | <p>The absolute path to the SAP base directory. This attribute is used to locate programs that the agent for SAP Web Application Server uses for start, stop, and clean functions.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example 1: c:\usr\sap\EC4\SYS\exe\run</p> <p>Example 2: c:\usr\sap\EC4\ASCS01\exe</p> |
| SAPServiceUser | <p>Windows user name used to start the SAP Windows service for an SAPSID. This user must be dedicated to all the SAP services under one SAP system, and must not be used by any other SAP service or instance under a different SAP system.</p> <p>Note: Do not include the domain name in the value for this attribute. Use the SAPAdminDomain attribute to specify domain information.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: SAPServiceEC4</p> |
| SAPSID | <p>SAP system name. This attribute starts with an alphabetic character and is exactly 3 characters in length. Ensure that the alphabetic characters used in this attribute are in uppercase only. SAPSID is defined during the SAP installation.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: EC4</p> |

Table 1-2 shows the optional attributes for configuring an SAP Web Application Server instance.

Table 1-2 Optional attributes

| Optional attributes | Description |
|---------------------|--|
| MonitorProgram | <p>The full pathname and command-line arguments for an externally provided monitor program.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example 1: <drive>:\usr\sap\EC4\ASCS00\work\myMonitor.exe</p> <p>Example 2: <drive>:\usr\sap\EC4\ASCS00\work\myMonitor.exe arg1 arg2</p> |
| EnqSrvResName | <p>Specifies the SAP Central Services instance resource name. This attribute is set for only Enqueue Replication Server (ERS) and will be used by both Enqueue and Enqueue Replication Servers to query others status during startup and failover.</p> <p>Type and dimension: string-scalar</p> <p>Default: No default</p> <p>Example: SAPPI1SCS_scs</p> |

How ApplicationHA agents monitor SAP Web Application Server

The SAP 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 resources 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 "Application critical state" to the Hyper-V host.

Depending on the configuration, the Hyper-V host then restarts the virtual machine. After the virtual machine restarts, the agent starts the configured Web sites and the associated application pools and brings the configured resources online on the system.

Configuring application monitoring

This chapter includes the following topics:

- [Considerations for configuring application monitoring](#)
- [Configuring application monitoring](#)

Considerations for configuring application monitoring

Symantec ApplicationHA provides an interface, Symantec ApplicationHA Health View, to configure and administer application monitoring.

A shortcut to access the Health View is created on the system's desktop after you install ApplicationHA. The Health View is Web-based and can be accessed using a browser.

You can also access the Health View directly from a browser window using the following URL:

`https://VMNameorIP:5634/vcs/admin/application_health.html?priv=ADMIN`

Consider the following before you configure application monitoring:

- Configure "Virtual Machine" role, on the virtual machines where you plan to configure application monitoring.
- Ensure that the "Integration Services" role is enabled on all the virtual machines where you plan to configure application monitoring.
- In case of virtual machines running Windows Server 2008 R2, upgrade the Integration Service.
- 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 ApplicationHA Health View.

- You can use the wizard to configure monitoring for only one application per virtual machine.
To configure application monitoring on the same virtual machine, for any additional applications, you must use the VCS commands.
To configure another application using the wizard, you must first unconfigure the existing application monitoring configuration.
www.symantec.com/docs/TECH159846
- The wizard runs in a logged-on user context. You must thus ensure that the logged-on user has administrative privileges on the virtual machine where you want to configure application monitoring.
- If you have configured a firewall, ensure that your firewall settings allow access to ports used by Symantec ApplicationHA installer, wizard, and services.
- 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
- After configuring SAP 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 all the 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.

Configuring application monitoring

Perform the following steps to configure monitoring for SAP Web Application Server on a virtual machine using the Symantec ApplicationHA Configuration Wizard.

Note: You can configure monitoring for multiple services and processes in a single wizard workflow. However, you cannot configure multiple applications simultaneously. To configure another application, run the wizard again.

To configure application monitoring for SAP Web Application Server

- 1 Launch the Symantec ApplicationHA Health View, using the shortcut created or in a browser, using the following URL:

`https://VMNameorIP:5634/vcs/admin/ application_health.html?priv=ADMIN`

Note: *VMNameorIP* refers to the Host name or IP address of the virtual machine.

- 2 Click **Configure Application Monitoring** to launch the Symantec ApplicationHA Configuration Wizard.
- 3 Review the information on the Welcome panel and then click **Next**.
- 4 On the Application Selection panel, click **SAP** in the Supported Applications list.
- 5 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 Hyper-V host.

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.

- 6 On the Finish panel, click **Finish** to complete the wizard.

This completes the application monitoring configuration.

Use the ApplicationHA Health View to monitor the application status and control application monitoring.

For more details refer to the *Symantec ApplicationHA Deployment Guide*.

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