

# Symantec™ ApplicationHA 6.1 Agent for JBoss Application Server Configuration Guide - Linux on KVM

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# Introducing the Symantec ApplicationHA Agent for JBoss Application Server

This chapter includes the following topics:

- [About the Symantec ApplicationHA agent for JBoss Application Server](#)
- [About installing and removing the ApplicationHA agent for JBoss Application Server](#)
- [Supported software](#)
- [JBoss Application agent functions](#)
- [Uniquely identifying JBoss Application Server Configurations](#)

## About the Symantec ApplicationHA agent for JBoss Application Server

The Symantec ApplicationHA agents monitor specific resources within an enterprise application. They determine the status of resources and start or stop them according to external events. The Symantec ApplicationHA agent for JBoss Application Server provides high availability for one or more JBoss Application Server Configuration.

# About installing and removing the ApplicationHA agent for JBoss Application Server

When you install or uninstall Symantec ApplicationHA, the ApplicationHA agent for JBoss Application Server is automatically installed or removed. For more information, see the *Symantec ApplicationHA Installation and Upgrade Guide*.

When you run the installer or uninstall program that accompanies the quarterly agent pack release of high availability agents from Symantec, the latest version of the ApplicationHA agent for JBoss Application Server is automatically installed or removed. For more information, see the *Symantec ApplicationHA Agent Pack Installation Guide*.

## Supported software

The Symantec ApplicationHA agent for JBoss Application Server supports the following software versions:

- Symantec ApplicationHA agent for JBoss Application Server can be installed and run inside virtual machines that have Symantec ApplicationHA 6.1 installed.
- The following versions of the Veritas Operations Manager components are supported:
  - Veritas Operations Manager Management Server 6.0 or later
  - Veritas Operations Manager managed host for Linux: 6.0 or later

## Supported application versions

[Table 1-1](#) lists the JBoss Application Server versions that Symantec ApplicationHA 6.1 currently supports on virtual machine.

**Table 1-1** Supported application versions

Application	Version
JBoss Application Server	5.1.x

---

**Note:** Install all JBoss Application Server components including JBossWS-CXF.

---

## Supported virtualization environments

Symantec ApplicationHA can be installed and run inside virtual machines in a KVM virtualization environment, running Red Hat Enterprise Linux (RHEL) 6, Update 3 and 4 in the physical host.

## Supported operating systems on virtual machines

[Table 1-2](#) shows the supported operating systems for Symantec ApplicationHA 6.1.

**Table 1-2** Supported guest operating systems

Operating systems	Levels	Kernel version
Red Hat Enterprise Linux 5	Updates 5, 6, 7, 8, 9	2.6.18-194.el5 2.6.18-238.el5 2.6.18-274.el5 2.6.18-308.el5 2.6.18-348.el5
Red Hat Enterprise Linux 6	Updates 3 and 4	2.6.32-279.el6 2.6.32-358.el6

---

**Note:** 64-bit operating systems are only supported.

---

If your system is running a lower level of Red Hat Enterprise Linux, than indicated in [Table 1-2](#), you must upgrade it before attempting to install Symantec ApplicationHA. Consult the Red Hat documentation for more information on upgrading or reinstalling your operating system.

Symantec supports only Red Hat distributed kernel binaries.

Symantec products operate on subsequent kernel and patch releases provided the operating systems maintain kernel ABI (application binary interface) compatibility.

## JBoss Application agent functions

The agent consists of resource type declarations and agent executables. The agent executables are organized into online, offline, monitor, and clean functions.

## Online

When you click **Start Application**, ApplicationHA ensures that the JBoss Application Server Configurations are running.

## Offline

When you click **Stop Application**, ApplicationHA ensures that the resource is given enough time to go offline successfully. The offline function uses a wait period that the `OfflineTimeout` attribute specifies. This enables the JBoss Application Server Configuration to complete the offline sequence before allowing further probing of the resource.

## Monitor

The monitor function conducts a first level check on the JBoss Application Server Configuration to ensure that the process of JBoss Application Server Configuration is running. The agent identifies the process for the JBoss Application Server component by applying the pattern matching on command lines of processes running in the system.

The second level check uses the utility `twiddle.sh` provided along with JBoss Application Server.

## Clean

The clean function attempts to gracefully shut down the JBoss Application Server Configuration. If the shut down is not successful, then the agent identifies the server configuration process and kills it.

# Uniquely identifying JBoss Application Server Configurations

You can configure one or more JBoss Application Server Configurations running on a single virtual host but the Application HA agent must be able to identify each configuration separately. This is done using the installation path of the JBoss Application Server and the server configuration name. The installation path is given by the attribute `JBossHome` and the `ServerConfig` attributes gives the server configuration name. It is important that the agent for JBoss Application Server can uniquely identify a configuration on a node that is hosting more than one simultaneous JBoss Application Server Configurations. The agent must identify the server configuration process before the agent kills the process of a non-responsive or a failed configuration.

For more details on the attributes:

See [“Attribute definition for JBoss Application Server agent ”](#) on page 27.

# Configuring application monitoring with Symantec ApplicationHA

This chapter includes the following topics:

- [About configuring application monitoring with ApplicationHA](#)
- [Before configuring application monitoring for JBoss Application Server](#)
- [Accessing the Symantec High Availability view](#)
- [Configuring application monitoring for JBoss Application Server](#)

## About configuring application monitoring with ApplicationHA

This chapter describes the steps to configure application monitoring with ApplicationHA in a virtualization environment.

Consider the following points before you proceed:

- You configure an application for monitoring on a virtual machine using the Symantec ApplicationHA Configuration Wizard.
- The Symantec ApplicationHA Configuration Wizard is launched when you click **Configure Application Monitoring** in the Symantec High Availability view of the Veritas Operations Manager (VOM) Management Server console.
- In this release, the wizard allows you to configure monitoring for only one application per virtual machine.

To configure another application using the wizard, you must first unconfigure the existing application monitoring.

- After you have configured monitoring for an application using the wizard, you can configure monitoring for other applications residing in the same virtual machine, using Symantec Cluster Server (VCS) commands.

For more information read the following technote:

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

## Before configuring application monitoring for JBoss Application Server

Ensure that you complete the following tasks before configuring application monitoring for JBoss Application Server on a virtual machine:

- Install Veritas Operations Manager (VOM) Management Server. For more information on working with VOM, see the *Symantec ApplicationHA User's Guide*. For information on accessing the Symantec High Availability view: See “[Accessing the Symantec High Availability view](#)” on page 15.
- Install ApplicationHA guest components on the virtual machine that you need to monitor.
- Assign ApplicationHA - Configure Application Monitoring (Admin) privileges to the logged-on user on the virtual machine where you want to configure application monitoring.
- Install the application and the associated components that you wish to monitor on the virtual machine.
- If you have configured a firewall, ensure that your firewall settings allow access to ports used by ApplicationHA installer, wizards, and services. Refer to the *Symantec ApplicationHA Installation Guide* for a list of ports and services used.

## Accessing the Symantec High Availability view

To administer an application on a virtual machine that is running in the KVM environment, you must access the Symantec High Availability view of the Veritas Operations Manager (VOM) Management Server console.

From the Symantec High Availability view, you can perform administrative actions such as:

- Start an application

- Stop an application
- Configure application monitoring
- Unconfigure application monitoring
- Enable application heartbeat
- Disable application heartbeat
- Enter maintenance mode
- Exit maintenance mode

**To access the Symantec High Availability view**

- 1 Log on to the VOM Management Server console.
- 2 Select the Server perspective and expand Manage in the left pane.
- 3 Expand the Organization, or Uncategorized Hosts to navigate to the virtual machine.
- 4 Right-click the required virtual machine, and then click **Manage ApplicationHA**.  
The Symantec High Availability view appears.

## Configuring application monitoring for JBoss Application Server

Perform the following steps to configure monitoring for JBoss Application Server on a virtual machine.

- 1 In the Symantec High Availability view of the Veritas Operations Manager Management Server Console, click **Configure Application Monitoring**.  
This launches the Symantec ApplicationHA Configuration Wizard.
- 2 Review the information on the Welcome screen and then click **Next**.  
The wizard lists all the supported applications for the system.
- 3 Select **JBoss Application Server** and then click **Next**.  
The JBoss Application Server Specification screen appears.



- 4 On the JBoss Application Server Specification page, enter the JBoss Home Directory and the Server Configuration Base Directory. Then click **Next**.

The JBoss Application Server Configuration screen appears.

---

**Note:** The server configurations which have no bootstrap beans to load into the miccontainer and no deployments, will not be shown in the list of server configuration on Application Inputs page. For example, `minimal`.

To verify the bootstrap beans loaded into the miccontainer with server deployment, the ApplicationHA framework will check for the presence of the files `jboss-beans.xml` and `bootstrap.xml`, located at:

```
<ServerBaseDir>/<ServerConfig>/deployers/jbosswebs.deployer/META-INF/jboss-beans.xml
```

```
<ServerBaseDir>/<ServerConfig>/conf/bootstrap.xml
```

---

- 5 Select the various JBoss Application Server Configurations that you want to monitor. The various configurations are shown in a list on the left side. You can enable one or more configurations to monitor. For each server configuration, enter the following fields:

User	System User under which the JBoss Application Server is executed.
Administrative User	Administrative user within JBoss Application Server.
Administrative Password	Password of Administrative user within JBoss Application Server.
Startup Arguments	Startup arguments to pass the startup script of JBoss Application Server (optional).
Environment File	Optional environment file to source before starting JBoss Application Server (optional).
Binding Set	The name of the set of bindings to use for the JBoss Application Server Configuration. Every server configuration has unique binding set like default-port, port-01 or port-02, and so on
JNDI Url	Modify the default value of the IP address and the port in the link which appears by default in the JNDI Url field according to your JBoss Application Server settings.  <code>jnp://&lt;ipaddress&gt;:&lt;port&gt;</code>

- 6 Click **Next**

The wizard will proceed to configure the resources and display their status.

- 7 Select the **JBoss Application Server Configuration**, specify the settings, and then click **Next**.

The wizard performs the application monitoring configuration tasks. The ApplicationHA Configuration screen displays the status of each task.

- 8 After all the tasks are complete, click **Next**.

---

**Note:** If the configuration tasks fail, click **Diagnostic information** to check the details of the failure.

You then have to run the wizard again to configure the application monitoring.

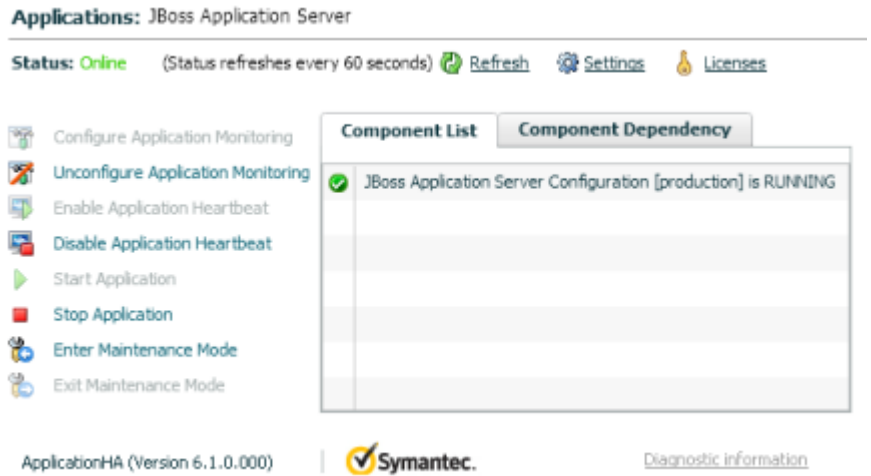
---

- 9 Click **Finish** to complete the wizard.

This completes the application monitoring configuration.

- 10 To view the status of the configured application on a virtual machine, on the Veritas Operations Manager Management Server console, right-click the appropriate virtual machine and then click **Manage ApplicationHA**.

The Symantec High Availability view appears.

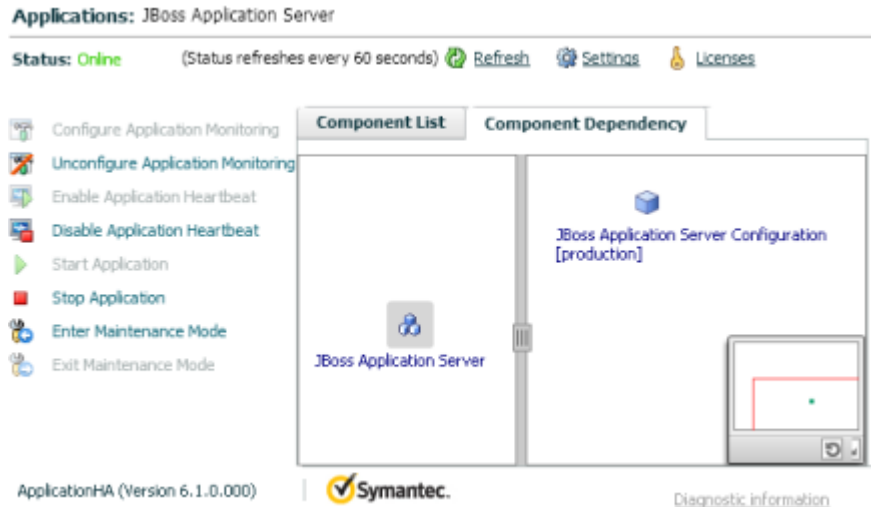


By default, the Component List tab appears. The tab lists each component of the configured application and the status description of each component.

For more information on viewing and administering applications through the Veritas Operations Manager, see the *Symantec ApplicationHA User's Guide*.

- To view component dependency for the monitored application, click the **Component Dependency** tab.

The component dependency graph appears.



By default, the component dependency graph shows the configured resources. The left pane displays component groups and/or configured applications. The right pane displays components of the selected component group or application. For more information on viewing component dependency for any configured application, see the *Symantec ApplicationHA User's Guide*.

# Troubleshooting the agent for JBoss Application Server

This chapter includes the following topics:

- [Starting the JBoss Application Server Configuration outside the Symantec ApplicationHA environment](#)
- [Reviewing error log files](#)

## Starting the JBoss Application Server Configuration outside the Symantec ApplicationHA environment

If you face problems while working with a resource, you must disable the resource within the cluster framework. A disabled resource is not under the control of the cluster framework, and so you can test the JBoss Application Server Configuration independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource.

You can then restart the JBoss Application Server Configuration outside the cluster framework..

---

**Note:** Use the same parameters that the resource attributes define within the cluster framework while restarting the resource outside the cluster framework.

---

A sample procedure to start a JBoss Application Server Configuration outside the ApplicationHA environment, is illustrated as follows.

**To start a server configuration outside the ApplicationHA environment**

- 1 Log in as superuser onto the host on which the JBoss Application Server Configuration to run.
- 2 Use the values defined in the agent attributes to initiate the start program.

For example, assume that the following values are assigned:

Attribute	Value
User	root
JBossHome	/usr/local/EnterprisePlatform-5.1.2/jboss-eap-5.1/jboss-as
AdminUser	admin
AdminPassword	admin
ServerConfig	production
ServerBaseDir	/usr/local/EnterprisePlatform-5.1.2/jboss-eap-5.1/jboss-as/server
BindingSet	ports-01
StartArgs	""

In the example below we will use the IP Address as 127.0.0.1

- 3 Go to the bin directory inside the directory specified by JBossHome:

```
/usr/local/EnterprisePlatform-5.1.2/jboss-eap-5.1/jboss-as/bin
```

- 4 Start the JBoss Application Server with the following command:

```
./run.sh -c production \
-Djboss.server.base.dir=/usr/local/EnterprisePlatform-5.1.2/ \
jboss-eap-5.1/jboss-as/server \
-Djboss.server.base.url=file:/usr/local/EnterprisePlatform-5.1.2/ \
jboss-eap-5.1/jboss-as/server \
-Djboss.service.binding.set=ports-01 \
-Djava.rmi.server.hostname=127.0.0.1 \
-Djboss.bind.address=127.0.0.1
```

- 5 Ensure that the JBoss Application Server Configuration starts successfully.

If the JBoss Application Server Configuration works properly outside the ApplicationHA framework, you can attempt to implement the server within the framework.

## Reviewing error log files

If you face problems while using JBoss Application Server or the agent for JBoss Application Server, use the log files described in this section to investigate the problems.

### Using JBoss Application Server log files

If the JBoss Application Server is facing problems, access the log files of the JBoss Application Server to further investigate the problem. The log files are located as follows:

- `<ServerBaseDir>/<ServerConfig>/log/server.log`
- `<ServerBaseDir>/<ServerConfig>/log/boot.log`

### Reviewing ApplicationHA log files

In case of problems while using the agent for JBoss Application Server, you can access the ApplicationHA log files at the following location:

```
/var/VRTSvcs/log/JBoss_A.log
```

### Reviewing cluster log files

In case of problems while using the agent for JBoss Application Server, you can also access the engine log file for more information about a particular resource. The engine log files are located at the following location:

The VCS engine log file is `/var/VRTSvcs/log/engine_A.log`.

### Using trace level logging

The `ResLogLevel` attribute controls the level of logging that is written in an ApplicationHA log file for each JBoss Application Server resource. You can set this attribute to `TRACE`, which enables very detailed and verbose logging.

If you set `ResLogLevel` to `TRACE`, a very high volume of messages are produced. Symantec recommends that you localize the `ResLogLevel` attribute for a particular resource.

### To localize ResLogLevel attribute for a resource

- 1 Make the ApplicationHA configuration writable:

```
# haconf -makerw
```

- 2 Identify the JBoss Application resource for which you want to enable detailed logging.

- 3 Localize the ResLogLevel attribute for the identified resource:

```
# /opt/VRTS/bin/hares -local JBoss_<count>_res \  
ResLogLevel
```

- 4 Set the ResLogLevel attribute to TRACE for the identified resource:

```
# /opt/VRTS/bin/hares -modify JBoss_<count>_res \  
ResLogLevel TRACE -sys SysA
```

- 5 Note the time before you begin to operate the identified resource.

- 6 Test the identified resource. The function reproduces the problem that you are attempting to diagnose.

- 7 Note the time when the problem is reproduced.

- 8 Set the ResLogLevel attribute back to INFO for the identified resource:

```
# /opt/VRTS/bin/hares -modify JBoss_<count>_res \  
ResLogLevel INFO -sys SysA
```

- 9 Review the contents of the log file. Use the time noted in Step 4 and Step 6 to diagnose the problem.

## Using agent for JBoss Application Server log files

In case of problems while using the agent for JBoss Application Server, you can access the agent log files for more information. The agent saves output of every operation process in the temporary folder of the resource system. If the temporary folder is /tmp, the log files are saved using the following naming format:

```
/tmp/.VRTSAgentName/ResourceName_EntryPointName.out
```

Let the resource name be JBoss\_1\_res. For example:

```
/tmp/.VRTSJBoss/JBoss_1_res_online.out  
/tmp/.VRTSJBoss/JBoss_1_res_offline.out  
/tmp/.VRTSJBoss/JBoss_1_res_clean.out  
/tmp/.VRTSJBoss/JBoss_1_res_monitor.out
```



---

**Note:** These files are overwritten each time you execute the corresponding operation process. In case you want to save the information, make a copy of the files to another location.

---

# Resource type definitions

This appendix includes the following topics:

- [About the resource type and attribute definitions](#)
- [Resource type definition for JBoss Application Server agent](#)

## About the resource type and attribute definitions

The resource type represents the configuration definition of the agent and specifies how the agent is defined in the configuration file. The attribute definitions describe the attributes associated with the agent. The required attributes describe the attributes that must be configured for the agent to function.

## Resource type definition for JBoss Application Server agent

Examples of agent type definition files are:

```
type JBoss (
    static boolean AEPTimeout = 1
    static str AgentFile = "/opt/VRTSvcs/bin/Script50Agent"
    static str AgentDirectory = "/opt/VRTSagents/ha/bin/JBoss"
    static str ArgList[] = { ResLogLevel, State, IState, User,
        EnvFile, AdminUser, AdminPassword, MonitorProgram,
        SecondLevelMonitor, StartArgs, StopArgs, JBossHome,
        ServerBaseDir, ServerConfig, BindingSet, JNDIUrl }
    str ResLogLevel = INFO
    str User = root
    str EnvFile
    str AdminUser = admin
```

```

str AdminPassword
str MonitorProgram
int SecondLevelMonitor = 0
str StartArgs
str StopArgs
str JBossHome
str ServerBaseDir
str ServerConfig
str BindingSet = "ports-default"
str JNDIUrl = "jnp://127.0.0.1:1099"
)

```

## Attribute definition for JBoss Application Server agent

Refer to the following required and optional attributes while configuring the agent for JBoss Application Server.

[Table A-1](#) lists the required attributes for the agent for JBoss Application Server.

**Table A-1** Required attributes

Required attribute	Description
JBossHome	<p>The absolute path to JBoss Application Server home directory. JBossHome is used to uniquely identify the JBoss Application Server. It is usually a directory named <code>jboss-as</code> under the directory specified during installation..</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: /usr/local/EnterprisePlatform-5.1.1/jboss-eap-5.1/jboss-as</p>
AdminUser	<p>The administrative username which is used to perform shutdown of the JBoss Application Server. For example: admin</p> <p>Type and dimension: string-scalar</p> <p>Default: admin</p>
AdminPassword	<p>Password for the administrative user. This is specified during the installation.</p> <p>Default: ""</p>

**Table A-1** Required attributes (*continued*)

Required attribute	Description
ResLogLevel	<p>The logging detail performed by the agent for JBoss Application Server for the resource. Valid values are:</p> <p>ERROR: Only logs error messages.</p> <p>WARN: Logs above plus warning messages.</p> <p>INFO: Logs above plus informational messages.</p> <p>TRACE: Logs above plus 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>
User	<p>The UNIX user name used to start and stop the JBoss Application Server Configuration.</p> <p>The agent operations use the <code>getpwnam(3C)</code> function system call to obtain UNIX user attributes. Hence you can define the user name locally or in a common repository such as NIS, NIS+, or LDAP.</p> <p>Type and dimension: string-scalar</p> <p>Default: root</p> <p>Example: jboss</p>
BindingSet	<p>The name of the set of bindings to use for the JBoss Application Server Configuration. These various binding names are stored in the <code>bindings-jboss-beans.xml</code> file under the server configuration directory.</p> <p>Type and dimension: string-scalar</p> <p>Default: ports-default</p> <p>Example: ports-01</p>
JNDIUrl	<p>JNDI Url of the server configuration. This is used to check the status of the server configuration.</p> <p>Default: <code>jnp://127.0.0.1:1099</code></p> <p>Example: <code>jnp://&lt;ipaddress&gt;:&lt;port&gt;</code></p>

**Table A-1** Required attributes (*continued*)

Required attribute	Description
ServerConfig	Name of the server configuration to monitor. Example: web, production, default, and so on. Default: ""
ServerBaseDir	Base directory for server configurations. The directory of each server configuration is within the server base directory. Example: /usr/local/EnterprisePlatform-5.1.1/jboss-eap-5.1/jboss-as/server Default: ""

[Table A-2](#) lists the optional attributes.

**Table A-2** Optional attributes

Optional attribute	Description
MonitorProgram	The full pathname and command-line arguments for an externally provided monitor program. Type and dimension: string-scalar Default: "" Example: /usr/local/bin/jboss_5_monitor.sh

Table A-2 Optional attributes (*continued*)

Optional attribute	Description
SecondLevelMonitor	<p>Used to enable second-level monitoring. Second-level monitoring is a deeper, more thorough state check of the configured ServerConfig. The numeric value specifies how often the monitoring routines must run.</p> <ul style="list-style-type: none"><li>■ 0 means never run the second-level monitoring routines</li><li>■ 1 means run routines every monitor interval</li><li>■ 2 means run routines every second monitor interval, and so on.</li></ul> <p>The agent uses the JBoss Application Server supplied script <code>twiddle.sh</code> scripting tool to perform second-level monitoring.</p> <p><b>Note:</b> Exercise caution while setting SecondLevelMonitor to large numbers. For example, if the MonitorInterval is set to 60 seconds and the SecondLevelMonitor is set to 100, then <code>twiddle.sh</code> is executed every 100 minutes, which may not be as often as intended.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 0</p> <p>Example: 1</p>
StartArgs	<p>Startup arguments to be passed to the JBoss Application Server startup scripts.</p> <p>Default: ""</p>
StopArgs	<p>Shutdown arguments to be passed to the JBoss Application Server Configuration.</p> <p>Default: ""</p>

# Detail monitoring

This appendix includes the following topics:

- [Setting the PATH variable](#)
- [Setting up detail monitoring for ApplicationHA agent for JBoss Application Server](#)

## Setting the PATH variable

ApplicationHA commands reside in the `/opt/VRTS/bin` directory. Add this directory to your PATH environment variable.

**To set the PATH variable**

- ◆ Perform one of the following steps:

For the Bourne Shell (sh or ksh), type:

```
$ PATH=/opt/VRTS/bin:$PATH; export PATH
```

For the C Shell (csh or tcsh), type:

```
$ setenv PATH :/opt/VRTS/bin:$PATH
```

## Setting up detail monitoring for ApplicationHA agent for JBoss Application Server

This section describes the procedure to enable and disable detail monitoring for JBoss Application Server.

### To enable detail monitoring for JBoss Application Server

- 1 Make the ApplicationHA configuration writable:

```
# haconf -makerw
```

- 2 Freeze the service group to avoid automated actions by ApplicationHA in case of an incomplete configuration:

```
# hagrps -freeze JBoss_1_SG
```

- 3 Enable detail monitoring for JBoss Application Server resources by using the following ApplicationHA commands:

```
# hares -modify JBoss_1_res SecondLevelMonitor <frequency>
```

---

**Note:** For more information on SecondLevelMonitor attribute: See [“Attribute definition for JBoss Application Server agent”](#) on page 27.

---

- 4 Save the configuration and unfreeze the service group.

```
# hagrps -unfreeze JBoss_1_SG
```

```
# haconf -dump -makero
```

### To disable detail monitoring for JBoss Application Server

- 1 Make the ApplicationHA configuration writable:

```
# haconf -makerw
```

- 2 Freeze the service group to avoid automated actions by ApplicationHA in case of an incomplete configuration:

```
# hagrps -freeze JBoss_1_SG
```

- 3 Disable detail monitoring for SAP resources by using the following ApplicationHA commands:

```
# hares -modify JBoss_1_res SecondLevelMonitor 0
```

- 4 Save the configuration and unfreeze the service group.

```
# hagrps -unfreeze JBoss_1_SG
```

```
# haconf -dump -makero
```