

# Veritas High Availability Agent 4.0.02.0 for Oracle Application Server Installation and Configuration Guide

AIX, HP-UX, Linux, Solaris

# Veritas High Availability Agent 4.0.02.0 for Oracle Application Server Installation and Configuration Guide

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Veritas High Availability Agent 4.0.02.0 for Oracle Application Server

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# Contents

Chapter 1	Introducing the Veritas Agent for Oracle Application Server	
	What's new in this agent .....	8
	Supported software .....	8
	About the Agent for Oracle Application Server .....	8
	Integrating with the high availability framework of Oracle .....	9
	Oracle Process Monitoring and Notification daemon (OPMN) daemon .....	9
	Oracle Application Server Containers for J2EE (OC4J) Clustering .....	9
	Agent Operations .....	10
	Online .....	10
	Offline .....	10
	Monitor .....	11
	Clean .....	11
Chapter 2	Installing the Veritas Agent for Oracle Application Server	
	Prerequisites for installing the Agent for Oracle Application Server .....	14
	Prerequisites for installing the agent in a VCS environment .....	14
	Prerequisites for installing the agent to support Solaris zones .....	14
	About the ACC library .....	14
	Upgrading the Veritas Agent for Oracle Application Server .....	15
	Installing the agent in a VCS environment .....	15
Chapter 3	Configuring the Veritas Agent for Oracle Application Server	
	Importing the agent types files .....	18
	Agent attributes .....	18
	Required attributes .....	19
	Optional attributes .....	21
	Executing second level monitoring .....	21
	Executing a customized monitoring utility .....	22
	Configuring the Oracle Application Server resources for Solaris zone support .....	23
Chapter 4	Clustering Oracle Application Servers	
	Configuring an Oracle Application Server in a clustered environment .....	26

- Allocating shared disk resource ..... 26
- Creating disk group, volume, and file system ..... 26
- Obtaining dedicated virtual IP address and DNS name ..... 26
- Obtaining dedicated user accounts ..... 27
- Creating Service Group and supporting resources ..... 27
- Installing the Oracle Application Server software ..... 28
  - Avoiding port conflicts ..... 28
  - Installing the Oracle Application Server software on a shared disk file system ..... 29
- Configuring virtual hostname on a standalone or clustered Oracle Application Server ..... 29
- Configuring the OPMN daemon to work in a cluster ..... 33
- Placing the Oracle Application Server component under cluster control 35

Chapter 5 Uninstalling the Veritas Agent for Oracle Application Server

Chapter 6 Troubleshooting the Veritas Agent for Oracle Application Server

- Using correct software and operating system versions ..... 40
- Meeting prerequisites ..... 40
- Configuring Oracle Application Server resources ..... 40
- Configuration checks for Solaris zone support ..... 40
- Starting the Oracle Application Server outside a cluster server ..... 41
- Reviewing log files ..... 41
  - Using VCS log files ..... 42
  - Using Oracle Application Server log files ..... 42
- Using trace level logging ..... 42

Appendix A Sample Configurations

- Sample agent type definition ..... 44
- Sample Oracle Application Server resource configuration ..... 44
- Sample Service Group configuration ..... 46
- Sample Service Group configurations for Solaris zone support ..... 52

Index 55

# Introducing the Veritas Agent for Oracle Application Server

The Veritas High Availability Agents monitor specific resources within an enterprise application, determine the status of these resources, and start or stop them according to external events. The Veritas High Availability Agent for Oracle Application Server provides high availability for all Oracle Application Server components in a cluster.

Along with the VCS or VAD cluster, the clustering features of the Oracle Application Server create a highly scalable, available, and easy-to-manage environment. By clustering Oracle Application Server instances with the Veritas Agent for Oracle Application Server, you can ensure application availability. You can also restore the application performance bandwidth automatically when one instance fails. You can also implement disaster recovery using the Global Cluster option.

This guide assumes that the user understands the primary components and basic functionality of a cluster. The guide also assumes that the user has a basic understanding of the Oracle Application Server architecture and the administration tasks required to start, stop, monitor and operate these components.

The chapter includes:

- [“What’s new in this agent”](#) on page 8
- [“Supported software”](#) on page 8
- [“About the Agent for Oracle Application Server”](#) on page 8

## What's new in this agent

- Added support for Solaris 10 zones in VCS 5.0 environment *only*.
- Integrated with an enhanced version of ACC library, that is compliant with VAD and VCS.

## Supported software

The Veritas High Availability Agent for Oracle Application Server support the following environments:

Environment	Supported Versions
Veritas Cluster Server	4.0, 4.1, 5.0
ACC Library	5.0.01.0
Operating Systems	AIX–5L on pSeries HP-UX–11i v2 on PA-RISC Linux–Red Hat Enterprise 3.0, 4.0 Solaris–8, 9, 10 on SPARC
Oracle Application Server	Oracle Application Server 10g 9.0.4, 10.1.2

## About the Agent for Oracle Application Server

This Agent for Oracle Application Server manages the Oracle Application Server components in a clustered environment. The agent can bring the components online and monitor the component instances. The agent can also detect server or component failures, and shut down components in case of a failure. The agent can also comprehensively remove all parts of components from a cluster node so the node can be brought online.

The Agent for Oracle Application Server manages the following Oracle Application Server components:

- Oracle Application Server  
The Oracle Application Server is either stand-alone or deployed within an Oracle Container for J2EE (OC4J) cluster. The Agent for Oracle Application Server manages the HTTP server (OHS), Web Cache, and OC4J components, and the DCM daemon on the Oracle Application Server Service Groups. See [“Oracle Application Server Containers for J2EE \(OC4J\) Clustering”](#) on page 9.



- **Oracle Process Monitoring and Notification daemon (OPMN) daemon**  
OPMN is required for starting and stopping other components. To avoid conflict between the Agent for Oracle Application Server and OPMN, you must configure the OPMN to not restart failed components. Within the clustered environment, OPMN is used only for starting and stopping the Oracle Application Server components.
- **Oracle Application Server Infrastructure**  
The Agent for Oracle Application Server manages the OID, SSO/DAS, and HTTP Server, and the DCM daemon on the Infrastructure Service Group.

## Integrating with the high availability framework of Oracle

Some releases of the Oracle Application Server, such as 10g, 10.1.2, and above, include additional capabilities for enhancing application availability. The Agent for Oracle Application Server in a clustered environment, integrate with these capabilities to further enhance availability.

### Oracle Process Monitoring and Notification daemon (OPMN) daemon

OPMN starts and monitors multiple Oracle Application Server components. The Agent for Oracle Application Server operations use OPMN to monitor and manage these components. The agent also monitors and protects the OPMN daemon itself.

---

**Caution:** Configure the OPMN daemon to refrain from taking automatic action in case a component within the cluster fails. For more information: See [“Configuring the OPMN daemon to work in a cluster”](#) on page 33.

---

### Oracle Application Server Containers for J2EE (OC4J) Clustering

The Oracle Application Server provides a mechanism to cluster the application server processes so that different processes can share the same workload. You can balance the load of client requests using the Oracle HTTP server, Web Cache, or a third-party load balancer. The Oracle Application Server also provides state replication and configuration management among clustered instances.

The J2EE and Veritas clustering technologies are complimentary and work at different levels:

- OC4J clustering focuses on application objects and session and messaging status. This level of clustering helps you build scalable applications, simplifies management of distributed applications, and reduces the client impact of application server failures.
- Veritas clustering manages and protects the entire application infrastructure that includes the OC4J cluster, file servers, enterprise applications, back end database, and so on. The Agent for Oracle Application Server also protects single points of failure in the Oracle Application Server infrastructure, such as the OPMN daemon.

The Agent for Oracle Application Server can restart failed OC4J components on alternate cluster nodes that restores application bandwidth. By including Oracle Application Server components in Service Groups, you can implement site-wide failover with the Global Cluster Option, for rapid disaster recovery purposes.

## Agent Operations

The operations that the Veritas Agent for Oracle Application Server can perform are described below.

### Online

The online operation performs the following tasks:

- Validates that the agent attributes are set properly.
- Verifies that the Oracle Application Server instance is not already online.
- Starts the instance by executing the `startproc` command. The command uses the `User`, `OracleHome`, and `ComponentProcessType` attributes:

```
# /bin/su User -c "$OracleHome/opmn/bin/opmnctl startproc  
iascomponent/process-type=ComponentProcessType"
```

---

**Caution:** Once an Oracle Application Server component is placed under cluster control, do not attempt to start or stop the instance without using a cluster interface, such as the Web Console, Java Console, or command-line interface.

---

The online operation exits either after all the processes start successfully, or after the timeout period specified in the `OnlineTimeout` attribute expires.

### Offline

The offline operation performs the following tasks:

- Verifies that the Oracle Application Server instance is not already offline.

- Stops the instance by executing the `opmnctl` command. The command uses the `User`, `OracleHome`, and `ComponentProcessType` attributes:

```
# /bin/su User -c "$OracleHome/opmn/bin/opmnctl stopproc  
iascomponent/process-type=ComponentProcessType"
```

---

**Caution:** Once an Oracle Application Server component is placed under cluster control, do not attempt to start or stop the instance without using a cluster interface, such as the Web Console, Java Console, or command-line interface.

---

The offline operation exits either after all the processes stop successfully, or after the timeout period specified in the `OfflineTimeout` attribute expires.

## Monitor

The monitor operation monitors the states of the Oracle Application Server instances running on all nodes within the cluster. The operation performs the following tasks:

- The first level check searches for all system processes that must be running for an Oracle Application Server instance. The check executes the process utility (`ps`) command and searches for the strings that uniquely identify the Oracle Application Server instance. These search strings include the values specified in the `ComponentProcessType` and `User` attributes.  
If the first level check does not find these processes running on the node, the check exits immediately, and reports the instance as `OFFLINE`.
- If the `SecondLevelMonitor` attribute is set to greater than 0, the monitor operation uses the OPMN daemon to check the status of the instance. The operation runs the `opmnctl status` command to check the status of the instance. If the instance is online, the second level check returns the status as `ONLINE`.  
See [“Executing second level monitoring”](#) on page 21.
- Depending upon the `MonitorProgram` attribute, the monitor operation can perform a customized check using a user supplied monitoring utility. For details about executing a custom monitor program:  
See [“Executing a customized monitoring utility”](#) on page 22.

## Clean

In case of a failure or after an unsuccessful attempt to online or offline an Oracle Application Server instance, the clean operation removes any Oracle Application Server processes remaining in the system. The operation performs the following tasks:

- Attempts to shut down the Oracle Application Server instance using the `opmnctl stopproc` command. The command uses the `ComponentProcessType` attribute:

```
$ opmnctl stopproc  
ias-component/process-type=ComponentProcessType
```
- The operation accesses the directory specified in the `OracleHome` attribute, and kills any remaining processes owned by the user specified in the `User` attribute.

# Installing the Veritas Agent for Oracle Application Server

This chapter describes how to install the Veritas High Availability Agent for Oracle Application Server in a cluster. You must install the agent on all systems that host a Oracle Application Server Service Group.

The chapter includes:

- [“Prerequisites for installing the Agent for Oracle Application Server”](#) on page 14
- [“Upgrading the Veritas Agent for Oracle Application Server”](#) on page 15
- [“Installing the agent in a VCS environment”](#) on page 15

## Prerequisites for installing the Agent for Oracle Application Server

Ensure that you meet the prerequisites before installing the Veritas High Availability Agent for Oracle Application Server.

### Prerequisites for installing the agent in a VCS environment

- Install and configure Veritas Cluster Server.
- Install the latest version of ACC library 5.0.  
See [“About the ACC library”](#) on page 14.
- Remove any prior version of this agent.

### Prerequisites for installing the agent to support Solaris zones

- Install the Oracle Application Server to support Solaris zones. For details, refer to note 330016.1 on the [metalink.oracle.com](http://metalink.oracle.com) site.
- Install and configure the VCS 5.0 environment to support Solaris zones. Refer to the VCS user documentation for details.
- Ensure that you set up the zones and the required system parameters correctly. For details, refer to the Sun documentation.
- Remove any prior version of this agent.

### About the ACC library

The operations for Veritas High Availability Agent for Oracle Application Server depend on a set of PERL modules known as the ACC library. The library must be installed on each system in the cluster that will run the Agent for Oracle Application Server. The ACC library contains common, reusable functions that perform tasks such as process identification, logging, and system calls.

To install or update the ACC library package, locate the library and related documentation either on the agent CD or in the compressed agent tar file.

# Upgrading the Veritas Agent for Oracle Application Server

To upgrade the agent, first remove the older version of the agent. For the uninstallation procedure:

See [“Uninstalling the Veritas Agent for Oracle Application Server”](#) on page 37.

Then follow the instructions below to install the new agent software.

## Installing the agent in a VCS environment

Perform the following steps on each system in the cluster.

### To install the agent on AIX systems

- 1 Log in as `root`.
- 2 Go to the `<cd_mount>/aix/application/oracleas_agent/<vcs_version>/pkgs` directory.
- 3 Install the package:  

```
# installp -ac -d VRTSvcssoas9.rte.bff VRTSvcssoas9.rte
```

### To install the agent on HP-UX systems

- 1 Log in as `root`.
- 2 Go to the `<cd_mount>/hpux/application/oracleas_agent/<vcs_version>/pkgs` directory.
- 3 Install the package:  

```
# swinstall -s `pwd` VRTSvcssoas9
```

### To install the agent on Linux systems

- 1 Log in as `root`.
- 2 Go to the `<cd_mount>/linux/application/oracleas_agent/<vcs_version>/pkgs` directory.
- 3 Install the package:  

```
# rpm -ihv VRTSvcssoas9.AgentVersion.rpm
```

### To install the agent on Solaris systems

- 1 Log in as root.
- 2 Go to the `<cd_mount>/solaris/sparc/application/oracleas_agent/<vcs_version>/<version>_agent/pkgs` directory.
- 3 Install the package:  
`# pkgadd -d . VRTSvcsoas9`



# Configuring the Veritas Agent for Oracle Application Server

After installing the Agent for Oracle Application Server, you must import the configuration file. After importing the configuration file, you can create and configure an Oracle Application Server resource. Before you configure a resource, review the attributes table that describes the Oracle Application Server resource type and its attributes.

The chapter includes:

- [“Importing the agent types files”](#) on page 18
- [“Agent attributes”](#) on page 18
- [“Executing second level monitoring”](#) on page 21
- [“Executing a customized monitoring utility”](#) on page 22
- [“Configuring the Oracle Application Server resources for Solaris zone support”](#) on page 23

To view sample agent type definition files and configuration service groups: See [“Sample agent type definition”](#) on page 44.

## Importing the agent types files

To use the Agent for Oracle Application Server, you must import the `OracleAS9Types.cf` file into the cluster.

### To import the agent types files to work with VCS

Perform the following steps using the VCS graphical user interface.

- 1 Start the Veritas Cluster Manager GUI and connect to the cluster on which the agent is installed.
- 2 Click **File > Import Types**.
- 3 In the **Import Types** dialog box, select the following file:

Version	Directory structure
VCS 4.x	<code>/etc/VRTSvcS/conf/sample_OracleAS9/OracleAS9Types.cf</code>
VCS 5.0	<code>/etc/VRTSagents/ha/conf/OracleAS9/OracleAS9Types.cf</code>
For Solaris zone support	<code>/etc/VRTSagents/ha/conf/OracleAS9/OracleAS9Types_zones.cf</code>

- 4 Click **Import**.
- 5 Save the VCS configuration.

The Oracle Application Server configuration is now imported to the VCS engine. You can now create Oracle Application Server resources. For additional information about using the VCS GUI, refer to the *Veritas Cluster Server User's Guide*.

For a sample agent definition:

See [“Sample agent type definition”](#) on page 44.

## Agent attributes

The required and optional attributes required for configuring an Oracle Application Server instance are described below.

## Required attributes

Required attributes	Description
ComponentProcessType String	<p>The process type of the Oracle Application Server component, that the resource is managing. The OPMN daemon uses this attribute to start, monitor, and stop the Oracle Application Server instance.</p> <p>The typical values for Oracle Infrastructure components are:</p> <ul style="list-style-type: none"> <li>■ For <i>HTTP_Server</i>, the process type is <b>HTTP_Server</b>.</li> <li>■ For <i>dcm-daemon</i>, the process type is <b>dcm-daemon</b>.</li> <li>■ For <i>OC4J</i>, the process type is <b>OC4J_SECURITY</b>.</li> <li>■ For <i>OID</i>, the process type is <b>OID</b>.</li> </ul> <p>The typical values for Oracle Application Server components are:</p> <ul style="list-style-type: none"> <li>■ For <i>HTTP_Server</i>, the process type is <b>HTTP_Server</b>.</li> <li>■ For <i>dcm-daemon</i>, the process type is <b>dcm-daemon</b>.</li> <li>■ For <i>WebCache</i>, the process type is <b>WebCache</b>.</li> <li>■ For <i>WebCache</i>, the process type is <b>WebCacheAdmin</b>.</li> <li>■ For <i>OC4J</i>, the process type is <b>OC4J_Portal</b>.</li> <li>■ For <i>OC4J</i>, the process type is <b>home</b>.</li> <li>■ For <i>OC4J</i>, the process type is <b>OC4J_BI_Forms</b>.</li> <li>■ For <i>wireless</i>, the process type is <b>OC4J_Wireless</b>.</li> <li>■ For <i>Discoverer</i>, the process type is <b>OAD</b>.</li> <li>■ For <i>Discoverer</i>, the process type is <b>OSAgent</b>.</li> </ul> <p>If you set this attribute to <b>opmn</b>, you can manage the OPMN daemon itself.</p> <p><b>Note:</b> The value of this attribute must match the value of the <code>process-type</code> column that the <code>opmnctl status</code> command returns.</p> <p>Example: <b>OC4J_Portal</b></p> <p>Default: ""</p>
ContainerName String	<p>Name of the Solaris zone on which the Oracle Application Server component is running.</p> <p>This attribute is applicable for Solaris zones support <i>only</i>.</p> <p>Example: <b>appsrv_zon1</b></p> <p>Default: ""</p>

**Agent attributes**

Required attributes	Description
OracleHome <i>String</i>	<p>The absolute path to the Oracle Application Server installation directory. The Agent for Oracle Application Server uses this attribute to locate the programs to be executed.</p> <p>By default, Oracle does not provide any standard scripts or environment setup files. All binaries are referenced relative to the <code>OracleHome</code> directory.</p> <p>Example: <code>/u01/app/oracle/Infrastructure</code></p> <p>Default: ""</p>
ResLogLevel <i>String</i>	<p>The logging detail performed by the agent for the resource. Valid values are:</p> <p><b>ERROR:</b> Only logs error messages.</p> <p><b>WARN:</b> Logs above plus warning messages.</p> <p><b>INFO:</b> Logs above plus informational messages.</p> <p><b>TRACE:</b> Logs above plus trace messages. <b>TRACE</b> is very verbose and should only be used during initial configuration or for troubleshooting and diagnostic operations.</p> <p>Example: <b>TRACE</b></p> <p>Default: <code>INFO</code></p>
User <i>String</i>	<p>The UNIX user name used to start, monitor, and stop the Oracle Application Server resource. This user is also the owner of the Oracle Application Server installation. If you specify the <a href="#">MonitorProgram</a> attribute, the security credentials of this user are used to run the specified custom monitor utility.</p> <p>You must synchronize the user names across all the systems within the cluster. All user names must resolve to the same UID and the same default shell on each system in the cluster.</p> <p>You can define the user locally or in a common repository, such as NIS, NIS+, or LDAP. The agent operations use the <code>getpwnam(3C)</code> system call to obtain all UNIX user attributes.</p> <p>Example: <code>oracle</code></p> <p>Default: ""</p>

## Optional attributes

Optional attribute	Description
MonitorProgram <i>String</i>	Absolute path name of an external, user-supplied monitor executable. For information about setting this attribute: See <a href="#">“Executing a customized monitoring utility”</a> on page 22. Example: <code>/u01/app/oracle/Infra/opmn/bin/oasmonitor.sh</code> Default: ""
SecondLevelMonitor <i>Integer</i>	Used to enable second-level monitoring. Second-level monitoring is a deeper, more thorough state check of the Oracle Application Server instance. The numeric value specifies how often the monitoring routines must run. 0 means never run the second-level monitoring routines, 1 means run routines every monitor interval, 2 means run routines every second monitor interval, and so on. See <a href="#">“Executing second level monitoring”</a> on page 21. <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 sapinfo.exe is executed every 100 minutes, which may not be as often as intended. For maximum flexibility, no upper limit is defined for SecondLevelMonitor. Example: 1 Default: 0

## Executing second level monitoring

If the [SecondLevelMonitor](#) attribute is set to greater than 0, the Agent for Oracle Application Server performs a second level check to monitor the state to the Oracle Application Server instance.

The second level check uses the OPMN daemon to check the status of the instance. The check executes the `opmnctl status` command and parses the status column of the output. The status column displays `Alive` for online and `Down` for offline or unknown.

For example:

```
Processes in Instance: ashpl.vcshp1.vxindia.veritas.com
```

```
-----
ias-component  process-type  pid          status
-----
OC4J           OC4J_BI_Forms 27684       Alive
```

OC4J	home	N/A	Down
WebCache	WebCacheAdmin	9234	Alive
WebCache	WebCache	9287	Alive
HTTP_Server	HTTP_Server	27590	Alive
dcm-daemon	dcm-daemon	14416	Alive
LogLeader	logleaderd	N/A	Down

---

**Note:** If the component is the OPMN daemon, the second-level monitor runs the `opmnctl status` command and checks the return code.

---

## Executing a customized monitoring utility

The monitor operation can execute a customized monitoring utility to perform an additional Oracle Application Server state check. The monitor operation executes the utility specified in the [MonitorProgram](#) attribute, if:

- The specified utility is a valid executable file.
- The first level process check indicates that the Oracle Application Server instance is online.
- The SecondLevelMonitor attribute is either set to 0 or 1, and the second level check indicates that the Oracle Application Server instance is online.
- The SecondLevelMonitor attribute is set to greater than 1, but the second level check is deferred for this monitoring cycle.

The monitor operation interprets the utility exit code as follows:

Exit code	Interpretation
110 or 0	Oracle Application Server instance is ONLINE
100 or 1	Oracle Application Server instance is OFFLINE
99	Oracle Application Server instance is UNKNOWN
Any other value	Oracle Application Server instance is UNKNOWN

To ensure that the customized utility is always available to the agent, Symantec recommends storing the file in a shared directory that is available on the online node.

## Configuring the Oracle Application Server resources for Solaris zone support

To enable the Agent for Oracle Application Server to support Solaris 10 zones, ensure that you perform these configuration steps:

- For each Oracle Application Server resource, set the [ContainerName](#) attribute to the name of the local zone in which the Agent for Oracle Application Server is installed.
- VCS must be installed on the global zones, on all the nodes in the cluster.
- Ensure that the required disk group and mount point are available.
- The zone in which the Oracle Application Server must be installed and configured correctly. You must be able to boot the zone on any of the physical nodes in the cluster.
- Configure the virtual IP address on the Oracle Application Server as the zone IP address.
- You must install the Agent for Oracle Application Server under the `/opt` directory. This directory must be available on the local zone as a `lofs` file system.

For sample Service Group configurations:

See [“Sample Service Group configurations for Solaris zone support”](#) on page 52.





# Clustering Oracle Application Servers

The Veritas Agent for Oracle Application Server can manage and monitor these Oracle Application Server programs and components:

- Oracle Process Monitoring and Notification daemon (OPMN) daemon
- Oracle Application Server Infrastructure
- Standalone or clustered Oracle Application Servers.

This chapter covers an overview of how you can install and cluster these server types. The chapter includes:

- [“Configuring an Oracle Application Server in a clustered environment”](#) on page 26

## Configuring an Oracle Application Server in a clustered environment

You can cluster the Oracle Application Server resources using various methods, Symantec recommends the following procedure to cluster Oracle Application Server resources in a clustered environment.

Perform these steps in the order presented below:

- 1 “[Allocating shared disk resource](#)”
- 2 “[Creating disk group, volume, and file system](#)”
- 3 “[Obtaining dedicated virtual IP address and DNS name](#)”
- 4 “[Obtaining dedicated user accounts](#)”
- 5 “[Creating Service Group and supporting resources](#)”
- 6 “[Installing the Oracle Application Server software](#)”
- 7 “[Configuring virtual hostname on a standalone or clustered Oracle Application Server](#)”
- 8 “[Configuring the OPMN daemon to work in a cluster](#)”
- 9 “[Placing the Oracle Application Server component under cluster control](#)”

### Allocating shared disk resource

Symantec recommends installing each Oracle Application Server instance on a separate and dedicated shared disk resource. Obtain a shared disk resource for each instance to be clustered.

### Creating disk group, volume, and file system

Create a disk group, volume, and file system on a shared disk resource that is allocated for an Oracle Application Server.

### Obtaining dedicated virtual IP address and DNS name

Obtain unique virtual addresses and DNS names for each Oracle Application Server instance. These addresses and names are required to support the Oracle Application Server IP network configuration.

Each Oracle Application Server node uses the virtual IP address and DNS name dedicated to the node, irrespective to the cluster system hosting the node.

## Obtaining dedicated user accounts

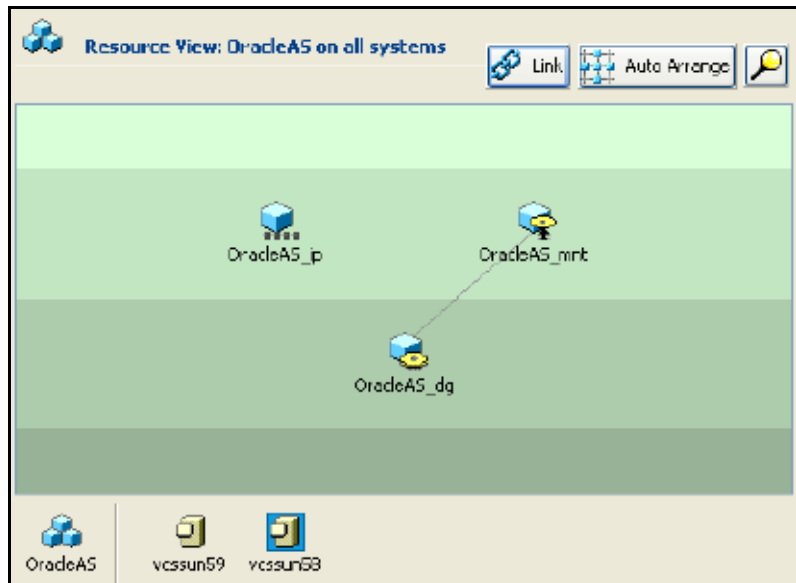
If the Oracle Application Server instance does not run using a root account, you must assign a dedicated [User](#) account for the instance.

## Creating Service Group and supporting resources

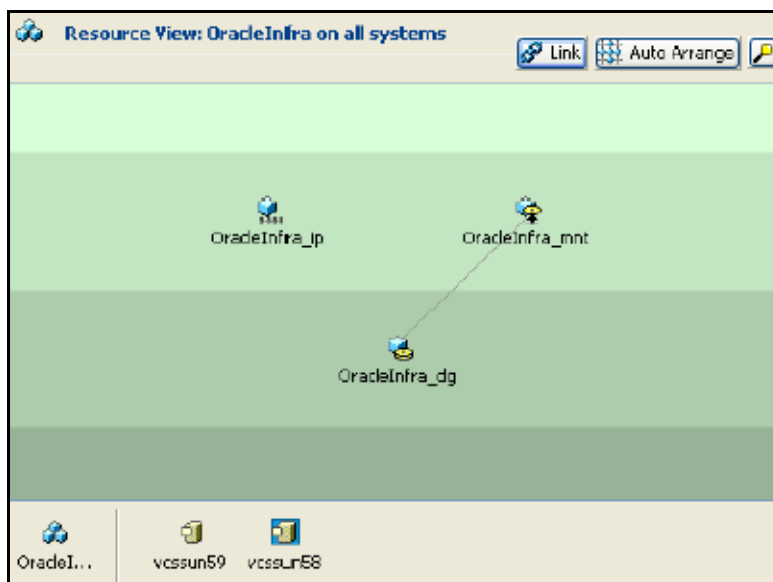
Perform the following tasks:

- Create a Service Group that can contain all required resources to support the Oracle Application Server instance.
- Create appropriate cluster resources and link the shared disk resource and network objects that were previously under the cluster control.
- Bring the Service Group online to test the configuration.

An example of an Oracle Application Server Service Group configuration follows.



An example of an Oracle Infrastructure Service Group configuration follows.



## Installing the Oracle Application Server software

Ensure that the shared disk and network resources are online. You can now install the Oracle Application Server and the Oracle Application Server Infrastructure software. Consider the following steps while installing the software:

- [“Avoiding port conflicts”](#)
- [“Installing the Oracle Application Server software on a shared disk file system”](#)

### Avoiding port conflicts

If other applications are running on the target system, the Oracle Application Server installer detects the busy ports during installation and uses other free ports for installing the component. If the ports are free, a port conflict may occur after installation. Symantec recommends that you pre-configure dedicated port numbers for each Oracle Application Server instance before starting the installation.

You can specify the port numbers in the `staticports.ini` file. A sample `staticports.ini` file exists on the Oracle Application Server CD under `Disk1/Stage/Response` directory. Copy this file to an appropriate location

and modify the port numbers for the components. Then run the installer using the appropriate command line arguments. Refer to the Oracle documentation for more information.

For example, for installing an Oracle Application Server Infrastructure component, run the installer:

```
./runInstaller  
\oracle.iappserver.infrastructure:s_\StaticPorts=<full pathname to  
the staticports.ini file >
```

Refer to the Oracle Application Server installation guide for information on using the static ports feature for installation.

## Installing the Oracle Application Server software on a shared disk file system

Follow the instructions in the Oracle Application Server product documentation to install the software. Ensure that the installation program installs the software on the shared disk file system previously established for this Oracle Application Server instance.

While installing:

- While installing the Oracle Application Server Infrastructure, select **High Availability and Replication** in the Oracle Universal Installer: Select Configuration Options dialog box.
- In the Oracle Universal Installer: Select High Availability or Replication Option, select **Virtual host** to configure all components to use a virtual hostname.
- When prompted for the virtual hostname, enter the dedicated virtual hostname allocated to the node on which you are performing the installation.

## Configuring virtual hostname on a standalone or clustered Oracle Application Server

The installer for installing a standalone or clustered Oracle Application Server does not provide the feature to configure the virtual hostname for the node. You must configure the virtual hostname manually. For manual configuration, you must:

- Enable the virtual IP address assigned to the Oracle Application Server installation.
- Associate a hostname with the virtual IP address in the DNS or local host file.
- Stop all Oracle Application Server processes except OPMN.

- Change the physical hostname in all the configuration files for the components installed on the server, to the virtual hostname. You must change all such occurrences where the physical hostname is used as a hostname instead of part of an instance name or other key.

As an example, follow these steps to perform the manual configuration. Refer to the Oracle documentation for exact details about these configuration files.

- [“To modify the HTTP Server”](#)
- [“To modify WebCache”](#)
- [“To modify the portal”](#)
- [“To modify wireless”](#)
- [“To modify OracleBI Discoverer”](#)
- [“To verify all changes”](#)

#### To modify the HTTP Server

- 1 In the following files, change all such occurrences where the physical hostname is used as a hostname instead of part of an instance name or other key:
  - `$ORACLE_HOME/Apache/Apache/conf/httpd.conf`
  - `$ORACLE_HOME/Apache/Apache/conf/mod_oc4j.conf`
  - `$ORACLE_HOME/Apache/Apache/htdocs/index.html`
- 2 Update the DCM repository:

```
# $ORACLE_HOME/dcm/bin/dcmctl updateConfig -ct ohs
```
- 3 Re-register `mod_osso` as a partner application:
  - a Verify that the [OracleHome](#) variable is set correctly.
  - b Set `LD_LIBRARY_PATH` as equal to `$ORACLE_HOME/lib32`.
  - c Set `LD_LIBRARY_PATH_64` as equal to `$ORACLE_HOME/lib`.
  - d Run this command to register `mod_osso` as a partner application:

```
# $ORACLE_HOME/jdk/bin/java -jar
$ORACLE_HOME/sso/lib/ossoreg.jar -site_name <virtual
hostname> -mod_osso_url http://<virtual hostname>
:<http port no> -config_mod_osso TRUE
-oracle_home_path <$ORACLE_HOME> -u <user>
-config_file
$ORACLE_HOME/Apache/Apache/conf/osso/osso.conf
-admin_infocn=orcladmin
```

### To modify WebCache

- 1 Make this change in the \$ORACLE\_HOME/webcache/webcache.xml file:
 

```
<CACHE NAME="cachename" ORACLEHOME=<ORACLE_HOME>
"HOSTNAME="<virtual hostname>" VOTES="1" CAPACITY="30 "
WCDEBUGON="NO">
```
- 2 Change the hostname to virtual hostname in the webcache.xml file.
- 3 Change the hostname to virtual hostname in the \$ORACLE\_HOME/webcache/docs/welcome.html file.

### To modify the portal

- 1 Change all occurrences of physical hostname to virtual hostname in the \$ORACLE\_HOME/portal/conf/cache.xml file.

---

**Note:** If the physical hostname is part of an instance name or any other key, do *not* change the hostname.

---

- 2 Follow these steps to retrieve the password for the portal schema from OID:
  - a From the Infrastructure ORACLE\_HOME, run this command:
 

```
$ORACLE_HOME/bin/oidadmin
```
  - b Log in to OID as cn=orcladmin.
  - c Open the **Oracle Directory Manager** screen.
  - d In the left panel, navigate to **Entry management > cn=OracleContext > cn=Products > cn=IAS > cn=IAS Infrastructure Databases > orclReferenceName=Global\_SID**.
  - e Select **OrclResourceName=PORTAL**.  
 In the right panel, take note of the password that is displayed in the **orclpasswordattribute** field.
- 3 Register the URL changes with the OracleAS portal:
 

```
# cd $ORACLE_HOME/portal/conf (OracleHome of the Oracle
Application Server)
# ./ptlconfig -dad portal -pw <password> -wc site
```
- 4 Restart the components:
 

```
# $ORACLE_HOME/opmn/bin/opmnctl startall
```
- 5 Follow these steps to update the Oracle Application Server Wireless Portal Service URL reference:
  - a Log in to the portal using the virtual hostname:
 

```
http://<virtual hostname>:port/pls/portal>
```
  - b Enter the administrator user name and password.

- c Click **Administrator**.
- d Under **Services**, click **Global Settings**.
- e Click the **Mobile** tab.
- f Change the Wireless Portal Service URL entry to use the virtual hostname.
- g Click **Apply**.

#### To modify wireless

- 1 In the `ORACLE_HOME/wireless/config/iaswcfg.xml` file, change all occurrences of physical hostname to virtual hostname.
- 2 Register the wireless device portal with Oracle Single Sign-On:

```
# cd $ORACLE_HOME/wireless/bin
# reregister.sh \ http://<virtual_hostname>:port/ptg/rm \
$ORACLE_HOME "cn=orcladmin"
```

#### To modify OracleBI Discoverer

Change all occurrences of physical hostname to virtual hostname in the following files:

---

**Note:** If the physical hostname is part of an instance name or any other key, do *not* change the hostname.

---

- `ORACLE_HOME/discoverer/config/configuration.xml`
- `HOME/j2ee/properties/oc4j_bi_forms.properties`
- `ORACLE_HOME/j2ee/OC4J_BI_Forms/config/oc4j.properties`

#### To verify all changes

All these steps are not applicable to every installation. Perform the relevant steps *only*. For details, refer to the *Installing in High Availability Environments* section in the *Oracle Application Server Installation Guide*.

- 1 Login using the virtual hostname:

```
http://<virtual_hostname>:port/pls/portal
```
- 2 Enter administrator user name and password.
- 3 Click **Administrator**.
- 4 Under **Services**, click **Global Settings**.
- 5 Click **Configuration**.



- 6 Verify that the host entry in Default JPKD Instance is based on the virtual hostname.
- 7 Click the **Cache** tab.
- 8 Verify that the host name entry in Web Cache Host Settings is based on the virtual hostname.
- 9 Click the **Mobile** tab.
- 10 Verify that the OracleAS 10g Wireless Portal Service URL entry in the OracleAS 10g Wireless Information section is based on virtual hostname.
- 11 Click the **Administrator** tab.
- 12 Under **Services**, click **Search Settings**.
- 13 Verify that the hostname in Oracle Text Base URL is based on the virtual hostname.

## Configuring the OPMN daemon to work in a cluster

The Agent for Oracle Application Server is designed to manage and monitor individual Oracle Application Server components. Therefore, you must configure the OPMN daemon to not take any automatic action if it detects a failure of a component under cluster control.

For all Oracle Application Server components, disable the *restart-on-death* option in the `opmn.xml` Oracle Application Server configuration file. This file is typically located in the `$ORACLE_HOME/opmn/conf` directory.

The *restart-on-death* parameter is defined in the `process-set` section of each Oracle Application Server component. For components like OC4J that have multiple instances, you must make this change for the `process-set` section under each `process-type`.

An example to show the changes for the HTTP\_Server component follows.

```
<ias-component id="HTTP_Server">
  <process-type id="HTTP_Server" module-id="OHS">
    <module-data>
      <category id="start-parameters">
        <data id="start-mode" value="ssl-disabled"/>
      </category>
    </module-data>
    <restart timeout="0" retry="0"/>
    <process-set id="HTTP_Server" restart-on-death="false"
numprocs="1"/>
  </process-type>
</ias-component>
```

An example to show the changes for two process types for an OC4J component follows.

```
<ias-component id="OC4J">
```

```

    <dependencies>
      <OID infrastructure="true"/>
    </dependencies>
    <process-type id="home" module-id="OC4J" status="disabled">
      <module-data>
        <category id="start-parameters">
          <data id="java-options" value="-server -
Djava.security.policy=$ORACLE_HOME/j2ee/home/config/java2.policy -
Djava.awt.headless=true"/>
        </category>
        <category id="stop-parameters">
          <data id="java-options" value="-
Djava.security.policy=$ORACLE_HOME/j2ee/home/config/java2.policy -
Djava.awt.headless=true"/>
        </category>
      </module-data>
      <start timeout="600" retry="2"/>
      <stop timeout="120"/>
      <restart timeout="720" retry="2"/>
      <port id="ajp" range="3301-3400"/>
      <port id="rmi" range="3201-3300"/>
      <port id="jms" range="3701-3800"/>
      <process-set id="default_island" restart-on-death="false"
numprocs="1"/>
    </process-type>
    <process-type id="OC4J_SECURITY" module-id="OC4J">
      <environment>
        <variable id="DISPLAY"
value="oasinfra.vxindia.veritas.com:0.0"/>
        <variable id="LD_LIBRARY_PATH"
value="/oasinfra/ohome/lib32:/oasinfra/ohome/lib"/>
      </environment>
      <module-data>
        <category id="start-parameters">
          <data id="java-options" value="-server -
Djava.security.policy=/oasinfra/ohome/j2ee/OC4J_SECURITY/config/jav
a2.policy -
Djava.awt.headless=true -Xmx512m "/>
          <data id="oc4j-options" value="-properties"/>
        </category>
        <category id="stop-parameters">
          <data id="java-options" value="-
Djava.security.policy=/oasinfra/ohome/j2ee/OC4J_SECURITY/config/jav
a2.policy -
Djava.awt.headless=true"/>
        </category>
      </module-data>
      <start timeout="900" retry="2"/>
      <stop timeout="120"/>
      <restart timeout="720" retry="2"/>
      <port id="ajp" range="3301-3400"/>
      <port id="rmi" range="3201-3300"/>

```

```
<port id="jms" range="3701-3800" />  
<process-set id="default_island" restart-on-death="false"  
numprocs="1" />  
</process-type>  
</ias-component>
```

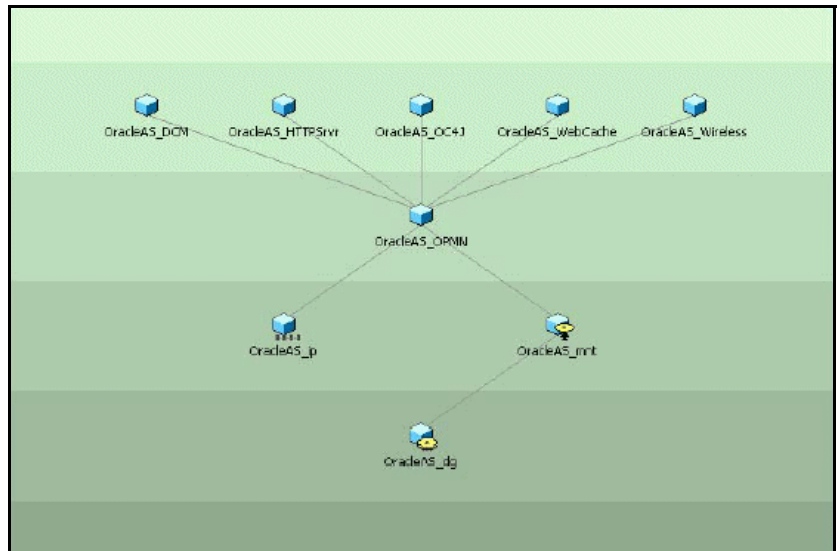
You must make changes in the opmn.xml file for each Oracle Application Server component that is to be placed under cluster control.

## Placing the Oracle Application Server component under cluster control

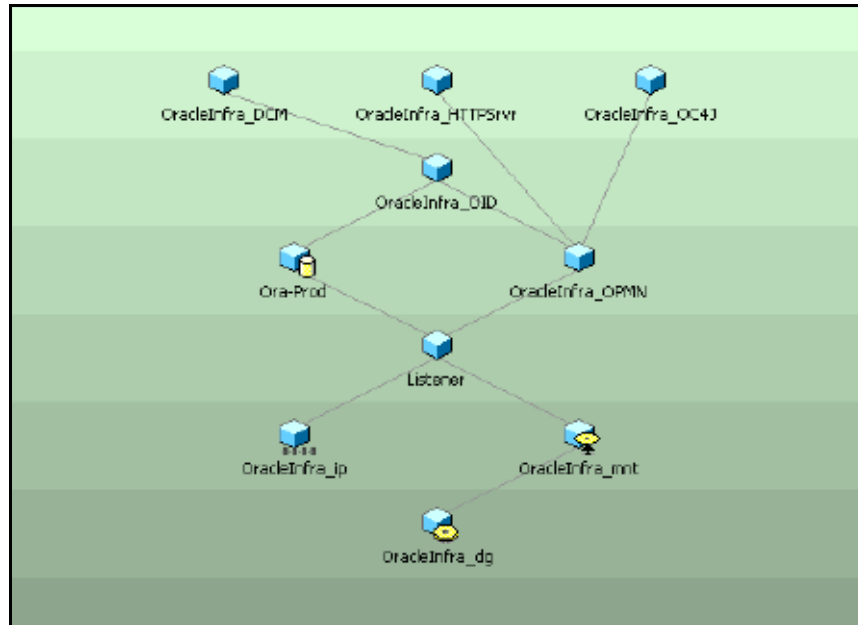
Create necessary cluster resources using the Agent for Oracle Application Server and place each Oracle Application Server instance under cluster control. To properly define the resource attributes:

See [“Agent attributes”](#) on page 18.

An example of a Service Group for an Oracle Application Server is shown below.



An example of a Service Group for an Oracle Application Server Infrastructure is shown below.



For a sample configuration:

See [“Sample Service Group configuration”](#) on page 46.

# Uninstalling the Veritas Agent for Oracle Application Server

Follow the steps below to remove the Veritas High Availability Agent for Oracle Application Server from a cluster. These steps must be performed while the cluster is active.

## To uninstall the agent in a VCS environment

- 1 Log in as `root`.
- 2 Set the cluster configuration mode to read/write by typing the following command from any system in the cluster:  

```
# haconf -makerw
```
- 3 Remove all Oracle Application Server resources from the cluster. Use the following command to verify that all resources have been removed.  

```
# hares -list Type=OracleAS9
```
- 4 Remove the agent from the cluster configuration by typing the following command from any system in the cluster.  

```
# hatype -delete OracleAS9
```

Removing the agent's type file from the cluster removes the include statement for the agent from the `main.cf` file, but the agent's type file is not removed from the cluster configuration directory. You can remove the agent's type file later, from the cluster configuration directory.
- 5 Save these changes. Then set the cluster configuration mode to read-only by typing the following command from any system in the cluster:  

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

- 6 Use the platform's native software management program to remove the Agent for Oracle Application Server from each node in the cluster:

<b>Platform</b>	<b>Command</b>
AIX	<code># installp -u VRTSvcsoas9.rte</code>
HP-UX	<code># swremove VRTSvcsoas9</code>
Linux	<code># rpm -e VRTSvcsoas9</code>
Solaris	<code># pkgrm VRTSvcsoas9</code>

# Troubleshooting the Veritas Agent for Oracle Application Server

This chapter covers tips and pointers on using the Agent for Oracle Application Server, with Veritas high availability products. To resolve issues effectively, follow the steps in the order presented below. You may come across unique issues, but make sure that you follow these steps in the presented order to avoid unnecessary issues.

These troubleshooting tips and pointers are applicable to the agent while working in a VCS environment.

The chapter includes:

- [“Using correct software and operating system versions”](#) on page 40
- [“Meeting prerequisites”](#) on page 40
- [“Configuring Oracle Application Server resources”](#) on page 40
- [“Configuration checks for Solaris zone support”](#) on page 40
- [“Starting the Oracle Application Server outside a cluster server”](#) on page 41
- [“Reviewing log files”](#) on page 41
- [“Using trace level logging”](#) on page 42

## Using correct software and operating system versions

Ensure that no issues arise due to incorrect software and operating system versions. For the correct versions of operating system and software to be installed on the resource systems:

See [“Supported software”](#) on page 8.

## Meeting prerequisites

Before installing the Agent for Oracle Application Server, double check that you meet the prerequisite requirements. For example, you must install the ACC library on VCS before installing the agent. For a list of prerequisites:

See [“Prerequisites for installing the Agent for Oracle Application Server”](#) on page 14.

## Configuring Oracle Application Server resources

Before using an Oracle Application Server resource, ensure that you configure the resource properly. For a list of resource types with which you can configure all Oracle Application Server resources:

See [“Agent attributes”](#) on page 18.

## Configuration checks for Solaris zone support

If you have configured the Agent for Oracle Application Server to support Solaris zones, ensure that you have followed all the configuration steps:

- Prerequisites for enabling Solaris zone support:  
See [“Prerequisites for installing the Agent for Oracle Application Server”](#) on page 14.
- Importing the `types.cf` file for Solaris zone support:  
See [“Importing the agent types files”](#) on page 18.
- Configuring the SAP resources for Solaris zone support:  
See [“Configuring the Oracle Application Server resources for Solaris zone support”](#) on page 23.



## Starting the Oracle Application Server outside a cluster server

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 Oracle Application Server independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource.

You can then restart the Oracle Application Server outside the cluster framework.

---

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

---

A sample procedure to start an Oracle Application Server instance outside the cluster framework, is illustrated below.

### To restart the Oracle Application Server instance outside the framework

- 1 Log in as a user with administration rights for the Oracle Application Server instance:

```
# su - <user>
```

- 2 Execute these commands to set the user environment:

```
$ ORACLE_HOME=<OracleHome>
$ PATH=$ORACLE_HOME/bin:$ORACLE_HOME/opmn/bin:$PATH
$ LD_LIBRARY_PATH=$ORACLE_HOME/lib:$LD_LIBRARY_PATH
$ export ORACLE_HOME PATH LD_LIBRARY_PATH
```

- 3 Run the `opmnctl` command to start the component:

```
$ opmnctl startproc process-type=<ComponentProcessType>
For example, to start an OID component, run this command:
$ opmnctl startproc process-type=OID
```

Ensure that the Oracle Application Server instance starts successfully outside the cluster framework. If the instance is working properly, attempt to start the instance inside the cluster framework.

## Reviewing log files

If you are facing problems while using the Agent for Oracle Application Server or an Oracle Application Server instance, refer to the following sections to access the relevant files for information about the issue.

## Using VCS log files

In case of problems while using the Agent for Oracle Application Server, you can also access the VCS engine log file for more information about a particular resource. The VCS engine log file is `/var/VRTSvcs/log/engine_A.log`.

## Using Oracle Application Server log files

If an Oracle Application Server is facing problems, you can access the server log files to further diagnose the problem. The Oracle Application Server log files are located in the `$ORACLE_HOME/opmn/logs` directory. Each component's start and stop process has a corresponding log file in this directory. For example, `$ORACLE_HOME/opmn/logs/HTTP_Server~1`.

## Using trace level logging

The [ResLogLevel](#) attribute controls the level of logging that is written in a VCS log file for each Oracle 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 is produced. Symantec recommends that you must localize the ResLogLevel attribute for particular resource.

### To localize ResLogLevel attribute for a resource

- 1 Identify the resource for which you want to enable detailed logging.
- 2 Localize the ResLogLevel attribute for the identified resource:  
`# hares -local Resource_Name ResLogLevel`
- 3 Set the ResLogLevel attribute to **TRACE** for the identified resource:  
`# hares -modify Resource_Name ResLogLevel TRACE -sys SysA`
- 4 Test the identified resource. The operation reproduces the problem that you are attempting to diagnose.
- 5 Set the ResLogLevel attribute back to **INFO** for the identified resource:  
`# hares -modify Resource_Name ResLogLevel INFO -sys SysA`
- 6 Review the contents of the VCS engine output log file.

You may also contact Symantec support for more help.

# Sample Configurations

This chapter covers samples of agent type definition while working with a cluster. This chapter also covers sample service group configuration for Oracle Application Server while working in a cluster.

The chapter includes:

- [“Sample agent type definition”](#) on page 44
- [“Sample Oracle Application Server resource configuration”](#) on page 44
- [“Sample Service Group configuration”](#) on page 46
- [“Sample Service Group configurations for Solaris zone support”](#) on page 52

## Sample agent type definition

### While working with VCS

After importing the agent types into the cluster, if you save the configuration on your system disk using the `haconf -dump` command, you can find the `OracleAS9Types.cf` file in the `/etc/VRTSvcs/conf/config` cluster configuration directory.

An excerpt from this file follows.

```
type OracleAS9
(
    static str ArgList[] = { ResLogLevel, User, OracleHome,
        ComponentProcessType, SecondLevelMonitor, MonitorProgram }

    str ResLogLevel = INFO
    str User
    str OracleHome
    str ComponentProcessType
    int SecondLevelMonitor
    str MonitorProgram
)
```

## Sample Oracle Application Server resource configuration

A sample excerpt from the `main.cf` file is shown below.

### While working with VCS

```
group OracleASInfrastructure
(
    SystemList = { vcssun58 = 0, vcssun59 = 1 }
)

DiskGroup OracleAS_dg
(
    DiskGroup = oraapp_dg
)

IP OracleAS_ip
(
    Device = bge0
    Address = "10.212.89.23"
    NetMask = "255.255.254.0"
)

Mount OracleAS_mnt
(
```

```
MountPoint = "/Oraapp"
BlockDevice = "/dev/vx/dsk/oraapp_dg/Oraapp"
FSType = vxfs
FsckOpt = "-y"
)

OracleAS9 OracleAS_DCM
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = dcm-daemon
)

OracleAS9 OracleAS_HTTPSrvr
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = HTTP_Server
)

OracleAS9 OracleAS_OC4J
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = OC4J
)

OracleAS9 OracleAS_OPMN
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = OPMN
)

OracleAS9 OracleAS_WebCache
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = WebCache
)

OracleAS9 OracleAS_Wireless
(
  User = oasinfra
  OracleHome = "/Oraapp/OraHome_1"
  ComponentProcessType = wireless
)

OracleAS_DCM requires OracleAS_OPMN
OracleAS_HTTPSrvr requires OracleAS_OPMN
OracleAS_OC4J requires OracleAS_OPMN
OracleAS_OPMN requires OracleAS_ip
```

OracleAS\_OPMN requires OracleAS\_mnt  
OracleAS\_WebCache requires OracleAS\_OPMN  
OracleAS\_Wireless requires OracleAS\_OPMN  
OracleAS\_mnt requires OracleAS\_dg

## Sample Service Group configuration

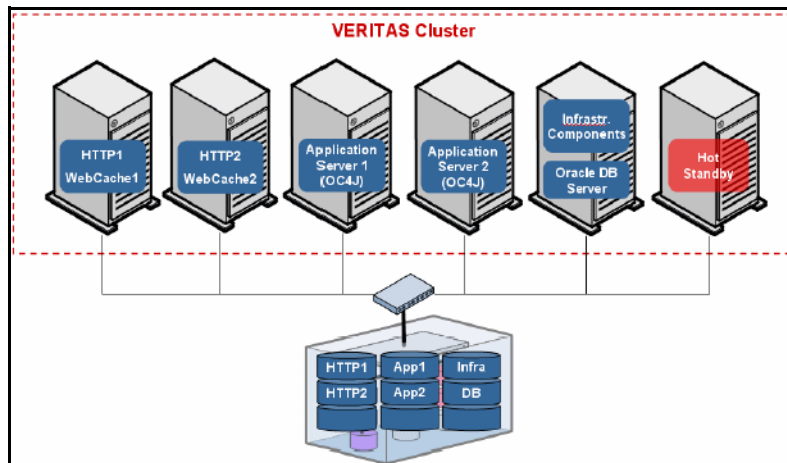
The following Service Group configuration demonstrates how an Oracle Application Server environment can be configured to spread the processing load over several systems in a clustered configuration. The example shows all the required services linked within a cluster. This environment clusters all the services, from the front-end to the back-end, in a classic multi-tier architecture that could support a wide range of applications.

Figure A-1 shows a six-node clustered environment is shown below. A business application (CRM, Finance, ERP, and so on) is spread across the six nodes:

- Web servers on the first two nodes
- Middle-tier application servers on the next two nodes
- Database and Oracle Infrastructure components running on the fifth node
- The sixth node is a hot-standby node to which any of the application services could fail over in the event of a fault.

Each application service is installed on shared disk file systems provided by a SAN, which is essential to enable each application service to run on any node in the cluster.

Figure A-1 Overview of Service Group



This example demonstrates a common HA strategy called an “N+1 configuration”. In an N+1 configuration, a single dedicated system is available to take over any services in the event of the failure of any of the other hosts in the cluster. The N+1 configuration has the advantage of allowing the application environment to operate at full CPU bandwidth in the event of any single system failure. For this to be true, all of the systems must be configured with similar processing capacity (speed, number of CPUs and memory).

Figure A-2 shows the startup dependencies for all service groups. You must always start the Oracle Application Server Infrastructure Service Group before any other Oracle Application Server Service Group. Therefore, the Service Group dependency is set to `online global (soft)`. This dependency setting prevents the Oracle Application Server Service Groups from stopping if the Infrastructure Service Group restarts, faults, or is directed to switch over to another system in the cluster.

This Service Group containing the production database for application environments is independent of the other Service Groups.

**Figure A-2** Dependency settings for Oracle Application Server Service Group

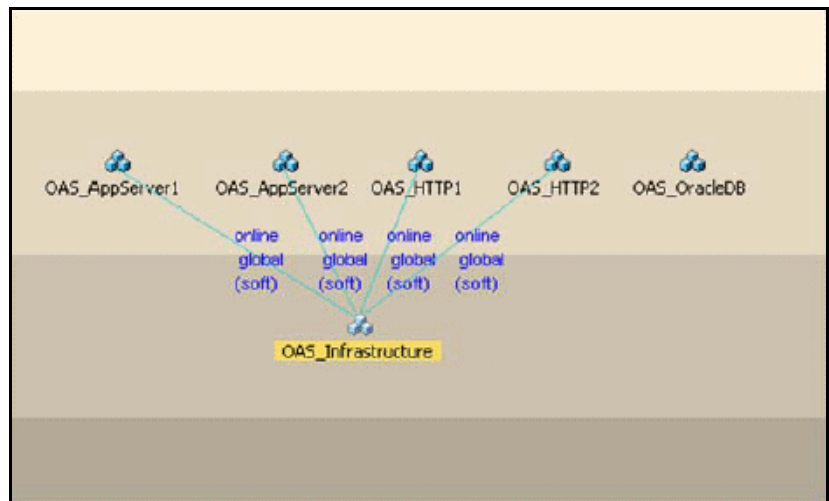


Figure A-3 shows a Service Group that includes the Oracle database and the Oracle Listener. This group represents the standard production database service that is part of the classic three-tier application environment.

The Agent for Oracle Application Server is not used in this sample Service Group. Use the agent to manage the Oracle Database and Listener processes.

Figure A-3 Oracle Database and Listener Service Group



Figure A-4 shows a Service Group that manages Oracle Application Server Infrastructure components. Since the Agent for Oracle Application Server uses the OPMN daemon to start, monitor, and stop the Oracle Application Server components, you must start the OPMN component before starting any other component.

Ensure that you start the Oracle Distributed Configuration Management (DCM) component and the OC4J\_SECURITY component used for Single Sign-on (SSO) after the Oracle Internet Directory (OID) component. The diagram also illustrates that the OID component should not be started until the Oracle Infrastructure Database containing the OID data is available.



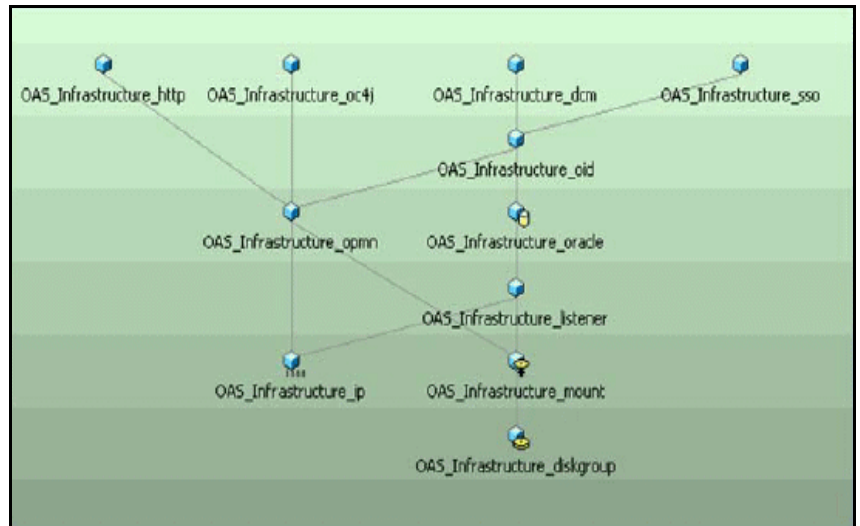
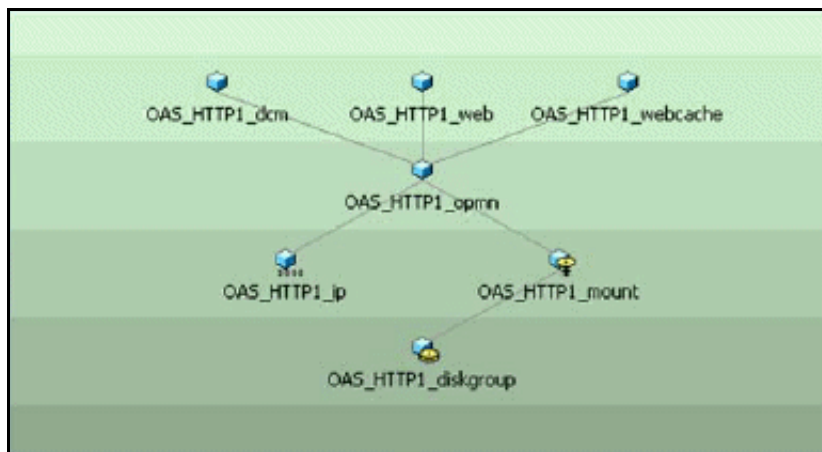
**Figure A-4** Oracle Application Server Infrastructure Service Group

Figure A-5 and Figure A-6 show Service Groups that manage the Oracle Application Server HTTP server and Webcache services.

Since the OPMN component is configured to start before the other Oracle Application Server components, Having multiple service groups for this function offers greater capacity as these normally run on dedicated host systems.

**Figure A-5** Sample 1: Service Group for Oracle Application Server HTTP server and Webcache services



**Figure A-6** Sample 2: Service Group for Oracle Application Server HTTP server and Webcache services

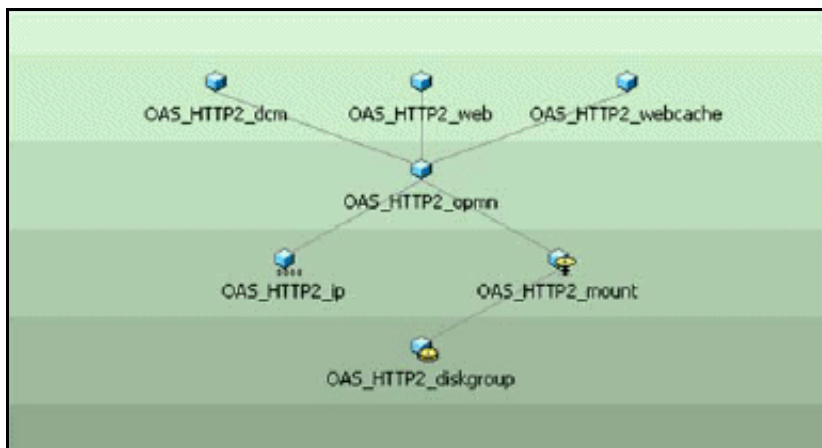
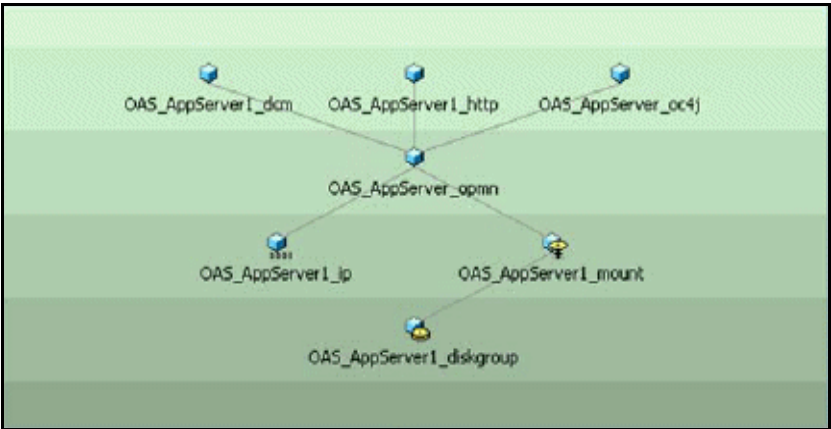


Figure A-7 and Figure A-8 show Service Groups that manage the Oracle Application Server OC4J Application Servers.

Since the OPMN component is configured to start before the other Oracle Application Server components, Having multiple service groups for this function offers greater capacity as these normally run on dedicated host systems.

The example shows an HTTP server within the Service Group so that the users can access the Oracle Application Server via HTTP. An HTTP module, `mod_oc4j` redirects network requests to the appropriate Oracle Application Server instance.

**Figure A-7** Sample 1: Service Group for Oracle Application Server OC4J Application Server



**Figure A-8** Sample 2: Service Group for Oracle Application Server OC4J Application Server

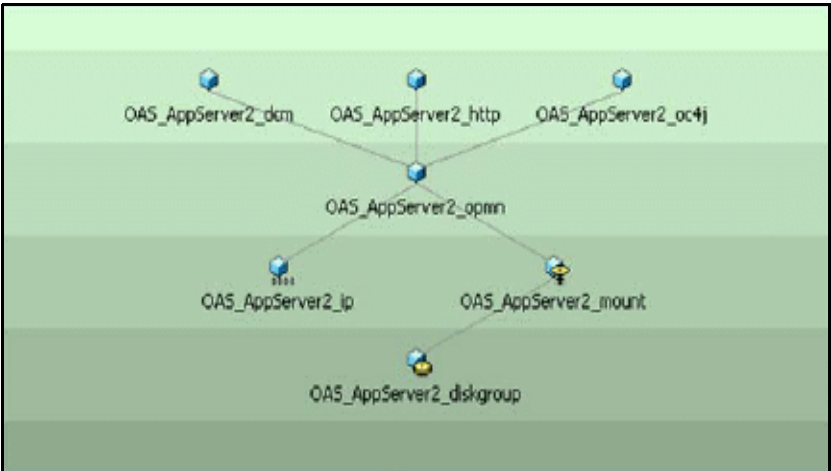
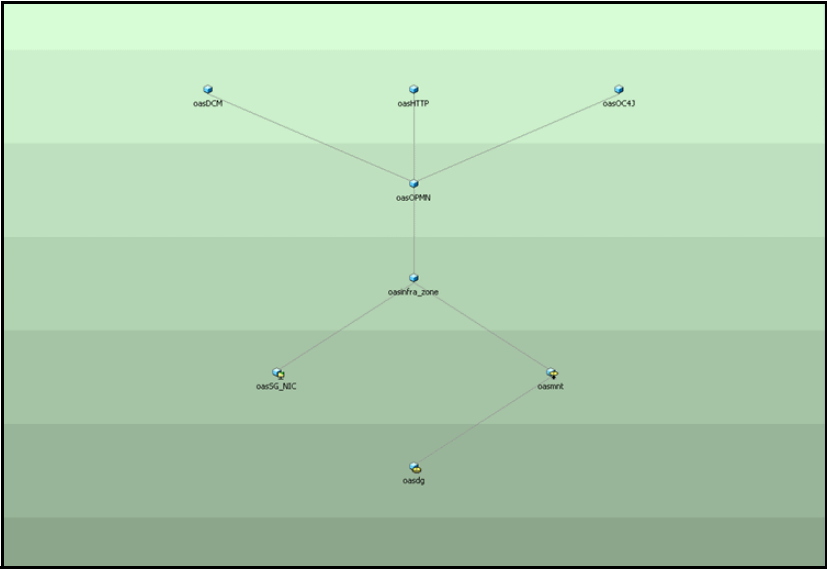




Figure A-10 shows a sample Service Group with Oracle HTTP Server, OC4J, and DCM running in a zone.

Figure A-10 Sample Service Group with Solaris zone support



**Sample Service Group configurations for Solaris zone support**

# Index

## A

- ACC library 14
- agent
  - about the agent 8
  - clustering Oracle Application Servers 25
  - configuring agent 17
  - installing the agent 13
  - introduction 7
  - sample agent type definition 44
  - supported software 8
  - troubleshooting the agent 39
  - uninstalling 37
  - upgrading 15
- agent attributes 18
  - ComponentProcessType 19
  - MonitorProgram 21
  - OracleHome 20
  - ResLogLevel 20
  - SecondLevelMonitor 21
  - User 20
- agent installation on vcs 15
  - installing on aix 15
  - installing on hp-ux 15
  - installing on linux 15
  - installing on solaris 16
- agent operations 10
  - clean 11
  - monitor 11
  - offline 10
  - online 10
- agent uninstallation 37
  - uninstalling on aix 38
  - uninstalling on hp-ux 38
  - uninstalling on linux 38
  - uninstalling on solaris 38

## I

- installation prerequisites 14
  - vcs 14

## O

- OC4J
  - introduction 9
- OPMN
  - introduction 9

## S

- sample Oracle Application Server resource configuration 44
- Sample Service Group configuration 46
- Solaris zone support
  - configuring Oracle Application Server resources 23
  - installation prerequisites 14
  - sample service group configurations 52
  - troubleshooting 40

