

**Oracle® Application Server**

Enterprise Deployment Guide

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# Preface

This preface describes the audience, contents and conventions used in the *Enterprise Deployment Guide*.

## Audience

This guide is intended for system administrators who are responsible for installing and configuring Oracle Application Server.

## Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at <http://www.oracle.com/accessibility/>.

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## Related Documents

The following manuals in the Oracle Application Server documentation library provide additional information on the process of installing and configuring the Enterprise Deployment architectures:

- *Oracle Application Server Concepts*
- *Oracle Application Server Installation Guide*
- *Oracle Internet Directory Administrator's Guide*
- *Oracle Application Server Single Sign-On Administrator's Guide*
- *Oracle Application Server Administrator's Guide*
- *Oracle Containers for J2EE Security Guide*
- *Oracle BPEL Process Manager Administrator's Guide*
- *Oracle Web Services Manager Installation Guide*

## Conventions

The following text conventions are used in this document:

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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# What is an Enterprise Deployment?

[Description](#)

[Benefits](#)

[In This Guide](#)

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[Variants](#)

## 1.1 Description

An enterprise deployment of Oracle SOA Suite is a reference configuration that is designed to support large-scale, mission-critical business software applications using SOA components. The hardware and software in an Enterprise Deployment configuration delivers:

### **High quality service**

- The system workload is managed and balanced effectively
- Applications continue to operate when resources are added or removed
- System maintenance and unexpected failures cause minimal downtime

### **Built-in Security**

- All incoming network traffic is received by the Load Balancing Router on a single, secure port and directed to internal IP addresses within the firewall; inside the firewall, functional components are grouped within DMZs
- User accounts are provisioned and managed centrally
- Security systems are integrated
- Administrative access is isolated

### **Efficient software provisioning and management**

- Application distribution is simple
- Systems are managed and monitored as one logical unit in a central console
- Death detection and restart mechanisms ensure availability

## 1.2 Benefits

The Oracle Application Server configurations discussed in this guide are designed to ensure security of all transactions, maximize hardware resources, and provide a

reliable, standards-compliant system for enterprise computing with a variety of applications. The security and high availability benefits of the Oracle Application Server configurations are realized through isolation in firewall zones and replication of software components.

### 1.2.1 Built-in Security

The Enterprise Deployment architectures are secure because every functional group of software components is isolated in its own DMZ, and all traffic is restricted by protocol and port. The following characteristics ensure security at all needed levels, as well as a high level of standards compliance:

- All external communication received on port 80 is redirected to port 443.
- Communication from external clients does not go beyond the Load Balancing Router level.
- No direct communication from the Load Balancing Router to the Data tier DMZ is allowed.
- Components are separated between DMZs on the Web Tier, Application Tier, and the Data Tier.
- Direct communication between two firewalls at any one time is prohibited.
- If a communication begins in one firewall zone, it must end in the next firewall zone.
- Oracle Internet Directory is isolated in the Data tier DMZ.
- Identity Management components are in the DMZ.
- All communication between components across DMZs is restricted by port and protocol, according to firewall rules.

### 1.2.2 High Availability

The Enterprise Deployment architectures are highly available, because each component or functional group of software components is replicated on a different computer, and configured for component-level high availability.

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**Note:** Oracle Web Services Manager (OWSM) WSM components cannot use the Fast Connection Failover (FCF) solution.

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## 1.3 In This Guide

Enterprise Deployments with the Oracle SOA Suite provide highly available, scalable and secure deployments of Oracle Enterprise Service Bus (ESB) and Oracle BPEL Process Manager (BPEL).

The instructions and diagrams in this guide represent a reference topology, to which a number of variations can be applied. This guide provides configuration instructions for these Enterprise Deployments of the Oracle SOA Suite, with different security options:

- mySOACompany with JSSO and Oracle Internet Directory (shown in [Figure 1-1](#))
- mySOACompany with Oracle Single Sign-On (shown in [Figure 1-2](#)).

[Table 1-1](#) lists the security configurations and the identity and policy stores used with them.

The policy store is the repository for OracleAS JAAS Provider authorization permissions and grants. Oracle Internet Directory and XML (the `ORACLE_HOME/j2ee/home/system-jazn-data.xml` file) are supported as policy store repositories.

User accounts and roles are always seeded in an enterprise identity store (typically an LDAP server), and are not replicated in the policy store. The policy store only has grants and references to groups and roles in the enterprise identity store. The same repository (Oracle Internet Directory or an XML file) can be used as both the identity and policy store.

In the Oracle SOA Suite, the Oracle BPEL Process Manager console uses OracleAS JAAS Provider permissions to secure and enforce user access to the Oracle BPEL Process Manager console functions. The policy store contains grants to users and roles to provide access to Oracle BPEL Process Manager server functions.

**Table 1–1 Supported Security Configurations**

Deployment Configuration	Policy Store	Identity Store
mySOACompany with Java SSO	OracleAS JAAS Provider and Oracle Internet Directory	OracleAS JAAS Provider and Oracle Internet Directory
mySOACompany with Oracle Single Sign-On	OracleAS JAAS Provider and Oracle Internet Directory	OracleAS JAAS Provider-Oracle Internet Directory

The servers in the mySOACompany system are grouped into tiers as follows:

- **Web Tier** — WEBHOST1 and WEBHOST2, with Oracle HTTP Server installed.
- **Application Tier** — APPHOST1 and APPHOST2, with Oracle Containers for J2EE installed, and multiple OC4J instances with applications deployed.

In mySOACompany with Oracle Single Sign-On, this tier includes IDMHOST1 and IDMHOST2, with Oracle Single Sign-On and Oracle Delegated Administration Services.

- **Data Tier** — OIDHOST1 and OIDHOST2, with 10g Release 3 (10.1.4.0.1) Oracle Internet Directory installed, and INFRADBHOST1 and INFRADBHOST2, the two-node Real Application Clusters database.

Figure 1-1 mySOACompany with JSSO and Oracle Internet Directory

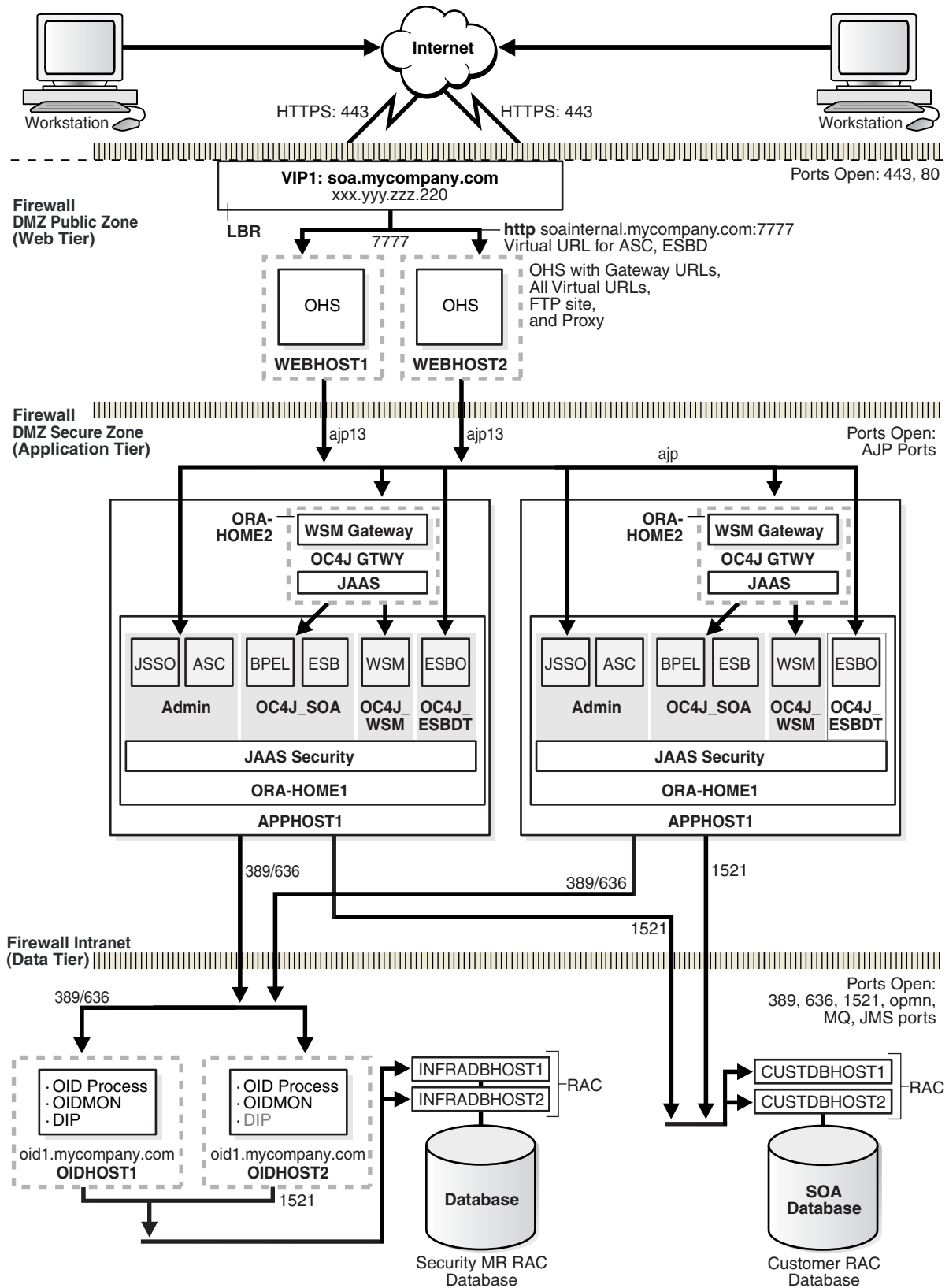
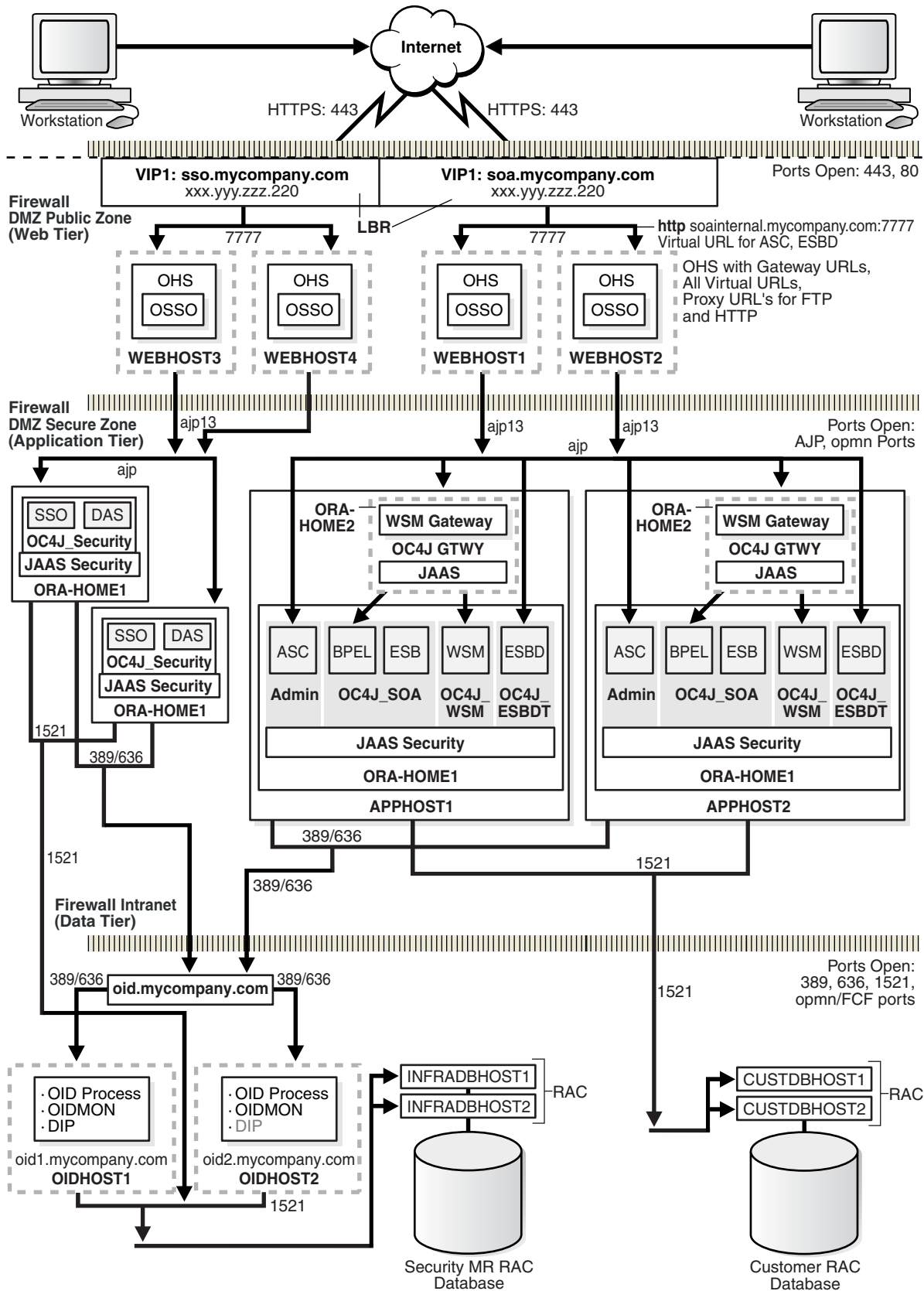


Figure 1-2 mySOAcompany with Oracle Single Sign-On



## 1.4 How to Use This Guide

Table 1–2 summarizes the process by which you install and configure mySOACompany with each of the user authentication methods. Follow the procedures indicated in the first column, in the order shown, for the chosen configuration.

**Table 1–2 Enterprise Deployment Configuration Procedures**

Perform the steps in...	To configure mySOACompany with JSSO and Oracle Internet Directory	To configure mySOACompany with Oracle Single Sign-On
Chapter 2, "Configuring the Data Tier"	Yes	Yes
Section 3.2, "Installing the Oracle HTTP Servers on WEBHOST1 and WEBHOST2"	Yes	Yes
Section 3.3, "Installing the Application Server Instances on APPHOST1 and APPHOST2 (ORA_HOME1)"	Yes	Yes
Section 3.4, "Disabling Application Server Control Console on APPHOST2 (Optional)"	Yes	Yes
Section 3.5, "Listing Occupied Ports"	Yes	Yes
Section 3.6, "Installing the Application Server Instances on APPHOST1 and APPHOST2 (ORA_HOME2)"	Yes	Yes
Section 3.7, "Creating OC4J Instances and OC4J Groups on APPHOST1 and APPHOST2"	Yes	Yes
Chapter 3.8, "Configuring the Cluster Gateways on WEBHOST1,2 and APPHOST1,2 (Optional)"	Yes	Yes
Section 3.9, "Configuring the Oracle HTTP Servers on WEBHOST1 and WEBHOST2 with the Load Balancing Router"	Yes	Yes
Section 3.10, "Configuring the Load Balancing Router"	Yes	Yes
Section 3.11, "Installing the Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 from the Oracle BPEL Process Manager (10.1.3.1.0) CD"	Yes	Yes
Section 3.12, "Configuring the Cluster of BPEL Instances on APPHOST1 and APPHOST2"	Yes	Yes
Section 3.13, "Installing the Oracle Enterprise Service Bus Runtime Instances on APPHOST1 and APPHOST2 from the Oracle Enterprise Service Bus (10.1.3.1.0) CD"	Yes	Yes
Section 3.14, "Installing the OWSM Instances on APPHOST1 and APPHOST2 from the Oracle Web Services Manager (10.1.3.1.0) CD"	Yes	Yes
Section 3.15, "Configuring the OWSM Cluster"	Yes	Yes
Section 3.16, "Applying the Patch to the Oracle Home on WEBHOST1 and WEBHOST2"	Yes	Yes
Section 3.17, "Applying the Patch to ORA-HOME1 and ORA-HOME2 on APPHOST1 and APPHOST2"	Yes	Yes
Section 3.18, "Undeploying Oracle Web Services Manager Applications on APPHOST1 and APPHOST2"	Yes	Yes
Section 3.19, "Deploying the Oracle Enterprise Service Bus Repository Instance on APPHOST1 and APPHOST2"	Yes	Yes
Section 3.20, "Configuring Service Failover for the OC4J_ESBDT Instances"	Yes	Yes
Section 3.21, "Configuring Oracle Enterprise Service Bus for Singleton Adapters"	Yes	Yes
Section 3.22, "Configuring the Cluster of Oracle Enterprise Service Bus Runtime Instances on APPHOST1 and APPHOST2"	Yes	Yes

**Table 1–2 (Cont.) Enterprise Deployment Configuration Procedures**

Perform the steps in...	To configure mySOACompany with JSSO and Oracle Internet Directory	To configure mySOACompany with Oracle Single Sign-On
Section 3.23, "Configuring JNDIs for the Topic and Topic Connection Factory"	Yes	Yes
Section 3.24, "Updating the Oracle Enterprise Service Bus Metadata"	Yes	Yes
Section 3.25, "Configuring the Slide Repository to use the Database as the Repository"	Yes	Yes
Section 3.26, "Configuring the Firewall for the Application Tier"	Yes	Yes
Section 3.27, "Deploying J2EE Applications"	Yes	Yes
Section 3.29, "Configuring Fast Connection Failover for the Real Application Clusters Database on APPHOST1 and APPHOST2"	Yes	Yes
Section 3.30, "Managing Oracle Application Server Component Connections"	Yes	Yes
Section 3.31, "Configuring Network Communication"	Yes	Yes
Section 3.32, "Configuring Application Authentication and Authorization"	Yes	Yes
Section 3.33, "Configuring the Cluster of Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 to use Oracle Internet Directory"	Yes	Yes
Section 3.34, "Configuring Java SSO"	Yes	No
Section 3.35, "Disabling the Worklist Application"	Yes	Yes
Chapter 4, "Installing and Configuring Oracle Single Sign-On and Oracle Delegated Administration Services"	No	Yes

## 1.5 Hardware Requirements

Table 1–3 and Table 1–4 list minimum hardware requirements for the Enterprise Deployment on Windows and Linux operating systems, respectively. The memory figures represent the memory required to install and run Oracle Application Server; however, for most production sites, you should configure at least 1 GB of physical memory.

For detailed requirements, or for requirements for a platform other than these, see the *Oracle Application Server Installation Guide for Microsoft Windows* for the platform in use.

**Table 1–3 mySOACompany Hardware Requirements (Windows)**

Server	Processor	Disk	Memory	TMP Directory	Swap
WEBHOST	300 MHz or higher Intel Pentium processor recommended	400 MB	512 MB	55 MB to run the installer; 256 MB needed for some installation types	512 MB
APPHOST	300 MHz or higher Intel Pentium processor recommended	2 GB	1 GB	400	1 GB
OIDHOST and INFRADBHOST	300 MHz or higher Intel Pentium processor recommended	2.5 GB	1 GB	55 MB to run the installer; 256 MB needed for some installation types	1 GB
ADMINHOST	300 MHz or higher Intel Pentium processor recommended	400 MB	512 MB	n/a	512 MB

**Table 1–4 mySOACompany Hardware Requirements (Linux)**

Server	Processor	Disk	Memory	TMP Directory	Swap
WEBHOST	Pentium (32-bit), 450 MHz or greater	520 MB	512 MB	400 MB	1.5 GB
APPHOST	Pentium (32-bit), 450 MHz or greater	2 GB	1 GB	400	1.5 GB
OIDHOST and INFRADBHOST	Pentium (32-bit), 450 MHz or greater	2.5 GB	1 GB	400 MB	1.5 GB
ADMINHOST	Pentium (32-bit), 450 MHz or greater	520 MB	512 MB	400 MB	1.5 GB

Production requirements vary depending on applications and the number of users. All Enterprise Deployment configurations described in this guide use two servers for each tier to provide failover capability; however, this does not presume adequate computing resources for any application or user population. If the system workload increases such that performance is degraded, you can add servers to the configuration by repeating the instructions for the installation and configuration of the second server on the tier (WEBHOST2, APPHOST2, INFRADBHOST2) to add a third server where it is needed.

## 1.6 Variants

The variants described in this section enable you to achieve deployment goals using fewer servers, different software, or alternative configurations.

### 1.6.1 Multi master Replication with Oracle Internet Directory

Multi master replication is an Oracle Internet Directory software solution that ensures read and write access to Oracle Internet Directory at all times, if at least one of the directory servers in the system remains available. When an Oracle Directory server resumes functioning after being unavailable, replication from the surviving directory server resumes automatically and synchronizes the contents between the directory servers forming the directory replication group. In addition, any changes made on one directory server instance are reflected on the second directory server instance.

To implement multi master replication in Oracle Internet Directory, follow the instructions in the *Oracle Internet Directory Administrator's Guide*, Oracle Internet Directory Replication Administration chapter, section titled "Installing and Configuring Multi master Replication".

### 1.6.2 OracleAS Cold Failover Cluster (Identity Management)

The OracleAS Cold Failover Cluster (Identity Management) solution is a hardware cluster comprising two computers. The computer that is actively executing an Infrastructure installation at any given time is called the primary (hot) node. If this node fails, the hardware cluster automatically diverts Infrastructure operations to the secondary (cold) node.

Each hardware cluster node is a standalone server that runs its own set of processes, but accesses a shared storage subsystem. The cluster can access the same storage, usually disks, from both nodes, but only the primary node has active access to the storage at any given time. If the primary node fails, the hardware cluster's software grants the secondary node access to the storage.

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**Note:** For a detailed discussion of the OracleAS Cold Failover Cluster (Identity Management) solution, see the *Oracle Application Server High Availability Guide*.

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The OracleAS Cold Failover Cluster (Identity Management) solution differs from the standard configuration in the following ways:

- The Oracle Internet Directory server and the database are on the same computer, whereas in the standard configuration the first Oracle Internet Directory instance and a database instance occupy OIDHOST1 and INFRADBHOST1, while the second Oracle Internet Directory instance and a database instance occupy OIDHOST2 and INFRADBHOST2. Thus, the OracleAS Cold Failover Cluster (Identity Management) solution operates two fewer servers than the RAC configuration.
- In the event of node failure, clients will experience a brief interruption of service while the workload is diverted to the cold node.

To implement the OracleAS Cold Failover Cluster (Identity Management) solution:

1. Obtain and configure a hardware cluster.
2. Install and configure the Oracle Application Server instances on the cluster computers to use the OracleAS Cold Failover Cluster (Identity Management) solution. Follow the instructions in the *Oracle Application Server Installation Guide for Microsoft Windows*, "Installing an OracleAS Cold Failover Cluster (Identity Management) Configuration".
3. Manage the OracleAS Cold Failover Cluster (Identity Management) solution, following the instructions from the *Oracle Application Server High Availability Guide*, "Managing Oracle Application Server Cold Failover Cluster (Identity Management)".

### 1.6.3 Forward and Reverse Proxies for Oracle HTTP Server

Proxies change the way the Oracle HTTP Server processes client requests.

A **forward proxy** is an intermediary server between a client and the origin server containing the content. Forward proxies are usually used to provide Internet access to internal clients that are otherwise restricted by a firewall. To get content from the origin server, the client sends a request to the proxy, naming the origin server as the target. The proxy requests the content from the origin server and returns it to the client. The client must be configured to use the forward proxy to access other sites.

A **reverse proxy** is a server that appears to outside clients to be the content server. It relays requests from outside the firewall to servers behind the firewall, and delivers retrieved content back to the client. A firewall rule allows access only to the proxy server, so that the content servers are protected. The proxy server changes URLs listed in the headers of any messages generated by the content servers, so that external clients are given no information about the servers behind the firewall. No configuration of clients is necessary with a reverse proxy (the client makes requests for content in the name-space of the reverse proxy). The reverse proxy decides where to send the requests, and returns the content as if it was the origin server.



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## Configuring the Data Tier

[Installing the Oracle Application Server Metadata Repository for the Security Infrastructure](#)

[Configuring Fast Connection Failover for the RAC Database on INFRADBHOST1-V and INFRADBHOST2-V](#)

[Installing the Oracle Internet Directory Instances in the Data Tier](#)

[Configuring the Virtual Server to Use the Load Balancing Router](#)

[Testing the Oracle Internet Directory Instances](#)

[Installing the ORAPEL, ORAESB and ORAWSM Schemas](#)

### 2.1 Installing the Oracle Application Server Metadata Repository for the Security Infrastructure

You must install the 10g(10.1.4.0.1) OracleAS Metadata Repository into the Real Application Clusters database before you install components into the Security DMZ. Oracle Application Server provides a tool, the Oracle Application Server Repository Creation Assistant, to create the OracleAS Metadata Repository in an existing database.

The 10g (10.1.4.0.1) OracleAS RepCA is available on the OracleAS RepCA CD-ROM or the Oracle Application Server DVD-ROM. You install the OracleAS RepCA in its own, separate Oracle home.

To install and execute the OracleAS Metadata Repository, you must perform these steps:

1. Install the OracleAS RepCA into the Real Application Clusters database, following the steps in the *Oracle Application Server Metadata Repository Creation Assistant User's Guide for Microsoft Windows* for the platform you are using. You can find this guide in the Oracle Application Server documentation library (Getting Started tab).
2. Ensure that the database meets the requirements specified in the "Database Requirements" section of the *Oracle Application Server Metadata Repository Creation Assistant User's Guide for Microsoft Windows*. In addition, ensure that the database computer has at least 512 MB of swap space available for execution of the OracleAS RepCA
3. Execute the OracleAS RepCA.

The RepCA creates the schemas listed in the *Oracle Application Server Metadata Repository Creation Assistant User's Guide for Microsoft Windows*.

4. Perform the post-installation step described in [Section 2.1.1](#).

## 2.1.1 Configuring the Time out Value in the sqlnet.ora File

You must configure the `SQLNET.EXPIRE_TIME` parameter in the `sqlnet.ora` file on the application infrastructure database.

1. Open the file `ORACLE_HOME/network/admin/sqlnet.ora` file (UNIX) or the `ORACLE_BASE/ORACLE_HOME/network/admin/sqlnet.ora` file (Windows).
2. Set the `SQLNET.EXPIRE_TIME` parameter to a value lower than the TCP session time out value for the Load Balancing Router and firewall.
3. Restart the listener by issuing these commands in `ORACLE_HOME/bin`:

```
lsnrctl stop
lsnrctl start
```

## 2.2 Configuring Fast Connection Failover for the RAC Database on INFRADBHOST1-V and INFRADBHOST2-V

Fast Connection Failover provides failover for a JDBC connection to a 10g R1 or 10g R2 RAC database. Upon failure of a RAC node, Oracle Notification Service (ONS) detects the failure and an SQL exception is thrown to application code. To enable Fast Connection Failover on INFRADBHOST1 and INFRADBHOST2:

1. Open the `ORACLE_HOME/opmn/conf/ons.conf` file .
2. Add the following:

```
localport=6100
remoteport=6200
nodes=infradbhost1-v.mycompany.com:6200,infradbhost2-v.mycompany.com:6200
```

3. Save and close the file.

---

---

**Note:** Additional configuration is required on the application tier (see [Section 3.29, "Configuring Fast Connection Failover for the Real Application Clusters Database on APPHOST1 and APPHOST2"](#)).

---

---

## 2.3 Creating a Non-Default Database Service

1. Navigate to `ORACLE_HOME/bin` of the RAC database installation.
2. Issue this command, substituting actual values for `ORCL`, `ORCL SVC`, `mycompany.com`, `ORCL1` and `ORCL2`:

```
srvctl add service -d ORCL -s "ORCL SVC.mycompany.com" -r
"ORCL1, ORCL2"
```

`ORCL` - Unique name for the database

`ORCL SVC` - Service name

`mycompany.com` - domain

`ORCL1, ORCL2` - List of instances

## 2.4 Enabling SSL on OPMN on RAC Database Nodes (Optional)

If SSL is enabled for an OPMN server on an Oracle Application Server instance, you must also perform a related configuration on the the OPMN instances on the RAC nodes. Follow these steps:

1. Navigate to `CRS_HOME/opmn/conf` (the Oracle home of the clusterware software for the RAC database ).
2. Open the `ons.config` file and add these lines:

```
walletfile=path to wallet
walletpassword=wallet password ( if needed)
```

## 2.5 Installing the Oracle Internet Directory Instances in the Data Tier

Follow these steps to install the Oracle Internet Directory components (OIDHOST1 and OIDHOST2) on the Data Tier with the Metadata Repository. The procedures for the installations are very similar, but the selections in the configuration options screen differ.

---

**Note:** Ensure that the clocks are synchronized between the two computers on which you intend to install the Oracle Internet Directory instances. Errors will occur if this is not done.

---

### 2.5.1 Installing the First Oracle Internet Directory Instance

The OracleAS Metadata Repository must be running before you perform this task. Follow these steps to install the 10g (10.1.4.0.1)Oracle Internet Directory on OIDHOST1:

1. Ensure that the system, patch, kernel and other requirements are met. These are listed in the *Oracle Application Server Quick Installation Guide* in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Ensure that ports 389 and 636 are not in use by any service on the computer by issuing these commands for the operating system you are using. (If the port is not in use, no output is returned from the command.)

On UNIX:

```
netstat -an | grep "389"
netstat -an | grep "636"
```

On Windows:

```
netstat -an | findstr :389
netstat -an | findstr :636
```

If the port is in use (if the command returns output identifying the port), you must free the port.

In UNIX:

Remove the entries for ports 389 and 636 in the `/etc/services` file and restart the services, or restart the computer.

In Windows:

Stop the component that is using the port.

3. Copy the `staticport.ini` file from the `Disk1/stage/Response` directory to the Oracle home directory.

4. Edit the `staticport.ini` file to assign the following custom ports:

```
Oracle Internet Directory port = 389
Oracle Internet Directory (SSL) port = 636
```

5. Start the Oracle Universal Installer as follows:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Welcome** screen appears.

6. Click **Next**.

On UNIX systems, the **Specify Inventory Directory and Credentials** screen appears.

7. Specify the directory you want to be the `oraInventory` directory and the operating system group that has permission to write to it.

8. Click **Next**.

On UNIX systems, a dialog appears, prompting you to run the `oraInstRoot.sh` script.

9. Open a window and run the script, following the prompts in the window.

10. Return to the Oracle Universal Installer screen and click **Next**.

The **Specify File Locations** screen appears with default locations for:

- The product files for the installation (Source)
- The name and path to an Oracle home (Destination)

---

---

**Note:** It is a good idea to make the Oracle home directory path for `OIDHOST1` the same as the path to the Oracle home location of `OIDHOST2`. For example, if the path to the Oracle home on `OIDHOST1` is:

```
/u01/app/oracle/product/AS10gOID
```

then the path to the Oracle home on `OIDHOST2` should be:

```
/u01/app/oracle/product/AS10gOID
```

---

---

11. Specify the **Destination Name** and **Path**, if different from the default, and click **Next**.

The **Select a Product to Install** screen appears.

12. Select OracleAS Infrastructure 10g and click **Next**.

The **Select Installation Type** screen appears.

13. Select **Identity Management** and click **Next**.

The **Upgrade Existing Oracle Application Server (10.1.2) Infrastructure** screen appears.

14. Select **Install New Oracle Application Server Infrastructure 10g (10.1.4.0.1)** and click **Next**.

The **Product-Specific Prerequisite Checks** screen appears.

15. Click **Next**.

The **Confirm Pre-Installation Requirements** screen appears.

16. Ensure that the requirements are met, check the box for each, and click **Next**.

The **Select Configuration Options** screen appears.

17. Select **Oracle Internet Directory, OracleAS Directory Integration and Provisioning**, and **High Availability and Replication** and click **Next**.

The **Specify Port Configuration Options** screen appears.

18. Select **Manual** and click **Next**.

The **Specify Repository** screen appears.

19. Provide the DBA login and computer information and click **Next**.

---



---

**Note:** The syntax for the hostname and port field for a RAC database is:

```
infradbhost1-V.mycompany.com:1521^infradbhost2-V.mycompany.com:1521
^
```

---



---

The **Select High Availability or Replication Option** screen appears.

20. Select **OracleAS Cluster (Identity Management)** and click **Next**.

The **Specify Namespace in Internet Directory** screen appears.

21. Click **Next** to specify the default **Suggested Namespace**, or enter values for the **Custom Namespace** and click **Next**.

The **Specify Instance Name and ias\_admin Password** screen appears.

22. Specify the instance name and password and click **Next**.

The **Summary** screen appears.

23. Review the selections to ensure that they are correct (if they are not, click **Back** to modify selections on previous screens), and click **Install**.

The **Install** screen appears with a progress bar. On UNIX systems, a dialog opens prompting you to run the `root.sh` script.

24. Open a window and run the script.

The **Configuration Assistants** screen appears. Multiple configuration assistants are launched in succession; this process can be lengthy. When it completes, the **End of Installation** screen appears.

25. Click **Exit**, and then confirm your choice to exit.

## 2.5.2 Installing the Second Oracle Internet Directory Instance

The OracleAS Metadata Repository and the first Oracle Internet Directory instance must be running before you perform this task. Follow these steps to install the 10g Release 2 (10.1.2) Oracle Internet Directory on OIDHOST2:

1. Ensure that the system, patch, kernel and other requirements are met. These are listed in the *Oracle Application Server Quick Installation Guide* in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Ensure that ports 389 and 636 are not in use by any service on the computer by issuing these commands for the operating system you are using. (If the port is not in use, no output is returned from the command.)

On UNIX:

```
netstat -an | grep "389"
```

```
netstat -an | grep "636"
```

On Windows:

```
netstat -an | findstr :389
```

```
netstat -an | findstr :636
```

If the port is in use (if the command returns output identifying the port), you must free the port.

In UNIX:

Remove the entries for ports 389 and 636 in the `/etc/services` file and restart the services, or restart the computer.

In Windows:

Stop the component that is using the port.

3. Copy the `staticport.ini` file from the `Disk1/stage/Response` directory to the Oracle home directory.
4. Edit the `staticport.ini` file and uncomment, and update these entries:

```
Oracle Internet Directory port = 389
Oracle Internet Directory (SSL) port = 636
```

5. Start the Oracle Universal Installer as follows:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Welcome** screen appears.

6. Click **Next**.

On UNIX systems, the **Specify Inventory Directory and Credentials** screen appears.

7. Specify the directory you want to be the `oraInventory` directory and the operating system group that has permission to write to it.

8. Click **Next**.

On UNIX systems, a dialog appears, prompting you to run the `oraInstRoot.sh` script.

9. Open a window and run the script, following the prompts in the window.

10. Return to the Oracle Universal Installer screen and click **Next**.

The **Specify File Locations** screen appears with default locations for:

- The product files for the installation (Source)

- The name and path to an Oracle home (Destination)

---

**Note:** It is a good idea to make the Oracle home directory path for OIDHOST1 the same as the path to the Oracle home location of OIDHOST2. For example, if the path to the Oracle home on OIDHOST1 is:

```
/u01/app/oracle/product/AS10gOID
```

then the path to the Oracle home on OIDHOST2 should be:

```
/u01/app/oracle/product/AS10gOID
```

---

11. Specify the **Destination Name** and **Path**, if different from the default, and click **Next**.

The **Select a Product to Install** screen appears.

12. Select OracleAS Infrastructure 10g and click **Next**.

The **Select Installation Type** screen appears.

13. Select **Identity Management** and click **Next**.

The **Upgrade Existing Oracle Application Server (10.1.2) Infrastructure** screen appears.

14. Select **Install New Oracle Application Server Infrastructure 10g (10.1.4.0.1)** and click **Next**.

The **Product-Specific Prerequisite Checks** screen appears.

15. Click **Next**.

The **Confirm Pre-Installation Requirements** screen appears.

16. Ensure that the requirements are met, check the box for each, and click **Next**.

The **Select Configuration Options** screen appears.

17. Select **Oracle Internet Directory, OracleAS Directory Integration and Provisioning**, and **High Availability and Replication** and click **Next**.

The **Specify Port Configuration Options** screen appears.

18. Select **Manual** and click **Next**.

The **Specify Repository** screen appears.

19. Provide the DBA login and computer information and click **Next**.

---

**Note:** The syntax for the hostname and port field for a RAC database is:

```
infradbhost1-V.mycompany.com:1521^infradbhost2-V.mycompany.com:1521
^
```

---

A dialog opens, prompting you to synchronize the system time of the primary Oracle Internet Directory computer and the system time on the computer on which you are installing.

20. Synchronize the system time on the computers and click **OK**.

The **Specify ODS Password** screen appears.

21. Specify the ODS password (by default, the `ias_admin` password) and click **Next**.
22. Specify the user name and password and click **Next**.  
The **Specify OID Login** screen appears.  
The **Specify Instance Name and `ias_admin` Password** screen appears.
23. Specify the instance name and password and click **Next**.  
The **Summary** screen appears.
24. Review the selections to ensure that they are correct (if they are not, click **Back** to modify selections on previous screens), and click **Install**.  
The **Install** screen appears with a progress bar. On UNIX systems, a dialog opens prompting you to run the `root.sh` script.
25. Open a window and run the script.  
The **Configuration Assistants** screen appears. Multiple configuration assistants are launched in succession; this process can be lengthy. When it completes, the **End of Installation** screen appears.
26. Click **Exit**, and then confirm your choice to exit.

## 2.6 Configuring the Virtual Server to Use the Load Balancing Router

If you plan to use the Enterprise Deployment Architecture for `mySOAcompany.com` with JAZN-SSO/DAS, you must configure the Load Balancing Router to perform these functions:

- Listen on `oid.mycompany.com`.
- Balance the requests received on ports 389 and 636 to `oidhost1.mycompany.com` and `oidhost2.mycompany.com` on ports 389 and 636.
- Monitor the heartbeat of the Oracle Internet Directory processes on both computers. If an Oracle Internet Directory process stops on one of the computers, the Load Balancing Router must route the LDAP traffic to the surviving computer.

---

---

**Note:** Some tuning of the Load Balancing Router's monitoring interval and time out values may be required to ensure system availability. If the interval or time out value is too long, the Load Balancing Router will not detect service failures in time; if it is too short, the Load Balancing Router may erroneously detect that a server is down.

For example, suppose the Load Balancing Router maps the virtual IP address `oid.mycompany.com` to the two Oracle Internet Directory servers for round robin load balancing, and the monitoring scheme attempts an `ldapbind` at 10-second intervals.

If the Oracle Internet Directory on `APPHOST1` is down, then the Load Balancing Router directs all traffic to the Oracle Internet Directory on `APPHOST2` only.

However, there is a 10-second interval during which the Load Balancing Router is unaware that the Oracle Internet Directory on `APPHOST1` is down. There is also a 30-second time out period. During this period, the Load Balancing Router continues to direct traffic to both Oracle Internet Directory servers in round robin mode, and `ldapbind` failures will occur when it attempts connections to the Oracle Internet Directory on `APPHOST1`.

---

---

## 2.7 Testing the Oracle Internet Directory Instances

1. Ensure that you can connect to each Oracle Internet Directory instance and the Load Balancing Router, using this command:

```
ldapbind -p 389 -h OIDHOST1
```

```
ldapbind -p 389 -h OIDHOST2
```

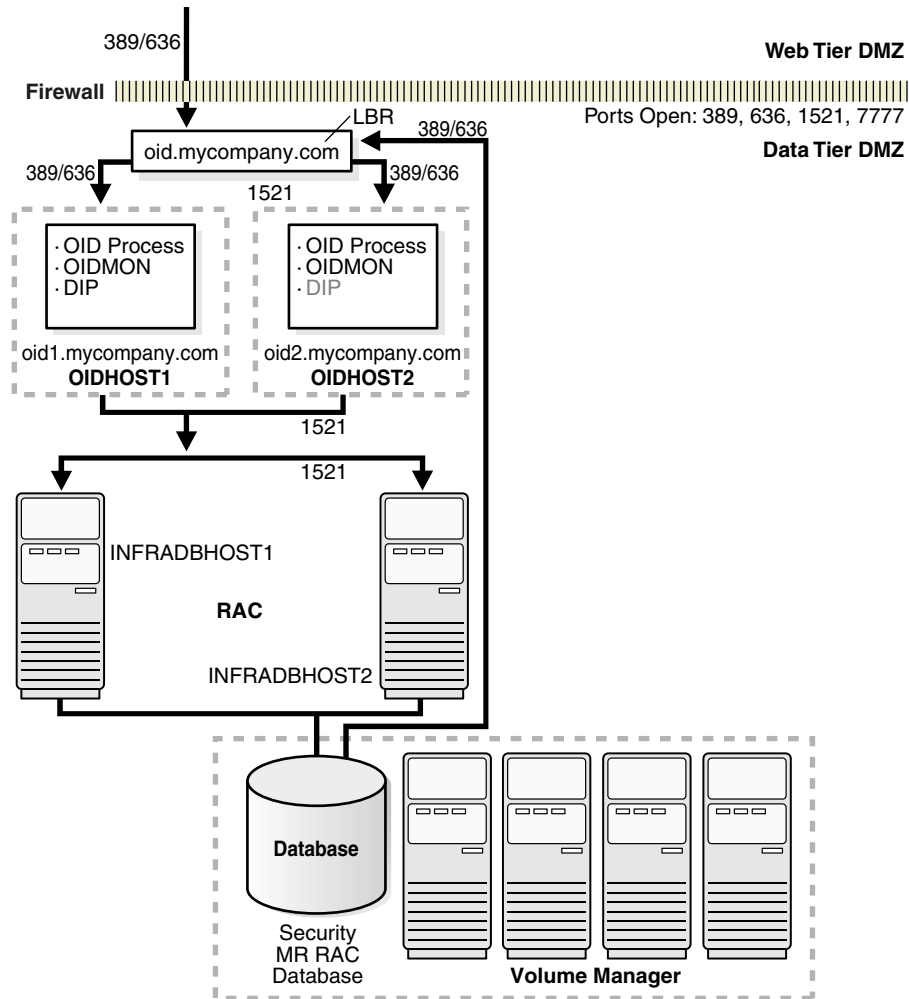
```
ldapbind -p 389 -h oid.mycompany.com
```

2. Start the `oidadmin` tool on each Oracle Internet Directory instance in `ORACLE_HOME/bin` with this command:

```
oidadmin
```

The Data Tier configuration is now as shown in [Figure 2-1](#).

**Figure 2–1 Data Tier Configuration**



## 2.8 Installing the ORABPEL, ORAESB and ORAWSM Schemas

The database for the SOA Suite must be of one of the versions listed in [Table 2–1](#):

**Table 2–1 Database versions supported for SOA Suite**

Database Series	Version
Oracle9i Release 2 (9.2.x)	9.2.0.7 or later
Oracle Database 10g Release 1 (10.1.x)	10.1.0.5 or later
Oracle Database Express Edition 10g Release 2 (10.2.x)	10.2.0.1
Oracle Database 10g Release 2 (10.2.x)	10.2.0.2 or later

Use these commands to determine the database version:

```
sqlplus "sys/password as sysdba"
```

```
SQL> select version from product_component_version where product
like 'Oracle%9i%' or product like 'Oracle%Database%';
```

Before you install the SOA Suite, you must install the ORABPEL, ORAESB, and ORAWSM schemas into the Oracle database (CUSTDBHOST1 and CUSTDBHOST2), according to these database requirements:

1. Navigate to the Oracle Application Server `Disk1/install/soa_schemas/irca` directory.
2. Execute the `irca.bat` or `irca.sh` script.



# Installing and Configuring the mySOACompany Web and Application Tiers

This chapter provides complete instructions for installing the web and application tiers for the mySOACompany configuration depicted in (Figure 1-1).

## 3.1 The Web and Application Tier Configuration Process

The Application Tier (APPHOST1 and APPHOST2) consists of multiple computers hosting middle tier Oracle Application Server instances. Each Oracle home contains multiple Oracle Containers for J2EE (OC4J) instances on which you deploy applications. In the complete configuration, requests are balanced among the OC4J instances on the application tier computers to ensure a performant and fault tolerant application environment.

The Web Tier (WEBHOST1 and WEBHOST2) consists of Oracle HTTP Servers.

**Table 3–1 Naming convention for the MySOACompany topology**

Name	Description
WEBHOST1, WEBHOST2	Hosts for the web server nodes.
APPHOST1, APPHOST2	Hosts for the application server nodes
ORA_HOME1	Oracle home on APPHOST1 and APPHOST2 for the following OC4J instances: OC4J_SOA, OC4J_ESBDT, OC4J_WSM, and Admin.
ORA_HOME2	Oracle home on APPHOST1/2 for the OC4J_GTWY instances.

The complete installation and configuration process for the Web and Application tiers is detailed in this section.

1. Use the 10g Release 3 (10.1.3.1.0) Oracle Universal Installer to install the Web tier Oracle HTTP Servers, specifying the same OPMN cluster:
  - a. Install an Oracle HTTP Server on WEBHOST1
  - b. Install an Oracle HTTP Server on WEBHOST2
2. Use the 10g Release 3 (10.1.3.1.0) Oracle Universal Installer to install the Application Server tier (ORA\_HOME1):
  - a. Install an Oracle Application Server instance on APPHOST1 (ORA\_HOME1, naming the default OC4J instance ADMIN)
  - b. Install an Oracle Application Server instance on APPHOST2 (ORA\_HOME1, naming the default OC4J instance ADMIN)

- c. Disable the ADMIN OC4J instance on APPHOST2 (ORA\_HOME1)
3. Use the 10g Release 3 (10.1.3.1.0) Oracle Universal Installer to install the Application Server tier (ORA\_HOME2):
  - a. Install an Oracle Application Server instance on APPHOST1 (ORA\_HOME2, naming the default OC4J instance OC4J\_GTWY)
  - b. Install an Oracle Application Server instance on APPHOST2 (ORA\_HOME2, naming the default OC4J instance OC4J\_GTWY)
4. Using Oracle Enterprise Manager 10g Grid Control Console, create these OC4J groups and OC4J instances, ensuring that the instances are part of the same OPMN cluster:
  - a. On APPHOST1 in the application server instance in ORA\_HOME1:
    - SOA\_GROUP (for the OC4J\_SOA instances)
    - ESBĐT\_GROUP (for the OC4J\_ESBĐT instances)
    - WSM\_GROUP (for the OC4J\_WSM instances)
    - OC4J\_SOA
    - OC4J\_ESBĐT
    - OC4J\_WSM
  - b. On APPHOST2 in the application server instance in ORA\_HOME1:
    - OC4J\_SOA
    - OC4J\_ESBĐT
    - OC4J\_WSM
  - c. Leave the default ADMIN OC4J instance in the application server instance of ORA\_HOME1 in the default group
  - d. Leave the default OC4J\_GTWY OC4J instance in the application server instance of ORA\_HOME2 in the default group
5. Cluster the Oracle HTTP Server and Oracle Application Server instances
  - a. If multicast is a problem, configure static discovery of the cluster
  - b. Create a gateway for instance discovery, if the instances are not on the same subnet.
  - c. Validate and discover the cluster status with the `opmnctl status @cluster` command
6. Configure the Web server for the load balancer
  - a. Add these virtual hosts to the Oracle HTTP Servers on WEBHOST1 and WEBHOST2: `soa.mycompany.com` and `soainternal.mycompany.com:7777`
7. Configure the load balancer for `soa.mycompany.com` and `soainternal.mycompany.com:7777`
  - a. Filter out external access for `soa.mycompany.com/em/*`
  - b. Filter out external access for `soa.mycompnay.com/esb/*`
  - c. NAT internal traffic for `soainternal.mycompany.com:7777`
8. Use the standalone installer, available on the Companion CD, to install Oracle BPEL Process Manager

- a. On APPHOST1 in the application server instance in ORA\_HOME1, install Oracle BPEL Process Manager in the OC4J\_SOA instance
- b. On APPHOST2 in the application server instance in ORA\_HOME1, install Oracle BPEL Process Manager in the OC4J\_SOA instance
- c. Perform post-installation configuration steps
9. Use the standalone installer, available on the Companion CD, to install Oracle Enterprise Service Bus run time instance
  - a. On APPHOST1 in the application server instance in ORA\_HOME1, install an Oracle Enterprise Service Bus run time instance in the OC4J\_SOA instance
  - b. On APPHOST2 in the application server instance in ORA\_HOME1, install an Oracle Enterprise Service Bus run time instance in the OC4J\_SOA instance
  - c. Perform post-installation configuration steps
10. Use the standalone installer, available on the Companion CD, to install Oracle Web Services Manager.
  - a. On APPHOST1 in the application server instance in ORA\_HOME1, install Oracle WSM in the OC4J\_WSM instance
  - b. On APPHOST2 in the application server instance in ORA\_HOME1, install Oracle WSM in the OC4J\_WSM instance
  - c. Perform post-installation configuration steps, including undeploying applications as appropriate.
  - d. On APPHOST1 in the application server instance in ORA\_HOME2, install Oracle WSM in the OC4J\_GTWY instance
  - e. On APPHOST2 in the application server instance in ORA\_HOME2, install OWSM to OC4J\_GTWY instance
  - f. Perform post-installation configuration steps, including undeploying applications as appropriate
11. Install the 10.1.3.3 patch set into all of the Oracle Homes.
12. Oracle Enterprise Service Bus repository instance deployment:
  - a. Using the procedure for 10.1.3.3, deploy the Oracle Enterprise Service Bus design time to the repository instance on APPHOST1.
  - b. Using the procedure for 10.1.3.3, deploy the Oracle Enterprise Service Bus design time to the repository instance on APPHOST2.
  - c. Perform post-installation configuration steps.
13. Install and configure adapters as necessary.
14. Perform the remaining configuration for the Identity Management tier.

## 3.2 Installing the Oracle HTTP Servers on WEBHOST1 and WEBHOST2

Use the Advanced option of the Oracle Universal Installer to install the Oracle HTTP Server instances.

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide* for the platform you are using. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.

2. Copy the `staticports.ini` file from the `Disk1/stage/Response` directory to a local directory, such as `TMP`. You will provide the path to this file during installation.

3. Edit the `staticport.ini` file to assign the following custom port:

```
Oracle HTTP Server port = 7777
```

---

---

**Note:** Ensure that this port is not already in use by any other service on the computer. Using the Static Ports feature to install the Application Server Tier ensures that the port assignments will be consistent, if the ports are correctly specified in the file and the port is not already in use. If a port is incorrectly specified, the Oracle Universal Installer will assign the default port. If a port is already in use, the Oracle Universal Installer will select the next available port.

---

---

4. Start the Oracle Universal Installer as follows:  
On UNIX, issue this command: **runInstaller**  
On Windows, double-click **setup.exe**  
The **Oracle Application Server 10.1.3.1.0 Installation** screen appears.
5. Specify an installation directory for the instance.
6. Select **Advanced Installation Mode**.
7. Click **Install**.  
The **Select Installation Type** screen appears.
8. Select **Web Server** and click **Next**.  
The **Specify Port Configuration Options** screen appears.
9. Select **Manual**, specify the location of the `staticports.ini` file, and click **Next**.  
The **Specify Instance Name** screen appears.
10. Specify the instance name and click **Next**.  
The **Cluster Topology Configuration** screen appears.
11. Check the box to configure the instance to be part of an Oracle Application Server cluster.  
Specify the multicast address and port.

---

---

**Note:** An example of a multicast address is `225.0.0.20`, with port `8001`. The address and port should be the same for each computer in a farm. This multicast address used should not be in use by any application or Oracle AS Instance on the network that is not a part of the farm.

---

---

12. Click **Next**.  
The **Summary** Screen appears.
13. Click **Install**.

The **Configuration Assistants** screen appears. When the configuration process completes, the **End of Installation** screen appears.

14. Click **Exit**, and then confirm your choice to exit.
15. Verify that the installation was successful by viewing the Oracle HTTP Server instances. Start a browser and access:

`http://WEBHOST1.mycompany.com:7777` and

`http://WEBHOST2.mycompany.com:7777`

---

**Note:** The `ORACLE_HOME/install/readme.txt` file contains the URLs for the installation and a command to verify the status of processes.

---

### 3.2.1 Renaming Apache 2.0 Web Server Instances on WEBHOST1 and WEBHOST2

If you installed the Oracle HTTP Server based on Apache 2.0 from the Companion CD on WEBHOST1 and WEBHOST2, the instance name on both computers will be the default name assigned by the installer. In a cluster, you will want the instance names to be unique when you view the instances with the `opmnctl @cluster status` command. Follow these steps to rename an instance:

1. Stop the instance by issuing this command:

```
opmnctl stopall
```

2. Modify the `ORACLE_HOME/opmn/conf/opmn.xml` file to change the instance id and name:

```
<ias-instance id="AS-1"
  name="AS-1">
```

3. Replace both occurrences of the existing instance name (AS-1 in the example) with a unique instance name.
4. Save and close the file.
5. Restart the instance by issuing this command:

```
opmnctl startall
```

## 3.3 Installing the Application Server Instances on APPHOST1 and APPHOST2 (ORA\_HOME1)

Install an Oracle Application Server instance consisting only of one OC4J instance, using the Advanced installation option of the Oracle Universal Installer. Follow these steps to install application servers to create ORA\_HOME1 on APPHOST1 and APPHOST2.

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide*. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Start the Oracle Universal Installer using one of these commands:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Oracle Application Server 10.1.3.1.0 Installation** screen appears with the Basic Installation Mode and the Integrated Web Server, J2EE Web Server and Process Management installation type selected.

3. Specify an installation directory for the instance, or leave the default.
4. Select **Advanced Install** and click **Next**.  
A confirmation dialog appears.
5. Click **Yes**.  
A progress dialog appears, then the **Select Installation Type** screen appears.
6. Select **J2EE Server** and click **Next**.  
The **Specify Port Configuration Options** screen appears.
7. Select **Automatic** and click **Next**.  
The **Administration Settings** screen appears.
8. Specify an instance name for the application server instance.

---

---

**Note:** The instance name you specify will be prepended to the host name. For example, if you specify `J2EE` as the instance name and the host name is `server1.mycompany.com`, the instance name will be `J2EE.server1.mycompany.com`.

---

---

9. Specify and confirm the administrator password for the default OC4J instance.
10. Specify a name for the default OC4J instance created by the installer (the default is `home`), such as `Admin`, or a similar name that designates it as the instance dedicated to Application Server Control.

---

---

**Note:** You will not deploy applications to the Admin OC4J instance; it will not be clustered with the user-created OC4J instances on which applications are deployed.

---

---

11. Check the box to designate the instance installed as an administration OC4J instance (the instance on which the Application Server Control Console will operate).

12. Click **Next**.

The **Cluster Topology Configuration** screen appears.

13. Specify the multicast address and port.

This step configures the multiple instances in the same Oracle Notification Service (ONS) topology. Availability notifications are shared among the participants in the topology, enabling dynamic routing from Oracle HTTP Server to OC4J and dynamic discovery of instances, as well as creation of OC4J groups. This multicast address has purposes different from the multicast address provided in [Section 3.12, "Configuring the Cluster of BPEL Instances on APPHOST1 and APPHOST2."](#)

---



---

**Note:** An example of a multicast address is 225.0.0.20, with port 8001. The address and port should be the same for each computer in a farm. The multicast address specified must not be in use by any application or Oracle Application Server instance on the network that is not a part of the farm.

---



---

14. Select the checkbox for the option **Access this OC4J instance from a separate Oracle HTTP Server**.

15. Click Next.

The Summary screen appears.

16. Click Install.

The Preparing to Install dialog appears, then the Install screen appears.

17. The Configuration Assistants screen appears. When the configuration process completes, the End of Installation screen appears.

18. Click Exit, and then confirm your choice to exit.

The first Oracle home, labeled ORA-HOME1 in the diagrams in Chapter 1, now exists on APPHOST1 and APPHOST2, with the Admin OC4J instance created.

19. Verify that the installation was successful by viewing the instance in Oracle Enterprise Manager 10g. Start a browser, log in to the Application Server Control Console, and view the application server instances at:

`http://WEBHOST1.mycompany.com:7777/em` and

`http://WEBHOST2.mycompany.com:7777/em`

---



---

**Notes:** On Windows, you can use the Start menu to select the instance, and then select the Oracle Application Server Control option.

The `ORACLE_HOME/install/readme.txt` file contains the URLs for the installation and a command to verify the status of processes.

By default, all components in the application tier are started in one JVM. You can increase the number of JVMs for the OC4J\_SOA instance (Oracle BPEL Process Manager and Oracle Enterprise Service Bus). See the chapter titled "Reconfiguring Application Server Instances" in the *Oracle Application Server Administrator's Guide* in the 10g Release 3 (10.1.3.1) documentation library.

---



---

## 3.4 Disabling Application Server Control Console on APPHOST2 (Optional)

Application Server Control Console stores certain local state information that does not get replicated to another active Application Server Control Console. This includes things such as JMX Notification Subscriptions and Received Notifications. If you use JMX notifications, you may wish to disable Application Server Control Consoles other than that on APPHOST1, so that Oracle HTTP Server does not route requests to them. This will ensure that notifications subscriptions are not changed or deleted on the instance receiving requests (causing the two instances to be out of synchronization). You can disable routing to Application Server Control Consoles by setting the

ohs-routing tag in the default-web-site.xml file for the Application Server Control Console to false as shown:

```
<web-app application="ascontrol" load-on-startup="true"
name="ascontrol"
ohs-routing="false" root="/em"/>
```

You can set ohs-routing to true if you need to use the secondary Application Server Control Consoles for failover. You will need to use some backup and recovery procedure in order to restore the state of notification subscriptions and received notifications from the primary Application Server Control Consoles to the secondary.

If you have multiple Application Server Control Consoles active, be aware of the following:

- If you change the administrator password on the managed OC4J instances, you will have to make the same change to the stored administrator password on all Application Server Control Console instances. When Oracle HTTP Server directs requests to an Application Server Control Console that does not have the correct password, attempts to connect to the managed instance will fail and Application Server Control Console will prompt for the new administrator password.
- On login, Application Server Control Console displays a warning on the Cluster Topology page that there are multiple instances running.

## 3.5 Listing Occupied Ports

Use the netstat command to identify occupied ports:

```
netstat -an
```

The port numbers within the AJP port range (12501-12600) that do not appear in the output of the netstat command are the port numbers that you can assign to OC4J instances.

## 3.6 Installing the Application Server Instances on APPHOST1 and APPHOST2 (ORA\_HOME2)

Install an Oracle Application Server instance consisting only of one OC4J instance, using the Advanced installation option of the Oracle Universal Installer. Follow these steps to install application servers to create ORA-HOME2 on APPHOST1 and APPHOST2.

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide*. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Start the Oracle Universal Installer using one of these commands:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Oracle Application Server 10.1.3.1.0 Installation** screen appears with the Basic Installation Mode and the Integrated Web Server, J2EE Web Server and Process Management installation type selected.

3. Specify an installation directory for the instance, or leave the default.
4. Select **Advanced Install** and click **Next**.

A confirmation dialog appears.

5. Click **Yes**.

A progress dialog appears, then the **Select Installation Type** screen appears.

6. Select **J2EE Server** and click **Next**.

The **Specify Port Configuration Options** screen appears.

7. Select **Automatic** and click **Next**.

The **Administration Settings** screen appears.

8. Specify an instance name for the application server instance.

---

---

**Note:** The instance name you specify will be prepended to the host name. For example, if you specify `J2EE` as the instance name and the host name is `server1.mycompany.com`, the instance name will be `J2EE.server1.mycompany.com`.

---

---

9. Specify and confirm the administrator password for the default OC4J instance.

10. Specify a name for the default OC4J instance created by the installer (the default is `home`), such as `OC4J_GTWY`, or a similar name that designates it as the instance dedicated to the gateway.

11. Do not check the box to designate the instance installed as an administration OC4J instance (the instance on which the Application Server Control Console will operate).

12. Click **Next**.

The **Cluster Topology Configuration** screen appears.

13. Specify the multicast address and port.

---

---

**Note:** An example of a multicast address is `225.0.0.20`, with port `8001`. The address and port should be the same for each computer in a farm. The multicast address specified must not be in use by any application or Oracle Application Server instance on the network that is not a part of the farm.

---

---

14. Select the checkbox for the option **Access this OC4J instance from a separate Oracle HTTP Server**.

15. Click **Next**.

The Summary screen appears.

16. Click **Install**.

The Preparing to Install dialog appears, then the Install screen appears.

17. The Configuration Assistants screen appears. When the configuration process completes, the End of Installation screen appears.

18. Click **Exit**, and then confirm your choice to exit.

The second Oracle home, labeled `ORA-HOME2` in the diagrams in Chapter 1, now exists on `APPHOST1` and `APPHOST2`, with the `OC4J_GTWY` instance created.

19. Verify that the installation was successful by viewing the instance in Oracle Enterprise Manager 10g. Start a browser, log in to the Application Server Control Console, and view the application server instance at:

`http://WEBHOST1.mycompany.com:7777/em`

---

**Notes:** On Windows, you can use the Start menu to select the instance, and then select the Oracle Application Server Control option.

The `ORACLE_HOME/install/readme.txt` file contains the URLs for the installation and a command to verify the status of processes.

---

## 3.7 Creating OC4J Instances and OC4J Groups on APPHOST1 and APPHOST2

You must create the OC4J instances and groups shown in the diagrams in Chapter 1. OC4J groups synchronize configuration of the OC4J instances in the group. For example, the `SOA_GROUP` created in this procedure ensures that configuration related to data sources, JMS, etc. will be synchronized across the multiple OC4J containers that are part of the group. Deployment of Oracle BPEL Process Manager is done on a per instance basis, as described in [Section 3.11](#). BPEL processes, in turn, are deployed to the dehydration store. Since Oracle BPEL Process Manager instances in a BPEL cluster share the same dehydration store, a BPEL process need only be deployed once.

Instances:

- `OC4J_SOA`
- `OC4J_ESBDT`
- `OC4J_WSM`

Groups:

- `SOA_GROUP`
- `ESBDT_GROUP`
- `WSM_GROUP`

1. Log in to the Application Server Control Console with the password set during installation.

The Cluster Topology page appears.

2. Click the link for the application server instance (`APPHOST1` or `APPHOST2` in the Members list). You will create the instances in `ORA-HOME1` only.

The Application Server page for the instance appears, with the Admin OC4J instance in the System Components list.

3. Click Create OC4J Instance.

The Create OC4J Instance page appears.

4. Enter `OC4J_SOA` in the OC4J Instance Name field.
5. Select Add to a new group with name, enter `SOA_GROUP` in the New Group Name field, and check the box to start the instance.
6. Click Create.

The Processing: screen appears with a message, then the Application Server page appears with the new instance and a confirmation message that the instance was created and added to the group.

7. Click the OC4J\_SOA instance.

The OC4J page appears.

8. Click Administration.

The Administration Tasks table appears.

9. Click the Go to Task icon for Server Properties in the Properties list.

The Server Properties page appears.

10. Specify an unused AJP port (see [Section 3.5, "Listing Occupied Ports"](#)) for the default-web-site and click Apply.

The Processing screen appears with a status message, then a confirmation message appears.

11. Repeat steps 1 through 9 for the OC4J\_ESBDT and OC4J\_WSM instances, using ESBDT\_GROUP and WSM\_GROUP as the respective group names. Assign a different unique port within the AJP port range to each instance.

12. Issue these commands in ORACLE\_HOME/opmn/bin:

```
opmnctl stopall
```

```
opmnctl startall
```

## 3.8 Configuring the Cluster Gateways on WEBHOST1,2 and APPHOST1,2 (Optional)

Firewalls separate the various tiers as shown in the architecture diagrams in Chapter 1. To enable communications between clusters on the tiers separated by a firewall, a cross-topology gateway needs to be configured. In a cross-topology gateway, one or more nodes on each side of the firewall are designated as entry points into the cluster.

For the Enterprise Deployment described in this guide, WEBHOST1 and WEBHOST2 are clustered on the web server tier (DMZ1) while APPHOST1 and APPHOST2 are clustered on the application server tier (DMZ2). To enable maximum redundancy, configure more than one node on each tier as the gateway (for example, configure WEBHOST1, WEBHOST2 in DMZ1 and APPHOST1, APPHOST2 on DMZ2 as gateway servers). The Oracle Notification Service (ONS) remote port on each instance is used for communication between the gateway servers.

To implement the gateway configuration:

1. Open the ORACLE\_HOME/opmn/conf/opmn.xml file on APPHOST1.
2. Create the <gateway> subelement as shown in the example:

```
<notification-server>
  <port local="6101" remote="6200" request="60041"/>
  <ssl enabled="true" wallet-file="$ORACLE_HOME\opmn\conf\ssl.wlt\default"/>
  <topology>
    <discover list="*225.0.0.20:8001"/>
    <gateway
      list="apphost1.mycompany.com:6200&apphost2.mycompany.com:6200&apphost1
        .mycompany.com:6300&apphost2.mycompany.com:6300/webhost1.mycompany.com:620
        0&webhost2.mycompany.com:6200"/>
    </gateway>
```

```
list="webhost1.mycompany.com:6200&webhost2.mycompany.com:6200/apphost1.myco
mpany.com:6200&apphost2.mycompany.com:6200&apphost1.mycompany.com:6300&
apphost2.mycompany.com:6300"/>
  </topology>
</notification-server>
...
```

---

**Note:** 6200 is the OPMN remote port for ORA\_HOME1 APPHOST1, APPHOST2, WEBHOST1 and WEBHOST2. 6300 is the OPMN remote port for ORA\_HOME2 on APPHOST1 and APPHOST2. You must view the `opmn.xml` file on each server to determine the port values needed for the configuration.

---

3. Issue this command in `ORACLE_HOME/opmn/bin` on APPHOST1:  
**opmnctl reload**
4. Copy the `<gateway>` subelement to the `opmn.xml` file on APPHOST2.
5. Issue this command in `ORACLE_HOME/opmn/bin` on APPHOST2:  
**opmnctl reload**
6. Copy the `<gateway>` subelement to the `ORACLE_HOME/opmn/conf/opmn.xml` file on WEBHOST1 and change the host names to the WEBHOST host names.
7. Issue this command in `ORACLE_HOME/opmn/bin` on WEBHOST1:  
**opmnctl reload**
8. Copy the `<gateway>` subelement to the `opmn.xml` file on WEBHOST2.
9. Issue this command in `ORACLE_HOME/opmn/bin` on WEBHOST2:  
**opmnctl reload**

---

**Note:** For more information, see "Configuring Cross-Topology Gateways" in the *Oracle Containers for J2EE Configuration and Administration Guide*.

---

## 3.9 Configuring the Oracle HTTP Servers on WEBHOST1 and WEBHOST2 with the Load Balancing Router

The Load Balancing Router receives client requests and balances them to the two Oracle HTTP Server instances on the Web tier. This is accomplished using two virtual hosts: `soa.mycompany.com` for external access, and `soainternal.mycompany.com` for internal access. Only the external access URL is SSL-enabled.

To configure the Oracle HTTP Server instances to listen on the virtual hosts:

1. Open the Oracle HTTP Server configuration file:  
**Apache 1.3:**  
`ORACLE_HOME/Apache/Apache/conf/httpd.conf`  
**Apache 2.0:**  
`ORACLE_HOME/ohs/conf/httpd.conf`

2. Perform the following steps:
  - a. Add the `LoadModule certheaders_module` directive for the appropriate platform.

**UNIX Apache 1.3:**

```
LoadModule certheaders_module libexec/mod_certheaders.so
```

**UNIX Apache 2.0 (use this directive if you plan to use Apache 2.0 on UNIX):**

```
LoadModule certheaders_module modules/mod_certheaders.so
```

**Windows:**

```
LoadModule certheaders_module
modules/ApacheModuleCertHeaders.dll
```

- b. Add the lines shown for the Apache version you are using to create a `NameVirtualHost` directive and a `VirtualHost` container for `soa.mycompany.com` and port 443.

**Apache 1.3:**

```
NameVirtualHost *:7777
<VirtualHost *:7777>
  ServerName soa.mycompany.com
  Port 443
  ServerAdmin you@your.address
  RewriteEngine On
  RewriteOptions inherit
  SimulateHttps On
</VirtualHost>

<VirtualHost *:7777>
  ServerName soainternal.mycompany.com
  Port 7777
  ServerAdmin you@your.address
  RewriteEngine On
  RewriteOptions inherit
</VirtualHost>
```

**Apache 2.0 (UNIX):**

```
NameVirtualHost *:7777
<VirtualHost *:7777>
  ServerName soa.mycompany.com:443
  ServerAdmin you@your.address
  RewriteEngine On
  RewriteOptions inherit
  SimulateHttps On
</VirtualHost>

<VirtualHost *:7777>
  ServerName soainternal.mycompany.com:7777
  ServerAdmin you@your.address
  RewriteEngine On
  RewriteOptions inherit
</VirtualHost>
```

---

---

**Notes:** The `LoadModule` directives (in particular, the `LoadModule rewrite_module` directive) must appear in the `httpd.conf` file at a location preceding the `VirtualHost` directives. The server must load all modules before it can execute the directives in the `VirtualHost` container.

It is a good idea to create the `VirtualHost` directives at the end of the `httpd.conf` file.

The `LoadModule rewrite_module` directive must appear before the `LoadModule certheaders_module` directive.

---

---

3. Save the `httpd.conf` file.
4. Restart the components by issuing these commands in `ORACLE_HOME/opmn/bin`:

```
opmnctl stopall
```

```
opmnctl startall
```

5. Verify that you can access these URLs:

```
http://soainternal.mycompany.com:7777/j2ee
```

```
https://soa.mycompany.com/j2ee
```

## 3.10 Configuring the Load Balancing Router

1. Configure the load balancer to balance requests between `WEBHOST1` and `WEBHOST2` for virtual hosts `https://soa.mycompany.com` and `http://soainternal.mycompany.com:7777`
2. Enable monitoring for the Oracle HTTP Server instances on `WEBHOST1` and `WEBHOST2`.
3. Enable filtering to filter out external access to:  

```
https://soa.mycompany.com/em/*
```

```
https://soa.mycompany.com/esbdt/*
```

```
https://soa.mycompany.com/BPELConsole/*
```

```
https://soa.mycompany.com/ccore/*
```
4. Include a Network Address Translation (NAT) statement to specify that `soainternal.mycompany.com` is invisible externally.
5. Ensure that persistence is not set for `soa.mycompany.com` and `soainternal.mycompany.com`.

## 3.11 Installing the Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 from the Oracle BPEL Process Manager (10.1.3.1.0) CD

The Oracle BPEL Process Manager instances must be installed in the `OC4J_SOA` instances on `APPHOST1` and `APPHOST2`.

---

---

**Note:** You use the component CD-ROMs (for example, the Oracle BPEL Process Manager CD-ROM or the Oracle Enterprise Service Bus CD-ROM) to install individual components, and you install the individual components into the same Oracle home as the J2EE Server installation performed in [Section 3.3, "Installing the Application Server Instances on APPHOST1 and APPHOST2 \(ORA\\_HOME1\)"](#).

---

---

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide* for the platform you are using. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Insert the Oracle BPEL Process Manager (10.1.3.1.0) CD.
3. Start the Oracle Universal Installer:  
On UNIX, issue this command: **runInstaller**  
On Windows, double-click **setup.exe**  
The **Welcome** screen appears.
4. Click **Next**.  
The **Specify File Locations** screen appears.
5. Specify ORA\_HOME1 as the installation directory (the same Oracle home as the Admin OC4J instance).
6. Click **Next**.  
The **Select Installation Type** screen appears.
7. Select the **BPEL Process Manager for OracleAS Middle Tier** option and click **Next**.  
The **Specify Outgoing HTTP Proxy Information** screen appears.
8. Specify the host, port and bypass proxy and click **Next**.  
The **Specify Database** screen appears.
9. Specify database information:  
**Database Type:** Oracle Database  
**Hostname and Port:**  
INFRADBHOST1-V.mycompany.com:1521^INFRADBHOST2-V.mycompany.com:1521  
**Service Name:** ORCLSVC.mycompany.com  
**ORABPEL Schema Password:** (BPEL Process Manager Schema password)
10. Click **Next**.  
The **Administration Settings** screen appears.
11. Specify administration settings:  
**AS Administrator Password:** (The Oracle Application Server administrator password set during installation)  
**OC4J Instance Name:** OC4J\_SOA  
**HTTP Host:Port:** soainternal.mycompany.com:7777

**12. Click Next.**

The **Summary** screen appears.

**13. Click Install.**

The installation proceeds, and then completes.

**14. Click Exit,** and confirm your choice to exit.**15. Verify that the installation was performed correctly by accessing these URLs:**

`http://soainternal.mycompany.com:7777/BPELConsole`

## 3.12 Configuring the Cluster of BPEL Instances on APPHOST1 and APPHOST2

This section briefly explains how to cluster BPEL instances for the Enterprise Deployment. BPEL instances in a cluster share the same dehydration store. If a BPEL instance fails, the surviving instance(s) in the cluster can resume ownership of a flow. Recovery can be manual, or can be scripted. A BPEL process suitcase is stored in the dehydration store as well, which allows a BPEL process to be deployed once to the store, and then be picked up for local deployment by each individual Oracle BPEL Process Manager instance in a BPEL cluster. This requires that Jgroups be configured. For more information, see the Oracle BPEL Process Manager Installation Guide, section titled "Creating an Oracle BPEL Process Manager Cluster".

1. Configure these server side properties (these instructions assume that APPHOST1 and APPHOST2 are in the same subnet. If they are not, see the instructions in the Oracle BPEL Process Manager Installation Guide 10g Release 3):

Set `enableCluster` to `true` and assign a name to the `clusterName` property in `ORACLE_HOME/bpel/system/config/collaxa-config.xml`. The `clusterName` configures the Oracle BPEL Process Manager instances in a BPEL cluster, and should be the same on APPHOST1 and APPHOST2.

Set `mcast-addr` and `mcast-port` in `ORACLE_HOME/bpel/system/config/jgroups-protocol.xml`. This configures the Jgroups configuration used by Oracle BPEL Process Manager as well as singleton adapters, such as the FTP adapter and the file adapter.

The values for the `mcast-addr` and `mcast-port` properties:

- Must be the same for all Oracle BPEL Process Manager nodes in the cluster
- Should be the same for all Oracle BPEL Process Manager nodes in the cluster
- Should not be in use by any application or instance on the network that is not also part of the farm

---

---

**Note:** This step is required to manage the adapter state (active or passive) and for propagation of process deployment notifications in the BPEL cluster. Configuration of Jgroups in BPEL and configuration of the ONS topology in Oracle Application Server have different purposes, and must have different multicast addresses to prevent network conflicts.

---

---

2. Set the `soapServerURL` to the same value as the load balancer internal URL and the `soapCallbackUrl` to the same value of the load balancer external URL, using the BPELADMIN console on each APPHOST:

- a. Log in to Oracle BPEL Admin Console (<http://hostname:port/BPELAdmin>) as the oc4jadmin user.
  - b. In the Configuration tab, set these values:  
     soapServerURL to `http://soainternal.mycompany.com:7777`  
     soapCallbackURL to `https://soa.mycompany.com`
  - c. Refer to the *Oracle BPEL Process Manager Administrator's Guide* for more information on securing BPEL processes.
3. Configure these properties on the client side of all computers in the cluster:  
     In the `ORACLE_HOME/bpel/utilities/ant-orabpel.properties` file, set `cluster` to `true`.  
     Set `oc4jinstancename` to `SOA_GROUP` (the name of the OC4J group that has the Oracle BPEL Process Manager deployed to it).
  4. Restart the OC4J\_SOA instances on both computers.

### 3.12.1 Best Practices for Cluster-based BPEL Deployments

When deploying applications in a BPEL cluster, ensure that you:

- Always deploy the BPEL process and all other artifacts to each computer in the cluster. This is necessary because custom jar files may be needed on each computer (for example, a local EJB).
- Use the BPEL Console to deploy processes to the cluster. See the *Oracle BPEL Process Manager Developer's Guide* for more information.
- Start the computers one at a time, and wait until one computer is completely started before starting the next one.
- Copy the client interfaces for EJB bindings to each computer's `system/classes` directory and then restart the Oracle BPEL Process Manager to load the classes.
- Ensure that for applications you build and deploy, define `wSDLLocation` in the `bpel.xml` file to point to the `wSDL` file on the local file system, and define `wSDLRuntimeLocation` to point to the `wSDL` file at run time. An example is provided in `ORACLE_HOME/bpel/samples/demos/LoanFlow/LoanDemo/bpel/bpel.xml`.
- Confirm that the BPEL process works after deployment using the sample application, `LoanFlow`, located in the `ORACLE_HOME/bpel/samples/demos/LoanDemo` directory.
- Refer to Chapter 1, *Oracle BPEL Process Manager Security* in the *Oracle BPEL Process Manager Administrator's Guide* for Release 10g (10.1.3.1) for information about securing BPEL and invoking secure BPEL processes.

### 3.12.2 Resolving Out-of-Memory Errors in the BPEL Runtime Console

When you work with tasks in the BPEL Console, this error may occur:

```
500 Internal Server Error
```

```
java.lang.OutOfMemoryError: PermGen space
```

To resolve the error, you increase the memory allocated to the PermGen space (used for loading static classes) with the `MaxPermSize` parameter. Follow these instructions

to set the `MaxPermSize` parameter in the Oracle Application Server instances on APPHOST1 and APPHOST2:

1. Open the `ORACLE_HOME/opmn/conf/opmn.xml` file and locate the `MaxPermSize` parameter, if present (shown in bold in [Example 3-1](#)). You might need to add the parameter to `opmn.xml`. The parameter must be added for the OC4J\_SOA container startup.

**Example 3-1 MaxPermSize Parameter in opmn.xml**

```
...
<category id="start-parameters">
    <data id="java-options" value="-Xrs -server
-XX:MaxPermSize=128M -ms512M -mx1024M -XX:AppendRatio=3
-Djava.security.policy=$ORACLE_HOME/j2ee/Admin/config/java2.policy
-Djava.awt.headless=true -Dhttp.webdir.enable=false"/>
    </category>
    <category id="stop-parameters">
        <data id="java-options"
value="-Djava.security.policy=$ORACLE_HOME/j2ee/Admin/config/java2.policy
-Djava.awt.headless=true -Dhttp.webdir.enable=false"/>
    </category>
...
```

2. Increase the value, or add the parameter, for example:

```
-XX:MaxPermSize=256M
```

3. Save and close the file, and restart the OC4J instance using these commands:

```
opmnctl reload
```

```
opmnctl stopproc process-type=OC4J_SOA
```

```
opmnctl startproc process-type=OC4J_SOA
```

### 3.13 Installing the Oracle Enterprise Service Bus Runtime Instances on APPHOST1 and APPHOST2 from the Oracle Enterprise Service Bus (10.1.3.1.0) CD

The ESB Runtime instances must be installed in the OC4J\_SOA instances on APPHOST1 and APPHOST2.

---

**Note:** You use the component CD-ROMs (for example, the Oracle BPEL Process Manager CD-ROM or the Oracle Enterprise Service Bus CD-ROM) to install individual components, and you install the individual components into the same Oracle home as the J2EE Server installation performed in [Section 3.3, "Installing the Application Server Instances on APPHOST1 and APPHOST2 \(ORA\\_HOME1\)"](#).

---

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide* for the platform you are using. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Insert the Oracle Enterprise Service Bus (10.1.3.1.0) CD.
3. Start the Oracle Universal Installer:

On UNIX, issue this command: **runInstaller**

- On Windows, double-click **setup.exe**
- The **Welcome** screen appears.
4. Click **Next**.  
The **Specify File Locations** screen appears.
  5. Specify ORA\_HOME1 as the installation directory (the same Oracle home as the OC4J\_SOA instance).
  6. Click **Next**.  
The **Select Installation Type** screen appears.
  7. Select the **Enterprise Service Bus for OracleAS Middle Tier** option and click **Next**.  
The **Specify Outgoing HTTP Proxy Information** screen appears.
  8. Specify the host, port and bypass proxy and click **Next**.  
The **Specify Database** screen appears.
  9. Specify database information:  
**Database Type:** Oracle Database  
**Hostname and Port:**  
INFRADBHOST1-V.mycompany.com:1521^INFRADBHOST2-V.mycompany.com:1521  
**Service Name:** ORCLSVC.mycompany.com  
**ORAESB Schema Password:** (*ESB Schema password*)
  10. Click **Next**.  
The **Administration Settings** screen appears.
  11. Specify administration settings:  
**AS Administrator Password:** (*The Oracle Application Server administrator password set during installation*)  
**OC4J Instance Name:** OC4J\_SOA  
**HTTP Host:Port:** soainternal.mycompany.com:7777
  12. Click **Next**.  
The **Select ESB Type** screen appears.
  13. Select **Runtime** and click **Next**.  
The **Summary** screen appears.
  14. Click **Install**.  
The installation proceeds, and then completes.
  15. Click **Exit**, and confirm your choice to exit.

### 3.14 Installing the OWSM Instances on APPHOST1 and APPHOST2 from the Oracle Web Services Manager (10.1.3.1.0) CD

The OWSM instances must be installed in these Oracle homes and OC4J instances as follows:

APPHOST1, Oracle home 1: OC4J\_WSM

APPHOST2, Oracle home 2: OC4J\_GTWY

APPHOST2, Oracle home 1: OC4J\_WSM

APPHOST2, Oracle home 2: OC4J\_GTWY

---

---

**Note:** You use the component CD-ROMs (for example, the Oracle Web Services Manager CD-ROM or the Oracle Enterprise Service Bus CD-ROM) to install individual components, and you install the individual components into the same Oracle home as the J2EE Server installation performed in [Section 3.6, "Installing the Application Server Instances on APPHOST1 and APPHOST2 \(ORA\\_HOME2\)"](#).

---

---

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide* for the platform you are using. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.

2. Insert the Oracle Web Services Manager (10.1.3.1.0) CD.

3. Start the Oracle Universal Installer:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Oracle Web Services Manager 10g (10.1.3.1.0) Installation** screen appears.

4. Specify the installation directory into which you installed the J2EE Server Oracle Application Server instance.

5. Specify the Application Server Details:

**HTTP Host:Port:** soainternal.mycompany.com:7777

**OC4J Instance Name:** OC4J\_WSM or OC4J\_GTWY (each in its Oracle home as described at the beginning of this procedure)

Administrator User: oc4jadmin

**Administrator Password:** (*The password set during installation*)

6. Specify the Database Details:

**Database Type:** Oracle Database

**Driver Type:** Thin

**Name:** ORCLSVC.mycompany.com

Database Connect String: (*Hostname and port of the SOA database listener, in the format host:port*) INFRADBHOST1-V:1521^INFRADBHOST2-V:1521

**User ID:** ORAWSM

**Password:** (*Oracle Web Services Manager schema password*)

7. Click **Next**.

The **Summary** screen appears.

8. Click **Install**.

The Install, the Oracle WSM Configuration Assistant, and then the End of Installation screens appear.

9. Click **Exit**, and confirm your choice to exit.

### 3.15 Configuring the OWSM Cluster

1. Access the OWSM console (the default user name is `admin` and the default password is `oracle`—you should change these for security reasons) at:

`http://soainternal.mycompany.com:7777/ccore`

2. Click **Add New Component**.

3. Use these values to register the clustered gateways:

**Component Name:** `Gateway_Cluster`

**Component Type:** `gateway`

**Container Type:** `Oracle Web Services Manager`

**Component URL:** `http://soainternal.mycompany.com:7777/gateway`

Leave the defaults for all other values.

4. Connect the single logical gateway to the OWSM monitor:
  - a. Start the Oracle WSM Control application by accessing `http://soainternal.mycompany.com:7777/ccore`.  
The **Enforcement Points** page appears.
  - b. Locate the gateway to configure and click its **Edit** icon.
  - c. Set the `cfluent.monitor.rmi.host` property to the monitor's host name, for example, `APPHOST1.mycompany.com` (assuming `coreman` is up on `APPHOST1` and down on `APPHOST2`).
  - d. Set the `cfluent.monitor.rmi.port` property to the monitor's RMI port, for example, `3118`. (The port number is the value of `dataload.monitor.rmi.port` in the `ORACLE_HOME/owsm/bin/coresv.properties` file.)
5. Click **Save**.
6. Connect the Oracle WSM Control to the Oracle WSM Monitor by performing these steps on each `OC4J_WSM` instance:
  - a. Open the `ORACLE_HOME/owsm/config/ccore/ui-config-installer.properties` file.
  - b. Set the `ui.om.server.rmiHost` property to the Monitor's host name.
  - c. Set the `ui.om.server.rmiPort` property to the Monitor's RMI port.
  - d. Save and close the `ui-config-installer.properties` file.
  - e. Redploy the application using one of these commands:

(Windows) **`wsmadmin.bat deploy OC4J administrator password control`**

(Linux) **`wsmadmin.sh deploy OC4J administrator password control`**

### 3.16 Applying the Patch to the Oracle Home on WEBHOST1 and WEBHOST2

Using the 10.1.3.3 Oracle Universal Installer, apply the patch to the Oracle home on the WEBHOST computers.

### 3.17 Applying the Patch to ORA-HOME1 and ORA-HOME2 on APPHOST1 and APPHOST2

1. Stop all components on APPHOST1 and APPHOST2.
2. Increase the `MaxPermSize` parameter as described in [Section 3.12.2, "Resolving Out-of-Memory Errors in the BPEL Runtime Console"](#).
3. Using the 10.1.3.3 Oracle Universal Installer, apply the patch to ORA-HOME1 and ORA-HOME2 on APPHOST1 and APPHOST2.

### 3.18 Undeploying Oracle Web Services Manager Applications on APPHOST1 and APPHOST2

Use the Application Server Control Console to undeploy the listed applications on APPHOST1 and APPHOST2:

**Table 3–2 Applications to undeploy**

Undeploy this application...	on these OC4J instances
core	Both OC4J_GTWY instances
coreman	Both OC4J_GTWY instances and one of the OC4J_WSM instances
policymanager	Both OC4J_GTWY instances
gateway	Both OC4J_WSM instances

1. Log in to the Application Server Control Console with the password set during installation.  
The Cluster Topology page appears.
2. Click the link in the Members list for the application server instance (APPHOST1 or APPHOST2).  
The Application Server page for the instance appears, listing the OC4J instances under the System Components list (for example, OC4J\_WSM).
3. Click the link for OC4J instance.  
The OC4J Instance page appears.
4. Click the Applications tab.  
The applications page for the OC4J instance appears. Click Expand All to list the applications deployed in that container.
5. Select the applications and click Undeploy.  
The Undeploy Application page appears, listing the applications selected for undeployment.
6. Select Yes.

## 3.19 Deploying the Oracle Enterprise Service Bus Repository Instance on APPHOST1 and APPHOST2

1. Update the `ORACLE_HOME/integration/esb/install/ant-tasks/esb_oc4j_install_props.xml` file with the values for your configuration (these values are those entered during the Oracle Enterprise Service Bus standalone installation). [Example 3-2](#) shows the contents of the file.
2. Set the environment by executing the `esbsetenv.sh` script, located in the `ORACLE_HOME/integration/esb/bin` directory.
3. Deploy the Oracle Enterprise Service Bus repository or runtime instance by executing:

```
ant -f $ORACLE_
HOME/integration/esb/install/ant-tasks/esboc4j.xml
```

---

**Note:** The ant script does not perform the RAC configuration in the `data-sources.xml` file. After the Ant script finishes executing, you must modify the `ORACLE_HOME/j2ee/oc4j_esbdt/config/data-sources.xml` file to configure the RAC. (In the path given, substitute `oc4j_esbdt` with the name of the OC4J container on your system, the directory in which the ESB repository was deployed using Ant scripts.)

Modify the connection pools `ESBPool` and `ESBAQJMSPool` to include the following:

```
<connection-factory
factory-class="oracle.jdbc.pool.OracleDataSource"
url="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(LOAD_
BALANCE=on)(ADDRESS=(PROTOCOL=tcp)(HOST=host1-vip.us.oracle.com)
PORT=1521))(ADDRESS=(PROTOCOL=tcp)(HOST=host2-vip)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=ORCL.us.oracle.com))"

user="oraesb" password="->pwdforOraesb">
```

---

4. Verify that the Oracle Enterprise Service Bus repository instance deployment was successful by accessing the Repository Instance Console at:

```
http://soainternal.mycompany.com:7777/esb
```

### Example 3-2 `esb_oc4j_install_props.xml`

```
?xml version="1.0"?>
<!-- $Header: esb_oc4j_install_props.xml 28-apr-2007.02:07:30 apatel Exp $ -->
<!-- Copyright (c) 2007, Oracle. All rights reserved.
NAME
    esb_oc4j_install_props.xml - Values to be used for deploying ESB on OC4J
    container
DESCRIPTION
    esb_oc4j_install_props.xml is imported in esboc4j.xml build file to deploy
    ESB (either repository or runtime) on OC4J container. Change the values of
    the properties in this file per your environment and then run ant -f ORACLE
    _HOME/integration/esb/install/ant-tasks/esboc4j.xml.
    The values of the properties you enter here are the ones you enter
    on Oracle Universal Installer (OUI) while installing Enterprise
    Service Bus (ESB) on OracleAS midtier using Advanced option.
NOTES
```

```

        <other useful comments, qualifications, etc.>
    MODIFIED    (MM/DD/YY)
    apatel      03/05/07 - Creation
-->
<project name="ESB Installation Properties" default="">
<!--
        OC4J container in which you want to deploy ESB
-->
<property name="home_container_v" value="OC4J_ESBDT"/>
<!--
        ESB component (runtime or repository) that you want to deploy on OC4J.
        Possible values: 'design' (for repository)
                        'runtime' (for runtime)
-->
<property name="esb_type_v" value="design"/>
<!--
        OC4J host hosting the repository
-->
<property name="ohs.host" value="soa.acme.com"/>
<!--
        Port of OC4J host hosting the repository
-->
<property name="ohs.port" value="7777"/>
<!--
        Username for connecting to oraesb schema
-->
<property name="db.user" value="oraesb"/>
<!--
        Password for connecting to oraesb schema
-->
<property name="db.password" value="oraesb"/>
<!--
        Database host where oraesb schema is installed
-->
<property name="db_host_v" value="stajo05-vip.us.oracle.com"/>
<!--
        Port of database host where oraesb schema is installed
-->
<property name="db_port_v" value="1521"/>
<!--
        Service name for database where oraesb schema is installed
-->
<property name="db_sid_v" value="ORCL SVC.mycompany.com"/>
<!--
        Value of AS Instance Name to which the OC4J instance
        belongs. The OC4J instance is the one specified in
        property 'home_container_v' in this file.
-->
<property name="ias_name_v" value="prodsoa1.stbee19.us.oracle.com"/>
<!--
        Value for 'AS Administrator Password'
-->
<property name="admin.server.password" value="welcome1"/>
<!--
        Database url for connecting to oraesb schema
        Sample value: jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(LOAD_
        BALANCE=on)(ADDRESS=(PROTOCOL=tcp)(HOST=mypc.acme.com)(PORT=1521)))(CONNECT_
        DATA=(SERVICE_NAME=orcl)))
-->
<property name="db.url" value="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(LOAD_

```

```

BALANCE=on) (ADDRESS=(PROTOCOL=tcp) (HOST=stajo05-vip.us.oracle.com) (PORT=1521)) (ADDRESS=(PROTOCOL=tcp) (HOST=stajo06-vip.us.oracle.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=ORCLSVCS.mycompany.com)) "/>
<!--
    If your computer is located behind a firewall
    you may need to route outgoing HTTP connections
    through a proxy server.
    Sample value: www-proxy.acme.com
-->
<property name="http.proxy.host" value="proxy.acme.com"/>
<!--
    HTTP proxy port
-->
<property name="http.proxy.port" value="80"/>
<!--
    Addresses for which proxy should be bypassed
    Sample value: "*acmecorp.com|localhost|mypc.us.oracle.com|*acme.com"
-->
<property name="http.non.proxy.hosts"
value="*acmecorp.com|localhost|mypc.us.oracle.com|*acme.com"/>
<!--
    Value of AS Instance Name.
    You can also get this value from $ORACLE_HOME/config/ias.properties
property 'IASname'
    Sample value: soahome.mypc.acme.com
-->
<property name="ias.name" value="prodsoal.stbee19.us.oracle.com"/>
<!--
    Value for OPMN request port.
    You can get this value from the following snippet in
    $ORACLE_HOME/opmn/conf/opmn.xml
    <notification-server>
    <port local="6101" remote="6201" request="6004"/>
    <ssl enabled="true" wallet-file="$ORACLE_HOME\opmn\conf\ssl.wlt\default"/>
    </notification-server>
-->
<property name="opmn.requestport" value="6003"/>
<!--
    Sample value: mypc.acme.com
-->
<property name="ias.virtual_host" value="stbee19.us.oracle.com"/>
</project>

```

## 3.20 Configuring Service Failover for the OC4J\_ESBBDT Instances

The failover scheme for the OC4J\_ESBBDT instances dictates that only one instance is up at any given time. If the single active instance fails, OPMN will start the other instance. Follow these steps on both OC4J\_ESBBDT instances to configure the failover:

1. Open the `ORACLE_HOME\opmn\conf\opmn.xml` file.
2. Modify the OC4J\_ESBBDT process as shown in bold:

```

<process-type id="OC4J_ESBBDT" module-id="OC4J" service-failover="1"
status="enabled">

```

3. Remove the numprocs entry:

```

<process-set id="default_group" numprocs="1"/>

```

4. Restart the instance by issuing these commands in `ORACLE_HOME\opmn\bin`:

```
opmnctl reload
opmnctl restartproc process-type=OC4J_ESBDT
```

## 3.21 Configuring Oracle Enterprise Service Bus for Singleton Adapters

If Oracle Enterprise Service Bus is deployed across a cluster, and an ESB flow is triggered by a singleton adapter (such as a file adapter), one, and only one instance of the clustered ESB should pick up the file and start one process. The ESB inbound endpoint property `clusterGroupId` enforces singleton behavior by adapters in a clustered environment. This feature is designed for endpoints, such as a file system, that do not natively support a solid locking mechanism, as does a SQL database.

This singleton control of adapters requires that the ESB and BPEL instances belong to the same Jgroup configuration, obtained from the `mcast-addr` and `mcast-port` values in the `ORACLE_HOME/bpel/system/config/jgroup-protocol.xml` file, as described in [Section 3.12, "Configuring the Cluster of BPEL Instances on APPHOST1 and APPHOST2."](#)

To configure this behavior, you assign a combination of J2EE Connector Architecture (JCA) endpoint activations to a specific cluster group (typically, activations toward the same non-transactional endpoint, such as the same directory). Only one activation can be active at any given time. For example:

Cluster 1, instance 1:

```
<service name="InboundServiceX" ...>
  ...
  <endpointProperties>
    <property name="clusterGroupId" value="cluster1"/>
  </endpointProperties>
</service>
```

Cluster1, instance 2:

```
<service name="InboundServiceX" ...>
  ...
  <endpointProperties>
    <property name="clusterGroupId" value="cluster1"/>
  </endpointProperties>
</service>
```

Cluster1, instance 3:

```
<service name="InboundServiceX" ...>
  ...
  <endpointProperties>
    <property name="clusterGroupId" value="cluster1"/>
  </endpointProperties>
</service>
```

[...]

In this configuration, all JCA adapter endpoint activations belonging to the same cluster group (in this case, cluster 1) will at any given time have only one activation active (the primary activation), and will be actively polling the endpoint (the file system). The others will be "hot standby", or secondary activations.

For example, if instance 2 is the primary activation and it stops, instance 1 and instance 3 will immediately detect this, and then instance 1 or instance 3 will resume the activation responsibility (that is, become the primary activation). If instance 2 is

restored to operation, it may re-assume the primary activation responsibility if instance 1 or instance 3 stops, and so on.

For more information, see "How to Add Endpoint Properties" in the *Oracle SOA Suite Developer's Guide*.

## 3.22 Configuring the Cluster of Oracle Enterprise Service Bus Runtime Instances on APPHOST1 and APPHOST2

---



---

**Note:** The cluster of Oracle Enterprise Service Bus instances must include instances of the runtime Server type only. The cluster must not include instances of the repository Server type.

---



---

In the Oracle Enterprise Service Bus runtime installation:

1. If the file exists, modify the clustering properties in `ORACLE_HOME/j2ee/OC4J_SOA/applications/esb-rt/META-INF/orion-application.xml` to uncomment the `cluster_name` property (for example, `cluster_name=esbcluster`) and the `property_name` property (for example, `<property name="primary_oc4j" value="false" />`).
2. Copy the clustering properties you uncommented from `ORACLE_HOME/j2ee/OC4J_SOA/applications/esb-rt/META-INF/orion-application.xml` to `ORACLE_HOME/j2ee/OC4J_SOA/application-deployments/esb-rt/orion-application.xml`. (If the `ORACLE_HOME/j2ee/OC4J_SOA/applications/esb-rt/META-INF/orion-application.xml` file does not exist, uncomment the properties described in step 1 in the `application-deployments/esb-rt/orion-application.xml` file).
3. Ensure that topics have been created by performing these steps in `sqlplus`:
  - a. `connect oraesb user / oraesb password;`
  - b. `select object_name from user_objects where object_name like 'AQ%';`  
 If if no rows are returned, the queues and/or topics are missing, and you must perform Step c.
  - c. Execute `ORACLE_HOME/integration/esb/sql/oracle/create_esb_topics.sql`.
4. Restart the server by issuing these commands:
 

```
opmnctl stopall
opmnctl startall
```

## 3.23 Configuring JNDIs for the Topic and Topic Connection Factory

Using Oracle Enterprise Manager 10g, follow these steps to configure JNDIs in the run time and both ESB repository instances. The JNDI Names created in this section are used to update the metadata in [Section 3.24, "Updating the Oracle Enterprise Service Bus Metadata"](#).

1. In the **Administration** tab, click **Expand All, Services, Enterprise Messaging Service**, then **Database Persistence**.  
The **Database Persistence** configuration page appears.
2. Click **Deploy**.
3. Navigate to the OC4J Admin instance's **Administration** tab.
4. Click **Expand All**.
5. Navigate to **Administration Tasks, Services, Enterprise Messaging Service**, then **Database Persistence**.
6. Click **Deploy**.  
The **Deploy Database Persistence Provider** screen appears.
7. Make the following entries and selections:  
**Resource Adapter Module Name:** `OracleOJMS`  
Select **Add a new resource provider to be used by this connector**  
**Resource Provider Name:** `esbRP`  
**Datasource JNDI Location:** `jdbc/esbaqdatasource`
8. Click **OK**.  
A confirmation page appears.
9. Click **Restart** and confirm your choice to restart when prompted. If errors occur, use the `opmnctl shutdown` and `opmnctl startall` commands to restart the default application.
10. On the **Resource Adapter** page for the OracleOJMS RA, in the **Connection Factories** tab, click **Create**.  
The **Create Connection Factory: Select Interface** screen appears.
11. Select `javax.jms.XATopicConnectionFactory` from the **Connection Factory Interface** drop-down list and click **Continue**.
12. The **Create Connection Factory** screen appears.
13. In the **JNDI Location** field, enter `OracleOJMS/XATCF`.
14. Click **Finish**.  
A confirmation message appears.
15. Create another connection factory by repeating steps 10-12, but substitute these values:  
Select `javax.jms.TopicConnectionFactory` from the **Connection Factory Interface** drop-down list.  
In the **JNDI Location** field, enter `OracleOJMS/TCF` and click **Finish**.
16. Click the **Administered Objects** tab and click **Create**.  
The **Create Administered Object** screen appears.
17. Select `oracle.j2ee.ra.jms.generic.AdminObjectTopicImpl` from the **Object Class** drop-down list and click **Continue**.
18. In the **JNDI Location** field, enter `ESBTopics`. Click **Finish**. In the **resourceProviderName** field, enter `esbRP`.

**19. Click Finish.**

A confirmation message appears.

## 3.24 Updating the Oracle Enterprise Service Bus Metadata

1. Navigate to the `ORACLE_HOME/integration/esb/bin` directory and issue this command:

Windows: **esbsetenv.bat**

UNIX: **esbsetenv.sh**

2. Create a file in the `ORACLE_HOME` directory called `esbparam.properties` with the key=value pairs in the example below, and the JNDI Names used in Section 3.23, "Configuring JNDIs for the Topic and Topic Connection Factory".

### Example 3-3 `esbparam.properties` file

```
DT_OC4J_HTTP_PORT=7777
DT_OC4J_HOST=soainternal.mycompany.com
PROP_NAME_DEFERRED_TOPIC_JNDI=ESBTopics/Topics/ESB_JAVA_DEFERRED
PROP_NAME_DEFERRED_TCF_JNDI=OracleOJMS/TCF
PROP_NAME_DEFERRED_XATCF_JNDI=OracleOJMS/XATCF
PROP_NAME_CONTROL_TOPIC_JNDI=ESBTopics/Topics/ESB_CONTROL
PROP_NAME_CONTROL_TCF_JNDI=OracleOJMS/XATCF
PROP_NAME_ERROR_TOPIC_JNDI=ESBTopics/Topics/ESB_ERROR
PROP_NAME_ERROR_TCF_JNDI=OracleOJMS/TCF
PROP_NAME_ERROR_XATCF_JNDI=OracleOJMS/XATCF
PROP_NAME_ERROR_RETRY_JNDI=ESBTopics/Topics/ESB_ERROR_RETRY
PROP_NAME_ERROR_RETRY_TCF_JNDI=OracleOJMS/XATCF
PROP_NAME_MONITOR_TOPIC_JNDI=ESBTopics/Topics/ESB_MONITOR
PROP_NAME_MONITOR_TCF_JNDI=OracleOJMS/TCF
PROP_NAME_INITIAL_CONTEXT_FACTORY=com.evermind.server.rmi.RMIInitialContextFactory
ACT_ID_RANGE=400
```

3. Issue this command to populate the `esb.parameter` table:

```
ant import-params -Dparamfile=esbparam.properties
```

### Example 3-4 `import` command

```
ant import-params -Dparamfile=$ORACLE_HOME/esbparam.properties -DDB_
URL=jdbc:oracle:thin:@//localhost:1521/ORCL -DDB_USER=oraesb -DDB_PASSWORD=oraesb
```

### Example 3-5 `export` command

```
ant export-params -DDB_URL=jdbc:oracle:thin:@//localhost:1521/ORCL -DDB_
USER=oraesb -DDB_PASSWORD=oraesb
```

4. On the ESB Console System screen (accessible at `http://soainternal.mycompany.com:7777/esb`, `http://APPHOST1:7777/esb`, `http://APPHOST2:7777/esb`), for each installation, update the topic and topic connection factory for asynchronous topics with these values:

**Topic:** `ESBTopics/Topics/ESB_JAVA_DEFERRED`

**Topic Connection Factory:** `OracleOJMS/XATCF`

## 3.25 Configuring the Slide Repository to use the Database as the Repository

Perform the steps in this section in all run time and repository instances.

1. Navigate to the `ORACLE_HOME/integration/esb/config` directory.
2. Make a copy of the `Domain_DB.xml` file, naming the copy `Domain.xml`.
3. Restart the server using these commands:

```
opmnctl stopall
opmnctl startall
```

## 3.26 Configuring the Firewall for the Application Tier

After you have installed all of the components on the Application Tier, you will be able to identify the port numbers that need to be opened on the firewall. This depends on the number of application server instances and types of components installed. In general, the process of configuring the firewall involves these steps:

1. For each installed instance, examine the `opmn.xml` file to determine the component types and their designated port ranges. See [Example 3-6](#) for examples of port assignments and ranges.
2. Determine the ports in use with the `netstat` command:

```
netstat -an
```

3. Configure the firewall to open only the ports in use.

### **Example 3-6 Oracle Application Server components and port ranges in the `opmn.xml` file**

```
<?xml version = '1.0' encoding = 'UTF-8'?>
<opmn xmlns="http://www.mycompany.com/ias-instance">
  <log path="$ORACLE_HOME/opmn/logs/opmn.log" comp="internal;ons;pm"
rotation-size="1500000"/>
  <debug path="$ORACLE_HOME/opmn/logs/opmn.dbg" comp="" rotation-size="1500000"/>
  <notification-server interface="ipv4">
    <port local="6104" remote="6204" request="6007"/>
    <ssl enabled="true" wallet-file="$ORACLE_HOME/opmn/conf/ssl.wlt/default"/>
  </notification-server>
  <process-manager>
    <process-modules>
    ...
    </process-modules>
    <ias-instance id="ohcoreidoid.stana17.mycompany.com"
name="ohcoreidoid.stana17.mycompany.com">
    ...
      <process-type id="IASPT" module-id="IASPT"
working-dir="/scratch/aime6/coreidoid/oh/iaspt/bin">
        <port id="ajp" range="7501-7600"/>
        <process-set id="IASPT" numprocs="1"/>
      </process-type>
    </ias-component>
    <ias-component id="ASG" status="enabled" id-matching="true">
    ...
      </module-data>
      <start timeout="600" retry="2"/>
      <stop timeout="120"/>
    </ias-component>
  </process-manager>
</opmn>
```

```

        <restart timeout="720" retry="2"/>
        <port id="default-web-site" range="8895" protocol="ajp"/>
        <port id="rmi" range="12401-12500"/>
        <port id="rmis" range="12701-12800"/>
        <port id="jms" range="12601-12700"/>
        <process-set id="default_group" numprocs="1"/>
    </process-type>
</process-type>
<process-type id="admin" module-id="OC4J" status="enabled">
    <module-data>
...
        <port id="default-web-site" range="12501-12600" protocol="ajp"/>
        <port id="rmi" range="12401-12500"/>
        <port id="rmis" range="12701-12800"/>
        <port id="jms" range="12601-12700"/>
        <process-set id="default_group" numprocs="1"/>
    </process-type>
</ias-component>
<ias-component id="soa_group" status="enabled">
    <process-type id="oc4j_soa" module-id="OC4J" status="enabled">
...
        <start timeout="600" retry="2"/>
        <stop timeout="120"/>
        <restart timeout="720" retry="2"/>
        <port id="default-web-site" range="12501-12600" protocol="ajp"/>
        <port id="rmi" range="12401-12500"/>
        <port id="rmis" range="12701-12800"/>
        <port id="jms" range="12601-12700"/>
        <process-set id="default_group" numprocs="1"/>
    </process-type>
</ias-component>
</ias-instance>
</process-manager>

</opmn>

```

Note that the AJP ports used by applications fall within the range 12501-12600. Ensure that all of the AJP ports used by OC4J applications are open on the firewall between the Web server and the application. If a port is not open, the following error occurs when access to the application from the Web tier is attempted (that is, when the URL `web host:port/application` is requested):

```
mod_oc4j: request to OC4J apphost1.mycompany.com:12501 failed:
Connect failed (errno=110)
```

This error creates an entry in a log file in the `ohs/logs` directory.

## 3.27 Deploying J2EE Applications

Follow the steps in this section to deploy applications. You can perform this step before or after configuring clusters.

### Deploying Applications with the Oracle Enterprise Manager 10g Application Server Control Console

1. Access the Application Server Control Console at:

**`http://soainternal.mycompany.com/em`**

The **Login** page appears.

2. Provide the password that was set during installation and click **Login**.  
The **OC4J:home** page appears.
3. Click the **Cluster Topology** link.  
The **Cluster Topology** page appears.
4. Identify in the **Members** list the OC4J instance in which you will deploy applications. Ensure that a green upward arrow appears in its **Status** column, indicating that it is running.

---

**Note:** You can deploy an application into multiple instances that belong to the same group. Instances in a group have the same name and password. For instructions on creating a group, see the *Oracle Application Server Administrator's Guide*, section titled "Using Application Server Control to Create and Manage Groups". If a group exists, you can scroll down to the **Groups** section to see the list of instances in the group. To deploy to the group, click the Group name and continue with Step 8.

---

5. If necessary, start the OC4J instance by clicking the **Select** checkbox at the beginning of the row and then clicking the **Start** button preceding the **Members** list.

The **Processing: Starting** screen appears with this message:

The selected topology members are being started.

The **Cluster Topology** screen appears with a message that the topology member was started.

6. Click the link for the OC4J instance for application deployment.  
The OC4J screen for the instance appears.
7. Click the **Applications** link.  
The **Applications** page for the instance appears.
8. Click **Deploy**.  
The **Deploy: Select Archive** screen appears.
9. Provide the location of the archive and click **Next**.  
The **Deploy: Application Attributes** screen appears.
10. Provide the application name and click **Next**.  
The **Deploy: Deployment Settings** screen appears.
11. (Optional) Perform deployment tasks or deployment plan editing, or save the current settings as a deployment plan.
12. Click **Deploy**.  
The **Processing: Deploy** screen appears with progress messages.

### Deploying Applications on the Command Line

1. Issue this command in APPHOST1\_ORACLE\_HOME\jdk\bin\java (the parameters are shown on separate lines for readability only):  

```
java -jar admin_client.jar uri admin ID admin password
```

```

-deploy -file full path -deploymentName app name
[-bindAllWebApps [Web site name]]
[-targetPath full path] [-parent app name]
[-deploymentDirectory full path]
[-iiopClientJar full path]

```

---

**Note:** Ideally, you should include the `-bindAllWebApps` subswitch to bind all Web modules within the EAR to the Web site through which they will be accessed. If no Web site is specified, modules will be bound to the default Web site.

---

The EAR file is deployed to the `ORACLE_HOME/j2ee/instance name/applications` directory by default. The deployed EAR file is also copied to this directory. In each successive deployment, this EAR file is overwritten.

### 3.28 Configuring Static Discovery to Eliminate Multicast Traffic (Optional)

If multicast traffic is a problem, you can configure the Web and Application Tier cluster for static discovery by modifying the `ORACLE_HOME\opmn\conf\opmn.xml` file after installation.

1. Locate the multicast entry:

```

<topology>
  <discover list="*225.0.0.1:8001"/>
  ...
</topology>

```

2. Replace the entry with a nodes list to specify static discovery instead:

```

<topology>
  <nodes
    list="apphost1:6200,apphost1:6200,apphost2:6200,apphost2:6200,webhost1:6200,webhost1:6200"/>
  </nodes>
</topology>

```

3. Issue this command in `ORACLE_HOME\opmn\bin`:

```
opmnctl reload
```

4. Verify that all nodes are present in the cluster by issuing this command in `ORACLE_HOME\opmn\bin`:

```
opmnctl @cluster status
```

---

**Note:** When APPHOST1 and APPHOST2 and WEBHOST1 and WEBHOST2 are in different subnets, you also need a gateway entry. See [Section 3.8, "Configuring the Cluster Gateways on WEBHOST1,2 and APPHOST1,2 \(Optional\)"](#) for more information.

---

### 3.29 Configuring Fast Connection Failover for the Real Application Clusters Database on APPHOST1 and APPHOST2

Fast Connection Failover provides failover for a JDBC connection to a 10g R1 or 10g R2 RAC database. Upon failure of a RAC node, Oracle Notification Service (ONS) detects

the failure and an SQL exception is thrown to application code. To enable Fast Connection Failover on APPHOST1 and APPHOST2:

1. Open the `ORACLE_HOME/opmn/conf/opmn.xml` file.
2. Add the RAC database hostname and remote port identifiers:

```
<notification-server>
  <port local="6100" remote="6200" request="6003"/>
  <ssl enabled="false" wallet-file="$ORACLE_HOME\opmn\conf\ssl.wlt\default"/>
  <topology>
    <nodelist="infradbhost1-vip.us.oracle.com:6200,infradbhost2-vip.us.oracle.com:6200"/>
    <discover list="*225.0.5.9:9999"/>
  </topology>
</notification-server>
```

3. Save and close the file.
4. Open the `ORACLE_HOME/j2ee/OC4J_SOA/config/data-sources.xml` file.
5. Add the RAC node information and enable Fast Connection Failover.

Ensure that the connection-factory class used by used by various connection pools in `OC4J_SOA` and `OC4J_ESBDT` is `oracle.jdbc.pool.OracleDataSource`. Also ensure that the `loginTimeout`, `connectionCachingEnabled`, and `fastConnectionFailoverEnabled` properties (shown in bold) are added for each connection pool.

```
<managed-data-source
  jndi-name="jdbc/TestDemoDS"
  description="Managed DataSource for TestDemoDS"
  connection-pool-name="connection_pool_name_for_OC4J_SOA_and_OC4J_ESBDT"
  name="TestDemoDS" />
<connection-pool
  name="TestDemoDS Connection Pool"
  min-connections="10"
  max-connections="30"
  inactivity-timeout="30"
  initial-limit="0"
  max-connect-attempts="10"
  connection-retry-interval="5">
  <connection-factory
    factory-class="oracle.jdbc.pool.OracleDataSource"
    user="system"
    password="welcome1"
    url="jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=ON)
      (ADDRESS=(PROTOCOL=TCP) (HOST=infradbhost1-V.mycompany.com) (PORT=1521))
      (ADDRESS=(PROTOCOL=TCP) (HOST=infradbhost2-V.mycompany.com) (PORT=1521))
      (CONNECT_DATA=(SERVICE_NAME=loon)))">
    <property name="loginTimeout" value="30"/>
    <property name="connectionCachingEnabled" value="true"/>
    <property name="fastConnectionFailoverEnabled" value="true"/>
  </connection-factory>
</connection-pool>
```

6. If you are using a RAC database as dehydration store, increase the `nonFatalConnectionMaxRetry` to 5 (from the default value of 2) in the `SOA_Oracle_Home\bpel\system\config\collaxa-config.xml` file. This setting ensures that BPEL performs sufficient connection retries in the event of RAC instance failover.

7. Save and close the file.
8. Issue this command in `ORACLE_HOME/opmn/bin`:

```
opmnctl reload
```

---

**Note:** Additional configuration is required on the data tier (see [Section 2.2, "Configuring Fast Connection Failover for the RAC Database on INFRADBHOST1-V and INFRADBHOST2-V"](#)).

---

### 3.30 Managing Oracle Application Server Component Connections

In order to ensure consistent availability of all services, ensure that the connection time out values for all Oracle Application Server components are set to a lower time out value than that on the firewall and Load Balancing Router. If the firewall or Load Balancing Router drops a connection without sending a TCP close notification message, then Oracle Application Server components will continue to try to use the connection when it is no longer available.

### 3.31 Configuring Network Communication

After the installation and configuration is complete, configure the network communication as described in this section. Table lists the ports open on each firewall.

Configure the Load Balancing Router to:

- Receive requests on `https://soa.mycompany.com`, port 443
- Balance requests with SSL acceleration to WEBHOST1, WEBHOST2 on port 7777

Configure the firewall for communication into DMZ1:

- `http://WEBHOST1.mycompany.com:7777`
- `http://WEBHOST2.mycompany.com:7777`
- ONS remote port 6200 on WEBHOST1 and WEBHOST2

Configure the firewall for communication into and out of DMZ2:

- `http://APPHOST1.mycompany.com` (J2EE with SOA components) AJP ports 12501-12510
- `http://APPHOST2.mycompany.com` (J2EE with SOA components) AJP ports 12501-12510
- ONS remote port 6200 for ORA\_HOME1 and 6300 for ORA\_HOME2 on APPHOST1 and APPHOST2

Configure the firewall for communication into DMZ3:

- INFRADBHOST1-V INFRADBHOST2-V database with listener on port 1521

**Table 3–3 Open ports between firewall zones**

Firewall Zones	Ports	Purpose
DMZ1 to DMZ2	12510-12510	WEBHOST1 and WEBHOST2, to access APPHOST1 and APPHOST2 AJP ports

**Table 3–3 (Cont.) Open ports between firewall zones**

Firewall Zones	Ports	Purpose
DMZ1 to DMZ2	6200, 6300	OPMN cluster gateway. This port should be the Oracle Notification Server (ONS) remote port 6200 for ORA_HOME1 and 6300 for ORA_HOME2 on APPHOST1 and APPHOST2.  The ports shown here are examples; the <code>ORACLE_HOME/opmn/conf/opmn.xml</code> file contains the actual ONS remote port assignments.
DMZ2 to DMZ1	6200, 6300	OPMN cluster gateway. This port should be the Oracle Notification Server (ONS) remote port 6200 for ORA_HOME1 and 6300 for ORA_HOME2 on APPHOST1 and APPHOST2.  The ports shown here are examples; the <code>ORACLE_HOME/opmn/conf/opmn.xml</code> file contains the actual ONS remote port assignments.
DMZ2 to DMZ1	7777	APPHOST1 and APPHOST2 loopback access to <code>soainternal.mycompany.com:7777</code>
DMZ2 to DMZ3	1521	Database access
DMZ2 to DMZ3	389, 636	Oracle Internet Directory server access
DMZ2 to DMZ3	6200	ONS remote port for Fast Connection Failover for RAC database
DMZ3 to DMZ2	6200	ONS remote port for Fast Connection Failover for RAC database

## 3.32 Configuring Application Authentication and Authorization

The tasks you have to perform depend on the authentication method you will use for mySOACompany. If you want user login sessions to persist after a failover event, you will need to use single sign-on.

### mySOACompany with JSSO and Oracle Internet Directory

Perform these tasks:

1. [Section 3.33, "Configuring the Cluster of Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 to use Oracle Internet Directory"](#)
2. [Section 3.34, "Configuring Java SSO"](#)

### mySOACompany with Oracle Single Sign-On

Perform these tasks:

1. "Steps to Use the Oracle Identity Management Security Provider" and "Settings for Authentication Method with Oracle Identity Management" in the Oracle Containers for J2EE Security Guide, Chapter 8.
2. [Section 3.33, "Configuring the Cluster of Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 to use Oracle Internet Directory"](#)
3. [Chapter 4, "Installing and Configuring Oracle Single Sign-On and Oracle Delegated Administration Services"](#)

### 3.33 Configuring the Cluster of Oracle BPEL Process Manager Instances on APPHOST1 and APPHOST2 to use Oracle Internet Directory

You will need to manually replicate certain OracleAS JAAS Provider settings from the Admin OC4J instance (created during installation) in the OC4J instances that use Oracle Internet Directory, created as described in this section.

For more information on pre- and post-installation requirements, see the *Oracle BPEL Process Manager Administrator's Guide*, Chapter 2, section titled "Configuring Identity Service 10.1.3.1.0 with 10.1.2 Oracle Internet Directory".

1. To configure Oracle Internet Directory for BPEL:

a. Navigate to the `ORACLE_HOME/bpel/system/services/install/ant-tasks` file.

b. Issue this command:

(Windows) **configure\_oid.bat**

(Linux) **configure\_oid.sh**

The syntax for Linux is:

```
sh ./configure_oid.sh oid_admin_user oid_admin_passwd oid_
nonssl_port ssl_enabled oid_realm_name seedRequiredUsers |
seedRequiredUsers oc4j_admin_user oc4j_admin_passwd oc4j_
container_name
```

For example:

```
sh ./configure_oid.sh orcladmin welcome 389 false us
seedRequiredUsers oc4jadmin welcome1 oc4j_soa
```

2. If you deployed BPEL or ESB in OC4J instances other the default (home) instance, copy the `ORACLE_HOME/j2ee/home/config/jazn.xml` file to the `ORACLE_HOME/j2ee/oc4j instance name/config/jazn.xml` file.

---

**Note:** The policies for an OC4J instance are specified by the provider in the `<jazn>` element in the `jazn.xml` file.

When you deploy an application that uses a different provider than the instance-level provider for the instance to which the application is deployed (`<jazn> config` in the `orion-application.xml` file differs from `<jazn> config` in the `jazn.xml` file, in that one is XML and the other is LDAP), the provider specified in the `orion-application.xml` file is used for identity store and authentication, while the provider specified in the `jazn.xml` file would be used for policies and authorization. This is not a recommended usage.

---



---

**Note:** The `hw_services` application should not be JSSO-enabled. If this application has been inadvertently SSO-enabled, deploying a process using `ant` on the command line will return the message "Successfully deployed the process..." although the deployment did not actually occur.

---

## 3.34 Configuring Java SSO

You will need to follow these steps on APPHOST1 and APPHOST2 to configure Java SSO for these applications in the OC4J\_Admin and OC4J\_SOA instances:

- `orabpel` (for Oracle BPEL Process Manager)
- `esb-dt` (for Oracle Enterprise Service Bus)
- `ccore` (for Oracle Web Services Manager)
- `ascontrol` (for Application Server Control Console)

Access the Application Server Control Console and perform these steps:

1. Click the link for the OC4J instance.

The OC4J: page appears.

2. Click Applications.

The applications are listed.

3. Click Expand All.

4. Select the javasso application and click Start.

This warning message appears:

```
Java SSO is not properly configured. This is often caused
when you are running multiple Java SSO applications in the
cluster that use different shared symmetric keys. Please
configure all Java SSO applications in the cluster to use the
same shared symmetric key. You can do this from Java SSO
Configuration page.
```

5. Click Configure Java SSO.

A confirmation message appears that the SSO configuration was completed and will take effect after the instances are restarted.

6. Click Restart.

A confirmation message appears.

7. Click Yes.

The instance is restarted. (If you are configuring the OC4J\_Admin instance, the system terminates your login session and you must log back in to continue the setup.)

8. Scroll to the Administration section and click Java SSO Configuration.

The Java SSO Configuration page appears.

9. Click Participating Applications.

The applications are listed.

10. Click the check box for the applications to be Java SSO enabled.

11. Click Apply.

12. Configure SSO for Oracle Web Services Manager:

- a. Navigate to `ORACLE_HOME/owsm/bin`.
- b. Edit the `ORACLE_HOME/owsm/bin/install.properties` file to set the `install.sso.support` property to `true`.

- c. Issue this command:

(Windows) **wsmadmin.bat deploy password console**

(Linux) **wsmadmin.sh deploy password console**

In the preceding commands, password is the OC4J administrator password.

---

**Note:** JSSO enablement is lost for applications added with a patch set when moving from 10.1.3.1 to 10.1.3.3

The JSSO enablement is provided by every JSSO partner application in `ORACLE_HOME/application-deployments/APPLICATION/orion-application.xml`. `APPLICATION` is the JSSO partner application directory. This declaration is required to signal a JSSO partner application:

```
<jazn provider="XML">
  <jazn-web-app auth-method="CUSTOM_AUTH" />
</jazn>
```

When a patchset is applied to `ascontrol` or another application, the application is redeployed and its `orion-application.xml` file replaced with a new one containing an entry resembling the following when JSSO is re-enabled:

```
<!-- This is commented out unless jazn-based SSO is used. The
installer or setup disables the comments if required. -->
<!-- %BEGINGOVERNSSO%
  <jazn provider="XML">
    <jazn-web-app auth-method="CUSTOM_AUTH" />
  </jazn>
%ENDGOVERNSSO% -->
```

which will become:

```
<jazn provider="XML">
  <jazn-web-app auth-method="CUSTOM_AUTH" />
</jazn>
```

---

### 3.35 Disabling the Worklist Application

The worklist application is a sample application that does not support Oracle Single Sign-On or Java SSO. If you do not want any applications that do not support single sign-on to be enabled in a production environment, follow these steps to disable the worklist application:

1. Open the `ORACLE_HOME/j2ee/home/config/default-web-site.xml` file.
2. Modify the file to comment out or delete this line:

```
<web-app application="hw_services" name="worklistapp"
load-on-startup="true" root="/integration/worklistapp" />
```
3. Restart the server.



---

---

# Installing and Configuring Oracle Single Sign-On and Oracle Delegated Administration Services

[Setting up the Load Balancing Router](#)

[Installing the Oracle HTTP Servers on WEBHOST3 and WEBHOST4](#)

[Installing and Configuring Oracle Single Sign-On](#)

[Reconfiguring Oracle Single Sign-On and Oracle Delegated Administration Services with the Oracle HTTP Servers](#)

[Configuring Session State Replication for the OC4J\\_SECURITY Instance](#)

[Disabling the Oracle HTTP Server on the Identity Management Tier](#)

## 4.1 Setting up the Load Balancing Router

Before installing the Identity Management components, you must set up the Load Balancing Router to listen for requests to `sso.mycompany.com` on port 443 (https), and balance the requests to the Oracle HTTP Servers' listening port 7777 (http). The Load Balancing Router should perform the protocol conversion, and must be configured for persistent HTTP sessions.

## 4.2 Installing the Oracle HTTP Servers on WEBHOST3 and WEBHOST4

Use the Advanced option of the Oracle Universal Installer to install the Oracle HTTP Server instances.

1. Ensure that the system, patch, kernel and other requirements are met as specified in the *Oracle Application Server Installation Guide* for the platform you are using. You can find this guide in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Copy the `staticports.ini` file from the `Disk1/stage/Response` directory to a local directory, such as `TMP`. You will provide the path to this file during installation.
3. Edit the `staticport.ini` file to assign the following custom port:

```
Oracle HTTP Server port = 7777
```

---

---

**Note:** Ensure that this port is not already in use by any other service on the computer. Using the Static Ports feature to install the Application Server Tier ensures that the port assignments will be consistent, if the ports are correctly specified in the file and the port is not already in use. If a port is incorrectly specified, the Oracle Universal Installer will assign the default port. If a port is already in use, the Oracle Universal Installer will select the next available port.

---

---

4. Start the Oracle Universal Installer as follows:  
On UNIX, issue this command: **runInstaller**  
On Windows, double-click **setup.exe**  
The **Oracle Application Server 10.1.3.1.0 Installation** screen appears.
5. Specify an installation directory for the instance.
6. Select **Advanced Installation Mode**.
7. Click **Install**.  
The **Select Installation Type** screen appears.
8. Select **Web Server** and click **Next**.  
The **Specify Port Configuration Options** screen appears.
9. Select **Manual**, specify the location of the `staticports.ini` file, and click **Next**.  
The **Specify Instance Name** screen appears.
10. Specify the instance name and click **Next**.  
The **Cluster Topology Configuration** screen appears.
11. Check the box to configure the instance to be part of an Oracle Application Server cluster.  
Specify the multicast address and port.

---

---

**Note:** An example of a multicast address is `225.0.0.20`, with port `8001`. The address and port should be the same for each computer in a farm. This multicast address used should not be in use by any application or Oracle AS Instance on the network that is not a part of the farm.

---

---

12. Click **Next**.  
The **Summary** Screen appears.
13. Click **Install**.  
The **Configuration Assistants** screen appears. When the configuration process completes, the **End of Installation** screen appears.
14. Click **Exit**, and then confirm your choice to exit.
15. Verify that the installation was successful by viewing the Oracle HTTP Server instances. Start a browser and access:  
`http://WEBHOST3.mycompany.com:7777` and

`http://WEBHOST4.mycompany.com:7777`

---

**Note:** The `ORACLE_HOME/install/readme.txt` file contains the URLs for the installation and a command to verify the status of processes.

---

### 4.2.1 Renaming Apache 2.0 Web Server Instances on WEBHOST3 and WEBHOST4

If you installed the Oracle HTTP Server based on Apache 2.0 from the Companion CD on WEBHOST3 and WEBHOST4, the instance name on both computers will be the default name assigned by the installer. In a cluster, you will want the instance names to be unique when you view the instances with the `opmnctl @cluster status` command. Follow these steps to rename an instance:

1. Stop the instance by issuing this command:

```
opmnctl stopall
```

2. Modify the `ORACLE_HOME/opmn/conf/opmn.xml` file to change the instance id and name:

```
<ias-instance id="AS-1  
  name="AS-1">
```

3. Replace both occurrences of the existing instance name (AS-1 in the example) with a unique instance name.
4. Save and close the file.
5. Restart the instance by issuing this command:

```
opmnctl startall
```

## 4.3 Installing and Configuring Oracle Single Sign-On

After the Data Tier is complete, follow these steps to install the Identity Management components (IDMHOST1 and IDMHOST2). configure Oracle Single Sign-On on IDMHOST1 and IDMHOST2.

### 4.3.1 Installing the First Identity Management Configuration

Follow these steps to install Identity Management on IDMHOST1:

1. Ensure that the system, patch, kernel and other requirements are met. These are listed in the *Oracle Application Server Quick Installation Guide* in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Copy the `staticport.ini` file from the `Disk1/stage/Response` directory to the Oracle home directory.
3. Edit the `staticport.ini` file and uncomment these entries:

```
Oracle HTTP Server port = 7777  
Oracle HTTP Server Listen port = 7777  
Application Server Control port = 1810
```

4. Start the Oracle Universal Installer as follows:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Welcome** screen appears.

5. Click **Next**.

On UNIX systems, the **Specify Inventory Directory and Credentials** screen appears.

6. Specify the directory you want to be the `oraInventory` directory and the operating system group that has permission to write to it.
7. Click **Next**.

On UNIX systems, a dialog appears, prompting you to run the `oraInstRoot.sh` script.

8. Open a window and run the script, following the prompts in the window.
9. Return to the Oracle Universal Installer screen and click **Next**.

The **Specify File Locations** screen appears with default locations for:

- The product files for the installation (Source)
- The name and path to an Oracle home (Destination)

---

---

**Note:** Ensure that the Oracle home directory path for IDMHOST1 is the same as the path to the Oracle home location of IDMHOST2. For example, if the path to the Oracle home on IDMHOST1 is:

```
/u01/app/oracle/product/AS10gSSO
```

then the path to the Oracle home on IDMHOST2 must be:

```
/u01/app/oracle/product/AS10gSSO
```

---

---

10. Specify the **Destination Name** and **Path**, if different from the default, and click **Next**.

The **Select a Product to Install** screen appears.

11. Select **OracleAS Infrastructure 10g** and click **Next**.

The **Select Installation Type** screen appears.

12. Select **Identity Management** and click **Next**.

The **Confirm Pre-Installation Requirements** screen appears.

13. Ensure that the requirements are met and click **Next**.

The **Select Configuration Options** screen appears.

14. Select **Oracle Single Sign-On, Oracle Delegated Administration Services, and High Availability and Replication**

The **Specify Port Configuration Options** screen appears.

15. Select **Manual**, specify the location of the `staticports.ini` file, and click **Next**.

The **Select High Availability Option** screen appears.

16. Select **OracleAS Cluster (Identity Management)** and click **Next**.

The **Create or Join an OracleAS Cluster (Identity Management)** screen appears.

17. Select **Create a New OracleAS Cluster** and click **Next**.

The **Specify New OracleAS Cluster Name** screen appears.

18. Complete the **New OracleAS Cluster Name** field with a name for the cluster and click **Next**.

---

**Note:** Write down the cluster name. You will need to provide it in subsequent installations of instances that will join the cluster.

---

The **Specify LDAP Virtual Host and Ports** screen appears.

19. Enter the name of the Load Balancing Router, the SSL port, and the non-SSL port.
20. Click **Next**.

The **Specify OID Login** screen appears.

21. Complete the fields and click **Next**.

The **Specify HTTP Load Balancer and Listen Ports** screen appears.

22. Enter the listen port of the HTTP Server and the host name and port of the HTTP Load Balancer, enabling the SSL option for the load balancer.
23. Click **Next**.

The **Specify Instance Name and ias\_admin Password** screen appears.

24. Specify the instance name and password and click **Next**.

The **Summary** screen appears.

25. Review the selections to ensure that they are correct (if they are not, click **Back** to modify selections on previous screens), and click **Install**.

The **Install** screen appears with a progress bar. On UNIX systems, a dialog opens prompting you to run the `root.sh` script.

26. Open a window and run the script.

The **Configuration Assistants** screen appears. Multiple configuration assistants are launched in succession; this process can be lengthy. When it completes, the **End of Installation** screen appears.

27. Click **Exit**, and then confirm your choice to exit.

### 4.3.2 Testing the Identity Management Components With Oracle Internet Directory

Follow these steps to test the first Identity Management installation with the Oracle Internet Directory:

1. Stop all components on `OIDHOST1`, using this command:

```
ORACLE_HOME/opmn/bin/opmnctl stopall
```

2. Ensure that all components on `OIDHOST2` are running:

```
ORACLE_HOME/opmn/bin/opmnctl status
```

3. Access the following URL:

```
https://IDMHOST1.mycompany.com/pls/orasso
```

4. Stop all components on `OIDHOST2`, using this command:

```
ORACLE_HOME/opmn/bin/opmnctl stopall
```

5. Ensure that all components on OIDHOST1 are running:  
`ORACLE_HOME/opmn/bin/opmnctl status`
6. Access the following URL:  
`https://IDMHOST2.mycompany.com/pls/orasso`

### 4.3.3 Installing the Second Identity Management Configuration

Follow these steps to install Identity Management on IDMHOST2:

1. Ensure that the system, patch, kernel and other requirements are met. These are listed in the *Oracle Application Server Quick Installation Guide* in the Oracle Application Server platform documentation library for the platform and version you are using.
2. Copy the `staticport.ini` file from the `Disk1/stage/Response` directory to the Oracle home directory.
3. Edit the `staticport.ini` file and uncomment these entries:

```
Oracle HTTP Server port = 7777
Oracle HTTP Server Listen port = 7777
Application Server Control port = 1810
```

4. Start the Oracle Universal Installer as follows:

On UNIX, issue this command: **runInstaller**

On Windows, double-click **setup.exe**

The **Welcome** screen appears.

5. Click **Next**.

On UNIX systems, the **Specify Inventory Directory and Credentials** screen appears.

6. Specify the directory you want to be the `oraInventory` directory and the operating system group that has permission to write to it.
7. Click **Next**.

On UNIX systems, a dialog appears, prompting you to run the `oraInstRoot.sh` script.

8. Open a window and run the script, following the prompts in the window.
9. Return to the Oracle Universal Installer screen and click **Next**.

The **Specify File Locations** screen appears with default locations for:

- The product files for the installation (Source)
- The name and path to an Oracle home (Destination)

---

---

**Note:** Ensure that the Oracle home directory path for IDMHOST1 is the same as the path to the Oracle home location of IDMHOST2. For example, if the path to the Oracle home on IDMHOST1 is:

```
/u01/app/oracle/product/AS10gSSO
```

then the path to the Oracle home on IDMHOST2 must be:

```
/u01/app/oracle/product/AS10gSSO
```

---

---

10. Specify the **Destination Name** and **Path**, if different from the default, and click **Next**.  
The **Select a Product to Install** screen appears.
11. Select **OracleAS Infrastructure 10g**, and click **Next**.  
The **Select Installation Type** screen appears.
12. Select **Identity Management** and click **Next**.  
The **Confirm Pre-Installation Requirements** screen appears.
13. Ensure that the requirements are met and click **Next**.  
The **Select Configuration Options** screen appears.
14. Select **Oracle Single Sign-On, Oracle Delegated Administration Services, and High Availability and Replication**.
15. Click **Next**.  
The **Select High Availability Option** screen appears.
16. Select **OracleAS Cluster (Identity Management)** and click **Next**.  
The **Create or Join an OracleAS Cluster (Identity Management)** screen appears.
17. Select **Join an Existing OracleAS Cluster** and click **Next**.  
The **Specify Existing OracleAS Cluster Name** screen appears.
18. Complete the **Existing OracleAS Cluster Name** field with the name you provided for the cluster when installing the first instance and click **Next**.  
The **Specify LDAP Virtual Host and Ports** screen appears.
19. Enter the name of the Load Balancing Router, the SSL port, and the non-SSL port.
20. Click **Next**.  
The **Specify OID Login** screen appears.
21. Complete the fields and click **Next**.  
The **Specify HTTP Load Balancer and Listen Ports** screen appears.
22. Enter the listen port of the HTTP Server and the host name and port of the HTTP Load Balancer, enabling the SSL option for the load balancer.
23. Click **Next**.  
The **Specify Instance Name and ias\_admin Password** screen appears.
24. Specify the instance name and password and click **Next**.  
The **Summary** screen appears.
25. Review the selections to ensure that they are correct (if they are not, click **Back** to modify selections on previous screens), and click **Install**.  
The **Install** screen appears with a progress bar. On UNIX systems, a dialog opens prompting you to run the `root.sh` script.
26. Open a window and run the script.  
The **Configuration Assistants** screen appears. Multiple configuration assistants are launched in succession; this process can be lengthy. When it completes, the **End of Installation** screen appears.
27. Click **Exit**, and then confirm your choice to exit.

28. Repeat the tests in [Section 4.3.2, "Testing the Identity Management Components With Oracle Internet Directory"](#).

## 4.4 Reconfiguring Oracle Single Sign-On and Oracle Delegated Administration Services with the Oracle HTTP Servers

Follow the steps in this section to reconfigure Oracle Single Sign-On and Oracle Delegated Administration Services.

1. Ensure that:
  - The Oracle Identity Management instance is started (status is Up).
  - You have the Oracle Internet Directory host and port numbers.
  - You have the password for cn=orcladmin, or another user who is a member of the iASAdmins group

2. Issue the command **ssocfg.sh** (UNIX) or (Windows) in *IDMHOST1\_ORACLE\_HOME/sso/bin* and *IDMHOST2\_ORACLE\_HOME/sso/bin*:

```
ssocfg.sh https sso.mycompany.com 443
```

In the preceding command, *sso.mycompany.com* is the VIP hostname for the Load Balancing Router.

3. On *IDMHOST1* and *IDMHOST2*, set the environment variables *ORACLE\_HOME* and *ORACLE\_SID*.
4. Issue the command **ssoreg.sh** (UNIX), or **ssoreg.bat** (Windows) in *IDMHOST1\_ORACLE\_HOME/sso/bin*:

```
ssoreg.sh -oracle_home_path $ORACLE_HOME  
-config_mod_osso TRUE  
-site_name sso.mycompany.com:443  
-remote_midtier  
-config_file $ORACLE_HOME/Apache/Apache/conf/osso/myosso.conf  
-mod_osso_url https://sso.mycompany.com:443
```

In the example, *myossof.conf* is the name of the resulting obfuscated osso configuration file created.

5. Copy the *myosso.conf* file to *WEBHOST3\_ORACLE\_HOME/Apache/Apache/conf/osso* and *WEBHOST4\_ORACLE\_HOME/Apache/Apache/conf/osso*.
6. Configure *mod\_osso* by following the instructions for the Oracle HTTP Server version in use:

**Release 3 (10.1.3):**

- a. Issue this command on *WEBHOST3* and *WEBHOST4*:

```
(UNIX) ORACLE_HOME/Apache/Apache/bin/osso1013 config_file
```

```
(Windows) perl ORACLE_HOME/Apache/Apache/bin/osso1013  
config_file
```

**Release 3 (10.1.2):**

- a. Copy the obfuscated osso configuration file created in Step 4 to the **ORACLE\_HOME/Apache/Apache/conf/osso** directory in WEBHOST3 and WEBHOST4:
- b. Modify the `ORACLE_HOME/Apache/Apache/conf/httpd.conf` file by uncommenting the `Include mod_osso.conf` directive.
- c. Modify the `ORACLE_HOME/Apache/Apache/conf/mod_osso.conf` file to add this directive:

```
OssosConfigFile $ORACLE_HOME/Apache/Apache/conf/osso/osso.conf
```

7. Copy the `IDMHOST1_ORACLE_HOME/sso/conf/sso_apache.conf` file to WEBHOST3.
8. Modify the `WEBHOST3_ORACLE_HOME/Apache/Apache/conf/httpd.conf` file to add this directive:

```
Include sso_apache.conf
```

9. Modify the `sso_apache.conf` file on WEBHOST3 to enable the SSL section and comment out the rewrite section (only the section shown in the example is enabled).

```
<IfDefine SSL>
  Oc4jExtractSSL on
  <Location /sso>
    SSLOptions +ExportCertData +StdEnvVars
  </Location>
</IfDefine>
```

10. Copy the `sso_apache.conf` file from WEBHOST3 to WEBHOST4.
11. Modify the `WEBHOST4_ORACLE_HOME/Apache/Apache/conf/httpd.conf` file to add this directive:

```
Include sso_apache.conf
```

12. Use these commands to identify the AJP port on IDMHOST1 and IDMHOST2:

```
IDMHOST1_ORACLE_HOME/opmn/bin/opmnctl status -l
```

```
IDMHOST2_ORACLE_HOME/opmn/bin/opmnctl status -l
```

13. Modify the `WEBHOST3_ORACLE_HOME/Apache/Apache/conf/mod_oc4j.conf` and `WEBHOST4_ORACLE_HOME/Apache/Apache/conf/mod_oc4j.conf` files by substituting the port values obtained in Step 21 for *AJP port 1* and *AJP port 2* in the `Oc4jMount` directives). This configuration directs Oracle Single Sign-On and Oracle Delegated Administration Services requests to the identity management server using the AJP protocol.

```
<IfModule mod_oc4j.c>
...
Oc4jMount /oiddas ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /oiddas/* ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /sso ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /sso/* ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /ssohelp ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /ssohelp/* ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /pls ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
Oc4jMount /pls/* ajp13://IDMHOST1:AJP port1, IDMHOST2:AJP port2
...
</IfModule>
```

14. Configure Oracle Delegated Administration Services by adding the following to `WEBHOST3_ORACLE_HOME/Apache/Apache/conf/mod_osso.conf`:

```
<IfModule mod_osso.c>
# for oiddas protected region
<Location /oiddas/ui/oracle/ldap/das>
    require valid-user
    AuthType Basic
</Location>
</IfModule>
<IfModule mod_alias.c>
# Define the alias which maps the "/uixi/" URI to
# the current version of the UIX installables
Alias /uixi/ "ORACLE_HOME/uix/cabo/"
# Turn on browser caching for the UIX installables
<Location /uixi>
# Use mod_headers to set the cache-control header
    Header set cache-control "Public"
# Use mod_expires to set the expires header to some
# date in the distant future
    ExpiresActive on
    ExpiresDefault "access plus 364 days"
</Location>
</IfModule>
```

15. Copy `WEBHOST3_ORACLE_HOME/Apache/Apache/conf/mod_osso.conf` to `WEBHOST4_ORACLE_HOME/Apache/Apache/conf/`, changing the `ORACLE_HOME` value in `Alias /uixi/ "ORACLE_HOME/uix/cabo/"` to specify `WEBHOST4_ORACLE_HOME`.
16. Configure the Oracle HTTP Server with the Load Balancing Router by adding the following to `WEBHOST3_ORACLE_HOME/Apache/Apache/conf/httpd.conf`:

- a. Add the `LoadModule certheaders_module` directive for the appropriate platform.

- b. UNIX Apache 1.3:

```
LoadModule certheaders_module libexec/mod_certheaders.so
```

UNIX Apache 2.0; use this directive if you plan to use Apache 2.0 on UNIX:

```
LoadModule certheaders_module modules/mod_certheaders.so
```

Windows:

```
LoadModule certheaders_module modules/ApacheModuleCertHeaders.dll
```

- c. Add the following lines to create a `NameVirtualHost` directive and a `VirtualHost` container for `sso.mycompany.com` and port 443.

Apache 1.3:

```
NameVirtualHost *:7777
<VirtualHost *:7777>
    ServerName sso.mycompany.com
    Port 443
    ServerAdmin you@your.address
    RewriteEngine On
    RewriteOptions inherit
    SimulateHttps On
```

```

</VirtualHost>

Apache 2.0:

NameVirtualHost *:7777
<VirtualHost *:7777>
    ServerName sso.mycompany.com:443
    ServerAdmin you@your.address
    RewriteEngine On
    RewriteOptions inherit
    SimulateHttps On
</VirtualHost>

```

---

**Notes:** The `LoadModule` directives (in particular, the `LoadModule rewrite_module` directive) must appear in the `httpd.conf` file at a location preceding the `VirtualHost` directives. The server must load all modules before it can execute the directives in the `VirtualHost` container.

It is a good idea to create the `VirtualHost` directives at the end of the `httpd.conf` file.

---

17. Copy `WEBHOST3_ORACLE_HOME/Oracle/Httpd/conf/httpd.conf` to `WEBHOST4_ORACLE_HOME/Oracle/Httpd/conf/`.
18. Restart the Oracle HTTP Server.

## 4.5 Testing the Identity Management Tier Components

After both Identity Management configurations are complete, test the configurations as follows:

1. Stop all components on `IDMHOST1`, using this command:
 

```
ORACLE_HOME/opmn/bin/opmnctl stopall
```
2. Ensure that all components on `IDMHOST2` are running, using this command:
 

```
ORACLE_HOME/opmn/bin/opmnctl status
```
3. Access the following URLs from two browsers:
 

```
https://sso.mycompany.com/pls/orasso
```

```
https://sso.mycompany.com/oiddas
```
4. Start all components from `IDMHOST1`, using this command:
 

```
ORACLE_HOME/opmn/bin/opmnctl startall
```
5. Stop all components on `IDMHOST2`, using this command:
 

```
ORACLE_HOME/opmn/bin/opmnctl stopall
```
6. Ensure that the login session is still valid for the `orasso` and `oiddas` logins.

## 4.6 Configuring Session State Replication for the OC4J\_SECURITY Instance

1. Access the Application Server Control Console at:

**http://mycompany.com:8888/em**

A login dialog opens.

2. Provide the user name and password that was set during installation and click **Login**.

The **Farm** page appears.

3. Select the application server instance.

A login dialog opens.

4. Provide the user name and password that was set during installation and click **OK**.

5. Select the OC4J\_SECURITY OC4J instance.

The OC4J\_SECURITY page appears.

6. Click **Administration**.

7. Click **Replication Properties**.

8. Check the **Replicate session state** box and enter values for Multicast Host and Multicast Port.

9. Click **Apply**.

10. Restart the OC4J\_SECURITY instance.

## 4.7 Disabling the Oracle HTTP Server on the Identity Management Tier

Follow these instructions on IDMHOST1 and IDMHOST2 to disable the Oracle HTTP Server on the Identity Management tier.

1. Edit the *ORACLE\_HOME*/opmn/bin/opmn.xml file to change the Oracle HTTP Server status to disabled, as shown in bold.

```
<ias-component id="HTTP_Server" status="disabled" >
  <process-type id="HTTP_Server" module-id="OHS">
    <module-data>
      ...
    </module-data>
  </process-type>
</ias-component>
```

2. Issue this command in *ORACLE\_HOME*/opmn/bin:

```
opmnctl stopall
```

3. Issue this command in *ORACLE\_HOME*/opmn/bin:

```
opmnctl startall
```

---

# Maintaining the SOA Suite

[Managing the SOA Suite](#)

[Enabling Disaster Recovery](#)

## 5.1 Managing the SOA Suite

Common administration operations are listed in [Table 5–1](#). You can monitor and manage the system using consoles or command line tools.

**Table 5–1 System administration tasks, tools, and related documentation**

Task or operation	Tool	Where documented
Access the Application Server Control Console	Application Server Control Console	<i>Oracle Application Server Administrator's Guide</i>
Start and stop Oracle Application Server	Application Server Control Console	<i>Oracle Application Server Administrator's Guide</i>
Create and delete OC4J instances	Application Server Control Console	<i>Oracle Application Server Administrator's Guide</i>
List and view log files	Application Server Control Console	<i>Oracle Application Server Administrator's Guide</i>
Back up and restore instances	Command line	<i>Oracle Application Server Administrator's Guide</i>
Change hostname, domain name, or IP address	Command line	<i>Oracle Application Server Administrator's Guide</i>
Manage wallets and Certificate Revocation Lists	Command line	<i>Oracle Application Server Administrator's Guide</i>
Start and stop the BPEL Process Manager server	Command line	<i>Oracle Application Server Administrator's Guide</i>
Manage, administer, and debug processes deployed to Oracle BPEL server	Oracle BPEL Console	<i>Oracle BPEL Process Manager Quick Start Guide</i>
Deploy Oracle Web Services Manager components	Web Services Manager Control Console	<i>Oracle Web Services Manager Deployment Guide</i>

## 5.2 Enabling Disaster Recovery

For recommendations and instructions on enabling disaster recovery, see the *Oracle Application Server High Availability Guide*



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