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1

About Deployment Options

This guide provides procedures for additional optional deployment options. Use the procedures in this guide only after you have completed an initial installation and configuration of Oracle Enterprise Performance Management System products.

Check the Oracle Documentation Library (http://www.oracle.com/technology/documentation/epm.html) on Oracle® Technology Network to see whether an updated version of this guide is available.
Scaling EPM System Products

Most Oracle Enterprise Performance Management System components support clustering in active-active configurations to remove single points of failure from the architecture, maintain consistent performance through load balancing, or both.

When you are deploying Java web applications on a machine other than the machine hosting Oracle Hyperion Foundation Services, WebLogic Server Administration Server must be running on the Foundation Services host machine. If you are deploying on the same machine as Foundation Services, WebLogic Server Administration Server does not need to be running.

Clustering Java Web Applications

This section assumes that you are familiar with WebLogic administration and clustering. If you are unfamiliar with these tasks, Oracle urges you to seek technical assistance before attempting to cluster an Oracle Enterprise Performance Management System Java web application.

Prerequisites

Note:
The information in this section assumes that you have installed your Java web applications on each node to be included in the cluster.

Complete these tasks before setting up a cluster for an EPM System Java web application:

- When scaling Oracle Hyperion Foundation Services, you must create a new schema using RCU and edit `RCUSchema.properties` on each machine in the deployment. For information, see "Creating Infrastructure Schemas Using Repository Creation Utility" and "Updating RCU Schema Properties" in the *Oracle Enterprise Performance Management System Installation and Configuration Guide*.

- When you are deploying on a machine other than the machine hosting Foundation Services, WebLogic Server Administration Server must be running on the Foundation Services host machine. If you are deploying on the same machine as Foundation Services, WebLogic Server Administration Server does not need to be running.

- Enable either session persistence or sticky sessions (which direct all requests for a specific session to the same server) on the load balancer.

- Install the EPM System product on each node that the cluster will include. Install to the same file system location on each machine. Using the same file system path on each physical machine in a cluster is important so that these environment
variables can be set once for the entire cluster, rather than set and customized for each node in the cluster:

All OS—CLASSPATH and PATH

Clustering Java Web Applications Using EPM System Configurator

You can cluster EPM System Java web applications during configuration with EPM System Configurator. Use the following general configuration sequence. This procedure assumes that the Oracle HTTP Server installed by EPM System Installer is the logical host.

Note:

When Oracle Hyperion Profitability and Cost Management is scaled within a clustered environment, each module within the Profitability enterprise application must be targeted to all of the servers within the Profitability cluster.

To cluster EPM System Java web applications during configuration with EPM System Configurator:

1. Install EPM System Java web applications on each machine in your environment.
2. Configure the Java web application on the first machine, selecting Deploy to Application Server on the EPM System Configurator Task Selection page.
   During deployment, EPM System Configurator creates a cluster for each managed server in WebLogic.
3. Configure the Java web application on the next machine, selecting Deploy to Application Server on the EPM System Configurator Task Selection page.
   During deployment, EPM System Configurator adds the server to the cluster in WebLogic.
   Repeat this step for any additional machines in the deployment.

Considerations about clustering Java web applications:

- EPM System Configurator configures a cluster for each managed server.
- You should have only one cluster for each EPM System product. Note that EPM System Configurator creates a cluster for each managed server.

Scaling Out a Single Managed Server

To scale out the single managed server on subsequent machines:

1. Using EPM System Installer, install the same set of Java web applications on any additional machines in the environment. Note that you cannot add or remove Java web applications when you scale out.
2. Run EPM System Configurator from each machine to which you are scaling out.
3. On the Task Selection panel under Hyperion Foundation, select **Scale out single managed server on this machine**.

   The **Scale out single managed server on this machine** option is only available when the following are true:
   - The WebLogic Administration Server is not installed on the current machine.
   - The single managed server is deployed on the WebLogic Administration Server.
   - The single managed server is not already scaled out on the machine.

4. Click **Next** to scale out the server.

When scaling Foundation Services, you must create a new schema using RCU and **edit RCUSchema.properties** on each machine in the deployment. For information, see "Creating Infrastructure Schemas Using Repository Creation Utility" and "Updating RCU Schema Properties" in the *Oracle Enterprise Performance Management System Installation and Configuration Guide*.

### Clustering Financial Management Servers

The following procedure is an overview of the recommended process for adding servers to the Oracle Hyperion Financial Management environment, defining clusters, and adding servers to the clusters.

To cluster servers in your Financial Management environment:

1. After you install Financial Management on a new server or servers, run EPM System Configurator on all new servers and select the **Configure Server** task and the **Configure Database** task.

2. Run EPM System Configurator on any one application server and select the **Configure Application Clusters** task to define clusters and to add servers to or remove servers from clusters.

3. Restart the Oracle Hyperion Foundation Services Java web application and the web server.

4. In Oracle Hyperion Enterprise Performance Management Workspace, register each application against the preferred cluster.

### Clustering Data Management

This section discusses clustering Data Management product components outside EPM System Configurator. See **Clustering Java Web Applications Using EPM System Configurator** for information about clustering Oracle Hyperion Financial Data Quality Management, Enterprise Edition.

**Data Relationship Management Clusters**

You can cluster Oracle Data Relationship Management web applications with either Oracle HTTP Server or third-party load balancers. For instructions on clustering with Oracle HTTP Server, see "Configuring Load Balancing for Data Relationship Management Web Applications" in the *Oracle Data Relationship Management Installation Guide*.  

---

Chapter 2

*Clustering Financial Management Servers*
With Data Relationship Management installed in a clustered database environment, you can select **Generate scripts to be run by a database administrator** when creating a database from the Repository Wizard in the Data Relationship Management Configuration Console. Two scripts are generated: one for creating the schema owner, or database, and one for creating the database schema objects. For instructions on clustering the Data Relationship Management repository, see the documentation for the database software being used.

You cannot cluster Data Relationship Management Servers.

### Configuring Essbase Clusters

This section discusses active-active and active-passive clustering of Oracle Essbase Server. For information about clustering Oracle Essbase Administration Services Java web application and Oracle Hyperion Provider Services Java web application, see [Clustering Java Web Applications Using EPM System Configurator](#).

Active-passive clustering (Windows): On Windows, Oracle recommends using Microsoft Cluster Services. This is because NTFS is not a clustered file system and CIFS-based file systems can have a negative impact on Essbase performance. To configure active-passive Essbase Server clusters using Microsoft Cluster Service, see [Configuring Active-Passive Essbase Clusters (Windows)](#).

Active-active clustering: You can configure active-active Essbase clusters using Provider Services. Active-active Essbase clusters support high availability and load balancing. An active-active Essbase cluster supports read-only operations on the databases and should be used only for reporting. Because active-active Essbase clusters do not support data write-back or outline modification, and they do not manage database replication tasks such as synchronizing the changes in one database across all databases in the cluster, they do not support Oracle Hyperion Planning. When Planning is configured to use Essbase in cluster mode as a data source, it does not support the ability to launch business rules with Oracle Hyperion Calculation Manager as the rules engine. See [Configuring Active-Active Essbase Clusters](#).

You can implement active-passive failover using EPM System Configurator, or active-active failover using Provider Services, but not both.

<table>
<thead>
<tr>
<th>Capability</th>
<th>Active-Passive (Windows)</th>
<th>Active-Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write-back</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Failover</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Load balancing</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>High availability</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Configuring Active-Passive Essbase Clusters (Windows)

Use Microsoft Cluster Service to set up an active-passive cluster in Essbase.

First, configure Essbase, then configure Microsoft Cluster Service.

To configure Essbase so that failover can be managed by an external failover mechanism:
1. On the first machine (Node1), use EPM System Configurator to set up the first Essbase instance in the cluster:
   
   For **Essbase Cluster Name**, specify the name for the cluster.

2. On the second machine (Node2), use EPM System Configurator to make this Essbase Server join the cluster you created on the first machine:
   
   - On the **Configure Essbase Server** page, for **Full path to application location (ARBORPATH)**, the location must match the location you specified on the first machine in the cluster.
   
   - Click **Assign to Existing Cluster**, select the cluster, and then click **OK** to make this Essbase Server join the cluster you created on the first machine.

   During cluster setup on the second machine, EPM System Configurator updates essbase.cfg (in ARBORPATH/bin) to enable **FAILOVERMODE** setting.

3. Open ARBORPATH/bin/essbase.cfg on the shared drive and ensure that:
   
   - **FAILOVERMODE** is set to **TRUE**
   
   - **ESSBASESERVERHOSTNAME** is set to the virtual hostname

4. Configure the Virtual IP.

   Microsoft Cluster Service requires that virtual IPs are configured in the hardware cluster for binding to failover processes. Because Essbase does not support VIP binding directly, this has to be done indirectly:

   a. Update the Oracle Hyperion Shared Services Registry to have the Essbase **HOST** property point to the VIP. Run the following command three times, once for each Essbase instance and once for the cluster:

   ```
   epmsys_registry.bat updateproperty #<guid>/@host<Virtual hostname>
   ```

   where \texttt{GUID} is the unique ID of each Essbase instance in the cluster (for example, \texttt{essbasecluster-inst1} and \texttt{essbasecluster-inst2}), and the unique ID of the cluster you defined, for example \texttt{EssbaseCluster-1}.

   b. Update the **hosts** file to ensure that the VIP hostname is the first name that comes up for name resolution on the machine, or that it is appropriately aliased to the primary physical IP on the box.

   Perform this task on both nodes in the cluster.

5. Set up OPMN as the service to be managed by Microsoft Cluster Service. See [Configuring Microsoft Cluster Service](#).

   Essbase is not directly managed by Microsoft Cluster Service; it is already managed by OPMN, which starts, stops, and restarts the Essbase Agent process on the local node. Essbase application processes are not managed by OPMN and therefore are not automatically started up and shut down. These server processes are managed by the Essbase Agent.

6. Optionally, create start, stop, and check status scripts for Essbase processes.

   Because Essbase is not managed directly by Microsoft Cluster Service but rather by OPMN, there may be a slight time delay during which OPMN cannot stop Essbase gracefully.

   There is logic built into OPMN so that a failure to bring down the Essbase Agent normally causes OPMN to abortively stop it. Once the Essbase Agent is
terminated, there is also logic in Essbase Servers while running in failover mode to terminate themselves within the lease expiration window (<= 20 seconds, by default).

This is important to know because there may be a scenario where Microsoft Cluster Service stops OPMN, which in turn stops the Essbase Agent, but there are Essbase applications still running. From a cluster services perspective, however, a failover can occur and OPMN can come up on the standby node. OPMN could also bring up the Essbase Agent on the standby node, but there may be server processes that do not start unless they have all terminated on the source node.

You can write custom status check scripts to alleviate this problem. For example, you could write custom status check scripts that could run as a post-STOP operation of OPMN to ensure that no Essbase Server processes are running after a certain time, for example, 20 seconds.

There are no client-side changes required.

Because Essbase Server is configured in FAILOVERMODE, it publishes active node information to the Shared Services Registry database, which stores Essbase high availability state-management tables.

Both Provider Services and the Shared Services Registry API have built-in logic to determine the active Essbase Server by querying the Essbase high availability state-management tables.

**Configuring Microsoft Cluster Service**

Prerequisites to configure Microsoft Cluster Service:

- Static IP address for Node1 and Node2
- IP address for the cluster
- Virtual hostname aliased to the physical IP of the nodes
- Cluster nodes exist as an object in AD
- Domain service account that will be used to manage the service
- Quorum disk available for Microsoft Cluster Service configuration
- Shared drive available to both cluster nodes

To configure Microsoft Cluster Service:

1. In the Microsoft Cluster Service Cluster Administrator (in the Microsoft cluster), select **Configure Application** to configure OPMN as a shared resource to be managed by Microsoft Cluster Service.

2. Create a generic service.

3. Configure the generic service with the service name. (Use the same service name configured on the cluster nodes.)

   For example, ensure that the OPMN service is configured on each node of the cluster.

4. For ease of manageability, move the shared disk and the configured service to a new group.
Clustering Essbase with Oracle Process Manager and Notification (OPMN) Server

Oracle Process Manager and Notification server (OPMN) enables you to monitor and control the Essbase Agent process. You add Essbase Agent information to opmn.xml to enable OPMN to start, stop, and restart the agent using the OPMN command line interface. OPMN can automatically restart the Essbase Agent when it becomes unresponsive, terminates unexpectedly, or becomes unreachable as determined by ping and notification operations. Additionally, you can use the failover functionality available in OPMN to provide high availability of Essbase clusters.

The following table describes an overview of the process of installing, configuring, and managing Essbase with OPMN.

Table 2-2  Installing, configuring, and managing Essbase with OPMN

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Oracle Enterprise Performance Management System products, including Essbase. Install Essbase locally on each node. During installation, EPM System Installer also installs OPMN on the Essbase Server machine.</td>
<td>&quot;Installing EPM System Products&quot; in the Oracle Enterprise Performance Management System Installation and Configuration Guide</td>
</tr>
</tbody>
</table>

**Note:**

Oracle recommends that the Shared Services Registry database be on a different machine than Essbase.
Table 2-2  (Cont.) Installing, configuring, and managing Essbase with OPMN

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure EPM System products, including Essbase. By default EPM System Configurator sets up Essbase to be managed by OPMN. If you are implementing Essbase clustering (active-passive only), during configuration with EPM System Configurator, do the following:</td>
<td>&quot;Configuring EPM System Products&quot; in the Oracle Enterprise Performance Management System Installation and Configuration Guide</td>
</tr>
<tr>
<td>1. On the first machine, use EPM System Configurator to set up the cluster:</td>
<td></td>
</tr>
<tr>
<td>• On the <strong>Configure Essbase Server</strong> page, for <strong>Full path to application location (ARBORPATH)</strong>, the location you specify must be a shared drive. The location must reside on a file system that is reachable by all Essbase servers in the cluster.</td>
<td></td>
</tr>
<tr>
<td>• For <strong>Essbase Cluster Name</strong>, specify the name for the cluster.</td>
<td></td>
</tr>
<tr>
<td>2. On the second machine, use EPM System Configurator to make this Essbase Server join the cluster you created on the first machine:</td>
<td></td>
</tr>
<tr>
<td>• On the <strong>Configure Essbase Server</strong> page, for <strong>Full path to application location (ARBORPATH)</strong>, the location must match the location you specified on the first machine in the cluster.</td>
<td></td>
</tr>
<tr>
<td>• Click <strong>Assign to Existing Cluster</strong>, select the cluster, and then click <strong>OK</strong> to make this Essbase Server join the cluster you created on the first machine.</td>
<td></td>
</tr>
<tr>
<td>During cluster setup on the second machine, EPM System Configurator updates essbase.cfg (in ARBORPATH/bin) to enable FAILEDMODE setting.</td>
<td></td>
</tr>
<tr>
<td>If you set up an active-passive Essbase cluster using EPM System Configurator, you must perform additional steps to set up Essbase failover on both nodes of the cluster.</td>
<td>Editing OPMN.XML for Active-Passive Essbase Clusters</td>
</tr>
<tr>
<td>Optionally, learn more about OPMN service failover and the required elements and attributes in opmn.xml for configuring Essbase for failover.</td>
<td>OPMN Service Failover for Essbase Server</td>
</tr>
<tr>
<td>Start Essbase using OPMN.</td>
<td></td>
</tr>
<tr>
<td>Diagnose problems by reviewing the OPMN logs.</td>
<td></td>
</tr>
</tbody>
</table>

"Starting and Stopping EPM System Products" in the Oracle Enterprise Performance Management System Installation and Configuration Guide

The "Essbase" chapter of Oracle Enterprise Performance Management System Installation and Configuration Troubleshooting Guide
Managing Essbase using OPMN, which enables you to monitor and control the Essbase Agent process. “Managing Essbase Using OPMN” in Oracle Essbase Database Administrator’s Guide

Editing OPMN.XML for Active-Passive Essbase Clusters

If you set up an active-passive Essbase cluster using EPM System Configurator, you must perform additional steps to set up Essbase failover on both cluster nodes.

To complete the setup of the Essbase active-passive cluster:

1. Update `/config/OPMN/opmn/opmn.xml` to specify the OPMN service failover network topology. In the `<notification-server interface>` section, add the `<topology>` section. For example:

   `<notification-server interface="any">`
   `<ipaddr remote="hostName" />`
   `<port local="portNumber" remote="portNumber" />`
   `<ssl enabled="true" wallet-file="\Oracle\Middleware\user_projects\epmsystem1\config\OPMN\opmn\wallet"/>
   `<topology>`
   `<nodes list="nodeName1:nodeRemotePort1,nodeName2:nodeRemotePort2"/>
   </topology>
   </notification-server>`

2. In the same section of the file, update `hostName` to match the `nodeName` for this machine.
   Oracle recommends using a fully qualified name.

3. In the same section of the file, enable or disable SSL communication as the communication mechanism between the OPMN servers in the failover nodes. By default, the `ssl enabled` parameter is `True`.
   To enable SSL, you must also recreate the wallet file on both nodes of the cluster. The wallet file parameters must be the same on both machines.
   To disable SSL communication, change the `ssl enabled` parameter to `False`. For example:

   `<notification-server interface="any">`
   `<ipaddr remote="hostName" />`
   `<port local="portNumber" remote="portNumber" />`
   `<ssl enabled="false" wallet-file="\Oracle\Middleware\user_projects\epmsystem1\config\OPMN\opmn\wallet"/>
   `<topology>`
   `<nodes list="nodeName1:nodeRemotePort1,nodeName2:nodeRemotePort2"/>
   </topology>
   </notification-server>`
where nodePort1 and nodePort2 are the remote ports of OPMN on each machine in the cluster.

4. Update opmn.xml to enable service failover for Essbase. In the <ias-component id="Essbase"> section, add service-failover="1". For example:

   <ias-component id="Essbase">
       <process-type id="EssbaseAgent" module-id="ESS" service-failover="1"
       service-weight="100">

5. In the <ias-component id="Essbase"> section of opmn.xml, for the first node, change service-weight="100" to service-weight="101". For the second node, keep the value at 100.

6. Update opmn.xml to reflect the name of the cluster. In the <ias-component id="Essbase"> section, change id="Essbase" from "Essbase" to the name of the cluster. For example, change:

   <ias-component id="Essbase">

   to

   <ias-component id="EssbaseClusterName">

7. In opmn.xml, remove "numprocs" from the process set definition and change the restart-on-death value to "true". For example edit the following section:

   <process-set id="AGENT" numprocs="1" restart-on-death="false">

as follows:

   <process-set id="AGENT" restart-on-death="true">

After Essbase is up and running, OPMN periodically sends a TCP-based forward ping to the agent. If a ping attempt fails, OPMN retries up to three times to contact the agent. If all ping attempts fail, OPMN stops the agent. OPMN attempts to restart the agent for these scenarios:

- **restart-on-death** (in opmn.xml) is set to TRUE.

In a production environment, **restart-on-death** should always be set to TRUE. Oracle recommends trying to restart a process on the local node first, before attempting failover. When **restart-on-death** is set to TRUE, OPMN first attempts to restart Essbase on the local node for the number of restarts that are configured in opmn.xml (the first start and the number of restarts). If all restart attempts fail, then failover to the standby node occurs.

In development and test environments, you can set **restart-on-death** to FALSE to test failover.

In non-failover mode, which is the default mode, the default setting for **restart-on-death** is FALSE.
• Failover mode is on, which supersedes the restart-on-death value. If restart-on-death is FALSE and failover mode is on, OPMN may bring up Essbase on the active or passive node.

Configuring Active-Active Essbase Clusters

Using Provider Services, you can create active-active cluster of identical databases belonging to one Essbase server, to multiple Essbase servers on the same computer, or to Essbase servers distributed across multiple computers over the network.

Note:

Essbase servers may be subject to licensing restrictions.

Provider Services clients include Oracle Smart View for Office clients, custom Java application programming interface (API) clients, and XML for Analysis (XMLA) clients. Provider Services distributes client requests to database instances belonging to the cluster. An active-active Essbase cluster supports read-only operations on the databases; it does not support data write-back or outline modification. An active-active Essbase cluster does not manage database replication capabilities, such as synchronizing the changes in one database across all databases in the cluster.

After configuring a set of Essbase servers for active-active clustering, you must define and enable the cluster under the Provider Services node in the Enterprise View of Administration Services Console. See Enabling Clustered Database Components.

Configuring Active-Active Clusters with Provider Services

If Essbase is clustered with Provider Services and no third-party tool:

• Essbase has no write-back capability and should be used for reporting only; therefore, Planning is not supported.
• Nodes must be loaded and calculated individually.

Adding Servers to Active-Active Essbase Clusters

You must specify which servers a cluster includes.

To add servers to an Essbase cluster, from Administration Services Console:

1. From Enterprise View or a custom view, select Essbase Servers.
2. For each server to be added:
   a. Right-click, and select Add Essbase Servers.
   b. In Add Essbase Server, enter the Essbase server name, user name, and password.
   c. Confirm the password that you entered in the preceding step.
3. From Enterprise View or a custom view, under the Provider Services node, select a provider.
4. Right-click and select Create, then Create Essbase Cluster.
5. Select Add Essbase Cluster, then Cluster name, and then enter a name for the cluster; for example, East Coast Sales.
6. Enter a short description; for example, East Coast sales databases.
7. Click **Add** to add servers to the cluster.
8. In **Select Cluster Component Database**, specify the Essbase server, application, and database names, and then click **OK**.
   
   The Essbase server and associated application and database names are displayed under the cluster component list; for example, `localhost.Demo.Basic`. A cluster component comprises the Essbase server, application, and database name.
9. Repeat the previous two steps to add any other components.
10. In **Add Cluster**, click **OK**.

   The new cluster name is displayed under **Essbase Clusters**.

**Removing Active-Active Essbase Clusters**

To remove an active-active Essbase cluster:

1. From **Enterprise View** or a custom view in Administration Services Console, under the **Provider Services** node, select a provider.
2. Under the provider node, select **Essbase Clusters**.
3. Under **Essbase Clusters**, select a cluster.
4. Right-click, and select **Remove**.
5. In **Remove Essbase Cluster**, click **Yes**.

   The removal takes effect when you restart Provider Services.

**Adding Components to Active-Active Essbase Clusters**

When creating an Essbase cluster, specify associated Essbase servers, applications, databases.

To add components to a cluster, from Administration Services Console:

1. From **Enterprise View** or a custom view, under the **Provider Services** node, select a provider.
2. Under the provider node, select the **Essbase Clusters** node.
3. Under the **Essbase Clusters** node, select the cluster.
4. Right-click, and select **Edit**.
5. In the **Essbase Cluster** panel, click **Add**.
6. In **Select Cluster Component Database**, specify the Essbase server, application, and database names.
7. Click **OK**.

   The database component is listed in the **Essbase Cluster** panel.
8. To add more components, repeat these steps for each component.
9. Click **Apply**.
10. Click **Close**.
Removing Database Components

To remove a database component from an active-active cluster, from Administration Services Console:

1. From Enterprise View or a custom view, under the **Provider Services** node, select a provider.
2. Under the **Provider** node, select the **Analytic Clusters** node.
3. Under the **Analytic Clusters** node, select a cluster.
4. Right-click, and select **Edit**.
5. For each database component to be removed, in the **Analytic Cluster** panel, select the component, and click **Remove**.
6. Click **Apply**.
7. Click **Close**.

Enabling Clustered Database Components

You can re-enable a database component after disabling it.

**Note:**

Components that were part of the cluster definition when Provider Services was started can be enabled and disabled dynamically with no need to restart Provider Services. However, if you add a component to a cluster or create a cluster, you must restart Provider Services for the new cluster definition to take effect. You can enable or disable the newly added components after restarting Provider Services.

To enable clustered database components, from Administration Services Console:

1. From Enterprise View or a custom view, under the **Hyperion Provider Services** node, select a provider.
2. Under the **Provider** node, select the **Analytic Clusters** node.
3. Under the **Analytic Clusters** node, select a cluster.
4. Right-click, and select **Edit**.
5. For each database component to be enabled, in the **Analytic Cluster** panel, select the component, and click **Enable**.

   The status of the database component changes to Enabled.

6. Click **Close**.
Components that were part of the cluster definition when Provider Services was started can be enabled and disabled dynamically without restarting Provider Services. However, if you add a component to an existing cluster or create a cluster, you must restart Provider Services for the new cluster definition to take effect. You cannot enable or disable the newly added cluster components until you restart Provider Services.

Disabling Cluster Components

You can disable individual database components in a cluster. For example, you can take the component offline to update the database.

To disable a database component in a cluster, from Administration Services Console:

1. From **Enterprise View** or a custom view, under the **Hyperion Provider Services** node, select a provider.
2. Under the provider node, select the **Essbase Clusters** node.
3. Under the **Essbase Clusters** node, select a cluster.
4. Right-click, and select **Edit**.
5. For each component to be disabled, in the **Essbase Cluster** panel, select the component, and click **Disable**.
6. Click **Close**.

Active-Active Essbase Clustering Examples

For simplicity, all examples in this section use Smart View.

Essbase Server Clusters

Provider Services enables you to group sets of Essbase servers running applications with identical databases and use them as one resource.

When adding or deleting an Essbase server in a cluster, restart the server to reflect changes to the group. You can enable or disable components in the group without restarting the server.

Essbase Database Clusters

Clustering Essbase databases enables load balancing and failover support. Provider Services provides parallel clustering, in which a series of active, duplicate databases respond to user requests. Which database is accessed is transparent to users, who connect to and retrieve data from one data source. Provider Services facilitates the routing of connections between databases in a cluster, based on availability and precedence rules.
In Figure 1, Smart View users connect to Essbase through Provider Services. Each user connection is assigned to a server during the Essbase session. Provider Services uses session-level load balancing. For example, in Figure 1, User 1’s connection is mapped to Data Source A. User 2’s connection is mapped to Data Source B. User 3’s connection is mapped to data source C. All requests from User 1 are handled by Data Source A for the duration of the connection.

If data source A fails:
- User 1 times out at Data Source A.
- User 1 is rerouted to the next available data source, which is Data Source C in Figure 2.

Figure 2 illustrates what happens when Data Source A goes offline.
In Figure 2, the state of query 1 is maintained at the middle tier and rerouted. Provider Services also provides load balancing across servers.

Figure 3 depicts clustered databases deployed on one server.
In **Figure 3**, two servers contain Essbase databases. Server 1 has four processors and 8 GB of RAM. Server 2 has eight processors and 16 GB of RAM. Because Server 2 has more resources, it contains Data Sources B and C. Therefore, Server 2 can handle both connections.

Failover support also applies for database clusters on one server. In **Figure 4**, Server 2 goes offline. User 2 and User 3 are then rerouted to the next available server, Server 1.
Connections to Essbase Clusters

Essbase clients and servers can connect to an Essbase cluster by way of a URL in this format:

http(s)://host:port/aps/Essbase?ClusterName=clusterName.

You can also connect to an Essbase cluster using only the cluster name, but you must first enable this by modifying a configuration file to specify the Provider Services server that resolves the cluster name in the URL. The Provider Services server is specified in these configuration files:

- For server-to-server communication—essbase.cfg
  
  Use this format:

  ApsResolver http(s)://host:port/aps

  You can specify several Provider Services servers in essbase.cfg, using a semicolon (;) between server names.

- For client-to-server communication—essbase.properties
  
  Use this format:

  ApsResolver=http(s)://host:port/aps

  Restart Essbase after updating these files.

To connect to a Provider Services active-active Essbase cluster using Oracle Hyperion Financial Reporting, you must configure Financial Reporting for three-tier mode.

To configure Financial Reporting for three-tier mode:

2. Select the MBeans tab and browse to com.hyperion/Financial Reporting/Attributes/EssbaseJAPIServer.

3. Confirm that EssbaseJAPIServer is set as the Provider Services server.

4. Enter the Provider Services cluster name as the Server Name in the Attribute value box and then click Refresh.


**OPMN Service Failover for Essbase Server**

This section provides an overview of OPMN service failover concepts and lists the elements and attributes in the opmn.xml file that are required for configuring Essbase for failover. This file contains many other elements and attributes; see the Oracle Process Manager and Notification Server Administrator's Guide.

**Service Failover**

Service failover is a mechanism to specify a critical process that must be run somewhere in an Essbase cluster if service is disrupted on a processing server. This enables you to preferentially select which processes must be kept running. Any process-type opmn.xml file element may be configured as a service failover such that, once started, OPMN ensures that the configured number of processes for the service are running on Essbase instances somewhere in the cluster. You can configure which Essbase instances participate in the service failover on an instance-by-instance basis. You can configure each Essbase instance for preferential selection of running the process on available Essbase instances. Only one process-set may be defined for each process-type configured as a service failover. Only one process is run for each service failover instance.

In the following diagram, a service failover process has been started in a cluster where all Essbase instances are configured to participate in the service failover.

![Diagram of service failover](image)

As shown in the diagram below, if the Essbase instance on which the service failover process is running goes down, such as for maintenance or an unprotected power outage or network failure, OPMN selects another participating Essbase instance on which to run the process. All of the Essbase instances shown in the diagram are participating in the service failover.
This section provides descriptions of elements and attributes in the opmn.xml file that are required to configure Essbase for failover. In the opmn.xml file, all elements are within the <ias_component> configuration element. (This entry represents the system component.)

<port>
Parents: notification-server
Attributes: local, remote, request
The port element contains configuration information for ONS listener threads host and port bindings.

Example:

<iias-component id="<Essbase-Cluster-Name>">
  <process-type id="EssbaseAgent" module-id="ESS" service-failover="1" service-weight="101">
    <environment>
      ...
    </environment>
    <port id="essbase-port-range" range="32768-33768"/>
  </process-type>
</iias-component>

<topology>
Parents: notification-server
Attributes: none
The topology element contains the configuration information for the ONS topology within a cluster.
Example:

```xml
<topology>
  <nodes list="adc2170731:6712,dadvmn0429:6712"/>
</topology>
```

**<nodes>**

**Parents:** topology  
**Attributes:** list  

The nodes element provides a list of specific addresses for OPMN servers in the same cluster as the local OPMN server. The local OPMN server is included in the list. Multiple nodes elements may be configured.

Example:

```xml
<topology>
  <nodes list="adc2170731:6712,dadvmn0429:6712"/>
</topology>
```

**service-failover="num"**

**Valid Values:** An integer value > 0  

A process-type may be configured as a service-failover (if num is not zero), which represents a process that exists num times somewhere in the cluster when it is up. The implementation is limited such that only one process of this type runs on a single service instance, and so the maximum number of processes for a specific service-failover in the cluster can never be more than the number of participating service instances in the cluster. If the value of num is greater than the number of service instances participating in this service-failover in the cluster and the service-failover is active (it has been started), then each participant added to the cluster automatically starts its service-failover process until the total number cluster wide is num.

A service-failover process can run on any instance participating in the service, which means each instance must have the service configured with the same ias-component id, process-type id and process-set id. To target the service itself, a request must specify both the ias-component and the process-type (it can also include the process-set).

A service-failover process-type can have only one process-set. Because the number of processes for a failover service is always 1, this process-set cannot specify numprocs, minprocs, or maxprocs.

A service-failover can be specified as a dependency (like any managed-process) or can specify dependencies. If specified as a dependency, the dependency check for a service-failover evaluates true as soon as one process of this type is active anywhere in the cluster, regardless of the configured value for num.

Example:

```xml
<ias-component id="<Essbase-Cluster-Name>">
  <process-type id="EssbaseAgent" module-id="ESS" service-failover="1"  
```
service-weight="101">
  <environment>
    <variable id="EPM_ORACLE_HOME" value="<Oracle Home-Location>"/>
  </environment>
  ...
</process-type>
</ias-component>

**service-weight="value"**

Default: 100

Valid Values: An integer value > 0

The service instances that run the actual **service-failover** processes are selected based upon the configured (or default) service-weight value. Service instances with higher weights are selected over service instances with lower weights. If a set of service instances have the same weight for a service, then the configured number of service instances are selected from the set to run the processes.

The **service-weight** attribute can only be specified if the **service-failover** attribute is set to a nonzero value.

Example:

```
<ias-component id="<Essbase-Cluster-Name>">
  <process-type id="EssbaseAgent" module-id="ESS" service-failover="1" service-weight="101">
    <environment>
      <variable id="EPM_ORACLE_HOME" value="<Oracle Home-Location>"/>
    </environment>
    ...
  </process-type>
</ias-component>
```

**restart-on-death**

Parents: <process-set>

Valid Values: true or false

If a managed process terminates unexpectedly, that is, is not stopped by a request, then OPMN does not automatically restart it.

Example:

```
<ias-component id="<Essbase-Cluster-Name>">
  <process-type id="EssbaseAgent" module-id="ESS" service-failover="1" service-weight="101">
    <environment>
      ...
    </environment>
    <process-set id="AGENT" restart-on-death="true">
      <module-data>
        <category id="start-parameters">
          <data id="start-executable" value="$ESSBASEEXE"/>
          <data id="agent-port" value="1423"/>
        </category>
      </module-data>
    </process-set>
  </process-type>
</ias-component>
```
start/stop/restart timeout

Parents: <process-set>

Valid Values: An integer > 0 and < 3600

A timeout value can be configured for each action.

Example:

<i>component id="<Essbase-Cluster-Name>""/>
  <process-type id="EssbaseAgent" module-id="ESS" service-failover="1"
  service-weight="101">
    <environment>
      ...
      </environment>
      <start timeout="600" retry="2" />
      <stop timeout="600"/>
      <restart timeout="600" retry="2" />
    </process-type>
</ias-component>
Configuring Oracle Web Services Manager for EPM System Products

If you will be using Oracle Web Services Manager for use with Oracle Hyperion Financial Close Management, Oracle Hyperion Tax Governance, Oracle Hyperion Financial Management, Oracle Hyperion Tax Provision, Oracle Hyperion Provider Services, or Oracle Data Relationship Management, perform the following steps, in order:

**Note:**
You must perform these steps after installing and configuring Oracle Enterprise Performance Management System. Oracle Web Services Manager (OWSM) is automatically installed, but not deployed or configured with Oracle Hyperion Enterprise Performance Management Workspace. Ensure that you have already installed the Repository Creation Utility using EPM System Installer before you perform these steps. See “Creating Infrastructure Schemas Using Repository Creation Utility” in the Oracle Enterprise Performance Management System Installation and Configuration Guide.

- Manually deploy Oracle Web Services Manager (OWSM).
- Configure Oracle Web Services Manager (OWSM).
- Set up the keystore for message protection.
- Set up the Oracle Web Services Policy Manager to service requests.
- Configure the WebLogic domain to connect to Oracle Internet Directory, Microsoft Active Directory (MSAD), or SunOne.

After performing these steps, restart managed servers.

**Manually Deploying Oracle Web Services Manager**

Oracle Web Services Manager (OWSM) is automatically installed, but not deployed or configured with Oracle Hyperion Enterprise Performance Management Workspace. Ensure that you have already installed the Repository Creation Utility using EPM System Installer before you perform this step. See “Creating Infrastructure Schemas Using Repository Creation Utility” in the Oracle Enterprise Performance Management System Installation and Configuration Guide.

To manually deploy OWSM:

1. Start Weblogic Server (`\Oracle\Middleware\user_projects\domains \EPMSystem\bin\startWeblogic.cmd`), and then log in to the WebLogic Administration Console (`http://hostname:port/console`).
2. Create `mds-owsm` datasource:
   a. Click **Lock & Edit**.
   b. In the **Domain Structure**, click **Data Sources**, and then on the **Configuration** tab, click **New**.
   c. From the **New** list, select **Generic Data Source**.
   d. Enter the JDBC Data Source properties, and then click **Next**.
      - **Name**—`mds-owsm`
      - **Scope**—Global
      - **JNDI Name**—`jdbc/mds/owsm`
      - **Database Type**—Oracle
   e. Keep the default JDBC Data Source property for **Database Driver**, and then click **Next**.
   f. Define the connection properties, and then click **Next**.
      - **Database name**
      - **Host Name**
      - **Port**
      - **Database User Name**—`SchemaPrefix_MDS`, where `SchemaPrefix` is the prefix that was provided in `RCUSchema.properties`
      - **Password**—The `rcuSchemaPassword` that was provided in `RCUSchema.properties`.
   g. On the **Targets** tab, select these clusters on which to deploy this data source, and then click **Save**.
      - **Admin Server**
      - **FoundationServices**—All servers in the cluster
      - **HFMWeb**—All servers in the cluster
      - **TaxManagement**—All servers in the cluster
   h. Click **Release Configuration**.

3. Deploy `owsm-pm.ear`:
   a. Click **Lock & Edit**.
   b. In the **Domain Structure**, click **Deployments**.
   c. On the **Configuration** tab, click **Install**.
   d. For **Path**, enter `\Oracle\Middleware\oracle_common\modules\oracle.wsm.pm`.
   e. Select `wsm-pm.ear` and then click **Next**.
   f. Select **Install this deployment as an application** and then click **Next**.
   g. Select deployment targets and then click **Next**.
      - **Admin Server**
      - **FoundationServices**—All servers in the cluster
      - **HFMWeb**—All servers in the cluster
To configure OWSM:

1. From the WebLogic Administration Services machine, select All Programs, then Oracle WebLogic, then WebLogic Server, then Tools, and then Configuration Wizard.

2. On the Welcome page, select Extend an Existing WebLogic domain to add new components to the existing EPM domain, and modify configuration settings.

3. Click Next.

4. On the Update Domain Configuration Type page, select Update an Existing Domain, ensure that the Domain Location is correct, and then click Next. For example, C:\Oracle\Middleware\user_projects\domain\EPMSystem.

5. On the Templates tab, ensure that Oracle WSM Policy Manager and Oracle JRF are selected, and then click Next.

6. On the Configure JDBC Data Sources page, modify the details for the JDBC data sources, as required, providing the password that you entered during RCU configuration, and then click Next.

7. On the Test Data Sources page, select the data sources to be tested, and then click Test Connections.

   If the connections are working, a check mark is displayed under Status. If the connections are not working, go back to correct the JDBC data source details, and rerun the test.

8. Click Next.

Configuring Oracle Web Services Manager

Oracle Web Services Manager is automatically installed, but not configured, with Oracle Hyperion Enterprise Performance Management Workspace.

You must configure OWSM before you can use Web Services. Ensure that you have already installed the Repository Creation Utility using EPM System Installer before you perform this step. See “Creating Infrastructure Schemas Using Repository Creation Utility” in the Oracle Enterprise Performance Management System Installation and Configuration Guide.

To configure OWSM:

1. From the WebLogic Administration Services machine, select All Programs, then Oracle WebLogic, then WebLogic Server, then Tools, and then Configuration Wizard.

2. On the Welcome page, select Extend an Existing WebLogic domain to add new components to the existing EPM domain, and modify configuration settings.

3. Click Next.

4. On the Update Domain Configuration Type page, select Update an Existing Domain, ensure that the Domain Location is correct, and then click Next. For example, C:\Oracle\Middleware\user_projects\domain\EPMSystem.

5. On the Templates tab, ensure that Oracle WSM Policy Manager and Oracle JRF are selected, and then click Next.

6. On the Configure JDBC Data Sources page, modify the details for the JDBC data sources, as required, providing the password that you entered during RCU configuration, and then click Next.

7. On the Test Data Sources page, select the data sources to be tested, and then click Test Connections.

   If the connections are working, a check mark is displayed under Status. If the connections are not working, go back to correct the JDBC data source details, and rerun the test.

8. Click Next.
9. On the **Component Datasources Configuration** tab, select the **OWSM MDS** schema, enter details for the **OWSM _mds** schema, and then click **Next**.

10. On the **JDBC Test** tab, select the component schema to be tested, and then click **Test Selected Connections**.
    
    If the connections are working, a check mark is displayed and the **Connection Result Log** displays the results. If the connections are not working, go back to correct the JDBC data source details, and rerun the test.

11. Click **Next** through the remaining pages.

12. Restart the server machine, stop all Oracle Enterprise Performance Management System services, and then start WebLogic Administration Server Console.

### Enabling Oracle Web Services Policy Manager to Service Requests

To set up Oracle Web Services Policy Manager to service requests:

1. Log in to the WebLogic Administration Console using WebLogic administrator credentials. ([http://WebLogic_Admin_Host:WebLogic_Admin_Port/console](http://WebLogic_Admin_Host:WebLogic_Admin_Port/console)).

2. Navigate to **Servers**, then **FoundationServices0**, then **Deployments**, then **wsm-pm**, and then **Control**.

3. Under **Start/Stop**, select **wsm-pm** and select **Start - Servicing All Requests** and then select **Yes**.

### Setting Up the Keystore for Message Protection

To set up the keystore for message protection:

1. First, create a keystore using the `keytool` command:

   Go to `/Oracle/Middleware/user_projects/$DOMAIN_HOME/config/fmwconfig` in the server running the WebLogic Administration Server hosting your Oracle Enterprise Performance Management System domain and execute the following command:

   ```
   keytool -genkeypair -keyalg RSA -alias aliasName -keypass password -keystore keystoreName.jks -storepass password -validity 3600
   ```

   **Note:**
   
   If the `keytool` command is not recognized, the **Path** environmental variable might not include JDK. Add the JDK to the **Path** variable using the following command: `set PATH=%PATH%;C:\Oracle\Middleware\JDK1.8.0_181\bin;.;`

2. Next, set up message protection for Web Services:

b. Expand **WebLogic Domain** and then select **EPMSystem** (or the domain name used for the EPM System deployment).

c. Right-click **EPMSystem**, select **Security**, and then select **Security Provider Configuration**.

d. Scroll to the **Keystore** section, expand the section, and then click **Configure**.

e. For **Keystore Path**, enter the path and name for the keystore that you created, for example ./EPMKeystore.jks).

f. Enter the keystore password that you used when creating the keystore and confirm it.

g. Enter an alias and password for both **Signature Key** and **Encryption Key**, using the alias and password that you used when creating the keystore. Confirm the passwords, and then click **OK**. The alias and password for the signature and encryption keys define the string alias and password used to store and retrieve the keys.

3. Log out and restart Oracle Enterprise Manager Fusion Middleware Control so the changes take effect, and then restart EPM System managed servers.

---

**Configuring the WebLogic Domain to OID, MSAD, SunOne**

This procedure is required to configure the WebLogic domain, or in the case of Oracle Hyperion Financial Close Management or Oracle Hyperion Tax Governance, to communicate with an external provider, such as OID, MSAD, or SunOne. Oracle Hyperion Shared Services must also be configured to work with this external provider. Follow the sections specific to your provider.

---

**Note:**


---

To connect OID, MSAD, or SunOne to the WebLogic Server:

1. Log in to the WebLogic Administration Console if you are not already logged in.

2. Click **Security Realms** on the left, click **myrealm**, and then click the **Providers** tab.

3. Click **Add**, enter the following details, and then click **OK**.

   For OID:

   - **Name** - **OID**
   - **Type** - **OracleIntenetDirectoryAuthenticator**

For MSAD:
• Name - **MSAD**
• Type - **ActiveDirectoryAuthenticator**

For SunOne:

Name - **SunOne**

You can ignore the prompt to restart the server; you will be restarting at the end of this procedure.

4. Click the provider you just added, click the **Provider Specific** tab, enter the following details for your provider, and then click **OK**.
   • Host
   • Port
   • Principal
   • Credential
   • User Base DB
   • Group Base DB
   • User from Name Filter (MSAD only)
   • User Name Attribute (MSAD only)

   You can leave the rest of the default values unchanged.

5. Click **OID**, **MSAD**, or **SunOne**, and for **Control Flag**, select **SUFFICIENT**.


---

**Financial Close Management and Tax Governance Configuration Options**

**Configuring Financial Close Management or Tax Governance for OAM**

If you are using Microsoft SQL Server or Oracle Database and OAM for single sign-on, perform the following procedure:

1. Log in to the WebLogic Administration Console using WebLogic administrator credentials. ([http://WebLogic_Admin_Host:WebLogic_Admin_Port/console](http://WebLogic_Admin_Host:WebLogic_Admin_Port/console)).

2. In the Domain Structure portlet, click **Security Realms**.

3. From the available realms, click the realm name with **Default Realm** status **True**.

   **Tip:**
   
   Click the realm name, not the check box.

4. Select the **Providers** tab to list all configured Authentication/Assertion providers.

5. Under Authentication Providers, click **New**.

6. Select **OAMIdentityAsserter** from the list of supported Authentication/Assertion providers, and then in the **Create a New Authentication Provider** panel, specify a name for the provider, such as **OAMIdentityAsserter**, and then click **OK**.
OAMIdentityAsserter is now listed in the list of configured providers.

7. Reorder the providers in the following order:
   - MSAD, OID, or SunOne, depending on which provider you are using
   - OAM IdentityAsserter
   - Default Authenticator
   - Default IdentityAsserter
Changing a Deployment

EPM System Configurator enables you to reconfigure products to incorporate changes in your environment.

To reconfigure, launch EPM System Configurator on the computer hosting the product, and follow the procedures in “Configuring EPM System Products” in the Oracle Enterprise Performance Management System Installation and Configuration Guide.

Changing Ports

For most Oracle Enterprise Performance Management System components, you change the port using EPM System Configurator. See the “Ports” appendix in Oracle Enterprise Performance Management System Installation and Configuration Guide for details.

If you reconfigure to change a port or server, you must also reconfigure the web server (under the Oracle Hyperion Foundation Services tasks in EPM System Configurator).
Updating the Shared Services Registry

You can edit the Oracle Hyperion Shared Services Registry using a command line utility. Use this utility only if you are unable to make the required changes to the Shared Services Registry using EPM System Configurator.

**Tip:**

You can make most changes using EPM System Configurator. For example, to make changes to a deployed Java web application, you can select the “Configure Logical Address for Web Applications” task in EPM System Configurator to make changes without having to redeploy the Java web application. See the *Oracle Enterprise Performance Management System Installation and Configuration Guide*.

You use the `epmsys_registry.bat` utility to make any required changes to the Shared Services Registry.

Understanding the Shared Services Registry Component Hierarchy

To make corrections to the Oracle Hyperion Shared Services Registry, you have to understand its structure. During configuration of 11.1.x products, EPM System Configurator automatically updates the Shared Services Registry with components for each product. Components also have child components, creating a hierarchy. Each component of the hierarchy has its own component properties. You need to know both the component names and the component property names to update the Shared Services Registry.

For example, the `ESSBASE_PRODUCT` component includes the following component properties:

- `host`
- `agent_PortNumber`

To find the component property names and child components for any component, you can use a command to view the component in the Shared Services Registry. See *Viewing the Components in the Shared Services Registry*.

Editing the Shared Services Registry

To edit the Oracle Hyperion Shared Services Registry:

1. Back up the Shared Services Registry.
2. On a machine hosting the 11.1.x Oracle Enterprise Performance Management System software, go to /bin and run the following command:

```
epmsys_registry view componentType
```

You need to view the component hierarchy to get the component property names that required to delete a component or update a component property. For information see Viewing the Components in the Shared Services Registry.

3. Depending on the required changes, refer to the following commands:

To delete a component, see Deleting a Component Instance.
To update a component property, see Updating a Component Property.

4. If you changed the LOGICAL_WEB_APP property for any product, run EPM System Configurator and configure the web server again. (On the Task Selection page, select the Oracle Hyperion Foundation Services Web Server Configuration task.)

Viewing the Components in the Shared Services Registry

Before you can delete a component or update a component property, you need to view the component hierarchy to get the component property names and values.

To view the component hierarchy:

1. Go to /bin and use the following command:

```
epmsys_registry view componentType
```

where `componentType` is the name of the component in the Shared Services Registry.

This command displays all the components in the specified hierarchy, displaying only the immediate children of the component. The information is displayed in the console.

For example, to view all the components in the PLANNING_PRODUCT hierarchy, run:

```
epmsys_registry view SYSTEM9/PLANNING_PRODUCT
```

2. If needed, repeat the command to get the property names for a subcomponent.

For example, LOGICAL_WEB_APP is a child of PLANNING_PRODUCT. To view the properties for LOGICAL_WEB_APP for Oracle Hyperion Planning, enter the following command:

```
epmsys_registry view SYSTEM9/PLANNING_PRODUCT/LOGICAL_WEB_APP
```

3. From the display, note the following information about components you want to delete or update:

- Component ID for any components you want to delete or update
- Component property names and values for any components you want to update
For example, the **LOGICAL_WEB_APP** for Planning has several properties, including **context**, **port**, and **host**.

### Deleting a Component Instance

You delete a component instance by referring to the component's ID that is displayed when you view the component hierarchy.

To delete a component from the component hierarchy, go to `/bin` and run the following command:

```
epmsys_registry deletecomponent #componentID
```

where `componentID` is the component's ID that you found when you viewed the component hierarchy.

Deleting a node does not delete its children.

#### Tip:

If you are deleting a product node, first delete all the children of the node and then delete the product node.

#### Caution:

Ensure that you delete the correct component.

### Updating a Component Property

You update a component property by referring to the component ID and the component property name that are displayed when you view the component hierarchy.

To update a component property, go to `/bin` and run the following command:

```
epmsys_registry updateproperty #componentID/@componentProperty value
```

where `componentID` is the component's ID you found when you viewed the component hierarchy, `componentProperty` is the component property name you want to update, and `value` is the new value for the component property.

Component property names are case sensitive.

#### Tip:

Look for the component property names in the section called “Properties” when you view the component hierarchy. In addition, you can update the host a component is running on using the property name “host.”
For example, to change the port number for the Oracle Essbase Server with the component ID 99999 to port number 1425, enter the following command:

```
epmsys_registry updateproperty #99999/@agent_PortNumber 1425
```

**Viewing Host Entries in the Shared Services Registry**

You can view the host entries in the Shared Services Registry.

You can use this command for a number of purposes. For example, use the command to:

- Simplify the rehosting process
- Simplify the process of changing server names to alias names
- Debug server communication issues

To view the host entries in the Shared Services Registry, go to `/bin` and run the following command:

```
epmsys_registry viewhosts
```

The displays shows the server names for this machine as they are stored in the Shared Services Registry in one column and the hostname as resolved by the DNS in another column.

💡 **Tip:**

If the names in the columns do not match, either resolve the DNS entries or create a hosts file to match the resolved names.
Using Enterprise Manager to Monitor EPM System Java Web Applications

EPM System Configurator deploys Oracle Enterprise Manager automatically when it deploys the first Java web application.

Oracle Enterprise Manager Fusion Middleware Control can be used to manage the WebLogic domain. You can use this embedded Enterprise Manager to manage all the Java web applications in EPM System out of the box. The full version of Enterprise Manager with Grid Control adds functionality on top of the Fusion Middleware Control, including historical information of the metrics.

- Status of the servers and Java web applications running
- Servers the Java web applications are running on and the ports they are listening on
- Health and performance of Java web applications and managed servers (select the server you want to monitor and navigate to WebLogic Server and then Performance Summary to view the available categories of metrics)

To launch Enterprise Manager, go to http://WebLogicAdminServerHost:port/em.
Removing an EPM Oracle Instance and Uninstalling EPM System

To uninstall this release of Oracle Enterprise Performance Management System products, follow this workflow:

1. Remove any instances related to the deployment. See Removing an Instance.

2. Use EPM System Uninstaller to remove binaries. Uninstalling EPM System Products. You can also silently uninstall EPM System components.


4. If you are not using the remaining content in Middleware Home for other products, run the uninstallers for Oracle HTTP Server, WebLogic Server, oracle_common, and Oracle Database clients by using Add/Remove programs, or use the product uninstallation shortcuts.

Removing an EPM Oracle Instance

You use EPM System Configurator to remove an EPM Oracle instance as part of uninstalling an Oracle Enterprise Performance Management System component or deployment.

Additionally, you can remove an instance for the following reasons (in these cases you remove the instance but do not uninstall):

• You have scaled out the deployment by configuring an additional EPM Oracle instance, and now you want to scale down the deployment by removing the instance.

• You incorrectly configured an EPM Oracle instance and want to remove the instance from the deployment.

Assumptions and Prerequisites

• You have installed and configured EPM System products using the Oracle Enterprise Performance Management System Standard Deployment Guide or the Oracle Enterprise Performance Management System Installation and Configuration Guide.

• You have run a deployment report to confirm the instance to be removed.

• WebLogic Administration Server must be stopped if you are removing an instance from the machine hosting the WebLogic Administration Server. WebLogic Administration Server must be running if you are removing an instance from a machine other than the one hosting the WebLogic Administration Server.

Removing an Instance

To remove an instance:
1. Launch EPM System Configurator from the machine hosting the instance to be removed using one of these methods:
   - Change to `EPM_ORACLE_INSTANCE/bin` and then launch:
     
     ```
     configtool.bat (.sh) -remove
     ```
   - From the Start menu, select Programs, then Oracle EPM System, and then EPM System Configurator Remove Instance.

   EPM System Configurator stops required services.

2. At the warning prompt, click Yes to proceed.

   If you are removing the last remaining instance of Oracle Hyperion Foundation Services, all other EPM System products will no longer work, because the Oracle Hyperion Shared Services Registry is removed.

3. Review the progress and completion of the removal tasks on the console.

   EPM System Configurator performs the following tasks during instance removal for the components in this instance:
   - Removes the Java web applications from the cluster. If it is the last Java web application in the cluster, removes the cluster.
   - Removes the configuration for IIS web applications.
   - Removes files from `EPM_ORACLE_INSTANCE`.
   - Removes Shared Services Registry entries.
   - Removes Windows Start Menu entries.
   - Removes Windows Services entries.
   - Removes Windows Registry entries.
   - For Oracle Hyperion Financial Close Management or Oracle Hyperion Tax Governance, removes composites.

   EPM System Configurator retains the following information during instance removal for the components in this instance:
   - Binary files in `EPM_ORACLE_HOME`.
   - The contents of `epm_oracle_instance/diagnostics`.
   - Product data.
   - Product repositories.

   If you are removing an instance where you deployed to a single managed server, remove the instance on the Administration Server machine (where the single managed server was first deployed) last.

   **Validating the Instance Removal**

   After removing an EPM Oracle instance, if there are instances remaining in the deployment, perform the following validation steps.

   To validate that an instance was successfully removed:
   1. Run a deployment report and confirm that the instance was removed:
Navigate to `epm_oracle_instance/bin` and execute the following command:

```
epmsys_registry report deployment
```

The report file (`deployment_report_YYYYMMDD_HHmmSS.html`) is stored in `epm_oracle_instance/diagnostics/reports`.

2. Launch Oracle Hyperion Enterprise Performance Management System Diagnostics using one of the following methods:
   - (Windows) In `/bin`, double-click `validate.bat`.
   - From the Start Menu, choose Programs, then Oracle EPM System, and then EPM System Diagnostics.

   Progress is shown in the command window.

3. To view results, navigate to `epm_oracle_instance/diagnostics/reports` and open `validation_report_date_time.html`.

---

**Uninstalling EPM System Products**

When you uninstall Oracle Enterprise Performance Management System products, EPM System Uninstaller removes the binaries from the installation location. Use uninstall when you want to completely remove components that are not in use any more in any instance in the deployment.

**Caution:**

When you uninstall EPM System products, EPM System Uninstaller removes everything from the installation directory. Before you uninstall, be sure to back up any files you want to keep. For information about backing up files, see *Oracle Enterprise Performance Management System Backup and Recovery Guide*.

To uninstall EPM System products:

1. Ensure that no EPM System processes are running.
2. Choose a method to launch the uninstaller:
   - (Windows) In `epm_oracle_home/uninstall`, double-click `uninstall.cmd`.
   - (Windows) In the Windows Control Panel, select Oracle EPM System to remove/uninstall.
   - (Windows) From a Windows console, change to `epm_oracle_home/uninstall/`, and then enter `uninstall.cmd`.
   - From the Start menu, select Programs, then Oracle EPM System, and then Uninstall EPM System.
3. Exit other programs before you continue, and then click or select Next.
4. Select the products to uninstall, and then click or select Next. All components on the same tier of the selected products are uninstalled.
For example, if you uninstall any Oracle Hyperion Financial Management web component, EPM System Uninstaller uninstalls all Financial Management web components.

All installed products are selected by default. Select “Uncheck all” to clear the selections for all products, and then select only the products you want to uninstall.

5. Specify whether you want to delete all the files and directories in the EPM Oracle Home directory.

If you select this option, data and customized files are deleted.

6. Confirm the products to uninstall, and then click or select Next.

EPM System Uninstaller displays progress incrementally as each assembly’s uninstallation is complete.

### Note:

To cancel the uninstallation, click or select Cancel. When you select Cancel, EPM System Uninstaller stops the uninstallation of the current assembly and rolls that assembly back to an installed state. It does not undo uninstallations for assemblies that were already uninstalled.

EPM System Uninstaller indicates the success or failure of the uninstallation. If any part of the uninstallation failed, EPM System Uninstaller notes which assembly failed to uninstall. Check the log files for more information about the errors. You can find the log files in `epm_oracle_instance/diagnostics/logs/install`. There is a log file for each assembly, named `product-install.log`; for example, `hss-install.log`.

7. Click or select Finish to close EPM System Uninstaller.

8. On Windows, if you uninstalled Oracle HTTP Server, you must reboot to completely remove the installation. This step is required if you plan to reinstall.

9. Reboot after uninstalling EPM System products.

When uninstalling a client, select **Delete common components** in the **Setup Type** window only if you are deleting all EPM System clients that are installed on a machine. If multiple EPM System clients are installed on the same machine and you are deleting only one client, deselect **Delete common components**.

### Performing a Silent Product Uninstallation

Silent uninstallations automate the process so that you can uninstall EPM System products on multiple computers without manually specifying uninstallation settings on each machine.

To uninstall EPM System products on multiple computers using the same uninstallation options, record a response file during installation. You can then run a silent uninstallation from the command line, using the options that were saved in the response file.

To run a silent uninstallation:
1. Copy the response file that you created during installation to the machine on which you want to run the uninstallation. You can also copy the file to a network drive that is accessible from the machines on which you want to uninstall.

For information about recording a response file during installation, see "Performing Silent Installations" in the Oracle Enterprise Performance Management System Installation and Configuration Guide.

2. From the command line, enter a command:

For Windows:

```
uninstall.cmd -silent filename
```

The uninstallation runs in the background.

**Uninstalling EPM System Clients**

You can uninstall Oracle Enterprise Performance Management System clients using the uninstall option in the client installers.

To uninstall EPM System clients:

1. From the *client installer folder*, open the subfolder for the client installer and then double-click the client installer file name. See Default Installation Directories and Notes.

2. Proceed through the installation wizard, selecting *Remove*, and then click *Finish* when the uninstallation is complete.

**Note:**

If you are uninstalling multiple clients that are installed on the same machine, or if a client is installed on the same machine as an EPM System server product, launch the uninstaller using the *DELETE_COMMONS=false* command line parameter. See Performing a Silent Client Uninstallation.

**Default Installation Directories and Notes**

The information in the following table applies to installations performed from Oracle Hyperion Enterprise Performance Management Workspace or with EPM System client installers and to silent installations.

**Table 7-1  Client Installer Installation Directories**

<table>
<thead>
<tr>
<th>Client</th>
<th>Default Installation Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Essbase Administration Services Console</td>
<td><code>EPM_ORACLE_HOME/products/Essbase/eas/console</code></td>
</tr>
<tr>
<td>Oracle Essbase Client</td>
<td><code>EPM_ORACLE_HOME/products/Essbase/EssbaseClient</code></td>
</tr>
<tr>
<td>Oracle Essbase Studio Console</td>
<td><code>EPM_ORACLE_HOME/products/Essbase/EssbaseStudio/console</code></td>
</tr>
</tbody>
</table>
Table 7-1  (Cont.) Client Installer Installation Directories

<table>
<thead>
<tr>
<th>Client</th>
<th>Default Installation Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Hyperion Financial Reporting</td>
<td>financialReportingUtils.zip</td>
</tr>
<tr>
<td>Oracle Hyperion PlanningOracle Smart View for Office extension</td>
<td>PlanningSVExtension.msi</td>
</tr>
<tr>
<td>Predictive Planning</td>
<td>predictiveplanning-x64.exe;predictiveplanning.exe</td>
</tr>
<tr>
<td>Oracle Hyperion Financial Close Management</td>
<td>CloseMgrSupplementalDataSVExt.exe</td>
</tr>
<tr>
<td>Tax Operations</td>
<td>TaxOpsTaxSupplementalSVExt.exe</td>
</tr>
</tbody>
</table>

Performing a Silent Client Uninstallation

You use the EPM System client installers with the command line parameter /x to uninstall EPM System clients.

To perform silent uninstallation of an EPM System client other than Essbase Client, Essbase Studio Console, or Administration Services Console, use this command:

```
installer file name /x /s /v"/qn /l*v log file path and name"
```

For example, this command uninstalls Smart View and creates the log c:/temp/SilentInstall.log:

```
SmartView.exe /x /s /v"/qn /l*v c:/temp/SilentInstall.log"
```

To perform a silent uninstallation of Essbase Client, Essbase Studio Console, or Administration Services Console, use this command:

```
installer file name /x /s /v"/qn DELETE_COMMONS=value /l*v log file path and name"
```

where value is true or false.

Essbase Client, Essbase Studio Console, and Administration Services Console share some common components. With the parameter DELETE_COMMONS=true, the uninstaller removes these common components. If multiple clients are installed on the same machine, or if the client is installed on the same machine as an EPM System server product, you must use DELETE_COMMONS=false if you want to delete only one of the clients.

Removing Smart View Extensions

Oracle Smart View for Office supports provider extensions for the following Oracle Enterprise Performance Management System products:

- Oracle Hyperion Financial Reporting
- The Predictive Planning extension for Oracle Hyperion Planning
- The Planning Admin extension for Planning

For information about removing Smart View Extensions, see the Oracle Smart View for Office User's Guide.
If you are an administrator, see the *Oracle Smart View for Office User's Guide* for information about administering extensions.
Performing Custom Configurations

This chapter describes additional custom configurations you can make to your Oracle Enterprise Performance Management System deployment.

Optimizing Performance by Changing the Heap Size

Depending on your environment, you might need to change the heap size for your Java web application server. For example, if you see "OutOfMemory" errors in WebLogic, increase the heap size. If you need to reduce the memory requirement of the WebLogic Server, decrease the heap size.

By default, if you deploy Java web applications to a single managed server, EPM System Configurator sets the default heap size for the single managed server based on the machine's memory:

- 12 GB or more on machine, sets heap size at 8 GB
- 6 GB or more, up to but not including 12 GB, sets heap size at 4 GB
- Under 6 GB on a 32-bit machine, sets heap size at 750 MB
- Under 6 GB on a 64-bit machine, sets heap size at 1.536 MB

Changing the Heap Size

Use Windows Registry Editor to change the heap size of the Windows service. To change the heap size of a managed server on Windows:

1. On the machine hosting the product whose managed server you want to modify, open Windows Registry Editor: Select Start and then Run, enter regedit, and then click OK.

2. In Registry Editor, select HKEY_LOCAL_MACHINE, then SOFTWARE, then Hyperion Solutions, then ManagedServerName, and then WindowsServiceName_InstanceName.

For example, if you deployed a single managed server, select HKEY_LOCAL_MACHINE, then SOFTWARE, then Hyperion Solutions, then EPMServer0, and then HyS9EPMServer_InstanceName.

If you scaled out a single managed server, on the scaleout machine, select HKEY_LOCAL_MACHINE, then SOFTWARE, then Hyperion Solutions, then EPMServer1, and then HyS9EPMServer_InstanceName.

For example, if you deployed Oracle Hyperion Planning, select HKEY_LOCAL_MACHINE, then SOFTWARE, then Hyperion Solutions, then Planning0, and then HyS9Planning_InstanceName.

If you need a complete list of managed servers in your deployment, run a deployment report:
Navigate to \textit{EPM\_ORACLE\_INSTANCE}/bin and execute the following command:

\texttt{epmsys_registry report deployment}

The report file (\texttt{deployment_report\_YYYYMMDD\_HHMMSS.html}) is stored in \texttt{EPM\_ORACLE\_INSTANCE/diagnostics/reports}.

3. Right-click \texttt{JVMOptionX} (where \texttt{X} is 1, 2, ...) whose value starts with \texttt{-Xmx}, and then select \texttt{Modify}.

4. In \texttt{Value data}, change the value to a value appropriate for your environment.

\texttt{-XmxValue}

For example, to set the heap size to 8 GB, enter the following:

\texttt{-Xmx8000m}

5. Click \texttt{OK}.

6. Close Registry Editor.

7. Start Oracle Enterprise Performance Management System by selecting \texttt{Start}, then \texttt{All Programs}, then \texttt{Oracle EPM System}, then \texttt{Foundation Services}, and then \texttt{Start EPM System}.

8. Complete these steps for each managed server on each machine in the deployment.

\textbf{Validating the Heap Size}

To validate that the heap size is set correctly:

1. Log in to the WebLogic Administration Console using WebLogic administrator credentials. (\texttt{http://WebLogic\_Admin\_Host:WebLogic\_Admin\_Port/console}, for example: \texttt{http://FNDHOST1:7001/console} (or select \texttt{Start}, then \texttt{All Programs}, then \texttt{Oracle WebLogic}, then \texttt{User Projects}, then \texttt{EPMSSystem}, and then \texttt{Admin Server Console}).

2. In the Domain Structure, expand \texttt{Environment}, and then select \texttt{Servers}.

3. In \texttt{Summary of Servers}, select \texttt{ManagedServerName}.

4. Click the \texttt{Monitoring} tab, and then the \texttt{Performance} tab.

5. In \texttt{Java Virtual Machine Memory Utilization Statistics}, review the \texttt{Heap Size Max} setting.

\section*{Customizing Essbase Configurations}

This section describes additional configuration settings you might need for Oracle Essbase.

\textbf{Enabling Client Lookup by Cluster Name}

Essbase clients can use a URL to connect to an Essbase cluster, in the form: \texttt{http(s)://host:port/aps/Essbase?ClusterName=(clusterName}. To simplify login, Essbase clients can use the cluster name directly instead of the URL. If you want to
enable client login using the cluster name, you must first specify a property to configure Oracle Hyperion Provider Services. The cluster name is resolved by the Provider Services servers specified in configuration files:

To enable lookup by cluster name:

1. Modify `essbase.cfg` and `essbase.properties` as follows:
   - For server-to-server communication, modify `essbase.cfg` to specify the Provider Services server to use, in the following format, separating each URL with a semicolon:
     
     ```
     ApsResolver http(s)://host:port/aps
     ```
   - For client-to-server communication, modify `essbase.properties` to specify the Provider Services server to use, in the following format:
     
     ```
     ApsResolver=http(s)://apshost1:port/aps
     ```

2. Restart Essbase after updating these files.

### Designating a Specific Installation of JRE for use with Essbase

To designate a specific installation of JRE for use with Essbase, update the `JVMMODULELOCATION` setting in `essbase.cfg`.

The `JVMMODULELOCATION` setting in the `essbase.cfg` file (in `ARBORPATH/bin`) enables you to designate a specific installation of JRE for use with Essbase, and is required to enable Data Mining, Oracle Hyperion Shared Services, custom defined functions, triggers, and external authentication.

This setting is particularly useful if you have multiple versions of Java installed on the Essbase Server computer.

During Essbase Server configuration, the correct setting for `JVMMODULELOCATION` is automatically added to `essbase.cfg`.

To change the `JVMMODULELOCATION` parameters, you must specify the full path and file name of the Java Virtual Machine (JVM) library. The location and name of the library varies, depending on the operating system that you are using. EPM System Installer installs JRE in `/1.8.0_181/jre`.

- **Note:**

  To run 64-bit Essbase on any 64-bit operating system requires a 64-bit JVM.

### Managing Memory with JvmModuleLocation

If you are not using Data Mining, Shared Services, custom defined functions, triggers, or external authentication, you can reduce the amount of memory used by editing `essbase.cfg` and setting `JvmModuleLocation` to null (empty).
If you are using these features, and need to reduce the amount of memory used, then you can reduce the JVM heap size by setting the following environment variables:

```
ESS_JVM_OPTION1=-Xmx16m
```

Because the default minimum and maximum for JVM heap size are different for different platforms and versions, set the correct value for your environment.

**Configuring the 32-bit Runtime Client on a 64-bit Windows Platform**

EPM System Installer installs both 32-bit and 64-bit Essbase Client on a machine with a 64-bit operating system.

If you want to use 32-bit and 64-bit client applications on the same machine, and you don’t want to have to recompile applications, use the following procedure.

To use the 32-bit Runtime Client on a 64-bit Microsoft Windows machine:

On the 64-bit machine, run the precompiled 32-bit client program from a command prompt or from a shell window on which `ESSBASEPATH` is set to the installation directory of the 32-bit Runtime Client and `PATH` is set to include the `bin` subdirectory under the `ESSBASEPATH` directory.

For example, on Windows AMD64 set the following:

```
ESSBASEPATH=%EPM_ORACLE_HOME%\common\EssbaseRTC\11.1.2.0
PATH=%ESSBASEPATH%\bin;%PATH%
```

For information on Application Programming Interface and Runtime Client, see the Oracle Essbase API Reference.

**Windows**

To configure 32-bit binaries to run on a 64-bit Windows machine:

1. Install Oracle Hyperion Foundation Services and Essbase but do not run EPM System Configurator.

2. Rename this directory:

   `%EPM_ORACLE_HOME%/products/Essbase/EssbaseServer`

   To:

   `%EPM_ORACLE_HOME%/products/Essbase/EssbaseServer-64`

3. Rename this directory:

   `%EPM_ORACLE_HOME%/products/Essbase/EssbaseServer-32`

   To:

   `%EPM_ORACLE_HOME%/products/Essbase/EssbaseServer`

4. Rename `%EPM_ORACLE_HOME%/bin` to `%EPM_ORACLE_HOME%/bin-64`
5. Rename `%EPM_ORACLE_HOME%/bin-32` to `%EPM_ORACLE_HOME%/bin`.

6. Run EPM System Configurator to configure Essbase but do not perform the Essbase cluster setup task or deploy Essbase in stand-alone mode.

7. Modify `%EPM_ORACLE_INSTANCE%/EssbaseServer/essbaseserver1/bin/essbase.cfg` to use a 32-bit JRE (in the JvmModuleLocation line). For example, set this parameter to:

   ```
   d:/oracle/Middleware/EPMSystem11R1/common/JRE/Sun/1.8.0_181/bin/server/jvm.dll
   ```

8. Modify `%EPM_ORACLE_INSTANCE%/EssbaseServer/essbaseserver1/bin/setEssbaseEnv.bat` to use a 32-bit ODBC (in the ODBCINST= line). For example, set this parameter to:

   ```
   d:/Oracle/Middleware/EPMSystem11R1/common/ODBC-64/Merant/8.0/odbcinst.ini
   ```

9. Modify the `PATH` environment variable so that it points to the 32-bit version:

   ```bash
   %EPM_ORACLE_HOME%/common/ODBC/Merant/7.1/Drivers
   ```

10. Make a copy of `%EPM_ORACLE_INSTANCE%/EssbaseServer/essbaseserver1/startEsscmd.bat` to `startEssbase.bat` and edit the file to change the `ESSCMD` line to `ESSBASE`.

Disaster Recovery

Related Topics
- General Information About Disaster Recovery
- Disaster Recovery Architecture
- Disaster Recovery for EPM System Components
- Disaster Recovery Without File System and Database Replication
- Additional Information

General Information About Disaster Recovery

This chapter contains information that is specific to Oracle Enterprise Performance Management System Disaster Recovery configurations. The Oracle Fusion Middleware Disaster Recovery Guide (http://download.oracle.com/docs/cd/E14571_01/doc.1111/e15250/toc.htm) is the primary reference for design considerations, recommendations, setup procedures, troubleshooting steps, and other information that you need to deploy and manage the Oracle Fusion Middleware Disaster Recovery solution.
Note:

Although the deployment shown in Figure 1 uses symmetric topology, with the same number of servers at the production and standby sites, deployment using asymmetric topology (with fewer servers at the standby site than at the production site) is also possible. Deployment with asymmetric topology requires a server at the standby site for each logical server cluster at the production site.

Use of a shared or replicated disk requires a common share across machines; for example, the share can be under /user_projects/data.

Disaster Recovery for EPM System Components

Environment Configuration

Configuring a Disaster-Recovery environment requires these steps:

1. Install and configure Oracle Enterprise Performance Management System at the production site.
Runtime executables and data should be on a replicatable partition.
Distributed services must be clustered to form a logical service.

2. If the host names at the standby site differ from the host names at the production site, set up host name aliases at the standby site. See Host Name Requirements.

3. When the EPM System configuration at the production site is complete, install and configure EPM System at the standby site.

4. Set up database replication.

---

**Note:**

You can use a backup and restoration procedure for replication.

5. Enable the standby site.
   - Disable mirroring between the production and standby sites.
   - Run the crash-recovery procedure for each application to recover Oracle Essbase. See Chapter 4, “Essbase Components,” in the *Oracle Enterprise Performance Management System Backup and Recovery Guide*.
   - Start the services on the standby hosts.

**Host Name Requirements**

An EPM System Disaster Recovery deployment requires a means of resolving host references between the production and standby sites. Ensure that your configuration uses one of these options, listed in order of preference:

- Production and standby sites are on separate networks.
  The fully qualified host names can be the same in both sites.
- Production and standby sites have different DNS that resolve the host names to the correct IP address in their network.
  The standby site can have a standby DNS that is activated when a disaster occurs.
- Production host names are resolved to a local IP address at the standby site by means of an `/etc/hosts` file.

If the host names must differ between the production and standby sites and there is no separate DNS for the standby site, set up an alias for the production site servers in the standby site as shown below, so that the main server is the first entry in the alias.
Database Recommendations

Database recommendations for a Disaster Recovery environment:

- Use the database host name alias on the standby site.
- Use Oracle Data Guard configuration for data repositories.
- For planned configuration changes, force database synchronization with Oracle Data Guard.

Disaster Recovery Without File System and Database Replication

You can set up Disaster Recovery using backup instead of file system and database replication. With replication, any changes made on the production site are also applied to the standby site. Backup is less costly than replication but enables you to recover only backed-up data. For example, if data was last backed up on Friday and the production site is damaged on the following Thursday, data changes that occurred between the two dates are lost. More-frequent backups enable you to recover more data.

The file system backup and the database backup must be synchronized. Backing up the file system and the database at approximately the same time, when there is relatively little activity, ensures that they are synchronized.

For Disaster Recovery without file systems and database replication, take one of these steps:

- Replicate the installation image to ensure that all patches applied to the production site after the initial setup are also applied to the standby site.
- Promptly manually apply all patches at the production site to the standby site.
Additional Information

For more information about setting up a Disaster Recovery environment, see these documents:

- The Oracle Fusion Middleware Disaster Recovery Guide (http://download.oracle.com/docs/cd/E14571_01/doc.1111/e15250/intro.htm#BABHCEJJ)
- The Disaster Recovery guide for the RDBMS that you use