Oracle® Fusion Applications
Installing and Managing in an Oracle VM Environment
11g Release 8 (11.1.8)
E26570-16

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Documentation for users that describes how to install and configure Oracle Fusion Applications as an Oracle VM instance.
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Glossary
The Oracle Fusion Applications Installing and Managing in an Oracle VM Environment describes how to install, configure, and manage instances of Oracle VM environments created from the Oracle VM templates for Oracle Fusion Applications. This document is applicable for the environments created from the official releases of Oracle VM templates for Oracle Fusion Applications Release 2 (11.1.2) and higher. The content is not applicable for any Oracle VM environments that are created using other methods.

Audience

This guide is intended for users who are installing, configuring, and managing an Oracle VM environment for Oracle Fusion Applications for the first time. Users should be comfortable with system administration tasks such as installing, setting up, and configuring Oracle Database 11g, installing and setting up Oracle VM manager, installing and managing Oracle Enterprise Manager, and applying patches on the computer where the product offerings will be installed.

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Related Documents

For more information, see the following documents:

- Oracle Fusion Applications Installation Guide
- Oracle Fusion Applications Administrator’s Guide
- Oracle Fusion Middleware Administrator’s Guide
- Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Identity Management (Oracle Fusion Applications Edition)
- Oracle Database Installation Guide for your platform
- Oracle Fusion Applications Common Implementation Guide
- Oracle Fusion Applications Patching Guide
- Oracle VM Documentation

Conventions

The following text conventions are used in this guide:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td><strong>monospace</strong></td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
What's New in This Guide

The following topics introduce the new and changed features of Oracle Fusion Applications Installation Guide for Oracle VM and other significant changes that are described in this guide, and provides pointers to additional information.

New and Changed Features for 11g Release 8 (11.1.8)

Oracle Fusion Applications Installation Guide for Oracle VM 11g Release 8 (11.1.8) includes the following new and changed features for this document.

Section 3.1.1.1

- Section 3.1.1 has been changed to reflect updated deployment properties. See: Section 3.1.1, "Additional Deployment Properties".
- Section 3.1 has been changed to reflect updated deployment properties. See: Section 3.1, "Prepare Deployment Properties".
- Section 2.9 has been altered to reflect that only 3-host standalone IDM is supported. See: Chapter 2.9, "Configure Standalone Oracle Identity Management".
- Table 2-1 has been altered to properly reflect current values. See: Table 2–1, "Suggested Memory (in GB) and Number of vCPUs".
- Section 2.8 has been altered to reflect the discontinuation of the use of Oracle Enterprise Manager 11g Grid Control See: Section 2.8, "Prepare an Oracle Enterprise Manager Instance".
Introduction to Oracle VM Installation

This chapter introduces the user to the installation and configuration of Oracle Fusion Applications as an Oracle VM instance.

This chapter includes the following sections:

- Section 1.1, "Overview"
- Section 1.2, "Oracle VM Installation Roadmap"

1.1 Overview

Oracle VM provides the topology required by Oracle Fusion Applications on a virtual server. An Oracle VM Template contains all of the software required to run a fully provisioned environment, including Oracle Database, Oracle Fusion Middleware, Oracle Identity Management, and Oracle Fusion Applications, all running on Oracle VM technology. It defines the topologies that will be deployed on Hypervisor servers along with associated artifacts, such as volumes and firewall configuration necessary to set up an Oracle Fusion Applications instance. The Oracle VM template is created using Oracle Fusion Applications Provisioning Installers with combinations of the following product configurations:

- Oracle Fusion Customer Relationship Management (Sales and Marketing), Enterprise Contracts, and Oracle Fusion Incentive Compensation
- Oracle Fusion Financials (Financials, Oracle Fusion Procurement, and Oracle Fusion Projects)
- Oracle Fusion Human Capital Management (Workforce Deployment, Workforce Development, and Compensation Management)
- Oracle Fusion Supply Chain Management (Product Management, Order Orchestration, Material Management and Logistics)

**Note:** Oracle Fusion Accounting Hub is a subset of Financials product configuration. Customer Data Hub is a subset of CRM Sales and Marketing product configuration.

Table 1–1 displays a list of available templates along with their included product configurations. Each template has a fixed topology that cannot be altered.
Table 1–1  Oracle VM Templates and Product Configurations

<table>
<thead>
<tr>
<th>Template Name</th>
<th>Included Product Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSI (Global Single Instance)</td>
<td>Oracle Fusion Customer Relationship Management, Enterprise Contracts, Incentive Compensation, Oracle Fusion Financials, Oracle Fusion Supply Chain Management, and Oracle Fusion Human Capital Management</td>
</tr>
<tr>
<td>CRM</td>
<td>Oracle Fusion Customer Relationship Management, Enterprise Contracts, and Incentive Compensation</td>
</tr>
<tr>
<td>HCM</td>
<td>Oracle Fusion Human Capital Management</td>
</tr>
</tbody>
</table>

The enterprise deployment architectures provided by Oracle VM templates implement High Availability (HA) because each component or functional group of software components is replicated on a different computer, and configured for component-level high availability. You choose whether you want HA or not during the creation of the Oracle VM instance. After you select the template that meets your needs, you complete the prerequisite steps to prepare the reference environment, and then you run the deployment steps to make the environment available for use (a reference environment is the environment delivered in the Oracle VM template). When you run the Oracle VM process, your entire Oracle Fusion Applications environment, except for the Oracle Fusion Applications Database, Oracle internet Directory Database, and Oracle Identity Management Database, runs on Oracle VM servers using Hypervisor. Outside of the Hypervisor, you need a deployer host where you install and run Oracle VM Manager to create and deploy Oracle VMs on the Hypervisor servers.

The deployment is the process that is triggered on the deployer host when the user invokes the `fovmdeploy.sh createTopology` command. During the process of deployment, the Oracle VM servers that are part of the topology are created from the Oracle VM template and are started. The initial phase of Oracle VM Deployment includes a process called rehydration, which performs additional reconfiguration steps that are specific to each Oracle VM. Before deployment, however, a set of prerequisites must be met to ensure that Oracle VM can be deployed properly. One of these steps is to establish a target database, an existing database located on a physical machine where Oracle VM Manager restores the Recovery Manager backup that is delivered as part of the Oracle VM template.

1.2 Oracle VM Installation Roadmap

The following table lists the high-level tasks included in the end-to-end Oracle VM Installation flow.

Table 1–2  Oracle VM Installation Flow

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select the appropriate template.</td>
<td>Review the Oracle Fusion Applications product offerings included in each template.</td>
<td>“Selecting Product Offerings” in Oracle Fusion Applications Installation Guide</td>
</tr>
<tr>
<td>Complete prerequisites.</td>
<td>To install an Oracle VM environment, you must complete prerequisite steps to ensure that your system meets certain requirements and is configured properly.</td>
<td>Chapter 2, “Prerequisites for Oracle VM Deployment”</td>
</tr>
<tr>
<td>Prepare deployment properties.</td>
<td>Modify the properties file for the topology you are deploying.</td>
<td>Section 3.1, “Prepare Deployment Properties”</td>
</tr>
</tbody>
</table>
### Table 1–2  (Cont.) Oracle VM Installation Flow

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run deployment.</td>
<td>Create the Oracle Fusion Applications topology, including Oracle Identity Management, onto the Oracle VMs.</td>
<td>Section 3.2, &quot;Run Deployment&quot;</td>
</tr>
<tr>
<td>Post-rehydration.</td>
<td>Perform post-rehydration steps.</td>
<td>Section 3.3, &quot;Post-Rehydration Steps&quot;</td>
</tr>
<tr>
<td>Scale out nodes.</td>
<td>Scale out the Oracle HTTP Server (OHS) and Primary nodes.</td>
<td>Section 3.4.1, &quot;Scale Out the OHS Node&quot;, Section 3.4.2, &quot;Scale Out the Primary Node&quot;</td>
</tr>
<tr>
<td>Remove a deployed topology.</td>
<td>Remove a previously created topology, as needed.</td>
<td>Section 3.4.3, &quot;Remove a Deployed Topology (Optional)&quot;</td>
</tr>
<tr>
<td>Remove Exported Template Storage.</td>
<td>Remove pre-exported templates that are no longer needed.</td>
<td>Section 3.4.4, &quot;Remove Exported Template Storage (Optional)&quot;</td>
</tr>
<tr>
<td>Rerun a deployment.</td>
<td>Reset a database so a deployment can be rerun.</td>
<td>Section 3.4.5, &quot;Rerun a Deployment (Optional)&quot;</td>
</tr>
</tbody>
</table>
This chapter describes the prerequisites for the deployment of an Oracle VM Template. This chapter includes the following sections:

- Section 2.1, "Oracle VM Servers and Virtual IP Addresses"
- Section 2.2, "Allocate a Deployer Host"
- Section 2.3, "Set the Privilege Escalation Mechanism"
- Section 2.4, "Install Oracle VM Manager"
- Section 2.5, "Provide Access to NetApp or Sun Storage Server"
- Section 2.6, "Allocate BIG IP End Points"
- Section 2.7, "Create a Database"
- Section 2.8, "Prepare an Oracle Enterprise Manager Instance"
- Section 2.9, "Configure Standalone Oracle Identity Management"
- Section 2.10, "Confirm the Oracle Virtual Assembly Builder Home is Accessible"
- Section 2.11, "Register Templates with Oracle VM Manager"
- Section 2.12, "Install the Oracle VM Automation Utility"
- Section 2.13, "Enable Secure Shell (SSH) for Deployer Host"

### 2.1 Oracle VM Servers and Virtual IP Addresses

The High Availability (HA) topologies require creation of the following Oracle VMs by default. You must have one or more Oracle VM servers that can host the following Oracle VMs.

- **Node 1**: (FA) Contains Administration Servers from all of the Oracle Fusion Applications domains.
- **Node 2**: (Primary) Contains all Managed Servers from Oracle Fusion Applications domains that need to scale out.
- **Node 3**: (Secondary) Contains the remaining Managed Servers from Oracle Fusion Applications domains.
- **Node 4**: Contains the Oracle Business Intelligence domain.
- **Node 5**: Contains the base Oracle HTTP Server (OHS) instance.
- **Node 6**: Contains the High Availability OHS instance and is optional.
Oracle VM Servers and Virtual IP Addresses

- Node 7: Contains the primary Managed Servers and is a replica of Node 2. This node is optional.
- Node 8: Contains the secondary Managed Servers and is a replica of Node 3. This node is optional.
- Node 9: Contains the IDM OID.
- Node 10: Contains the IDM MW.
- Node 11: Contains the IDM OHS (also called Auth OHS).

Ensure that you allocate virtual host names and virtual IP addresses (static IPs) for each of these nodes. The Domain Name System (DNS) server used in the subnet where the Hypervisors and Oracle VMs reside must resolve the virtual host names and virtual IP addresses. During deployment you specify the values of virtual host names and virtual IP addresses in deployment properties. For more information, see Section 3.1, "Prepare Deployment Properties."

The following table displays suggested values for memory and number of virtual CPUs (vCPUs) for each topology.

| Table 2–1  Suggested Memory (in GB) and Number of vCPUs |
|-----------------|--------|--------|--------|
| **Node Type/Topology** | **CRM** | **HCM** | **GSI** |
| Node 1 - FA | 19 G | 6 CPU | 14 G | 6 CPU | 24 G | 6 CPU |
| Node 2 - Primary | 29 G | 12 CPU | 32 G | 12 CPU | 60 G | 12 CPU |
| Node 3 - Secondary | 59 G | 12 CPU | 61 G | 12 CPU | 85 G | 12 CPU |
| Node 4 - BI | 13 G | 6 CPU | 13 G | 6 CPU | 13 G | 6 CPU |
| Node 5 - OHS | 3 G | 2 CPU | 3 G | 2 CPU | 3 G | 2 CPU |
| Node 9 - IDM3_OID | 4 G | 4 CPU | 4 G | 4 CPU | 4 G | 4 CPU |
| Node 10 - IDM3_MW | 11 G | 4 CPU | 11 G | 4 CPU | 11 G | 4 CPU |
| Node 11 - IDM3_OHS | 1.5 G | 2 CPU | 1.5 G | 2 CPU | 1.5 G | 2 CPU |

The memory settings provided are a minimum number to successfully complete deployment and rehydration. Both the memory number and the number of vCPUs on an Oracle VM may be changed during deployment, according to requirements based on a formal sizing exercise.

At the end of deployment, the Administration Servers on the Node 1 are shut down and the memory allocated to this Oracle VM is reduced to only 1.5 GB after rehydration completes successfully. The memory is returned to the pool. This behavior is controlled by the following deployment properties.

faovm.ha.adminserver.shutdown=true
faovm.ha.fa.post.rehydrate.memory=1536

If you do not want the Node 1 Administration Servers to shutdown at the end of deployment, you can modify the properties as follows. For information about how to modify these properties, see Section 3.1, "Prepare Deployment Properties."

faovm.ha.adminserver.shutdown=false
faovm.ha.fa.post.rehydrate.memory=value_in_MB

If you set the property, faovm.ha.adminserver.shutdown=false, the Administration Servers stay up and the memory is not changed. If you leave this property set to true
but increase the `post.rehydrate.memory` from 1536, then you are specifying the quantity of memory allocated to the Oracle VM after shutting down the servers.

If you leave the settings at their original values, `true` and 1536, to get enough memory returned to the Oracle VM to start the Administration Servers, you need to perform the following on the Oracle VM:

```bash
login as root
echo 30000MB > /proc/xen/balloon
```

After this step, you can start the Administration Servers. Note that when you use the previous method to increase the memory of the Oracle VM, you can increase the memory only up to the value that was initially allocated for the Oracle VM during rehydration.

### 2.2 Allocate a Deployer Host

Allocate one server host, which can be a smaller machine, as a deployer host. You can use this host to run Oracle VM Manager, mount the Oracle Virtual Assembly Builder home with the templates, and run the deployment. The deployment uses network and disk resources, so two vCPUs and 4 GB of RAM are sufficient.

Do not use one of your Oracle VM servers (Hypervisors) as the deployer host because Hypervisors are not suited for heavy I/O processing and may lock up.

### 2.3 Set the Privilege Escalation Mechanism

Certain operations that run from the deployer host require root privilege. There are four deployment properties that control how root privileges are obtained, as shown in the following examples. Note that lines beginning with a pound sign, `#`, are comments.

```
# Deploy-only privilege escalation properties, supported methods: run_as_root, sudo, pbrun
faovm.privilege.escalation.method=run_as_root

# If escalating via run_as_root, path to properly configured run_as_root binary relative to deployfw
faovm.privilege.escalation.run_as_root.path=bin/run_as_root

#faovm.privilege.escalation.run_as_root.path=/usr/local/packages/aime/ias/run_as_root

#Supported privilege escalation methods: none, sudo, pbrun
#If escalating via sudo, path to sudo binary:
faovm.ha.fusiondb.new.host.privilege.escalation.sudo.path=/usr/bin/sudo

# If escalating via pbrun, path to pbrun binary
faovm.ha.fusiondb.new.host.privilege.escalation.pbrun.path=/path/to/pbrun
faovm.ha.fusiondb.new.host.privilege.escalation.pbrun.policy.name=policy1-root
```

The property, `faovm.privilege.escalation.method`, takes a value of `run_as_root`, `sudo`, or `pbrun`, as the method to obtain root privilege. The corresponding properties, `faovm.privilege.escalation.x.path` where `x` is `run_as_root`, `sudo` or `pbrun`, specify where the corresponding root privilege utility is located.

The property, `faovm.privilege.escalation.run_as_root.path` specifies where the `run_as_root` utility is located. The Oracle VM Automation Utility, described in Section 2.12, "Install the Oracle VM Automation Utility", includes the `run_as_root` utility in the `FAOVM/deployfw/bin` directory. You can prepare the
Install Oracle VM Manager

FAOVM/deployfw/bin/run_as_root utility by following these steps before starting the deployment:

1. Become the root user on the deployer host.
2. Run these commands:
   
   ```
   chown root deployfw/bin/run_as_root
   chmod u+s deployfw/bin/run_as_root
   ```

   If you want to use sudo or pbrun instead, then set the
   faovm.privilege.escalation.method property to sudo or pbrun, and update the
   location of the utilities as shown in the following example:

   ```
   # If escalating via sudo, path to sudo binary
   faovm.privilege.escalation.sudo.path=/usr/bin/sudo

   # If escalating via pbrun, path to pbrun binary
   faovm.privilege.escalation.pbrun.path=/path/to/pbrun
   ```

2.4 Install Oracle VM Manager

Oracle VM Manager orchestrates the deployment. Follow the steps in the Oracle VM
Manager Installation Guide to install Oracle VM Manager on your deployer host.

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15439/toc.htm

After you install Oracle VM Manager, register your Oracle VM server pools with the
Oracle VM Manager. For more information, see Section 2.11, "Register Templates with
Oracle VM Manager."

2.5 Provide Access to NetApp or Sun Storage Server

Access to a NetApp or a Sun Storage Server is required so that Oracle Fusion
Applications Oracle VM automation can create volumes required for deployment. For
each deployment instance, the following volumes are created on the storage server
during the deployment process if you are using NetApp or Sun Storage Server. If you
are using generic Network File System (NFS), then the following volumes must be
created and must exist before the deployment process begins. During deployment, the
file volumes are mounted in the respective Oracle VMs. To configure the storage
server, see Step 5 of Section 3.1, "Prepare Deployment Properties."

- Volume 1: Shared by the FA, Primary, Secondary, and BI nodes (120 GB) The name
  of volume 1 must be specified for the faovm.ha.fa.storage.name deployment
  property.

- Volume 2: Used by the OHS nodes. (12 GB) The name of volume 2 must be
  specified for the faovm.ha.ohs.storage.name deployment property.

- Volume 3: Shared by IDM3_OID and IDM3_MW nodes. (25 GB) The name of
  volume 3 must be specified for the faovm.ha.idm3oid.storage.name deployment
  property.

- Volume 4: Used by IDM3_OHS node (10 GB) The name of volume 4 must be
  specified for the faovm.ha.idm3ohs.storage.name deployment property.

The volume sizes specified are based on the assumption that Volume 1 consumes
approximately 90 GB after rehydration and that OHS and WebChat use approximately
8 GB. These volume sizes can be adjusted during deployment.
2.6 Allocate BIG IP End Points

Allocate BIG IP end points, both external and internal, for the Oracle VM topology deployment. The following two tables illustrate examples of BIG IP end points and their mappings to OHS virtual host end points. Replace `OHS_VM_IP_ADDR` with the IP address of your OHS Oracle VM. The port values for internal end points and the mapped OHS virtual host end points, both internal and external, are fixed and should have the exact values listed. Note that not all end points may be required for all topologies. For example, the end point for ICDomain will not be required for any of the published topologies, but Oracle reserves these ports for future use.

Table 2–2  Internal BIG IP End Points (HTTP - Non-SSL)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Internal End Point (host:port)</th>
<th>Mapped to OHS Virtual Host End Point (host:port)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CommonDomain</td>
<td>gsi-elha-fs-int.example.com:10613</td>
<td><code>OHS_VM_IP_ADDR:10613</code></td>
</tr>
<tr>
<td>HCMDomain</td>
<td>gsi-elha-hcm-int.example.com:10619</td>
<td><code>OHS_VM_IP_ADDR:10619</code></td>
</tr>
<tr>
<td>CRMDomain</td>
<td>gsi-elha-crm-int.example.com:10615</td>
<td><code>OHS_VM_IP_ADDR:10615</code></td>
</tr>
<tr>
<td>FinancialDomain</td>
<td>gsi-elha-fin-int.example.com:10603</td>
<td><code>OHS_VM_IP_ADDR:10603</code></td>
</tr>
<tr>
<td>ProjectsDomain</td>
<td>gsi-elha-prj-int.example.com:10605</td>
<td><code>OHS_VM_IP_ADDR:10605</code></td>
</tr>
<tr>
<td>ProcurementDomain</td>
<td>gsi-elha-prc-int.example.com:10607</td>
<td><code>OHS_VM_IP_ADDR:10607</code></td>
</tr>
<tr>
<td>ProcurementDomain(Supplier Portal)</td>
<td>gsi-elha-prc-sp-int.example.com:10609</td>
<td><code>OHS_VM_IP_ADDR:10609</code></td>
</tr>
<tr>
<td>SCMDomain</td>
<td>gsi-elha-scm-int.example.com:10617</td>
<td><code>OHS_VM_IP_ADDR:10617</code></td>
</tr>
<tr>
<td>BIDomain</td>
<td>gsi-elha-bi-int.example.com:10621</td>
<td><code>OHS_VM_IP_ADDR:10621</code></td>
</tr>
<tr>
<td>ICDomain</td>
<td>gsi-elha-ic-int.example.com:10611</td>
<td><code>OHS_VM_IP_ADDR:10611</code></td>
</tr>
<tr>
<td>IDMAdmin</td>
<td>gsi-cln-ha-ldap-admin.example.com:443</td>
<td><code>IDM_Auth_OHS_IP_ADDR:7777</code></td>
</tr>
</tbody>
</table>

Table 2–3  External BIG IP End Points (HTTPS - SSL enabled)

<table>
<thead>
<tr>
<th>Domain</th>
<th>External End Point (host:port)</th>
<th>Mapped to OHS Virtual Host End Point (host:port)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CommonDomain</td>
<td>gsi-elha-fs-ext.example.com:10614</td>
<td><code>OHS_VM_IP_ADDR:10614</code></td>
</tr>
<tr>
<td>HCMDomain</td>
<td>gsi-elha-hcm-ext.example.com:10620</td>
<td><code>OHS_VM_IP_ADDR:10620</code></td>
</tr>
<tr>
<td>CRMDomain</td>
<td>gsi-elha-crm-ext.example.com:10616</td>
<td><code>OHS_VM_IP_ADDR:10616</code></td>
</tr>
<tr>
<td>FinancialDomain</td>
<td>gsi-elha-fin-ext.example.com:10604</td>
<td><code>OHS_VM_IP_ADDR:10604</code></td>
</tr>
<tr>
<td>ProjectsDomain</td>
<td>gsi-elha-prj-ext.example.com:10606</td>
<td><code>OHS_VM_IP_ADDR:10606</code></td>
</tr>
<tr>
<td>ProcurementDomain</td>
<td>gsi-elha-prc-ext.example.com:10608</td>
<td><code>OHS_VM_IP_ADDR:10608</code></td>
</tr>
<tr>
<td>ProcurementDomain(Supplier Portal)</td>
<td>gsi-elha-prc-sp-ext.example.com:10610</td>
<td><code>OHS_VM_IP_ADDR:10610</code></td>
</tr>
<tr>
<td>SCMDomain</td>
<td>gsi-elha-scm-ext.example.com:10618</td>
<td><code>OHS_VM_IP_ADDR:10618</code></td>
</tr>
<tr>
<td>BIDomain</td>
<td>gsi-elha-bi-ext.example.com:10622</td>
<td><code>OHS_VM_IP_ADDR:10622</code></td>
</tr>
<tr>
<td>ICDomain</td>
<td>gsi-elha-ic-ext.example.com:10612</td>
<td><code>OHS_VM_IP_ADDR:10612</code></td>
</tr>
<tr>
<td>IDMDomain</td>
<td>gsi-cln-ha-login.example.com:443</td>
<td><code>IDM_Auth_OHS_IP_ADDR:7777</code></td>
</tr>
</tbody>
</table>
2.7 Create a Database

The Oracle Fusion Applications database, Oracle Internet Directory database, and Oracle Identity Management database that is delivered as part of the Oracle VM template was created by an RMAN backup. The Oracle VM process restores this backup to an already existing database, called the target database. The target database can be either a two-node Oracle Real Application Cluster (Oracle RAC) or a single instance database and should be on a physical machine, not an Oracle VM. This means no Oracle Database server is running in any of the Oracle VM servers listed in Section 2.1, "Oracle VM Servers and Virtual IP Addresses". For this release, the supported database version is Oracle Database 11.2.0.3.

Review these sections to prepare your database:
- Section 2.7.1, "Applying Patches to Exadata"
- Section 2.7.2, "Configure spfile on the Database"
- Section 2.7.3, "Set Up an Oracle Real Application Clusters (RAC) Database"
- Section 2.7.4, "Set Up a Single-Instance Database"

2.7.1 Applying Patches to Exadata

For customers on the Linux64 operating system who use the Oracle Exadata Database Machine, please download and apply patch p13734832_112030_Linux-x86-64.zip from Oracle Support, making sure to follow any manual patch postinstallation steps described in the readme file for the patch.

Then, the following patches for Generic and Linux64 must be applied with the included considerations:

<table>
<thead>
<tr>
<th>Generic/Linux Patch</th>
<th>Exadata Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>p13508115_112030_Generic.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p10263668_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p12312133_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p12358083_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p12672969_112030_Linux-x86-64.zip</td>
<td>Ignore (included in p13734832_112030_Linux-x86-64.zip)</td>
</tr>
<tr>
<td>Generic/Linux Patch</td>
<td>Exadata Equivalent</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>p12772404_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p12880299_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p12889054_112030_Linux-x86-64.zip</td>
<td>Ignore (included in p13734832_112030_Linux-x86-64.zip)</td>
</tr>
<tr>
<td>p12977501_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p12985184_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13014128_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13073340_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13257247_112030_Linux-x86-64.zip</td>
<td>Ignore (included in p13734832_112030_Linux-x86-64.zip)</td>
</tr>
<tr>
<td>p13365700_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13382280_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p13404129_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13454210_112030_Linux-x86-64.zip</td>
<td>Ignore (included in p13734832_112030_Linux-x86-64.zip)</td>
</tr>
<tr>
<td>p13503598_112030_Linux-x86-64.zip</td>
<td>Ignore (included in p13734832_112030_Linux-x86-64.zip)</td>
</tr>
<tr>
<td>p13714926_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p13775960_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
<tr>
<td>p13787482_112030_Linux-x86-64.zip</td>
<td>Apply as is</td>
</tr>
<tr>
<td>p13790109_112030_Linux-x86-64.zip</td>
<td>Download and apply the overlay patch on 11.2.0.3.5ExadataData base for the same Bug number</td>
</tr>
</tbody>
</table>
2.7.2 Configure spfile on the Database

The RMAN restore procedure relies on the target database being configured with an spfile. Follow these steps to add an spfile file to the database:

1. Log in as the sys user.

2. For the following command:

   create spfile from pfile = 'ORACLE_HOME/dbs/initORACLE_SID.ora';

   replace ORACLE_HOME and ORACLE_SID with the value of the database that you created and run the command.

   If an spfile does not exist for the target database before running the RMAN restore, an error occurs, related to not being unable to find /dbs/spfile.

2.7.3 Set Up an Oracle Real Application Clusters (RAC) Database

The following is the setup for a two-node Oracle RAC database for Oracle VM deployment. See Section 2.7.4, "Set Up a Single-Instance Database" for the setup of a single instance database.

2.7.3.1 Database Parameters

The following table describes the recommended database parameters that should be set before database cloning.
### Table 2-4  Recommended Fusion Applications Database Parameters for Oracle 11.2.0.3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Recommended Value for Starter</th>
<th>Recommended Value for Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>_fix_control</td>
<td>5483301:OFF, 6708183:ON</td>
<td>5483301:OFF, 6708183:ON</td>
</tr>
<tr>
<td>_b_tree_bitmap_plans</td>
<td>FALSE</td>
<td>FALSE</td>
</tr>
<tr>
<td>audit_trail</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>nls_sort</td>
<td>BINARY</td>
<td>BINARY</td>
</tr>
<tr>
<td>open_cursors</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>4 GB</td>
<td>8 GB</td>
</tr>
<tr>
<td>plsql_code_type</td>
<td>NATIVE</td>
<td>NATIVE</td>
</tr>
<tr>
<td>processes</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>session_cached_cursors</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>sga_target</td>
<td>9 GB</td>
<td>18 GB</td>
</tr>
<tr>
<td>undo</td>
<td>6 GB; autoextend ON</td>
<td>6 GB; autoextend ON</td>
</tr>
<tr>
<td>temp</td>
<td>6 GB; autoextend ON</td>
<td>6 GB; autoextend ON</td>
</tr>
<tr>
<td>redo</td>
<td>3 groups; each 2 GB per database instance</td>
<td>3 groups; each 2 GB per database instance</td>
</tr>
<tr>
<td>DB_SECUREFILE</td>
<td>ALWAYS</td>
<td>ALWAYS</td>
</tr>
<tr>
<td>PARALLEL_MAX_SERVERS</td>
<td>CPU_COUNT</td>
<td>CPU_COUNT</td>
</tr>
<tr>
<td>JOB_QUEUE_PROCESSES</td>
<td>CPU_COUNT</td>
<td>CPU_COUNT</td>
</tr>
<tr>
<td>add_active_session_lega__behavior</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
</tbody>
</table>

The following table describes the recommended Oracle Internet Directory Database parameters for Oracle 11.2.0.3

### Table 2-5  Recommended Oracle Internet Directory Database Parameters for Oracle 11.2.0.3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>db_securefile</td>
<td>Always</td>
</tr>
<tr>
<td>parallel_max_servers</td>
<td>cpu_count</td>
</tr>
<tr>
<td>job_queue_processes</td>
<td>cpu_count</td>
</tr>
<tr>
<td>_b_tree_bitmap_plans</td>
<td>FALSE</td>
</tr>
<tr>
<td>audit_trail</td>
<td>NONE</td>
</tr>
<tr>
<td>nls_sort</td>
<td>BINARY</td>
</tr>
<tr>
<td>open_cursors</td>
<td>500</td>
</tr>
<tr>
<td>session_cached_cursors</td>
<td>500</td>
</tr>
<tr>
<td>plsql_code_type</td>
<td>NATIVE</td>
</tr>
<tr>
<td>processes</td>
<td>2500</td>
</tr>
<tr>
<td>sga_target</td>
<td>4 GB</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>2 GB</td>
</tr>
</tbody>
</table>
The following table contains recommended Oracle Internet Management Database parameters for Oracle 11.2.0.3.

### Table 2–6  Recommended Oracle Internet Management Database Parameters for Oracle 11.2.0.3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>db_securefile</td>
<td>Always</td>
</tr>
<tr>
<td>parallel_max_servers</td>
<td>cpu_count</td>
</tr>
<tr>
<td>job_queue_processes</td>
<td>cpu_count</td>
</tr>
<tr>
<td>_b_tree_bitmap_plans</td>
<td>FALSE</td>
</tr>
<tr>
<td>audit_trail</td>
<td>NONE</td>
</tr>
<tr>
<td>nls_sort</td>
<td>BINARY</td>
</tr>
<tr>
<td>open_cursors</td>
<td>500</td>
</tr>
<tr>
<td>sessionCached_cursors</td>
<td>500</td>
</tr>
<tr>
<td>plsql_code_type</td>
<td>NATIVE</td>
</tr>
<tr>
<td>processes</td>
<td>2500</td>
</tr>
<tr>
<td>sga_target</td>
<td>4 GB</td>
</tr>
<tr>
<td>pgaAggregate_target</td>
<td>2 GB</td>
</tr>
<tr>
<td>undo</td>
<td>6 GB</td>
</tr>
<tr>
<td>temp</td>
<td>6 GB</td>
</tr>
<tr>
<td>redo</td>
<td>3 groups; each 2 GB per database instance</td>
</tr>
</tbody>
</table>

When changing Oracle RAC database parameters to conform with Performance, Scalability and Reliability (PSR) requirements, use and update the spfile in Oracle Automatic Storage Management. Do not save the parameters to a local spfile. The Oracle VM database restore process uses and updates only the Oracle Automatic Storage Management spfile. Oracle VM assumes that the location of the Oracle Automatic Storage Management spfile is:

```bash
spfile='+DATADISCGROUP/RACDBNAME/spfileRACDBNAME.ora'
```

For example:

```bash
spfile='+DATA_SLCC10/dbm/spfiledbm.ora'
```

In this example, `DATA_SLCC10` is the Data Disc Group name and `dbm` is the Oracle RAC database name.
2.7.3.2 Collect Oracle RAC Database Information
Collect the following information about your Oracle RAC database, which is required when you specify input property values in the deploy.properties file before deployment:

- Oracle RAC service name
- Physical host names for the two-node Oracle RAC database
- SID values for the two-node Oracle RAC database
- Listener port for the two-node Oracle RAC database, where the ports must be the same on each instance
- Oracle home
- Operating system user credentials that own the Oracle RAC instance, generally for the oracle user
- SYS schema credentials
- Oracle Automatic Storage Management DATA disc and REDO disc names
- Path to the folders where datafiles, temporary files and redo logs will be restored. You may want to query the Oracle RACs Oracle Automatic Storage Management to get these values.
- Path to the spfile in Oracle Automatic Storage Management.

2.7.3.3 Specify a Stage Location
Specify a stage location that is not in the Oracle Automatic Storage Management, to which the contents of the Recovery Manager (RMAN) database backup .tar.gz file can be unpacked in preparation for the RMAN restore. The deployment process will restore the RMAN backup of the reference environment database to the target Oracle RAC database using the first node of the two-node Oracle RAC.

2.7.4 Set Up a Single-Instance Database
Restoring to a single-instance database is similar to restoring to an Oracle RAC database, with the following exceptions:

- Set the faovm.ha.fusiondb.new.is.rac property to false.
- If the single instance database (SIDB) is not configured to use Oracle Automatic Storage Management, then you must provide database data file paths to these properties: faovm.ha.fusiondb.new.datafile.path, faovm.ha.fusiondb.new.tempfile.path, and faovm.ha.fusiondb.new.recolog.path. These must be set to the absolute path of the folder where the target database stores data/temp files.
  
  Run show parameter control_files; in SQLPlus before running deploy, to find this path.
- Leave the properties for Oracle RAC, faovm.ha.fusiondb.new.datadisc, and faovm.ha.fusiondb.new.recodisc as they are, but do not leave them empty.
- Set the service name to be the same as the SID.
- If the single instance database is configured to use Oracle Automatic Storage Management, the following properties should be filled with the correct Oracle Automatic Storage Management disc group names: faovm.ha.fusiondb.new.datafile.path, faovm.ha.fusiondb.new.tempfile.path,
faovm.ha.fusiondb.new.recolog.path, faovm.ha.fusiondb.new.spfile, fusiondb.new.datadisc, and fusiondb.new.recodisc. You may want to query the Oracle Automatic Storage Management to get these values.

- Set the listener port in fusiondb.new.port.
- Set both faovm.ha.HOST_DB and faovm.ha.HOST_DB2 equal to the database host.

2.7.5 Change the Paths for DBA Directories

To create an Oracle Fusion Applications database, several DBA directories must be set accordingly and manually created on the file system. The paths of the DBA directories are defined in the deployment properties file using the following properties. For more information, see Section 3.1, "Prepare Deployment Properties".

```bash
# dba_directories configuration (can add as many as needed)
faovm.ha.fusiondb.new.oracle.base=/u01/app/oracle/product/11.2.0
faovm.ha.fusiondb.new.dbadir.name0=APPLCP_FILE_DIR
faovm.ha.fusiondb.new.dbadir.path0=${fusiondb.new.oracle.home}/incident_logs
faovm.ha.fusiondb.new.dbadir.name1=APPLLOG_DIR
faovm.ha.fusiondb.new.dbadir.path1=${fusiondb.new.oracle.home}/appllog_dir
faovm.ha.fusiondb.new.dbadir.name2=ADMIN_DIR
faovm.ha.fusiondb.new.dbadir.path2=${fusiondb.new.oracle.home}/rdbms/admin
faovm.ha.fusiondb.new.dbadir.name3=EQ_CONFIG_DIR
faovm.ha.fusiondb.new.dbadir.path3=${fusiondb.new.oracle.home}/search/webapp/config
faovm.ha.fusiondb.new.dbadir.name4=XMLDIR
faovm.ha.fusiondb.new.dbadir.path4=${fusiondb.new.oracle.home}/rdbms/xml
faovm.ha.fusiondb.new.dbadir.name5=EQ_LANG_DIR
faovm.ha.fusiondb.new.dbadir.path5=${fusiondb.new.oracle.home}/search/data/language
faovm.ha.fusiondb.new.dbadir.name6=ORACLE_OCM_CONFIG_DIR
faovm.ha.fusiondb.new.dbadir.path6=${fusiondb.new.oracle.home}/ccr/state
faovm.ha.fusiondb.new.dbadir.name7=DATA_PUMP_DIR
faovm.ha.fusiondb.new.dbadir.path7=${fusiondb.new.oracle.base}/admin/${fusiondb.new.service.name}/dpdump
faovm.ha.fusiondb.new.dbadir.name8=EQ_CACHE_DIR
faovm.ha.fusiondb.new.dbadir.path8=${fusiondb.new.oracle.base}/oradata/${fusiondb.new.service.name}/cache
```

If you do not change these properties in the deployment property file, then manually create the following directories on the database server where ORACLE_HOME is the Oracle Database home directory:

```
/u01/app/oracle/product/11.2.0_CHANGE_ME
ORACLE_HOME/incident_logs
ORACLE_HOME/appllog_dir
ORACLE_HOME/rdbms/admin
ORACLE_HOME/search/webapp/config
ORACLE_HOME/rdbms/xml
ORACLE_HOME/search/data/language
ORACLE_HOME/ccr/state
ORACLE_HOME/admin/fusion_apps_database_service_name/dpdump
ORACLE_HOME/oradata/fusion_apps_database_service_name/cache
```
2.8 Prepare an Oracle Enterprise Manager Instance

The Oracle VM deployment process installs an Oracle Enterprise Manager agent into each of the Oracle VMs in the topology. You must prepare an Oracle Enterprise Manager 12c Cloud Control instance (Cloud Control) for the wiring of these agents.

2.8.1 Install Oracle Enterprise Manager 12c Cloud Control

Perform the following steps to prepare a Cloud Control instance.

1. Refer to the Oracle Enterprise Manager Cloud Control Basic Installation Guide to install this product.

2. Download and deploy the Oracle Fusion Applications plug-in in your Cloud Control. This is required for the discovery of the deployed Oracle Fusion Applications OVM topology into Cloud Control. For more information, follow the steps in "Deploying and Updating Plug-ins" in the Oracle Enterprise Manager Cloud Control Administrator’s Guide.

3. Ensure that you can deploy the Java VM Diagnostics (JVMD) Manager on your Oracle Enterprise Manager 12c Oracle Management Service. This is required for the JVMD agent deployment that occurs as part of the Oracle Fusion Applications Oracle VM rehydration. For more information, see "Installing JVM Diagnostics" in the Oracle Enterprise Manager Cloud Control Basic Installation Guide.

4. Apply Bundle Patch 1 as described in the Oracle Enterprise Manager Cloud Control Basic Installation Guide.

2.9 Configure Standalone Oracle Identity Management

If you use the single-tenant or standalone templates, a standalone 11g Oracle Identity Management Oracle VM is rehydrated as part of the deployment process. This Oracle VM can be deployed in one of two ways: using a single host or using three hosts.

2.9.1 Three-Host Standalone Oracle Identity Management

When using single-tenant templates, you have the option of deploying the IDM in an EDG-compliant three-host configuration where the IDM is split as follows:

- Host 1: OID
- Host 2: OIM
- Host 3: AuthOHS

These components cannot be rearranged. To tell the deployer to create these three hosts, the faovm.topo.ovms property must look like this:

foavm.topo.ovms=idm3oid,idm3mw,idm3ohs,fa,secondary,primary,bi,webchat

In this scenario, the following properties must be set:

```
faovm.ha.HOST_IDSDB=idsdb_hostname
faovm.ha.HOST_IDSDB2=idsdb2_hostname
faovm.ha.HOST_OIDDB=oiddb_hostname
faovm.ha.HOST_OIDDB2=oiddb2_hostname
faovm.ha.HOST_OIMDB=${HOST_IDSDB}
faovm.ha.HOST_OIMDB2=${HOST_IDSDB2}
faovm.ha.HOST_LDAP=ldap_host.com
faovm.ha.HOST_PSTORE=${HOST_LDAP}
faovm.ha.HOST_OIM=idm3mw_hostname
```
Properties beginning with the prefix `faovm.ha.idm.*` must be configured. Properties beginning with `faovm.ha.idm1.*` can be ignored.

Optionally, you can uncomment the following properties to replace the user name and password for the Fusion Application administration user in the identity store:

```
#faovm.ha.idm3oid.faappsadmin.username=fa_admin_user_name
#faovm.ha.idm3oid.faappsadmin.password=password
```

For more information on creating and managing users, see "Provisioning Identities" in Oracle Fusion Applications Administrator's Guide

Note also that when using a shared Oracle Identity Management, the property `faovm.topo.ovms` should not contain an entry for any Identity Management related nodes.

### 2.9.2 Properties Specific to `idsdb`

The `faovm.idsdb.new` properties are used to wire up the Oracle Fusion Applications OWSM datasources to the `ids` database. You need to replace `dbname`, `port`, `sid1`, `sid2`, `port1`, and `port2` with values that match the Oracle Identity Management database.

```
# IDM Database-related properties, these must be specified whether MTIDM is enabled or not
faovm.idsdb.new.is.rac=true
faovm.idsdb.new.dbname=oimdb917
faovm.idsdb.new.service.name=${idsdb.new.dbname}
faovm.idsdb.new.sid=${idsdb.new.dbname}
faovm.idsdb.new.port=1917
faovm.idsdb.new.rac.sid1=oimdb917a
faovm.idsdb.new.rac.sid2=oimdb917b
faovm.idsdb.new.rac.port1=1917
faovm.idsdb.new.rac.port2=1917
faovm.idsdb.new.rac.dbhost1=${HOST_IDSDB}
faovm.idsdb.new.rac.dbhost2=${HOST_IDSDB2}
```

### 2.9.3 New Additions for `oiddb` and `oimdb`

The following new properties enable Oracle VM automation utility to locate the database backup for each of the external databases for Oracle Internet Directory and Oracle Identity Management. They provide attributes necessary to restore database backup to the remote, pre-requisite database shell and then wire the single tenant IDM to these database instances.

#### 2.9.3.1 Single-Tenant IDM OID database-related properties

You must enter values that match the external OID database for the following properties: `dbname`, `port`, `sid1`, `sid2`, `port1`, `port2`, `owner.user.name`, and `password`.

```
# Source/reference OID database information
faovm.ha.oiddb.src.backup.dir=idm/oiddb
faovm.ha.oiddb.src.backup.archive=${oiddb.src.backup.dir}/dbbackup.tar.gz

# Target/New OID database-related properties
faovm.ha.oiddb.new.is.rac=true
faovm.ha.oiddb.new.dbname=oiddb817
faovm.ha.oiddb.new.service.name=${oiddb.new.dbname}
faovm.ha.oiddb.new.sid=${oiddb.new.dbname}
```
Configure Standalone Oracle Identity Management

Prerequisites for Oracle VM Deployment

faovm.ha.oiddb.new.port=1817
faovm.ha.oiddb.new.rac.sid1=oiddb817a
faovm.ha.oiddb.new.rac.sid2=oiddb817b
faovm.ha.oiddb.new.rac.port1=1817
faovm.ha.oiddb.new.rac.port2=1817
faovm.ha.oiddb.new.rac.dbhost1=${HOST_OIDDB}
faovm.ha.oiddb.new.rac.dbhost2=${HOST_OIDDB2}

# Target/New OID database-restore-related properties
faovm.ha.oiddb.new.do.restore=true
faovm.ha.oiddb.new.do.backup.push=false
faovm.ha.oiddb.new.do.reset.on.cleanup=false
faovm.ha.oiddb.new.backup.stage.path=/u01/app/backup/ha-crm-v1r3_20120430/oiddb
faovm.ha.oiddb.new.host=${HOST_OIDDB}
faovm.ha.oiddb.new.host.db.owner.user.name=oracle
faovm.ha.oiddb.new.host.login.user.name=${oiddb.new.host.db.owner.user.name}
faovm.ha.oiddb.new.host.login.user.password=CHANGEME

# Supported privilege escalation methods: none, sudo, pbrun
faovm.ha.oiddb.new.host.privilege.escalation.method=none

# Source/reference OID database information
faovm.ha.oimdb.src.backup.dir=idm/oimdb
faovm.ha.oimdb.src.backup.archive=${oimdb.src.backup.dir}/dbbackup.tar.gz

# Target/New OIM database-related properties
faovm.ha.oimdb.new.is.rac=${idsdb.new.is.rac}
faovm.ha.oimdb.new.dbname=${idsdb.new.dbname}
faovm.ha.oimdb.new.service.name=${oimdb.new.dbname}
faovm.ha.oimdb.new.sid=${oimdb.new.dbname}
faovm.ha.oimdb.new.port=${idsdb.new.port}
faovm.ha.oimdb.new.rac.sid1=${idsdb.new.rac.sid1}
faovm.ha.oimdb.new.rac.sid2=${idsdb.new.rac.sid2}
faovm.ha.oimdb.new.rac.port1=${idsdb.new.rac.port1}
faovm.ha.oimdb.new.rac.port2=${idsdb.new.rac.port2}
faovm.ha.oimdb.new.rac.dbhost1=${HOST_OIMDB}
faovm.ha.oimdb.new.rac.dbhost2=${HOST_OIMDB2}

2.9.3.2 Single-Tenant IDM OIM Database-related Properties
You must enter values that match the external OIM database for the following values:
owner.user.name, password.

# Source/reference OIM database information
faovm.ha.oimdb.src.backup.dir=idm/oimdb
faovm.ha.oimdb.src.backup.archive=${oimdb.src.backup.dir}/dbbackup.tar.gz

# Target/New OIM database-related properties
faovm.ha.oimdb.new.is.rac=${idsdb.new.is.rac}
faovm.ha.oimdb.new.dbname=${idsdb.new.dbname}
faovm.ha.oimdb.new.service.name=${oimdb.new.dbname}
faovm.ha.oimdb.new.sid=${oimdb.new.dbname}
faovm.ha.oimdb.new.port=${idsdb.new.port}
faovm.ha.oimdb.new.rac.sid1=${idsdb.new.rac.sid1}
faovm.ha.oimdb.new.rac.sid2=${idsdb.new.rac.sid2}
faovm.ha.oimdb.new.rac.port1=${idsdb.new.rac.port1}
faovm.ha.oimdb.new.rac.port2=${idsdb.new.rac.port2}
faovm.ha.oimdb.new.rac.dbhost1=${HOST_OIMDB}
faovm.ha.oimdb.new.rac.dbhost2=${HOST_OIMDB2}
# Target/New OIM database-restore-related properties
faovm.ha.oimdb.new.do.restore=true
faovm.ha.oimdb.new.do.backup.push=false
faovm.ha.oimdb.new.do.reset.on.cleanup=false
faovm.ha.oimdb.new.backup.stage.path=/u01/app/backup/ha-crm-v1r3_20120430/oimdb
faovm.ha.oimdb.new.host=${HOST_OIMDB}
faovm.ha.oimdb.new.host.db.owner.user.name=oracle
faovm.ha.oimdb.new.host.login.user.name=${oimdb.new.host.db.owner.user.name}
faovm.ha.oimdb.new.host.login.user.password=CHANGEME
# Supported privilege escalation methods: none, sudo, pbrun
faovm.ha.oimdb.new.host.privilege.escalation.method=none
# If escalating via sudo, path to sudo binary
faovm.ha.oimdb.new.host.privilege.escalation.sudo.path=/usr/bin/sudo
# If escalating via pbrun, path to pbrun binary
faovm.ha.oimdb.new.host.privilege.escalation.pbrun.paths=path/to/pbrun
faovm.ha.oimdb.new.host.privilege.escalation.pbrun.policy.name=policy1-root
faovm.ha.oimdb.new.sys.user.name=sys
faovm.ha.oimdb.new.sys.user.password=CHANGEME
faovm.ha.oimdb.new.oracle.home=/u01/app/oracle/product/11.2.0.3/dbhome_1
faovm.ha.oimdb.new.crs.home=/u01/app/11.2.0.3/grid
faovm.ha.oimdb.new.asm.home=${oimdb.new.crs.home}
faovm.ha.oimdb.new.is.asm=true
faovm.ha.oimdb.new.asm.sid=+ASM1
faovm.ha.oimdb.new.datadisc=+DATA_SLCC10
faovm.ha.oimdb.new.recodisc=+RECO_SLCC10
faovm.ha.oimdb.new.datafile.path=${oimdb.new.datadisc}/${oimdb.new.sid}/datafile
faovm.ha.oimdb.new.tempfile.path=${oimdb.new.datadisc}/${oimdb.new.sid}/tempfile
faovm.ha.oimdb.new.recolog.path=${oimdb.new.recodisc}/${oimdb.new.sid}/ONLINELOG
faovm.ha.oimdb.new.spfile=${oimdb.new.datadisc}/${oimdb.new.sid}/spfile${oimdb.new.sid}.ora
faovm.ha.oimdb.new.tns.admin=${oimdb.new.oracle.home}/network/admin
faovm.ha.oimdb.new.set.archivelogmode=true

## 2.9.4 Non-Oracle Fusion Customer Relationship Management Topology
If you use an Oracle VM template that does not contain Oracle Fusion Customer Relationship Management, then do not include `webchat` in the `faovm.topo.ovms` property. If WebChat is enabled in a single-instance IDM non-Oracle Fusion Customer Relationship Management topology, users are redirected to the OAM Logon page after any cursor movement in the Manage User page of the Function Setup Manager application.

To prevent WebChat from being deployed in a single-instance IDM non-Oracle Fusion Customer Relationship Management topology, ensure that the following line in the deployment property file does not contain `webchat`:

faovm.topo.ovms=idm1,ohs,fa,secondary,primary,bi (if 1-host standalone IDM)
faovm.topo.ovms=idm3oid,ids3mw,ids3ohs,fa,secondary,primary,bi (if 3-host standalone IDM)

## 2.10 Confirm the Oracle Virtual Assembly Builder Home is Accessible
Confirm that the Oracle Virtual Assembly Builder software, `OVAB_HOME`, is accessible from the deployer host. The following table describes the file location.
2.11 Register Templates with Oracle VM Manager

Follow these one-time setup steps to register the topology templates in the appropriate server pools in Oracle VM Manager.

1. Determine template paths for each node (ohs, fa, bi, webchat) inside the Oracle Virtual Assembly Builder catalog:
   a. `setenv ORACLE_HOME OAVB_HOME`
   b. `setenv AB_INSTANCE $ORACLE_HOME/ab_instance`
   c. `setenv JAVA_HOME $ORACLE_HOME/jre` (or to a valid JDK 1.6 location)
   d. `cd $AB_INSTANCE/bin`
   e. Run the following command to print information about the following assemblies: `component_wls_fa` (for the FA node), `component_wls_bi` (for the BI node), `composite_ohs` (for the OHS node), and `wls_webchat` (for the WebChat node, if applicable.)

      ```
      ./abctl edit <<!
      ? open component_wls_fa
      ? print
      !
      ```

      The output of this command contains the location of the template *.img and *.cfg files inside the catalog for the respective assembly. For example:

      `template UCMCluster /ovab/small_20110510/ab_instance/catalog/shared/cid_8B6Qd53dUBj2PE3/templates/tid_m1K0GgbdUBj2PE3/templateFiles`

      There may be multiple template entries in the output, but all of them contain the same directory path for a given assembly. Under the directory there are multiple *.img files and one vm.cfg file. Usually there are System.img, AB.img and vm.cfg files.

      Repeat this step to locate the template directories for Oracle Business Intelligence, OHS, and WebChat by using assembly names `component_wls_bi`, `composite_ohs`, `component_wls_webchat`, respectively, in the `abctl edit` command. Note that for OHS there is an additional `ORACLE_INSTANCE.img` file, which you must also copy.

2. Log in to each of your Oracle VM servers and create directories for the fa, bi, ohs, and webchat templates under `/OVS/seed_pool`. An example for FSCMH V1 MT templates from 20111013 follows:

   ```
   cd /OVS/seed_pool
   mkdir ha-fscmh-v1-mt_20111013_ohs (for ohs)
   ```
Install the Oracle VM Automation Utility

Perform the following steps to install the Oracle VM Automation Utility on your deployer host.

1. Create a faovm directory, for example, mkdir /scratch/faovm.

2. Copy OVAB_HOME/oracle-ovmautomation-all.zip to /scratch/faovm and unzip.

3. setenv FAOVM /scratch/faovm

Enable Secure Shell (SSH) for Deployer Host

During deployment steps, the deployer host must be able to establish secured shell (SSH) with all the database hosts (Oracle Fusion Applications and IDM), and all of the OVM hosts to be created during the deployment steps. The SSH session uses the OS user credentials specified in the deployment properties.

The default SSH port is port 22. This port must be open for bi-directional communication if you place a firewall between the hosts.
This chapter describes the steps for the deployment of an Oracle VM Template.

This chapter includes the following sections:

- Section 3.1, "Prepare Deployment Properties"
- Section 3.2, "Run Deployment"
- Section 3.3, "Post-Rehydration Steps"
- Section 3.4, "Other Oracle VM Life Cycle Management Tasks"
- Section 3.5, "Troubleshooting Oracle VM Deployment"

### 3.1 Prepare Deployment Properties

**Note:** All input properties in the deployment properties file must have a value after the "=" character. Do not leave it blank for any optional input properties. Otherwise, you will encounter error messages during deployment. If no value will be provided for an optional input property, comment the property by adding a comment character (#) before the property.

From the FAS/deployfw/deployprops directory created in Section 2.12, "Install the Oracle VM Automation Utility", copy the ovm-crm|fscmb|hcm-deploy.properties file to the ova-ha-deploy.properties file, depending on which topology you are deploying. This file contains the input properties for the deployment instance that are required for creating a topology from the templates. The properties file should be modified as described in the following steps. Each step includes an example of the file properties to be modified.

1. Update the following properties to specify your Oracle VM Manager connection information and the default pool name.

   - `faovm.ovmm.host=server01.com`
   - `faovm.ovmm.port=8888`
   - `faovm.ovmm.secure.port=8889`
   - `faovm.ovmm.use.secure=false`
   - `faovm.ovmm.username=admin`
   - `faovm.ovmm.password=<password you must provide>`

2. Update the following properties to specify the Oracle Enterprise Manager 12c Cloud Control (Cloud Control) information for the wiring for the Oracle Enterprise Manager agents inside the Oracle VMs.
# EM Agent properties
# Enable rehydration-time emagent install and application discovery
faovm.emagent.install.enabled=true
faovm.emagent.oms.host=omshost.example.com_CHANGEME
# EM Agent 11g: HTTP port, EM Agent 12c: HTTPS port
faovm.emagent.oms.ports=4900
faovm.emagent.agent.password=CHANGEME
# Version of the EM agent to install, must be supported by your OMS
faovm.emagent.version=12.1.0.3.0
# Optional property to specify a manually staged EM agent install bundle
#faovm.emagent.install.bundle.file.name=${emagent.version}_AgentCore_226.zip

Additionally, to configure 12c EM agent, specify the following properties:

# EM Agent 12c configuration properties, applicable only for 12c
faovm.emagent.port=3875
faovm.emagent.os.user.name=emcadm
faovm.emagent.os.user.password=CHANGEME
faovm.emagent.os.user.id=10101
faovm.emagent.os.user.group.name=${os.apps.user.group.name}
faovm.emagent.os.user.home.dir=/home/${emagent.os.user.name}
faovm.emagent.oracle.base=/oem/app/oracle/product/12c
faovm.emagent.oracle.home=${emagent.oracle.base}/core/${emagent.version}

---

**Note:** By default, the EM agent OS user will be created to belong to the same OS group as the FA OS user. This is required for the EM Agent to be able to monitor the FA system.

---

3. Update the following properties to specify your Cloud Control Oracle Management Server (OMS) Repository information.

faovm.oms.url=http://server01.com:4889/em/
faovm.oms.user=sysman
faovm.oms.password=<password you must provide>
faovm.oms.db.host=server01.com
faovm.oms.db.port=1521
faovm.oms.db.service.name=emdb.example.com

4. Update the following JVM Diagnostics properties to specify your Cloud Control OMS.

faovm.jvmd.host=server01.com
faovm.jvmd.port=3600

5. Update the following properties to point to your storage server. Use faovm.storage.type to indicate the type of storage that you will use, for example, netapp, sun or genericnfs, and specify the properties for that storage type in subsequent sections. Note that if you are using generic Network File System (NFS) with storage type genericnfs, then the volumes must be created and must exist before the deployment process begins. During deployment, the file volumes are mounted in the respective Oracle VMs.

# Storage-related properties, supported types: netapp, sun, genericnfs
faovm.storage.type=netapp

# location where the shared storage is mounted on the reference system (DO NOT CHANGE)
faovm.storage.mount=/u01
# location to mount the deploy shared storage on deployer and VMs (MAY BE CHANGED)
Prepare Deployment Properties

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faovm.storage.physical.mount=/u1234

# Netapp Storage properties
faovm.storage.netapp.host=server01
faovm.storage.netapp.username=fusionst
faovm.storage.netapp.password=<password you must provide>
faovm.storage.netapp.containing-aggregate=emsprod01
# snapshot disable property should be set only in developer's environment
faovm.storage.netapp.snapshot.disable=true
# NFS options to use when mounting storage
faovm.storage.netapp.nfs.export.root=/vol
faovm.storage.netapp.nfs.mount.options=rw,tcp,hard,nointr,rsize=32768,wsize=32768,nfsvers=3,timeo=600
# Host/IP to use on the deployer when mounting storage
faovm.storage.netapp.deployer.nfs.mount.host=${storage.netapp.host}
# Host/IP to use in deployed VMs when mounting storage
faovm.storage.netapp.vm.nfs.mount.host=${storage.netapp.host}

# Sun Storage properties
faovm.storage.sun.host=server404
faovm.storage.sun.username=fusovm
faovm.storage.sun.password=<password you must provide>
faovm.storage.sun.pool=pool-404
faovm.storage.sun.project=emsprod02
faovm.storage.sun.snapshot.disable=true
# NFS options to use when mounting storage
faovm.storage.sun.nfs.export.root=/export
faovm.storage.sun.nfs.mount.options=rw,tcp,hard,nointr,rsize=131072,wsize=131072,nfsvers=3,timeo=600
# Host/IP to use on the deployer when mounting storage
faovm.storage.sun.deployer.nfs.mount.host=${storage.sun.host}
# Host/IP to use in deployed VMs when mounting storage
faovm.storage.sun.vm.nfs.mount.host=${storage.sun.host}

# Generic, Predefined NFS
faovm.storage.genericnfs.host=server123
faovm.storage.genericnfs.nfs.export.root=/vol
faovm.storage.genericnfs.nfs.mount.options=rw,tcp,hard,nointr,rsize=32768,wsize=32768,nfsvers=3,timeo=600
# Host/IP to use on the deployer when mounting storage
faovm.storage.genericnfs.deployer.nfs.mount.host=${storage.genericnfs.host}
# Host/IP to use in deployed VMs when mounting storage
faovm.storage.genericnfs.vm.nfs.mount.host=${storage.genericnfs.host}

---

**Note:** If you chose to use genericnfs storage and run into the file lock issue, then "nolock" should be added to the nfs mount option for genericnfs like this:

faovm.storage.genericnfs.nfs.mount.options=rw,hard,nointr,nolock,rsize=32768,wsize=32768,timeo=600

---

6. If you plan to use the same template several times, you can use the pre-exported template storage feature. Instead of exporting template contents during deployment, this feature exports the template file system contents, once before you begin, and then each deployment uses clones of this volume to save time and space on the storage appliance.

To use this feature, set the following property to true:
Prepare Deployment Properties

# Controls whether createTopology will attempt to thin-provision storage
# using exploded template storage already provisioned using the
# createExportedTemplateStorage verb. Note: this can not be used when
# the storage.type is genericnfs
faovm.storage.use.parent=true

The following properties become relevant and should be set based on what storage
type is in use:

# Settings used when using flex-cloning
faovm.storage.netapp.exported.template.nfs.export.root=${storage.netapp.nfs.exp
ort.root}
faovm.storage.netapp.exported.template.snapshot.name=faovm_exported_template_ snapshot

# Settings used when using snapshot-cloning
faovm.storage.sun.exported.template.project=${storage.sun.project}
faovm.storage.sun.exported.template.nfs.export.root=${storage.sun.nfs.export.ro
ot}
faovm.storage.sun.exported.template.snapshot.name=faovm_exported_template_ snapshot

The following properties are used to construct the names and sizes of the volumes
used for the base exported template volume and need to be updated only when
using netapp flexclones because the ":-" character is not allowed in volume names:

faovm.ha.fa.storage.exported.template.size=80g
faovm.ha.fa.storage.exported.template.name=${faovm.ha.fa.vm.template.name}
faovm.ha.primary.storage.exported.template.name=${faovm.ha.fa.storage.exported.
template.name}
faovm.ha.secondary.storage.exported.template.name=${faovm.ha.fa.storage.exporte
d.template.name}
faovm.ha.bi.storage.exported.template.name=${faovm.ha.fa.storage.exported.templa
te.name}
faovm.ha.ohs.storage.exported.template.size=8g
faovm.ha.ohs.storage.exported.template.name=${vm.template.name}

7. (Optional) Update the following properties for your system and VNC console
credentials for the Oracle VMs.
   faovm.os.vnc.console.password=<password you must provide>
   faovm.os.system.user.name=root
   faovm.os.system.user.password=<password you must provide>

8. (Optional) Update the following properties to specify the operating system (OS)
user and group name and IDs for the OS user that owns the Netapp volumes:
   faovm.os.apps.user.name=oracle
   faovm.os.apps.user.password=<password you must provide>
   faovm.os.apps.user.id=1000
   faovm.os.apps.user.group.name=dba
   faovm.os.apps.user.group.id=1001
   faovm.os.apps.user.home.dir=/home/oracle

9. Update the following properties to configure the eth0 network for the Oracle VMs.
These settings may be the same as the setting of the Hypervisors where the Oracle
VMs will be started.
   If you have Oracle VMs spread across different Hypervisors that happen to be
   located in a different subnet, then you can add additional properties for the
   specific combination of topology type and Oracle VM host type. The format of the
additional properties is faovm.<topologyType>.<hostType>.os.network.X, where
topologyType = ha, hostType takes one of the values from
ohs|fa|primary|secondary|bi|idm1|idm3oid|idm3mw|idm3ohs, and X is the
remainder of the property such as dns.server, eth0.gateway, and so on.

The following properties are the default network properties for all Oracle VM host
types:

faovm.os.network.dns.server=144.20.190.70
faovm.os.network.eth0.gateway=10.232.144.1
faovm.os.network.eth0.netmask=255.255.248.0

10. Update the following properties for your BIG IP end point host and ports. Note
that ports are optional.

faovm.ha.bigip.mapping.fs.host.external=fscmhcm-cln-large-fs-ext.example.com
faovm.ha.bigip.mapping.fs.host.internal=fscmhcm-cln-large-fs-int.example.com
faovm.ha.bigip.mapping.crm.host.external=fscmhcm-cln-large-crm-ext.example.com
faovm.ha.bigip.mapping.crm.host.internal=fscmhcm-cln-large-crm-int.example.com
faovm.ha.bigip.mapping.fin.host.external=fscmhcm-cln-large-fin-ext.example.com
faovm.ha.bigip.mapping.fin.host.internal=fscmhcm-cln-large-fin-int.example.com
faovm.ha.bigip.mapping.scm.host.external=fscmhcm-cln-large-scm-ext.example.com
faovm.ha.bigip.mapping.scm.host.internal=fscmhcm-cln-large-scm-int.example.com
faovm.ha.bigip.mapping.hcm.host.external=fscmhcm-cln-large-hcm-ext.example.com
faovm.ha.bigip.mapping.hcm.host.internal=fscmhcm-cln-large-hcm-int.example.com
faovm.ha.bigip.mapping.prj.host.external=fscmhcm-cln-large-prj-ext.example.com
faovm.ha.bigip.mapping.prj.host.internal=fscmhcm-cln-large-prj-int.example.com
faovm.ha.bigip.mapping.prc.host.external=fscmhcm-cln-large-prc-ext.example.com
faovm.ha.bigip.mapping.prc.host.internal=fscmhcm-cln-large-prc-int.example.com
faovm.ha.bigip.mapping.prc.supplierportal.host.external=fscmhcm-cln-large-prc-s
p-ext.example.com
faovm.ha.bigip.mapping.prc.supplierportal.host.internal=fscmhcm-cln-large-prc-s
p-int.example.com
faovm.ha.bigip.mapping.bi.host.external=fscmhcm-cln-large-bi-ext.example.com
faovm.ha.bigip.mapping.bi.host.internal=fscmhcm-cln-large-bi-int.example.com
faovm.ha.bigip.mapping.default.port.external=443

If external ports are not specified, they are configured with the default value of
443.

11. This step includes updating Oracle RAC database properties and database
directories.

a. Update the following properties to specify Oracle RAC database properties.
Specify the following values that you collected when setting up the Oracle
RAC instance in Section 2.7.3, "Set Up an Oracle Real Application Clusters
(RAC) Database":

- Oracle RAC service name
- Physical host names for the two-node Oracle RAC database
- SID values for the two-node Oracle RAC database
- Listener port for the two-node Oracle RAC database, where the ports must be the same on each instance
- Oracle home
- Operating system user credentials that own the Oracle RAC instance, generally for the `oracle` user
- SYS schema credentials
- Oracle Automatic Storage Management DATA disc and REDO disc names

Examples follow:

```bash
faovm.ha.fusiondb.new.service.name=dbm
faovm.ha.fusiondb.rac.new.sid1=dbm1
faovm.ha.fusiondb.rac.new.sid2=dbm2
faovm.ha.fusiondb.new.do.restore=true

faovm.ha.fusiondb.src.backup.dir=db <an absolute path or relative path to $OVABHOME/db, where db backup archive is located>

faovm.ha.fusiondb.src.backup.archive=${fusiondb.src.backup.dir}/dbbackup.tar.gz <path to the RMAN backup archive>

faovm.ha.fusiondb.new.do.backup.push=true <this enables the deploy to untar the DB tar ball directly to target DB, make sure there is enough disk space on target DB.>

faovm.ha.fusiondb.new.backup.stage.path=<path to where src.backup.archive should be staged on the HOST1 of the target DB. If do.backup.push is enabled, the backup.archive will be exploded to this location during deployment. This is a non-ASM path.>

faovm.ha.fusiondb.new.host.user.name=oracle
faovm.ha.fusiondb.new.host.user.password=<password you must provide>

faovm.ha.fusiondb.new.sys.user.name=sys
faovm.ha.fusiondb.new.sys.user.password=<password you must provide>

faovm.ha.fusiondb.new.oracle.home=/u01/app/oracle/product/11.2.0/dbhome_1

faovm.ha.fusiondb.new.datadisc=+DDATA
faovm.ha.fusiondb.new.recodisc=+RECO

faovm.ha.fusiondb.new.datafile.path=${fusiondb.new.datadisc}/${fusiondb.new.service.name}/datafile
faovm.ha.fusiondb.new.tempfile.path=${fusiondb.new.datadisc}/${fusiondb.new.service.name}/tempfile
faovm.ha.fusiondb.new.recolog.path=${fusiondb.new.recodisc}/${fusiondb.new.service.name}/ONLINELOG
faovm.ha.fusiondb.new.spfile=${fusiondb.new.datadisc}/${fusiondb.new.service.name}/spfile${fusiondb.new.service.name}.ora

# physical host 1 for 2-node RAC
faovm.ha.HOST_DB=db_host.com

# physical host 2 for 2-node RAC
faovm.ha.HOST_DB2=db2_host.com
```
Prepare Deployment Properties

**Note:** The Oracle Automatic Storage Management directory structures defined by the variables below must exist and be writable:

- `faovm.ha.fusiondb.new.datadisc=+DATA_SLCC10`
- `faovm.ha.fusiondb.new.recodisc=+RECO_SLCC10`
- `faovm.ha.fusiondb.new.datafile.path=${fusiondb.new.datadisc}/${fusiondb.new.sid}/datafile`
- `faovm.ha.fusiondb.new.tempfile.path=${fusiondb.new.datadisc}/${fusiondb.new.sid}/tempfile`
- `faovm.ha.fusiondb.new.recolog.path=${fusiondb.new.recodisc}/${fusiondb.new.sid}/ONLINELOG`
- `faovm.ha.fusiondb.new.spfile=${fusiondb.new.datadisc}/${fusiondb.new.sid}/spfile${fusiondb.new.sid}.ora`

For each of the above directory structures in Oracle Automatic Storage Management, the following must exist and can be created using `asmcmd`:

```
+DATA/hcmtest1/datafile
+DATA/hcmtest1/tempfile
+RECO/hcmtest1/ONLINELOG
```

In addition, if specifying a path in the controlfile location, the directory structure `*.control_files='+DATA/hcmtest1/controlfile/control01.ctl','+DATA/hcmtest1/controlfile/control02.ctl` must exist before you run the command.

**b.** Review and update, if necessary, the following properties that specify the paths for database directory objects in the database:

```
# dba_directories configuration (can add as many as needed)
faovm.ha.fusiondb.new.oracle.base=/u01/app/oracle/product/11.2.0_CHANGEME
faovm.ha.fusiondb.new.dbadir.name0=APPLCP_FILE_DIR
faovm.ha.fusiondb.new.dbadir.path0=${fusiondb.new.oracle.home}/incident_logs
faovm.ha.fusiondb.new.dbadir.name1=APPLLLOG_DIR
faovm.ha.fusiondb.new.dbadir.path1=${fusiondb.new.oracle.home}/appllog_dir
faovm.ha.fusiondb.new.dbadir.name2=ADMIN_DIR
faovm.ha.fusiondb.new.dbadir.path2=${fusiondb.new.oracle.home}/rdbms/admin
faovm.ha.fusiondb.new.dbadir.name3=EQ_CONFIG_DIR
faovm.ha.fusiondb.new.dbadir.path3=${fusiondb.new.oracle.home}/search/webapp/config
faovm.ha.fusiondb.new.dbadir.name4=XMLDIR
faovm.ha.fusiondb.new.dbadir.path4=${fusiondb.new.oracle.home}/rdbms/xml
faovm.ha.fusiondb.new.dbadir.name5=EQ_LANG_DIR
faovm.ha.fusiondb.new.dbadir.path5=${fusiondb.new.oracle.home}/search/data/language
faovm.ha.fusiondb.new.dbadir.name6=ORACLE_OCM_CONFIG_DIR
faovm.ha.fusiondb.new.dbadir.path6=${fusiondb.new.oracle.home}/ccr/state
faovm.ha.fusiondb.new.dbadir.name7=DATA_PUMP_DIR
faovm.ha.fusiondb.new.dbadir.path7=${fusiondb.new.oracle.home}/admin/${fusiondb.new.service.name}/dpdump
faovm.ha.fusiondb.new.dbadir.name8=EQ_CACHE_DIR
faovm.ha.fusiondb.new.dbadir.path8=${fusiondb.new.oracle.home}/oradata/${fusiondb.new.service.name}/cache
```
Prepare Deployment Properties

For most directories, their paths are relative to `fusiondb.new.oracle.home`, so the default value should be sufficient. The `DATA_PUMP_DIR` and `EQ_CACHE_DIR` directories depend on the value of the `fusiondb.new.oracle.base` property by default. Specify a value for the `fusiondb.new.oracle.base` property if you want to use the default values for the `DATA_PUMP_DIR` and `EQ_CACHE_DIR` directories.

c. Alter the properties to run the fusiondb restore with these enhancements:

```
faovm.ha.fusiondb.new.backup.stage.path=/u01/app/backup/ha-crm-v1r3_20120430/fusiondb
```

# Supported privilege escalation methods: none, sudo, pbrun
```
faovm.ha.fusiondb.new.host.privilege.escalation.method=none
```

# If escalating via sudo, path to sudo binary
```
favm.ha.fusiondb.new.host.privilege.escalation.sudo.path=/usr/bin/sudo
```

# If escalating via pbrun, path to pbrun binary
```
favm.ha.fusiondb.new.host.privilege.escalation.pbrun.path=/path/to/pbrun
```

```
favm.ha.fusiondb.new.host.privilege.escalation.pbrun.policy.name=policy1-root
```

```
favm.ha.fusiondb.new.datadisc=+DATA_SLCC10
```

```
favm.ha.fusiondb.new.recodisc=+RECO_SLCC10
```

```
favm.ha.fusiondb.new.spfile=${fusiondb.new.datadisc}/${fusiondb.new.sid}/spfile${fusiondb.new.sid}.ora
```

```
favm.ha.fusiondb.new.crs.home=/u01/app/11.2.0.3/grid
```

```
favm.ha.fusiondb.new.asm.home=${fusiondb.new.crs.home}
```

```
favm.ha.fusiondb.new.is.asm=true
```

```
favm.ha.fusiondb.new.asm.sid=+ASM1
```

```
favm.ha.fusiondb.new.set.archivelogmode=true
```

12. Update the following properties for the host names of the Oracle VMs for the topologies to be deployed.

```
faovm.ha.HOST_FA=fa_host.com
```

```
faovm.ha.HOST_PRIMARY=primary_host.com
```

```
faovm.ha.HOST_SECONDARY=secondary_host.com
```

```
faovm.ha.HOST_BI=bi_host.com
```

```
faovm.ha.HOST_OHS=ohs_host.com
```

13. Update the following properties for your Oracle VMs for the HA nodes if you plan to create a High Availability (HA) Oracle VM.

```
faovm.ha.HOST_PRIMARY_HA1=primary_host.com
```

```
faovm.ha.HOST_SECONDARY_HA1=secondary_host.com
```

```
faovm.ha.HOST_OHS_HA1=ohs_host.com
```

The creation of HA nodes for Primary, Secondary, and OHS Oracle VMs as part of `createTopology` is disabled by default with the following settings in `ovm-ha-deploy.properties`. If you want the HA nodes for primary and secondary Oracle VMs to also be created, set the following properties to `true`:

```
faovm.ha.primary.create.ha.node=true
```

```
faovm.ha.secondary.create.ha.node=true
```

```
faovm.ha.ohs.create.ha.node=true
```

14. Update the following properties to point to your external dependency hosts, for example, LDAP, IDMDB, OAM, OIM, and so on.

```
# host 1 for 2-node RAC
faovm.ha.HOST_DB=db_host.com
```

```
# host 2 for 2-node RAC
```
faovm.ha.HOST_DB2=db2_host.com
faovm.ha.HOST_LDAP=ldap_host.com
faovm.ha.HOST_IDSDB=idsdb_host.com
faovm.ha.HOST_IDSDB2=idsdb2_host.com
faovm.ha.HOST_OIDDB=oiddb_host.com
faovm.ha.HOST_OIDDB2=oiddb2_host.com
faovm.ha.HOST_PSTORE=${HOST_LDAP}
faovm.ha.HOST_OIDB=${(HOST_IDSDB)}
faovm.ha.HOST_OIDB2=${(HOST_IDSDB2)}
faovm.ha.HOST_WEBGATE=webgate_host.com
faovm.ha.HOST_OIDM=oam_host.com
faovm.ha.HOST_OIDM=oidm_host.com
faovm.ha.HOST_SMTP=${SMTP_host.com}

Note that hosts specified in Steps 12, 13, and 14 are used to identify the IP addresses to update /etc/hosts during rehydration of each Oracle VM.

15. Specify the template name that you previously registered with Oracle VM Manager, and any VM-specific properties for the FA node.

faovm.ha.fa.ovmm.pool.name=adcgei12-pool
faovm.ha.fa.vm.template.name=ha-fscmh-v1-mt_20111013_fa
faovm.ha.fa.cpus=6
faovm.ha.fa.memory=13312
faovm.ha.fa.storage.name=ha_fscmh_v1_fa
faovm.ha.fa.storage.size=120g

16. Update VM-specific properties for the Primary node. The Primary node uses the same template as the FA node and shares the same volume.

faovm.ha.primary.ovmm.pool.name=adcgei12-pool
faovm.ha.primary.cpus=12
faovm.ha.primary.memory=20480

17. Update VM-specific properties for the Secondary node. The Secondary node uses the same template as the FA node and shares the same volume.

faovm.ha.secondary.ovmm.pool.name=adcgei12-pool
faovm.ha.secondary.cpus=24
faovm.ha.secondary.memory=51200

18. Specify the template name that you previously registered with OVM manager and any VM-specific properties for the BI node. The BI node shares the volume with the FA node.

faovm.ha.bi.ovmm.pool.name=adcgei12-pool
faovm.ha.bi.vm.template.name=ha-fscmh-v1-mt_20111013_bi
faovm.ha.bi.cpus=4
faovm.ha.bi.memory=6144

19. Specify the template name that you previously registered with Oracle VM Manager and any VM-specific properties for the OHS node. The OHS node has its own volume.

faovm.ha.ohs.ovmm.pool.name=adcgei12-pool
faovm.ha.ohs.vm.template.name=ha-fscmh-v1-mt_20111013_ohs
faovm.ha.ohs.cpus=2
faovm.ha.ohs.memory=1024
faovm.ha.ohs.storage.name=ha_fscmh_v1_ohs
faovm.ha.ohs.storage.size=12g
20. For deployment of a single-tenant IDM based topology, specify the template name that you previously registered with Oracle VM Manager and any VM-specific properties for the IDM node. The IDM node has its own volume so you must replace user_idm_CHANGEME with the file system that you allocated to the IDM node. See Section 2.5, "Provide Access to NetApp or Sun Storage Server" for more information.

    faovm.ha.idm1.ovmm.pool.name=adcgei12-pool
    faovm.ha.idm1.vm.template.name=ha-fscmh-v1_20111013_idm
    faovm.ha.idm1.cpus=4
    faovm.ha.idm1.memory=16384
    faovm.ha.idm1.storage.size=70g
    faovm.ha.idm1.storage.name=user_idm_CHANGEME

21. (Optional) If you need to apply additional approved patches to Fusion Middleware, Fusion Applications, and OHS during rehydration, un-comment these properties and enter the location where the patches are stored:

    #faovm.ha.fa.fapatch.home=CHANGEME
    #faovm.ha.ohs.mwpatch.home=CHANGEME

You may find that the ovm-ha-deploy.properties file has more properties defined than the ones listed in this section. You do not need to change the values of these properties.

    Save the ovm-ha-deploy.properties file after you complete your updates.

### 3.1.1 Additional Deployment Properties

This section lists additional deployment properties added in this release, as well as their default values. You can make changes to these properties to suit your needs and then continue with deployment.

- BI Specific email configuration properties

    # BI Does not use SOA Email
    # The outgoing mail server and outgoing mail server port should match the configuration that is setup in sendmail configuration for the BI host
    faovm.bi.email.config.enable=true
    faovm.bi.email.outgoing.from.address=bi-sender.example.com
    faovm.bi.email.outgoing.from.display.name=Oracle Business Intelligence Reporting
    faovm.bi.email.outgoing.mail.server=localhost
    faovm.bi.email.outgoing.mail.server.port=25

    #faovm.ha.ovab.wlst.timeout=1200
    faovm.ha.fa.max.memory=${faovm.ha.fa.memory}
    faovm.ha.fa.originally.provisioned.max.memory=${faovm.ha.fa.originally.provisioned.memory}
    faovm.ha.primary.max.memory=${faovm.ha.primary.memory}
    faovm.ha.primary.originally.provisioned.max.memory=${faovm.ha.primary.originally.provisioned.memory}
    faovm.ha.secondary.max.memory=${faovm.ha.secondary.memory}
    faovm.ha.secondary.originally.provisioned.max.memory=${faovm.ha.secondary.originally.provisioned.memory}
    faovm.ha.bi.max.memory=${faovm.ha.bi.memory}
    faovm.ha.bi.originally.provisioned.max.memory=${faovm.ha.bi.originally.provisioned.memory}
    faovm.ha.ohs.max.memory=${faovm.ha.ohs.memory}
    faovm.ha.ohs.originally.provisioned.max.memory=${faovm.ha.ohs.originally.provisioned.memory}
#faovm.ha.ohs.mepatch.home=CHANGEME

faovm.ha.oiddb.new.oracle.base=/u01/app/oracle/product/11.2.0.3
faovm.ha.oiddb.new.db dir.name0=DATA_FILE_DIR
faovm.ha.oiddb.new.db dir.path0=${oiddb.new.oracle.home}/demo/schema/sales_history/
faovm.ha.oiddb.new.db dir.name1=DATA_PUMP_DIR
faovm.ha.oiddb.new.db dir.path1=${oiddb.new.oracle.base}/admin/${oiddb.new.dbname}/dpdump
faovm.ha.oiddb.new.db dir.name2=LOG_FILE_DIR
faovm.ha.oiddb.new.db dir.path2=${oiddb.new.oracle.home}/demo/schema/log/
faovm.ha.oiddb.new.db dir.name3=MEDIA_DIR
faovm.ha.oiddb.new.db dir.path3=${oiddb.new.oracle.home}/demo/schema/product_media/
faovm.ha.oiddb.new.db dir.name4=ORACLE_OCM_CONFIG_DIR
faovm.ha.oiddb.new.db dir.path4=${oiddb.new.oracle.home}/ccr/state
faovm.ha.oiddb.new.db dir.name5=SS_OE_XMLDIR
faovm.ha.oiddb.new.db dir.path5=${oiddb.new.oracle.home}/demo/schema/order_entry/
faovm.ha.oiddb.new.db dir.name6=SUBDIR
faovm.ha.oiddb.new.db dir.path6=${oiddb.new.oracle.home}/demo/schema/order_entry/2002/Sep
faovm.ha.oiddb.new.db dir.name7=XMLDIR
faovm.ha.oiddb.new.db dir.path7=${oiddb.new.oracle.home}/rdbms/xml

faovm.ha.oimdb.new.oracle.base=/u01/app/oracle/product/11.2.0.3
faovm.ha.oimdb.new.db dir.name0=DATA_FILE_DIR
faovm.ha.oimdb.new.db dir.path0=${oimdb.new.oracle.home}/demo/schema/sales_history/
faovm.ha.oimdb.new.db dir.name1=DATA_PUMP_DIR
faovm.ha.oimdb.new.db dir.path1=${oimdb.new.oracle.base}/admin/${oimdb.new.dbname}/dpdump
faovm.ha.oimdb.new.db dir.name2=LOG_FILE_DIR
faovm.ha.oimdb.new.db dir.path2=${oimdb.new.oracle.home}/demo/schema/log/
faovm.ha.oimdb.new.db dir.name3=MEDIA_DIR
faovm.ha.oimdb.new.db dir.path3=${oimdb.new.oracle.home}/demo/schema/product_media/
faovm.ha.oimdb.new.db dir.name4=ORACLE_OCM_CONFIG_DIR
faovm.ha.oimdb.new.db dir.path4=${oimdb.new.oracle.home}/ccr/state
faovm.ha.oimdb.new.db dir.name5=SS_OE_XMLDIR
faovm.ha.oimdb.new.db dir.path5=${oimdb.new.oracle.home}/demo/schema/order_entry/
faovm.ha.oimdb.new.db dir.name6=SUBDIR
faovm.ha.oimdb.new.db dir.path6=${oimdb.new.oracle.home}/demo/schema/order_entry/2002/Sep
faovm.ha.oimdb.new.db dir.name7=XMLDIR
Prepare Deployment Properties

faovm.ha.oimdb.new.dba.dir.path7=${oimdb.new.oracle.home}/rdbms/xml

#faovm.ha.idml.faappssadmin.firstname=CHANGEME
#faovm.ha.idml.faappssadmin.lastname=CHANGEME
#faovm.ha.idml.faappssadmin.email=CHANGEME

#faovm.ha.idm3oid.faappssadmin.firstname=CHANGEME
#faovm.ha.idm3oid.faappssadmin.lastname=CHANGEME
#faovm.ha.idm3oid.faappssadmin.email=CHANGEME

faovm.patch.file82=shiphome/fasaaslcmtools.zip
faovm.patch.todir82=${ovabext.dir}

#faovm.mwpatch.home=CHANGEME
#faovm.ha.wls.server.aux.sysprops=-Dweblogic.slc=true
-Dweblogic.slc.exceptions.verbose=true -Dweblogic.kernel.debug=true
#faovm.ha.mwpatch.apply.timeout=43200

3.1.1.1 Changed Default Deployment Properties Values

The default values for these deployment properties have changed from the previous release:

BEFORE:
faovm.emagent.oms.ports=4901
AFTER:
faovm.emagent.oms.ports=4900

BEFORE:
faovm.emagent.install.bundle.file.name=12.1.0.2.0_AgentCore_226.zip
AFTER:
#faovm.emagent.install.bundle.file.name=${emagent.version}_AgentCore_226.zip

BEFORE:
faovm.emagent.oracle.home=${emagent.oracle.base}/core/12.1.0.2.0
AFTER:
faovm.emagent.oracle.home=${emagent.oracle.base}/core/${emagent.version}

BEFORE:
faovm.oms.url=https://${emagent.oms.host}:4901/em/
faovm.oms.url.http=http://${emagent.oms.host}:4890/em/
AFTER:
faovm.oms.url=https://${emagent.oms.host}:7799/em/
faovm.oms.url.http=http://${emagent.oms.host}:7788/em/

BEFORE:
faovm.default.email.outgoing.mail.server=smtp.oracleoutsourcing.com
faovm.osn.email.outgoing.mail.server.port=25
faovm.bi.email.outgoing.mail.server.port=25
AFTER:
faovm.default.email.outgoing.mail.server=localhost
faovm.osn.email.outgoing.mail.server.port=587
Prepare Deployment Properties

3.1.2 Deprecated Deployment Properties from Prior Releases

These properties are no longer used in this release:

- #faovm.mtidm.source.tenant.id=UNDEFINED
- #faovm.mtidm.source.tenant.name=acme
- #faovm.mtidm.source.enterprise.id=UNDEFINED
- #faovm.mtidm.source.jps.root=cn=acme.FAService,cn=OPSS
- #faovm.mtidm.oim.admin.username=oim_admin
- #faovm.mtidm.oim.admin.password=CHANGEME
- #faovm.mtidm.oam.admin.username=oamadminuser
- #faovm.mtidm.oam.admin.password=CHANGEME
- #faovm.mtidm.global.jps.root=cn=FAPolicies
- #faovm.mtidm.pstore.binddn.username=cn=orcladmin
- #faovm.mtidm.pstore.binddn.password=CHANGEME
- #faovm.mtidm.oim.mds.schema.username=oim_mds
- #faovm.mtidm.oim.mds.schema.password=CHANGEME
- #faovm.mtidm.oim.admin.port=17001
- #faovm.mtidm.oam.admin.port=17001
- #faovm.mtidm.oam.server.name=oam_server1

- #faovm.patch.file10=fasaaslcmtools/fa_startstop_saas.zip
- #faovm.patch.todir10=${ovabext.dir}

- #faovm.ha.fusiondb.new.genoptimizedqueryplan.enabled=true
- #faovm.ha.fusiondb.new.genoptimizedqueryplan.schema=BEES_MDS,SCM_FUSION_MDS_SOA,SETUP_FUSION_MDS_SOA,PRC_FUSION_MDS_SOA,OIC_FUSION_MDS_SOA,HCM_FUSION_MDS_SOA,FUSION_MDS,PRJ_FUSION_MDS_SOA,FUSION_MDS_SPACES,CRM_FUSION_MDS_SOA,FUSION_MDS_ESS,FU_FUSION_MDS_SOA

- #faovm.ha.HOST_WEBCHAT=webchat2host.example.com

- # Defaulted/Overridden properties - these base values should not be changed
- #faovm.ha.storage.create=false
- #faovm.ha.storage.unmount=false
- #faovm.ha.bigip.mapping.enabled=false
- #faovm.ha.sendmail.enabled=false
- # Controls whether files are created during deploy to allow later scaleout.
- #faovm.ha.allow.scale.out=false
- # Controls whether the HA nodes are created during the initial topology setup.
- #faovm.ha.create.node=false

- #faovm.ha.fa.bigip.mapping.enabled=true

- #faovm.ha.fa.patch.file10=wlspatches/fa/pre-host-patch/wlspatches.txt
- #faovm.ha.fa.patch.todir10=${ovabext.dir}

- #faovm.ha.fa.patch.file101=wlspatches/fa/pre-host-patch/p13349651_1036_Generic.zip
- #faovm.ha.fa.patch.todir101=${faovm.ha.fa.patch.todir10}

- #faovm.ha.fa.patch.file102=fasaaslcmtools/cloudlangpack.zip
- #faovm.ha.fa.patch.todir102=${ovabext.dir}

- #faovm.ha.fa.patch.file103=opatches/fa/pre-host-patch/patches.txt
- #faovm.ha.fa.patch.todir103=${ovabext.dir}

- #faovm.ha.fa.patch.file104=opatches/fa/pre-host-patch/p14787722_Generic.zip
- #faovm.ha.fa.patch.todir104=${faovm.ha.fa.patch.todir10}

- #faovm.ha.fa.patch.file105=opatches/fa/pre-host-patch/p16294200_linuxx64.zip
- #faovm.ha.fa.patch.todir105=${faovm.ha.fa.patch.todir10}

- #faovm.ha.fa.patch.file106=opatches/fa/pre-host-patch/p16326775_Generic.zip
- #faovm.ha.fa.patch.todir106=${faovm.ha.fa.patch.todir10}
#faovm.ha.fa.patch.file107=opatches/fa/pre-host-patch/p16389043_Generic.zip
#faovm.ha.fa.patch.todir107=${faovm.ha.fa.patch.todir103}
#faovm.ha.fa.patch.file108=opatches/fa/pre-host-patch/p16417375_111500_Fusion_Linux-x86-64.zip
#faovm.ha.fa.patch.todir108=${faovm.ha.fa.patch.todir103}

# Webchat host specific properties
#
#faovm.ha.webchat.ovmm.pool.name=slce08-pool
#faovm.ha.webchat.vm.template.name=ha-crm-v1r4_2012MMDD_webchat
#faovm.ha.webchat.vm.template.dir=/testmnt/template/webchat
#faovm.ha.webchat.ovab.sharedfs.component.name=component_wls_webchat
#faovm.ha.webchat.logical.hostname=webchat.oracleoutsourcing.com
#faovm.ha.webchat.hostname=${HOST_WEBCHAT}
#faovm.ha.webchat.cpus=4
#faovm.ha.webchat.memory=5120
#faovm.ha.webchat.originally.provisioned.memory=5120
#faovm.ha.webchat.storage.create=true
#faovm.ha.webchat.storage.size=12g
#faovm.ha.webchat.storage.name=user_webchat_CHANGEME
#faovm.ha.webchat.storage.parent.size=10g
#faovm.ha.webchat.storage.parent.name=${vm.template.name}
#faovm.ha.webchat.storage.unmount=true
# Comma separated list of BOSH domain names to be configured.
# List should be comprehensive and include all domains including any that were
# previously configured and are still needed
# Leave empty if no changes are needed and to skip BOSH rehydration
#faovm.ha.webchat.bosh.domain.names=example.com_CHANGEME
#faovm.ha.webchat.os.apps.user.name=aime
#faovm.ha.webchat.os.apps.user.id=94110
#faovm.ha.webchat.os.apps.user.group.name=svrtech
#faovm.ha.webchat.os.apps.user.group.id=42424
#faovm.ha.webchat.os.apps.user.home.dir=/home/aime
#faovm.ha.webchat.lockfile=/dev/shm/ohs_webchat_http_lock
# Use range 600-699 for patch files applicable for webchat ovm type

#faovm.ha.idm1.update.login.page=true

#faovm.ha.idm3oid.storage.unmount=true

#faovm.ha.idm3mw.standalone.file.archive0=idm/u01_oim.tar
#faovm.ha.idm3mw.storage.create=true
#faovm.ha.idm3mw.storage.size=30g
#faovm.ha.idm3mw.storage.parent.size=30g
#faovm.ha.idm3mw.update.login.page=true

3.2 Run Deployment

This step initiates the creation of the Oracle Fusion Applications topology, including Oracle Identity Management, onto the Oracle VM systems.

1. Set the following environment variables.

    setenv OVAB_HOME path_to_your_ovab_home
    setenv JAVA_HOME path_to_jre (in OVAB_HOME/jre) or path_to_JDK_1.6
    setenv FAOVM path_to_ovm_utility
Note that the path_to_ovm_utility refers to the directory you created in Section 2.12, "Install the Oracle VM Automation Utility".

2. Run the faovmdeploy.sh utility to create exported template storage. This step is optional and is necessary only if you followed Step 6 in Section 3.1, "Prepare Deployment Properties".

   cd $FAOVM/deployfw/bin
   ./faovmdeploy.sh createExportedTemplateStorage type=ha

   This utility operates on all host types for which storage is created, such as ohs, fa, and idm hosts. It does not operate on hosts that share storage, such as primary and secondary hosts. Optionally, you can add the following command line option to skip pinging the existing hosts from the deployer host:
   skipPingExistingHosts=true.

   This utility generates a log file for the creation of your topology in the directory, $FAOVM/deployfw/logs.

   An example of the output follows:

   [13:33:13/ohs] Executing Task: Create Sun Storage Share - ha-crm-v1r1-mt_20111213_ohs ... Done. [0m45s]
   [13:33:59/ohs] Executing Task: Mount Storage - /u1234 ... Done. [0m1s]
   [13:34:00/ohs] Executing Task: Change Storage Owner to Deploy User - /u1234 ... Done. [0m11s]
   [13:34:12/ohs] Executing Task: Read Shared File Sets ... Done. [0m28s]
   [13:34:41/ohs] Executing Task: Export File Sets ... Done. [0m32s]
   [13:43:10/ohs] Executing Task: Export File Set - fmwHome ... Done. [0m49s]
   [13:44:00/ohs] Executing Task: Export File Set - ora_inventory ... Done. [0m26s]
   [13:44:26/ohs] Executing Task: Export File Set - ovabext ... Done. [0m26s]
   [13:44:52/ohs] Executing Task: Export File Set - EMAgent ... Done. [0m44s]
   ... Done. [10m55s]
   [13:45:36/ohs] Executing Task: Unmount Storage - /u1234 ... Done. [0m1s]
   [13:45:44/ohs] Executing Task: Create Sun Storage Snapshot - ha-crm-v1r1-mt_20111213_ohs@faovm_exported_template_snapshot ... Done. [0m8s]
   [13:45:52/fa] Executing Task: Create Sun Storage Share - ha-crm-v1r1-mt_20111213_fa ... Done. [0m31s]

3. Run the faovmdeploy.sh utility to create an Oracle VM.

   cd $FAOVM/deployfw/bin
   ./faovmdeploy.sh createTopology type=ha

   This utility generates a log file for the creation of your topology in the directory, $FAOVM/deployfw/logs.

   An example of the output follows:

   [19:40:59/ohs] Executing Task: Create Volume - ilawler_ohs ... Done. [0m9s]
   [19:41:08/ohs] Executing Task: Change Volume Owner ... Done. [0m5s]
   [19:41:13/ohs] Executing Task: Read Shared File Sets ... Done. [0m32s]
   [19:41:46/ohs] Executing Task: Export File Sets ... Done. [0m32s]
   [19:41:46/ohs] Executing Task: Export File Set - fmwHome ... Done. [0m46s]
   [19:45:33/ohs] Executing Task: Export File Set - ORACLE_INSTANCE ... Done. [0m40s]
   [19:46:14/ohs] Executing Task: Export File Set - webgate ... Done. [0m43s]
   [19:46:57/ohs] Executing Task: Export File Set - ovabext ... Done. [0m31s]
   [19:47:29/ohs] Executing Task: Export File Set - EMAgent ... Done. [0m38s]
Run Deployment

[19:48:07/ohs] Executing Task: Instantiate Rehydration Templates ... Done. [0m5s]
[19:48:12/ohs] Executing Task: Copy Rehydrate Framework Files to Volume ... Done. [0m0s]
[19:48:13/ohs] Executing Task: Stage Rehydration Patches ... Done. [0s]
[19:48:13/ohs] Executing Task: Fix APPLTOP Permissions ... Done. [0m15s]
[19:48:29/ohs] Executing Task: Change Volume Owner ... Done. [0m24s]
[19:48:53/ohs] Executing Task: Create OVM - EXAMPLE.us.example2.com ... Done. [3m35s]
[19:52:29/ohs] Executing Task: Unmount Volume Mount Point - /u01 ... Done. [0m5s]


The faovmdeploy.sh command completes after the storage volumes are created and populated and the Oracle VMs are powered on. The rehydration of the domains continues within each individual Oracle VM even after the command completes.

3.2.1 Check the Status of createTopology

Use the status argument to check the status of the createTopology session. You can check the status of the entire topology with this command:

cd $FAOVM/deployfw/bin
./faovmdeploy.sh status type=ha

You can also check the status of a single node type by specifying the hostType argument:

cd $FAOVM/deployfw/bin
./faovmdeploy.sh status type=ha hostType=[ohs|fa|primary|secondary|bi]

3.2.2 Check the Status of Each Oracle VM

To manually check the status of each Oracle VM, log in to each Oracle VM using the root credentials that you specified, and monitor the rehydration progress within that Oracle VM.

For example, to check progress of the FA node, log in to the FA Oracle VM and run this command:

cd /u01/APPLTOP/ovabext/crmapps.oracleoutsourcing.com/CRMDomain
ls wls-latebinding-*.out

This command lists the Managed Servers for the CRMDomain, such as the Administration Server and Managed Servers, that have been rehydrated so far. An example of the output follows:

```
-rw-r--r-- 1 root   root   33 May 12 03:50 wls-latebinding-CRMDomain-AdminServer.properties.out
-rw-r--r-- 1 root   root   33 May 12 03:53 wls-latebinding-CRMDomain-ODICluster.properties.out
-rw-r--r-- 1 root   root   33 May 12 03:56 wls-latebinding-CRMDomain-EmailMarketingCluster.properties.out
-rw-r--r-- 1 root   root   33 May 12 04:00 wls-latebinding-CRMDomain-ContractManagementCluster.properties.out
-rw-r--r-- 1 root   root   33 May 12 04:05 wls-latebinding-CRMDomain-SalesCluster.properties.out
-rw-r--r-- 1 root   root   33 May 12 04:10 wls-latebinding-CRMDomain-CRM_SOACluster.properties.out
```

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Each file contains the following text if the rehydration of that Managed Server was successful:

```
/u01/APPLTOP/ovabext/crmapps.oracleoutsourcing.com/CRMDomain/wls-latebinding-CRMDomain-AdminServer.properties.out
deployer.rehydration-result = OK
```

Additional log files related to rehydration are located under the /assemblybuilder/log directory within the Oracle VM.

### 3.3 Post-Rehydration Steps

Perform the following steps after rehydration completes successfully:

- **Perform Postinstallation Tasks**
- **Apply Oracle Fusion Middleware Patches**
- **Apply Oracle Fusion Applications Patches**
- **Oracle Fusion Applications Post-installation Steps**

**Note:** In the following sections, references to hosts, such as HOST_SECONDARY and HOST_BI, represent the host names that you defined in Steps 12 through 14 in Section 3.1, "Prepare Deployment Properties". You must replace them with the host names in your environment to perform the manual steps.

#### 3.3.1 Perform Postinstallation Tasks

Complete the following post-rehydration step that is related to Oracle VM.

- **Perform Postinstallation Tasks**

#### 3.3.1.1 Perform Postinstallation Tasks

After Oracle VM deployment is complete, follow the manual "Postinstallation Tasks" described in the Oracle Fusion Applications Installation Guide.

#### 3.3.2 Apply Oracle Fusion Middleware Patches

Apply the mandatory Oracle Fusion Middleware patches. For more information, see "Oracle Fusion Middleware" in Oracle Fusion Applications release notes.
3.3.3 Apply Oracle Fusion Applications Patches

Refer to Oracle Fusion Applications release notes for information related to any additional patches that must be applied after Oracle VM deployment.

3.3.4 Oracle Fusion Applications Post-installation Steps

You must now perform the necessary implementation and functional setup tasks.

3.3.4.1 Manage User Passwords for Login Access to Applications Components

For complete information about setting up and managing passwords for your new environment, see "Securing Oracle Fusion Applications" and "Provisioning Identities" in Oracle Fusion Applications Administrator’s Guide.

3.3.4.2 Enable Product Offering Functionality

Before you can start using any of the product offerings you have installed, you must complete some common implementation tasks and enable the functionality of the offerings in your environment.

A large library of product-related documentation is available for use after provisioning. Some of the guides that you will find useful are listed here:

- Oracle Fusion Applications Common Implementation Guide
- Part VII, Completing Oracle Fusion Applications Post-Installation Tasks in the Oracle Fusion Applications Installation Guide
- Product-specific Oracle Fusion Applications implementation guides

3.4 Other Oracle VM Life Cycle Management Tasks

These are other life cycle management tasks that might be useful for your Oracle VM installation.

- Scale Out the OHS Node
- Scale Out the Primary Node
- Remove a Deployed Topology (Optional)
- Remove Exported Template Storage (Optional)
- Rerun a Deployment (Optional)

3.4.1 Scale Out the OHS Node

To scale out the OHS node, first prepare the ovm-ha-deploy.properties file by updating the scale-out Oracle VM information. You must specify your Oracle VM host names. Other properties are determined automatically based on the specifications for the base OHS Oracle VM.

faovm.ha.HOST_OHS_SCALE1=server02.com

You must add the number of scale-out host names based on the number of scale out OHS Oracle VM. Update environment information in POD’s excel sheets that you want to create.

To execute the scale out:

cd $FAOVM/deployfw/bin
./faovmddeploy.sh scaleoutOHS type=ha scaleoutInstances=1
3.4.2 Scale Out the Primary Node

To scale out the Primary node, first prepare the ovm-ha-deploy.properties file by updating the scale-out Oracle VM information. You must specify your Oracle VM host names. Other properties are determined automatically based on the specifications for the base Primary Oracle VM.

faovm.ha.HOST_PRIMARY_SCALE1=primary_host_scale1.com

You must add the number of scale-out host names based on the number of scale out Primary Oracle VMs that you want to create.

To execute the scale out:

cd $FAOVM/deployfw/bin
./faovmdeploy.sh scaleoutApps type=ha scaleoutInstances=1

3.4.3 Remove a Deployed Topology (Optional)

If you want to remove a topology that you previously created, use the cleanupTopology argument with faovmdeploy.sh.

cd $FAOVM/deployfw/bin
./faovmdeploy.sh cleanupTopology type=ha

Additionally, if you want to reset the Oracle RAC database to its original state, you can do this by setting the following property to "true":

faovm.ha.fusiondb.new.do.reset.on.cleanup=true

3.4.4 Remove Exported Template Storage (Optional)

If you previously used the pre-exported template storage feature, as described in Step 6 under Section 3.1, "Prepare Deployment Properties", you can remove these templates by using the cleanupExportedTemplateStorage command. Do not use this command if any topologies exist with volumes that are clones of the base exported template storage volumes and shares. If you run this command when these clones exist, the command will fail and it may also remove all of the storage for those clones. The command syntax follows:

cd $FAOVM/deployfw/bin
./faovmdeploy.sh cleanupExportedTemplateStorage type=ha

3.4.5 Rerun a Deployment (Optional)

If you want to rerun a deployment, reset the database and reexecute the restore process because some steps cannot be rerun on a database that has already undergone a deployment and rehydration. To reset the database, create a shell script /tmp/resetdb.xxxx.sh, where xxxx is the source database name, to help stop the database and drop or remove the data files.

3.5 Troubleshooting Oracle VM Deployment

The following troubleshooting scenarios are included in this section.

- Re-triggering Rehydration
3.5.1 Re-triggering Rehydration

During rehydration, if for some reason, you need to log in to an Oracle VM and manually re-trigger rehydration for that Oracle VM by invoking `abinit-host.sh`, remember to set the following environment variables first:

```
export JAVA_HOME=/assemblybuilder/jre
export PATH=$PATH:$JAVA_HOME/bin
```

3.5.2 Oracle VM Fails to Shutdown While Removing a Deployed Topology

When you remove a topology by following the steps in Section 3.4.3, "Remove a Deployed Topology (Optional)," it may appear that the VMs are not responding or not able to shutdown because the network has been cutoff or shut down. If this is the case, the `/etc/init.d/dimstartstop` or `/etc/init.d/fastartstop` scripts may not be responding.

To work around this, log into the corresponding hypervisor and use the "xm destroy" command to forcibly shut down the VM.

3.5.3 Update Oracle Data Integrator (ODI) Server Startup Properties if High Availability is Enabled

If you create an Oracle VM environment with corresponding High Availability (HA) deployment properties, then you need to follow the instructions below to add the missing server startup properties to the `odi_serverHA` server in the HA node prior to performing ODI import.

1. Repeat Steps 1-4 for both `odi_server1` and `odi_serverHA` in the CRM and HCM domains.
2. Login to the Oracle WebLogic Server Administration Console for the respective domain (CRM or HCM). In the Domain Structure window, expand the Environment node. Click Server. The Summary of Servers page appears.
3. Select the odi server (odi_server1 or odi_serverHA) from the appropriate column in the table. The Settings page appears. Click Lock & Edit. Click the Server Start tab. Enter the following into the Arguments field, replacing the values in `<...>` accordingly. Click Save and Activate Changes.

   For `odi_server1`:
   
   ```
   -DJDBCProgramName=DS/<domain>/odi_server1 -Dserver.group=ODICluster
   -Dtangosol.coherence.localhost=secondary.oracleoutsourcing.com
   -Dtangosol.coherence.localport<odi_server coherence port>
   -Doracle.odi.coherence.wka1=secondary.oracleoutsourcing.com
   -Doracle.odi.coherence.wka1.port<odi_server coherence port>
   -Dtangosol.coherence.cluster=ODICluster
   ```

   For `odi_serverHA`:
   
   ```
   -DJDBCProgramName=DS/<domain>/odi_serverHA -Dserver.group=ODICluster
   -Dtangosol.coherence.localhost=secondary-ha1.oracleoutsourcing.com
   -Dtangosol.coherence.localport<odi_server coherence port>
   -Doracle.odi.coherence.wka1=secondary.oracleoutsourcing.com
   ```
-Doracle.odi.coherence.wka1.port=<odi server coherence port>
-Doracle.odi.coherence.wka2=secondary-ha1.oracleoutsourcing.com
-Doracle.odi.coherence.wka2.port=<odi server coherence port>
-Dtangosol.coherence.cluster=ODICluster

Where:

- <domain> is the HCMDomain or CRMDomain
- <odi server coherence port> is the coherence port allocated to the ODI managed servers (odi_server1 or odi_serverHA). Note that this will be the same on both secondary and secondary-ha1 Oracle VMs.

---

**Note:** There should be no line breaks between the different -D parameters. Do not copy and paste the code from above into your Administration Console's Arguments text field. Copying and pasting this code may result in HTML tags being inserted into the Java arguments. In addition, the text that you enter should not contain characters other than those included in the example above.

---

4. Restart the odi_server1 and odi_serverHA managed servers.
This chapter describes how to move or copy Fusion Applications components and/or data from one environment to another when the source environment was installed using Oracle Virtual Machine (Oracle VM) templates.

This chapter describes two types of content movement. Each is independent of the other:

- Section 4.1, "Perform a Production-to-Test Data Refresh"
- Section 4.2, "Perform a Full Clone"

### 4.1 Perform a Production-to-Test Data Refresh

It may be necessary periodically to bring production data into the test environment to conduct certain types of tests. For example, it might be useful to test Oracle Fusion Applications with realistic data in the following circumstances:

- Testing new functionality
- Testing bug fixes and code changes
- Testing previously unused functionality
- Testing upgrades
- Testing performance
- Training users

#### 4.1.1 Introduction

Production-to-test data movement includes two distinct parts: updating the Oracle Identity Management components, using a particular set of scripts and properties files, and updating the Fusion Applications test database using a different set of scripts and properties files.

#### 4.1.1.1 Technical Assumptions and Requirements

Before moving production data, consider the following:

- **Matching systems**: Test and Production systems must be identical in terms of product version, patch levels, deployment topology and configurations. Test and Production environments were initially created using the same Oracle VM Template. Note that Oracle VM installations do not support Windows.
- **Oracle Identity Management:** Because the production data references real users and applications policies, the identity store and policy store at the test environment must contain a copy of these objects.

- **Databases:** Both the source and target databases must be on RAC and Automatic Storage Management (ASM).

- **Data Masking:** When moving data from the production environment to the test environment, you must mask all sensitive information in the copied data. Even when sensitive information is masked, you must use caution in granting access to this data in the test environment. In certain cases, you may not be able to mask out all sensitive data. For example, if you want to conduct heavy-duty payroll testing to validate new tax formulas, you may not want to conduct the test with real payroll data.

- **Cloud Control:** An instance of the Oracle Enterprise Manager Cloud Control is required. If Cloud Control has not yet been installed, you can obtain and install it now. See Section 2.8.1, "Install Oracle Enterprise Manager 12c Cloud Control". The *Oracle Enterprise Manager Cloud Control Basic Installation Guide* provides details on how to install, create a software library, add named credentials, register the necessary Fusion Application servers with Cloud Control, and deploy Management Agents on each server to establish communication between them and Cloud Control. All of these configurations are required prerequisites to performing the data refresh.

  By default, when installing Cloud Control along with an Oracle VM version of Fusion Applications, you are prompted to establish credentials and deploy agents on each of the Oracle VM hosts. If this was not completed, you can do it manually now, following the instructions in the *Oracle Enterprise Manager Cloud Control Basic Installation Guide*.

- **Access:** If firewalls are in place, ensure that there is JDBC database access from the destination mid-tier host to the source database and destination database hosts.

- **Backup locations:** Production to test uses the following backups from the Source (Production) environment:

  **RMAN backup (HOT) of the Source DB:** The database backup should be taken with archive mode ON and the database still open (HOT backup of database plus archive logs). The file system location of the RMAN backup should be accessible from the Destination (Test) database host.

  **APPLTOP snapshot (COLD) of the Source Mid-Tier:** The snapshot should be COLD (all mid-tier servers shutdown before taking the snapshot). The file system location of the snapshots should be accessible from the Source (Production) Mid-Tier host.

  **Note:** It is important that the RMAN backup and the file system snapshots are done simultaneously (time-synched), otherwise the database and the file system contents might not be consistent in the destination environment after completing content movement.

- **Credentials:** You will need the credentials of the owner of the Cloud Control instance (typically `sysman`). You also need the credentials for the owner of the database host to run the production-to-test scripts.
4.1.1.2 Which Servers are Involved

An installation of Fusion Applications may be spread over any number of server hosts; different machines or Oracle VMs may be used for the transactional database, the Oracle Identity Management components, the Fusion Applications components themselves, the particular products such as Oracle Fusion Customer Relations Management, and/or the Business Intelligence (BI) applications. With two matching installations, those servers are doubled.

When performing the production-to-test data movement, only the following servers are involved and need to be registered and called from Cloud Control:

<table>
<thead>
<tr>
<th>Production Hosts</th>
<th>Test Hosts</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Database host</td>
</tr>
<tr>
<td>Fusion Applications host aka MidTier host</td>
<td>Fusion Applications secondary host aka MidTier host</td>
</tr>
<tr>
<td>None</td>
<td>Beehive-CRM host</td>
</tr>
<tr>
<td>None</td>
<td>BI host</td>
</tr>
</tbody>
</table>

Note that, as a security measure, the production database is not touched directly. Instead, the database contents are accessed through the RMAN backup file, which must be accessible to the destination (test) database host.

4.1.1.3 What's Included in the Production-to-Test Package

Unzip the famigratep2t.zip in a location that is accessible by the host machine where the Cloud Control is running.

After unzipping, you should see the following directory structure and files:

```
./components directives metadata procedures sample_inputs swlib.xml

./components:
famigratep2t_component.zip

./directives:
extract_component.sh

./metadata:
dictionary_extract_component.xml properties_extract_component.xml
dictionary_famigrate_p2t.xml properties_famigrate_p2t.xml

./procedures:
FA_P2T.xml

./sample_inputs:
FA_P2T_DP_rac.input FA_P2T_DP_single.input
```

Note: The path where you unzipped the P2T package will be required in the subsequent emctl calls. It will be referred to as the `unzip_location_path`.

The `components` directory contains a zip file with all the shell scripts, jar files, and other code that comprise the Production-to-Test logic. You do NOT need to unzip this
component; Cloud Control will do that automatically when a deployment procedure is run.

The directives directory contains a shell script to unzip and install the code at a location where Cloud Control can find it.

The metadata directory contains the metadata used by the component and directive. These three directories, along with swlib.xml, constitute the Cloud Control "software library" that will be registered with Cloud Control in the following procedures.

The sample_inputs files will be edited with your environment variables.

4.1.1.4 Process Overview

After the prerequisites are met and the backups and snapshots taken, you can proceed with the two major processes:

- Section 4.1.2, "Move the Required Oracle Identity Management Data"
- Section 4.1.3, "Perform the Data Refresh"

4.1.2 Move the Required Oracle Identity Management Data

When you update the test environment with the production transaction data, you must also bring the Oracle Identity Management objects to which those data refer. These include such objects as the enterprise users, roles, and application policies. The process includes the following steps:

- Identify and perform the prerequisites. See Section 4.1.2.1.
- Execute the Oracle Identity Manager prerequisite script. See Section 4.1.2.2
- Move the Oracle Internet Directory. See Section 4.1.2.3.
- Run the Oracle Identity Manager post-replication script. See Section 4.1.2.4
- Modify Oracle Platform Security Services properties and run the OPSS script. See Section 4.1.2.5.

4.1.2.1 Prerequisites for Oracle Identity Management Movement

- **Servers:** Before beginning movement on the Oracle Identity Management components, the Fusion Applications servers should be shut down. After the Oracle Identity Management movement is complete, those servers must be restarted.

- **Access Oracle Identity Management production-to-test components:** Moving the Oracle Identity Management objects requires using properties files and scripts to transfer the Oracle Identity Manager, the Oracle Internet Directory, and the Oracle Policy Store.

To begin, access the automated scripts location:

```
$oim_home/idmscripts/idmp2t/
```

There you will find the properties files referenced in the following tasks.

**Note:** If the Oracle Internet Directory and the Oracle Identity Manager are set up on different hosts, you will need to copy the scripts from $oim_home/idmscripts/idmp2t to the Oracle Internet Directory host.
Each of the various scripts uses the elements described in the following table.

<table>
<thead>
<tr>
<th>Script Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-pfile</td>
<td>Properties file with input parameters. For example oim-params.txt.</td>
</tr>
<tr>
<td>-stage</td>
<td>Stage in which the script is being executed. Supported values for OIM are PRE and POST.</td>
</tr>
<tr>
<td>-target</td>
<td>Host against which the script is being executed. Supported values are SOURCE and DESTINATION.</td>
</tr>
<tr>
<td>-logdir</td>
<td>Optional. Directory name where log files are written.</td>
</tr>
</tbody>
</table>

4.1.2.2 Execute Oracle Identity Manager Prerequisite Script

1. On the destination Oracle Identity Manager host, update the oim-params.txt file with the appropriate destination values, as described in the comments within the file.

2. Execute the following script:

```
./p2t-oim.sh --pfile oim-params.txt --STAGE pre --target destination --logdir /u01/oim/oim_home/idmscripts/idmp2t/oim/logs
```

4.1.2.3 Move the Oracle Internet Directory

1. On the destination Oracle Internet Directory host, update the oid-params.txt file with the appropriate destination values, as commented in the file itself.

2. Execute following script, which takes care of pre-replication, replication, configuration, and post-replication steps.

```
./p2t-oid.sh --stage all --rename TRUE
```

4.1.2.4 Run Oracle Identity Manager Post-Replication Script

On the destination Oracle Identity Manager host, execute the following script:

```
./p2t-oim.sh --pfile oim-params.txt --STAGE post --target destination --logdir /u01/oim/oim_home/idmscripts/idmp2t/oim/logs
```

4.1.2.5 Modify Oracle Platform Security Services Properties and Run the OPSS Script

1. Copy the jps-config.xml file and the bootstrap directory from the Oracle Identity Manager host to the matching destination host.

2. On the destination host, update the opss.properties file with appropriate destination values, as commented in the file itself.

3. Execute the following script to migrate the Oracle Platform Security Services:

```
./p2t-opss.sh --pfile opss.properties --stage post
```

Note: Remember to restart the Fusion Applications servers before moving on to the next section.
4.1.3 Perform the Data Refresh

After the Oracle Identity Management components have been updated, the production-to-test movement for Fusion Applications data can begin.

To copy data from the production environment to the test environment:

1. Unpack the production-to-test components and register them in the Oracle Enterprise Manager Cloud Control (Cloud Control). See Section 4.1.3.1.

2. Edit the sample properties file included in the Production-to-Test package to match your system environment. See Section 4.1.3.2.

3. Execute the production-to-test scripts. See Section 4.1.3.3.

4. Apply data masking to sensitive information. See Section 4.1.3.4.

4.1.3.1 Register the Production-to-Test Components

It is presumed that you have Enterprise Manager Cloud Control installed and configured, with all the necessary Fusion Applications servers registered and successfully communicating with Cloud Control. If not, go to the Oracle Enterprise Manager Cloud Control Basic Installation Guide and complete those procedures before returning here.

To set up the production-to-test software library and deployment procedure so they can be launched:

1. On the host where the Cloud Control instance resides, register the software library using the following command:

   ```
   emctl register oms metadata -service swlib -file unzip_location_path -pluginId "oracle.sysman.emas" -sysman_pwd "OMS password"
   ```

   The following output should result:

   Oracle Enterprise Manager Cloud Control 12c Release 12.1.0.1.0
   Copyright (c) 1996, 2011 Oracle Corporation. All rights reserved.
   Metadata registration successful

2. You can also check the Cloud Control interface to confirm that the software library was successfully registered. From the Enterprise menu, select Provisioning and Patching, then Software Library. The Software Library page is displayed.
3. To register the deployment procedure, use the following command:

```
emctl register oms metadata -service procedures -file unzip_location/path/procedures/FA_P2T.xml -pluginId "oracle.sysman.emas" -sysman_pwd "OMS password"
```

The following message should be displayed:

Oracle Enterprise Manager Cloud Control 12c Release 12.1.0.1.0
Copyright (c) 1996, 2011 Oracle Corporation. All rights reserved.
Metadata registration successful

4. You can also check the Cloud Control interface to confirm that the deployment procedure was successfully registered. From the Enterprise menu, select Provisioning and Patching, then Procedure Library. The Deployment Procedure Manager is displayed, showing the Production to Test Procedure.
4.1.3.2 Edit the Properties File

The deployment procedure requires a set of variables and their values which must be defined in one of the .input files supplied with the package.

1. Access the appropriate sample file for your environment, either FA_P2T_DB_single.input (for a single-instance database), or FA_P2T_DB_rac.input (for RAC/ASM environments).

2. Edit the host names, paths, credentials, and other values to match your production (source) and test (destination) environments. Note that the credentials for the mid-tier host should match the user ID that owns ORACLE_HOME. Similarly, the credentials for the database host should match the user ID that owns the database. All variables are annotated with comments in the file itself.

4.1.3.3 Execute the Production-to-Test Scripts

The deployment procedure can be run either from the Cloud Control host or from any of the Oracle VM hosts that have emcli available under APPTOP.

To launch the deployment procedure:

1. Log in to emcli:
   ```
   emcli login -username="sysman"
   ```

2. Run the command:
   ```
   emcli submit_procedure -name=FA_P2T_DP -input_file=data:file name
   ```

   The following output is displayed:

   Verifying parameters ...
   Schedule not specified, defaults to immediate
   B11EF6EAE4E0E958E040E40A4F887E88
   Deployment procedure submitted successfully
To review and track the progress of the deployment procedure execution using the Cloud Control interface:

1. From the Enterprise menu, select Provisioning and Patching, then Procedure Activity.
   The Deployment Procedure Manager displays the Activity page, including the status of the run of this deployment procedure.

2. Select the appropriate link in the Run column to see more details. The resulting screen lists all phases and steps of the deployment procedure.
3. Select a link in the **Status** column to see the output of a step.

4. Click an item in the **Status** column to review the Job Execution page. Click an item in the **Job Status** column to review the complete log file.

### 4.1.3.4 Apply Data Masking to Sensitive Data
After the data has been moved to the test system, sensitive information should be masked for legal and security reasons. For instructions, see the “Data Masking” section of the *Oracle Fusion Applications Administrator’s Guide*. 
4.2 Perform a Full Clone

It is often convenient to create a new Fusion Applications instance from an existing one, particularly when creating multiple staging instances. Cloned instances might be used for training purposes, to sandbox different sets of customizations, or to complete a long customization process without being disrupted by patch or upgrade bundles. Each clone will be identical to, and independent from, the source instance.

4.2.1 Introduction

Review the core concepts of cloning and its requirements.

4.2.1.1 Concepts and Terminology

- **Full clone**: A full clone is an instantaneously created, read-writable copy of a snapshot. One or more full clones can be created from a single snapshot. Only full cloning is supported now.

- **Cold clone vs. hot clone**: The full clone service supports only cold cloning, that is: cloning from a backup, when all source system or server components are shut down. This implies that the source will not change during cold cloning, so server information will be duplicated with 100% accuracy. A "hot" clone, by contrast, occurs as just one of many running processes, and the integrity of the copied data may be compromised if any files are in use during the hot cloning process.

4.2.1.2 Technical Assumptions and Requirements

Review the cloning requirements for administrators, the installation environment, and the instance configurations:

4.2.1.2.1 Users

It is assumed that Oracle Fusion Application administrators who will use this document to perform cloning are:

- Familiar with installing and configuring Oracle Fusion Applications using Oracle VM template deployment
- Familiar with using and NFS storage application such as NetApp or Sun ZFS Storage Appliance.

4.2.1.2.2 Environment

Cloning requires the following system and database versions:

- **Operating system**: Oracle Enterprise Linux 4.x, 5.x, (and higher)
- **Oracle Transaction Database**: Oracle 11.2.0.3 and above. Both source and target databases must be on RAC and ASM.
- **Protocol**: NFSv3, NFSv4
- **Storage**: Such as NetApp or Oracle Sun ZFS Storage Appliance

4.2.1.2.3 Configurations

Note the configuration requirements:

- The source was created using Oracle VM templates, or is a clone of such a deployment.
Only software components and configurations supported natively in Oracle VM deployment are supported in cloning.

The source and destination must have the same topology.

The source can be HA-enabled / scaled-out.

Source and destination may have different database configurations. For example, the source can run on RAC while the destination runs on single-instance, and vice versa.

Source does not need to be accessible while cloning is in progress.

Long-running, in-flight data will be cleared at the destination.

Alterations made to local storage (as opposed to the external NFS storage) will not be moved. Such local storage could include files such as /temp, /scratch, and /var, as well as any FA OHS configuration changes or third-party software installed separately from Fusion Applications.

4.2.1.3 Process Overview

The cloning process requires the following high-level steps:

- Section 4.2.2, "Prepare the Source and Create a Backup"
- Section 4.2.3, "Prepare the Destination Environment"
- Section 4.2.4, "Prepare Deployer Host and Fill Out Oracle VM Deploy Properties"
- Section 4.2.5, "Run the Cloning Deployment"
- Section 4.2.6, "Remove a Cloned Environment (Optional)"

4.2.2 Prepare the Source and Create a Backup

Begin with a fully configured Oracle Fusion Applications source, built from Oracle VM templates. Ensure that you have sufficient memory / hypervisor capacity to accommodate a duplicate of the source environment. Then follow the tasks below to prepare the topography, take an RMAN backup of databases, gather source database parameters, and create an rsync -a backup of the entire source.

Task 1 Prepare the topology

Create NFS storage locations that duplicate the source storage locations. For example, a typical installation might require five to seven locations, such as:

- 1 for the database backups (fusiondb, oimdb, and oiddb)
- 1 for OHS
- 1 for FA (eventually to be mounted to four hosts: Admin, Primary, Secondary, and BI (Business Intelligence))
- 1-3 for Oracle Identity Management (depending on whether a single- or 3-node installation was used on source)
- 1 for Webchat (if installed and used on source).

The NFS locations must be accessible from the source, destination, and deployer hosts. They will be used to store the RMAN database backups and the rsync copies of the source directories.
Task 2  Back up the databases
Take an RMAN backup of the transaction database (fusiondb), and the Oracle Identity Management databases (oimdb and oiddb). If archivelog mode is turned ON, a HOT backup must be taken using "backup database plus archivelog". (This requirement is due to an RMAN duplicate limitation.)
If archivelog mode is NOT on, a COLD backup must be taken using "backup database".

Task 3  Gather database parameters on the source system
These will be used in the deployment properties on the destination.

Queries for looking up properties on each database:

```
select name from v$datafile;
select member from v$logfile;
select name from v$tempfile;
select tablespace_name from dba_tablespaces where tablespace_name like '%UNDO%';
```

Note: If you are using a RAC database, use the tablespace from node1.

Task 4  Use rsync to back up the source
We recommend using rsync-a (archive) to make an identical copy of the source file system. Log in to a source host where the source storage location is mounted, and run a command such as:

```
rsync-a/OHS1/*/net/xxxx
```

where OHS1 is a source directory, and xxxx is a matching destination storage location. This creates a copy. Repeat for each source storage (OHS, FA, IDM, and Webchat).

4.2.3 Prepare the Destination Environment
Cloning is similar to a fresh installation and requires many of the same prerequisite steps, as described in Chapter 2. These include:

- Establishing the appropriate VM Servers and IP addresses for the destination. See Section 2.1. (Note that you can use the same Deployer Host that was allocated for the source installation.)
- Setting the "privilege escalation mechanism" for handling root privileges. See Section 2.3.
- Allocating IP endpoints for the destination. See Section 2.6.
- Creating new (empty) database instance so that the rman backup can be restored back as part of fullclone process. Section 2.7.
- Confirm that the OVAB Home is accessible to the deployer host. See Section 2.10
- Registering templates. If the hypervisor used for the destination already has the templates registered, this step is not needed. Otherwise, see Section 2.11.
- Installing the Oracle VM Automation utility to the deployer host. (This utility includes the CloneTopography option.) See Section 2.12.
- Enabling a Secure Shell (SSH) for the deployer host. See Section 2.13

Observe that not every step in Chapter 2 is replicated; it is unnecessary to allocate a deployer host, install an Oracle VM Manager, prepare an Oracle Enterprise Manager instance, or configure a stand-alone Oracle Identity Management for cloning.
4.2.4 Prepare Deployer Host and Fill Out Oracle VM Deploy Properties

Ensure that you have unzipped oracle-ovmautomation-all.zip on the deployer host, so that the cloning tools are available.

Then fill out the Oracle VM deploy properties (~/.deployfw/deployprops/ovm-ha-deploy.properties) as in a fresh installation (Section 3.1). Also include the cloning-specific properties annotated in the following sections.

4.2.4.1 Deployment Properties for Databases

Properties for the transaction database and the Oracle Identity Management databases must be set.

4.2.4.1.1 Transaction Database (Fusion DB)

Note that .src file properties are new and must be added to the properties file.

faovm.ha.fusiondb.new.do.restore=true
faovm.ha.fusiondb.new.do.backup.push=false
faovm.ha.fusiondb.new.do.reset.on.cleanup=false
faovm.ha.fusiondb.new.backup.stage.path=/net/slcaf463/db_clone/fusiondb
(This is the fusionDB backup location, make sure it’s accessible from the target)
faovm.ha.fusiondb.src.datafile.path=<enter-source-datafile-location>
faovm.ha.fusiondb.src.tempfile.path=<enter-source-tempfile-location>
faovm.ha.fusiondb.src.recolog.path=<enter-source-log-location>
faovm.ha.fusiondb.src.undo.tablespace.name=<enter-source-undo-tablespace-name>

4.2.4.1.2 Oracle Internet Directory Database (OIDDB)

faovm.ha.oiddb.new.do.restore=true
faovm.ha.oiddb.new.do.backup.push=false
faovm.ha.oiddb.new.do.reset.on.cleanup=false
faovm.ha.oiddb.new.backup.stage.path=/net/slcaf463/db_clone/oiddb
(This is the oidDB backup location; make sure it’s accessible from the target)
faovm.ha.oiddb.src.datafile.path=<enter-source-datafile-location>
faovm.ha.oiddb.src.tempfile.path=<enter-source-tempfile-location>
faovm.ha.oiddb.src.recolog.path=<enter-source-log-location>
faovm.ha.oiddb.src.undo.tablespace.name=<enter-source-undo-tablespace-name>

4.2.4.1.3 Oracle Identity Manager Debatable (OIMDB)

faovm.ha.oimdb.new.do.restore=true
faovm.ha.oimdb.new.do.backup.push=false
faovm.ha.oimdb.new.do.reset.on.cleanup=false
faovm.ha.oimdb.new.backup.stage.path=/net/slcaf463/db_clone/oimdb
(This is the oimDB backup location; make sure it’s accessible from the target)
faovm.ha.oimdb.src.datafile.path=<enter-source-datafile-location>
faovm.ha.oimdb.src.tempfile.path=<enter-source-tempfile-location>
faovm.ha.oimdb.src.recolog.path=<enter-source-log-location>
faovm.ha.oimdb.src.undo.tablespace.name=<enter-source-undo-tablespace-name>

4.2.4.2 Deployment Properties for Storage

A full clone uses rsync backup.

4.2.4.2.1 From an rsync Backup:

faovm.storage.type=genericnfs
faovm.storage.use.parent=true
Perform a Full Clone

# Generic, Pre-defined NFS
faovm.storage.genericnfs.host=<sun storage hostname>
faovm.storage.genericnfs.nfs.export.root=/vol
faovm.storage.genericnfs.nfs.mount.options=rw,hard,nointr,rsize=32768,wsize=32768,
timeo=600

# Host/IP to use on the deployer when mounting storage
faovm.storage.genericnfs.deployer.nfs.mount.host=${storage.genericnfs.host}

# Host/IP to use in deployed VMs when mounting storage
faovm.storage.genericnfs.vm.nfs.mount.host=${storage.genericnfs.host}

# Settings used when external storage solution is managing parent storage cloning
faovm.storage.genericnfs.parent.nfs.export.root=${storage.genericnfs.nfs.export.root}

faovm.ha.fa.storage.name=<fa-storage-clone-name>
faovm.ha.fa.storage.parent.name=<parent-clone-name>

faovm.ha.ohs.storage.name=<ohs-storage-clone-name>
faovm.ha.ohs.storage.parent.name=<parent-clone-name>

4.2.4.3 Oracle Identity Management Properties

The properties differ depending on the number of nodes in the source Oracle Identity Management system.

4.2.4.3.1 If using a single-node, stand-alone Oracle Identity Management:

faovm.ha.idm1.storage.name=<idm-storage-clone-name>
faovm.ha.idm1.storage.parent.name=<parent-clone-name>

4.2.4.3.2 If using a 3-node, stand-alone Oracle Identity Management:

faovm.ha.idm3oid.storage.name=<idm-oid-storage-clone-name>
faovm.ha.idm3oid.storage.parent.name=<parent-clone-name>

faovm.ha.idm3mw.storage.name=<idm-mw-storage-clone-name>
faovm.ha.idm3mw.storage.parent.name=<parent-clone-name>

faovm.ha.idm3ohs.storage.name=<idm-ohs-storage-clone-name>
faovm.ha.idm3ohs.storage.parent.name=<parent-clone-name>

4.2.4.4 Beehive/webchat Properties (if using):

faovm.ha.webchat.storage.name=<webchat-storage-clone-name>
faovm.ha.webchat.storage.parent.name=<parent-clone-name>

4.2.4.5 Set Cloning-Specific Block of Parameters

Note: All credential.<user>.password keys must have <USER> uppercased, regardless of the <user> case used elsewhere. All <user> values are uppercased before property lookup. Below are the required overrides when cloning.

faovm.credential.BEE_DATA.password=CHANGEME
faovm.credential.BEE_CODE.password=CHANGEME
faovm.credential.BEE_MDS.password=CHANGEME
faovm.credential.FUSION.password=CHANGEME
faovm.credential.CRM_FUSION_SOAINFRA.password=CHANGEME
faovm.credential.OAMADMINUSER.password=CHANGEME
faovm.credential.OIM/Admin.password=CHANGEME
faovm.credential.TECHSTACK BI RPD.password=CHANGEME
Perform a Full Clone

faovm.credential.FUSION_APPS_PROV_PATCH_APPID.password=CHANGEME
faovm.credential.OAM.WEBGATE.password=CHANGEME

4.2.5 Run the Cloning Deployment
As in a fresh install, this involves setting environment variables, running a deploy script, and verifying the status of data and scheduling.

4.2.5.1 Set the Environment Variables and Invoke Deployment
Set the environment variables:

export JAVA_HOME=<JAVA_HOME location>
export OVAB_HOME

4.2.5.2 Invoke the Deploy Script
Invoke the deploy script in cloning mode:

-bash-3.2$ faovm/deployfw/bin/faovmdeploy.sh cloneTopology type=ha

4.2.5.3 Verify Status
Verify the status of the clear inflight data and schedule.

4.2.5.3.1 Verify Status of Clear Inflight Data
Log in to the Fusion Applications host.
/assemblybuilder/logs/ab.out shows the status of the execution.

\[00:23:17/fa\] Executing Task: Purge FA Queues ... Done. \[0m6s\]
\[00:23:23/fa\] Executing Task: Truncate Soa Tables ... Done. \[0m15s\]
\[00:23:38/fa\] Executing Task: Truncate Ess Tables ... Done. \[0m6s\]
\[00:23:45/fa\] Executing Task: Recreate UMS Tables ... Done. \[0m2s\]
\[00:23:47/fa\] Executing Task: Truncate Table ATK_POPUP_ITEMS ... Done. \[0m0s\]

4.2.5.3.2 Verify Status of the Schedule Recreation
Log in to the secondary host.
/assemblybuilder/logs/ab.out shows the status of the execution.

ab.out output:
\[20:39:24/secondary\] Executing Task:
oracle.apps.fnd.provisioning.ovm.rehydratefw.cli.cmd.fa.HR2HRODICmd ... Done. \[0m8s\]
\[20:39:33/secondary\] Executing Task: Export SES Schedules ... Done. \[0m25s\]
\[20:39:58/secondary\] Executing Task: Delete SES Schedules ... Done. \[0m8s\]
\[20:40:07/secondary\] Executing Task: Update SES Schedules ... Done. \[0m9s\]
\[20:40:16/secondary\] Executing Task:
oracle.apps.fnd.provisioning.ovm.common.cli.cmd.WLSTScheduleESSJobsForAllPillarsCmd ... Done.

4.2.6 Remove a Cloned Environment (Optional)
Should you want to completely remove the components you've installed on a destination environment, use the cleanupTopology option

-bash-3.2$ faovm/deployfw/bin/faovmdeploy.sh cleanupTopology type=ha

This will clean up the destination Virtual Machines, but does not revert any changes made to the destination NFS storage locations and databases.
Glossary

deployment
The process that is triggered on the deployer host when the user invokes the faovmdeploy.sh createTopology command. During the process of deployment, the Oracle VM servers that are part of the topology are created from the Oracle VM Template and are started.

HA
A method of implementation in which each component or functional group of software components is replicated on a different computer and configured for component-level high availability. You can choose whether you want HA during the creation of the Oracle VM instance.

High Availability (HA)
See HA.

Oracle VM Template
Defines all of the topologies that will be deployed on Hypervisor servers along with associated artifacts, such as volumes and firewall configurations necessary to set up an Oracle Fusion Applications instance.

reference environment
The environment delivered in the Oracle VM Template.

rehydration
The process that runs during the initial phase of Oracle VM deployment and performs additional reconfiguration steps that are specific to each Oracle VM
**target database**

An existing database located on a physical machine, where Oracle VM Manager restores the Recovery Manager backup that is delivered as part of the Oracle VM Template.