Oracle® Beehive
Installation Guide
Release 1 (1.4) for Solaris Operating System (SPARC 64-Bit)
E13793-02

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Preface

The *Oracle Beehive Installation Guide for Solaris Operating System (SPARC 64-Bit)* describes how to install and configure Oracle Beehive.

**Audience**

The *Oracle Beehive Installation Guide for Solaris Operating System (SPARC 64-Bit)* is directed at any administrator whose task is the installation, deployment, configuration, administration, and maintenance of Oracle Beehive.

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Related Documents

For more information, see the following documents in the Oracle Beehive Release 1 documentation library:

- *Oracle Beehive Administrator’s Guide*
- *Oracle Beehive Administrator’s Reference Guide*
- *Oracle Beehive Application Developer’s Guide*
- *Oracle Beehive Concepts*
- *Oracle Beehive Deployment Guide*

Conventions

The following text conventions are used in this document:

<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>italic</td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td>monospace</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>
Oracle Beehive Installation

This part describes how to install and uninstall Oracle Beehive. To configure Oracle Beehive, refer to Part II, "Oracle Beehive Post-Installation Configuration". To install Oracle Beehive in a high availability environment, refer to Part III, "Oracle Beehive High Availability Configuration".

This part contains the following modules:

- What You Should Know Before Installing Oracle Beehive
- Oracle Beehive Database Requirements
- Oracle Beehive Install Wizard Checklist
- Oracle Beehive Install Wizard
- Upgrading Oracle Beehive Release 1 (1.3)
- Upgrading Oracle Beehive Release 1 (1.4.1)
- Oracle Beekeeper Installation Help
- Upgrading Oracle Beekeeper Version 1.3
- Upgrading Oracle Beekeeper Version 1.4.1
- Installing Oracle Beehive with Provisioning Application
- Provisioning Oracle Beehive
- Installing Oracle Beehive in Silent Mode (Non-Interactive)
- Oracle Beehive Install and Config Wizard Command-Line Options
- Oracle Beehive Uninstall Wizard
What You Should Know Before Installing Oracle Beehive

This module describes the hardware and software prerequisites of Oracle Beehive and available installation scenarios. It covers the following topics:

- Requirements
- Installation Scenarios
- Upgrading Oracle Beehive
- Starting Oracle Beehive Install Wizard
- Post-Installation Procedures
- Cloning Application Tiers and Deployments
- Uninstalling Oracle Beehive

Requirements

This section describes the following Oracle Beehive software and hardware requirements:

- Operating System Certification
- Required Operating Systems Packages for SPARC
- Required Operating System Patches
- Database Requirements
- Oracle Enterprise Manager Grid Control Requirements
- Hardware Requirements

Operating System Certification

Oracle Beehive is certified for Sun Solaris 10 (SPARC 64-bit).

Required Operating Systems Packages for SPARC

Oracle Beehive requires the following packages on Solaris operating systems (SPARC 64-Bit):

- SUNWbtool
- SUNWlwp
- SUNWlwm
Required Operating System Patches

Currently, no patches are required for Solaris 10. However, Sun Microsystems, Inc. often updates the list of required patches for J2SE. Click the "Readme" link on the following URL for the most current list of patches:

http://sunsolve.sun.com/pub-cgi/show.pl?target=patchpage

Increasing Shell Limits

Note: In order to install Oracle Beehive, the maximum number of open file descriptors must be at least 4096.

In particular, on Solaris, ensure that the output from the command `ulimit -n` is at least 4096.

Although the steps in this section increase the value of the maximum number of open file descriptors, ensure that the kernel parameter `fs.file-max` is set to a value equal or higher than the value of `hard nofile` in the `/etc/security/limits.conf` file.

Solaris

To improve the performance of Oracle Beehive on Solaris, increase the following shell limits for the user installing Oracle Beehive:

- Maximum number of open file descriptors, hard limit: 65536
- Maximum number of processes available to a single user, hard limit: 16384

For more information, refer to Solaris Tunable Parameters Reference Manual from the Solaris 10 Administrator Collection from the Sun Microsystems Documentation Web site.

Linux

To improve the performance of Oracle Beehive on Linux, increase the following shell limits for the user installing Oracle Beehive:

Table 1–1 Minimum Shell Limits

<table>
<thead>
<tr>
<th>Shell Limit</th>
<th>Item in limits.conf</th>
<th>Hard Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of open file descriptors</td>
<td>nofile</td>
<td>65536</td>
</tr>
<tr>
<td>Maximum number of processes available to a single user</td>
<td>nproc</td>
<td>16384</td>
</tr>
</tbody>
</table>

Follow these steps to increase the shell limits. These steps assume you are using a user named `oracle` to install Oracle Beehive:
1. Add the following lines to the /etc/security/limits.conf file:

```
oracle soft nproc 2047
oracle hard nproc 16384
oracle soft nofile 1024
oracle hard nofile 65536
```

2. Add or edit the following line in the /etc/pam.d/login file, if it does not already exist:

```
session required /lib/security/pam_limits.so
```

3. Depending on the oracle user’s default shell, make the following changes to the default shell start-up file:

- For the Bourne, Bash, or Korn shell, add the following lines to the /etc/profile file (or the file on SUSE Linux systems, /etc/profile.local):

```
if [ $USER = "oracle" ]; then
  if [ $SHELL = "/bin/ksh" ]; then
    ulimit -p 16384
    ulimit -n 65536
  else
    ulimit -u 16384 -n 65536
  fi
fi
```

- For the C shell (csh or tcsh), add the following lines to the /etc/csh.login file (or the file on SUSE Linux systems, /etc/csh.login.local):

```
if ( $USER == "oracle" ) then
  limit maxproc 16384
  limit descriptors 65536
endif
```

Database Requirements

Refer to "Oracle Beehive Database Requirements" for information about Oracle Beehive database requirements, creating databases, and configuring database settings.

---

**Note:** The installation scenario "Installing Oracle Beehive for Demilitarized Zone (DMZ)" does not require a database. See this section for more information about this scenario.

---

Oracle Enterprise Manager Grid Control Requirements

If you want to install the Oracle Beehive Provisioning Application, which enables you to install Oracle Beehive from Oracle Enterprise Manager Grid Control, you must have Oracle Enterprise Manager 10g Release 4 Grid Control (10.2.0.4) or later.

Hardware Requirements

The following are the minimum hardware requirements for Oracle Beehive:

- Disk Space: 2.6 GB
- Swap Space: 2,048 MB
- Memory:
– Oracle Beehive: 2 GB RAM
– Oracle Beehive for DMZ: 1 GB

Notes: The values for minimum disk space and memory do not include the amounts required for the target database.

Oracle Beehive does not support IPv6 (Internet Protocol version 6). You must disable IPv6 from the server on which you plan to install Oracle Beehive before starting the installation process.

Installation Scenarios

This section describes the possible ways you may install Oracle Beehive. It covers the following topics:

- Installing Oracle Beehive Against an Existing Database
- Installing Oracle Beehive Provisioning Application to Allow Oracle Beehive to Be Provisioned through Oracle Enterprise Manager Grid Control
- Installing Oracle Beehive for Demilitarized Zone (DMZ)
- Installing Oracle Beehive Integration for Zimbra
- Installing Oracle Beekeeper
- Installing Oracle Beehive in Silent Mode
- Installing Oracle Beehive in High Availability Environment
- Installing More Than One Instance

Installing Oracle Beehive Against an Existing Database

This is the standard installation scenario that will give you a fully functioning instance of Oracle Beehive.

This scenario gives you the choice to install and configure Oracle Beehive, or to install Oracle Beehive now and configure it later.

For more information about installing Oracle Beehive against an existing database, refer to “Oracle Beehive (Standard Installation) Sequence of Screens”.

Installing Oracle Beehive Provisioning Application to Allow Oracle Beehive to Be Provisioned through Oracle Enterprise Manager Grid Control

Oracle Enterprise Manager Grid Control offers a centralized environment with which you can manage the complete Oracle IT infrastructure, including systems running Oracle and non-Oracle technologies. Oracle Enterprise Manager Grid Control gives you a broad set of administration, configuration management, provisioning, end-to-end monitoring, and security capabilities.

Oracle Beehive Provisioning Application enables you to install and configure Oracle Beehive instances in the robust environment of Oracle Enterprise Manager Grid Control.

Oracle Beehive Provisioning Application enables you to upload an installable version of Oracle Beehive into the central software library of Oracle Enterprise Manager Grid Control. Oracle Beehive Provisioning Application also creates a deployment procedure
with which you can install and configure Oracle Beehive on any host through the deployment procedure manager of Oracle Enterprise Manager Grid Control.

For more information about installing Oracle Beehive Provisioning Application, refer to "Oracle Beehive Provisioning Application Sequence of Screens". For more information about the Oracle Beehive Provisioning Application, refer to "Installing Oracle Beehive with Provisioning Application".

**Specifying Location of Oracle Beehive Shiphome Binaries in Grid Control**

Before you install Oracle Beehive Provisioning Application, you must specify the location where Oracle Enterprise Manager Grid Control will look for the Oracle Beehive shiphome binaries, which is a zip file containing an installable version of Oracle Beehive. The following steps show you how to do this:

2. Click the Deployments tab. Click Provisioning from the menu bar. Click Administration. In the section Software Library Configuration, specify the location for the software library. This is a directory where Oracle Enterprise Manager Grid Control will look for the Oracle Beehive shiphome binaries.

**Note:** If you have more than one Oracle Management Service sharing the same management repository, make sure each Oracle Management Service can read from and write to the location of the software library.

**Installing Oracle Beehive for Demilitarized Zone (DMZ)**

This scenario installs and configures Oracle Beehive into a demilitarized zone (DMZ) that will integrate with the rest of the Oracle Beehive system.

An Oracle Beehive DMZ configuration consists of one or more Oracle Beehive DMZ instances that are isolated from the Internet by a firewall on one side, and from one or more Oracle Beehive non-DMZ instances by a firewall on the other side. The DMZ instances are viewed as semi-secure. They are protected from the open Internet, but are not completely trusted like the non-DMZ instances that are inside the second firewall and part of the company's intranet. Oracle Beehive data is stored only in the non-DMZ instances, and administrative tasks may only be performed on the non-DMZ instances.

Oracle Beehive for DMZ requires an existing (non-DMZ) Oracle Beehive instance.

Oracle Beehive for DMZ does not require a database. However, the administration tool beect1 will be disabled. Because this installation scenario does not require a database, you only have to specify a target installation location, which the Oracle Beehive Install Wizard will configure as a DMZ.

The following image illustrates an Oracle Beehive DMZ instance integrated in an Oracle Beehive system:
For more information about installing Oracle Beehive for a DMZ, refer to "Oracle Beehive for DMZ Sequence of Screens".

**Installing Oracle Beehive Integration for Zimbra**

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

Oracle Beehive Integration for Zimbra is a Web-based client for Oracle Beehive. For more information about installing this product, refer to "Oracle Beehive Integration for Zimbra Sequence of Screens".
After installing this product, refer to "Configuring Oracle Beehive Integration for Zimbra".

---

**Note:** If you install Oracle Beehive in a computer with at least 3 GB of memory, Oracle Beehive Integration for Zimbra will be configured in the same Oracle home.

---

**Requirements**
The following are the minimum hardware requirements for Oracle Beehive Integration for Zimbra:

- Disk Space: 1.3 GB
- Memory: 1 GB RAM

The following Web browsers are supported for Oracle Beehive Integration for Zimbra:

- Microsoft Windows XP and Vista: Internet Explorer 7 and 6.0 SP2 and Firefox 1.5 and later and 2.0
- Fedora Core 4: Firefox 1.5 and 2.0
- Mac OS X 10.4: Firefox 1.5 and 2.0

---

**Installing Oracle Beekeeper**

Oracle Beekeeper is available for Oracle Beehive Release 1 (1.3) and later.

Oracle Beekeeper is a secure, browser-based administration client. It provides Oracle Beehive administrators centralized and role-based access to system configuration and management, user and workspace administration, monitoring, and reporting functions. For more information about installing this product, refer to "Oracle Beekeeper Installation Help".

---

**Requirements and Certifications**

This version of Oracle Beekeeper is certified for Oracle Beehive Release 1 (1.4) and Web browsers Mozilla Firefox version 2 and Microsoft Internet Explorer version 7.

The following are the minimum hardware requirements for Oracle Beekeeper:

- Disk Space: 750 MB
- Memory: 1GB RAM

---

**Installing Oracle Beehive in Silent Mode**

Silent mode enables you to install Oracle Beehive with minimal interaction. You provide the Oracle Beehive Install Wizard with a response file that contains all the required information to install and configure Oracle Beehive. As a result, you do not have to be present to select, specify, and confirm options in each step of the installation process.

This scenario is appropriate if you want to install Oracle Beehive as a batch process or do not want to use the GUI provided by the Install Wizard.

You may install Oracle Beehive against an existing database or Oracle Beehive Provisioning Application in silent mode.

For more information about installing Oracle Beehive in silent mode, refer to "Installing Oracle Beehive in Silent Mode (Non-Interactive)".
Installing Oracle Beehive in High Availability Environment

Installing Oracle Beehive in a high availability environment involves installing a third-party load balancer, installing multiple Oracle Beehive instances, and configuring the virtual server of each instance.

For more information, refer to "Installing Oracle Beehive in High Availability Environment".

Installing More Than One Instance

To install more than one instance of Oracle Beehive so that each instance is in its own computer and shares the same database, simply install each instance with the Install Wizard. When entering the database information for each instance, use the same global service name for the server name.

To install multiple instances of Oracle Beehive with Oracle RAC, refer to the section, "Installing Multiple Oracle Beehive Instances with Oracle RAC".

To configure a load balancer after installing multiple Oracle Beehive instances, refer to "Installing Oracle Beehive in High Availability Environment".

Upgrading Oracle Beehive

This section covers the following topics:

- Upgrade Sequence
- Upgrading Multiple Oracle Beehive Application Tiers
- Applying Deployment Template after Upgrade
- Upgrading Voicemail Configuration

Upgrade Sequence

To upgrade an Oracle Beehive Release 1 deployment, upgrade the following Oracle Beehive products in the indicated order:

1. Oracle Beehive Release 1. Refer to "Oracle Beehive Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens" or "Oracle Beehive Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens".

   **Note:** You may only upgrade an Oracle Beehive Release 1 (1.4.1) deployment to Oracle Beehive Release 1 (1.4.3). You must upgrade an Oracle Beehive Release 1 (1.3) deployment to Oracle Beehive Release 1 (1.4.1) before upgrading it to Oracle Beehive Release 1 (1.4.3).

   You must shutdown all Oracle Beehive application tiers before upgrading them.

   Ensure that the upgrade process has started your newly upgraded Oracle Beehive application tiers before proceeding to upgrade other Oracle Beehive products.

   Refer to "Upgrading Multiple Oracle Beehive Application Tiers" if you are upgrading more than one Oracle Beehive application tier.
2. Any standalone Oracle Beehive Integration for Zimbra, Oracle Beehive Provisioning Application, or Oracle Collaboration Coexistence Gateway (Windows only).

3. Any Oracle Beehive for DMZ instances. Refer to "Oracle Beehive for DMZ Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens" or "Oracle Beehive for DMZ Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens".

---

**Note:** You must shutdown all Oracle Beehive for DMZ instances before upgrading them.

Ensure that the upgrade process has started your newly upgraded Oracle Beehive DMZ instances before proceeding to upgrade other Oracle Beehive products.

---

4. Any Oracle Beekeeper Release instances. Refer to "Upgrading Oracle Beekeeper Version 1.3" or "Upgrading Oracle Beekeeper Version 1.4.1".

Refer to "Upgrading Oracle Beehive Release 1 (1.3)" or "Upgrading Oracle Beehive Release 1 (1.4.1)" for information about upgrading Oracle Beehive products.

Refer to "Upgrading Oracle Beehive in Silent Mode" in "Installing Oracle Beehive in Silent Mode (Non-Interactive)" for more information about upgrading Oracle Beehive products in silent mode.

---

**Upgrading Multiple Oracle Beehive Application Tiers**

Follow these steps to upgrade multiple Oracle Beehive Release 1 (1.4.1) application tiers:

1. Shutdown all your Oracle Beehive Release 1 (1.4.1) application tiers.

2. Upgrade an Oracle Beehive Release 1 (1.4.1) application tier.

3. Wait until the upgrade process is complete. Upgrade a subsequent Oracle Beehive Release 1 (1.4.1) application tier. Do not start upgrading this tier until the previous tier’s upgrade process is complete. You do not have to shutdown any upgraded application tiers.

4. Repeat step 3 until all application tiers are upgraded.

---

**Applying Deployment Template after Upgrade**

It is highly recommended that you apply a deployment template to your upgraded Oracle Beehive Release 1 (1.4) deployment; the upgrade process does not automatically do this for you. Note that a new Oracle Beehive Release 1 (1.4) installation already has a deployment template associated with it.

A deployment template is an XML file that represents the formally defined structure of an Oracle Beehive application tier and its components such as OC4J instances, services, Oracle Beehive Transport Infrastructure (BTI), and the HTTP server.

If your upgraded Oracle Beehive Release 1 (1.4) deployment does not have a deployment template associated with it, those beectl commands that change the deployment structure (such as those that add and delete OC4J and service instances) will succeed. However, you will receive a message indicating that you should apply a deployment template.
In addition, an upgrade from Oracle Beehive Release 1 (1.4) to Oracle Beehive Release 1 (1.5) will fail if your deployment does not have a deployment template associated with it.

Follow these steps to apply a deployment template to an Oracle Beehive deployment:

1. Retrieve a list of available deployment templates with the command `beectl list_deployment_templates`. This command will output the identifier of each deployment template and a short description.

2. Select an appropriate deployment template and apply it with the `beectl modify_deployment_structure`. The following example applies the deployment template `SERVER_AND_CLIENT` to the local Oracle Beehive application tier:

   ```
   modify_deployment_structure --primary_template SERVER_AND_CLIENT
   ```

---

**Note:** Any customizations to the deployment structure (such as extra OC4J or service instances) or start/stop parameters (such as the maximum heap size of an OC4J instance) will be lost when you apply a deployment template with the command `beectl modify_deployment_structure`. The deployment template specified by this command will overwrite any customizations in your Oracle Beehive deployment.

---

### Upgrading Voicemail Configuration

After you have upgraded Oracle Beehive from an earlier version to version 1.4, you must re-create your voicemail facilities using the new method, and remove facilities that you created in earlier version with the `beectl add_config_object` command.

You can list facilities and groups created using the earlier method by using the following command (from the operating system shell, so you can make use of the `grep` utility):

```
beectl list_components | grep -i voice
```

Locate all the voice components defined with a voicemail DNIS alias. Then, check which group is associated to each voicemail DNIS by using the `beectl list_properties` command:

```
beectl list_properties --component <voicemail DNIS>
```

Run this command for each identified component, and make a note of the group associated with each voicemail DNIS.

Once you have this information, you can assign the groups and phone numbers using the new facility configuration method, by using the new `beectl add_voice_facility` command. The following example demonstrates briefly how to use the command:

```
beectl add_voice_facility
   --group_collabid <GROUP_COLLAB_ID>
   --include '18885551111|18885552???'
   --exclude '188855529??'
```

**See Also:** For complete information on creating voicemail facilities in Oracle Beehive Release 1 (1.4), see "Managing Oracle Beehive Voicemail and Fax" in the *Oracle Beehive Administrator’s Guide*. 

---
The --include statement associates phone number 18885551111 and phone number range 18885552000-18885552999.

The --exclude statement associates the phone number range 18885552900-18885552999 not to be included in the broader include range.

The value of --group_collabid is a the CollabID of a group. You can find this value for any group by using the beectl list_groups command with the global option --entity_format id:

```
beectl list_groups --group <group identifier> --show ALL --entity_format id
```

Use this command with the group that was defined for voicemail. If you followed the upgrade procedure described earlier to gather all the information, then the value for the <GROUP_COLLAB_ID> was listed when you used the beectl list_properties command.

**Starting Oracle Beehive Install Wizard**

All installation scenarios use the Oracle Beehive Install Wizard.

Run `runInstaller` from a user account other than root to start the installation and configuration of Oracle Beehive

---

**Note:** Oracle Beekeeper is shipped on its own installation media (separate from Oracle Beehive). Run `runInstaller` from this installation media to start the installation and configuration of Oracle Beekeeper.

---

The Oracle Beehive Install Wizard has several command-line options available. For more information about these options, refer to "Oracle Beehive Install and Config Wizard Command-Line Options".

---

**Note:** For all installation scenarios, except "Installing Oracle Beehive in Silent Mode", you may run the Oracle Beehive Install Wizard without any command-line options. For more information about installing Oracle Beehive in silent mode, refer to "Installing Oracle Beehive in Silent Mode (Non-Interactive)".

---

**Post-Installation Procedures**

Depending on the installation scenario you have chosen, your security requirements, the standards-based clients you want to use with Oracle Beehive, or any other issue particular to your deployment, perform the appropriate procedures described in "Oracle Beehive Post-Installation Procedures". These procedures include the following:

- Using Oracle Beehive Command-Line Utility
- Configuring Oracle Beehive to Listen on Ports Less Than 1024
- Opening Ports Required by Oracle Beehive for FTP
- Configuring DMZ Instances
- Integrating and Synchronizing LDAP with Oracle Beehive
- Configuring SSL
Cloning Application Tiers and Deployments

Cloning is the process of copying an existing installation to a different location while preserving its configuration.

You may clone an application tier, which involves preparing a “gold” image of a patched Oracle home. With this clone, you may create a new application tier with all patches applied to it in a single step. This is in contrast to separately installing, configuring, and applying any patches to Oracle Beehive.

You may also clone a deployment, which involves creating an installation that is a copy of a production, test, or development installation.

Refer to "Cloning Oracle Beehive Application Tiers and Sites" for more information.

Uninstalling Oracle Beehive

You may uninstall the following products with the Oracle Beehive Uninstall Wizard:

- Oracle Beehive Release 1
- Oracle Beehive Provisioning Application
- Oracle Beehive for DMZ
- Oracle Beehive Integration for Zimbra

Start the Oracle Beehive Uninstall Wizard by running the Oracle Beehive Install Wizard and clicking the Uninstall button. Alternatively, run the Oracle Beehive Config Wizard (or Oracle Beehive Install Wizard) with the -uninstall command-line option.

For more information about Oracle Beehive Install Wizard or Oracle Beehive Config Wizard, refer to "Oracle Beehive Install and Config Wizard Command-Line Options".

For more information about uninstalling Oracle Beehive, refer to "Oracle Beehive Uninstall Wizard".
You may uninstall Oracle Beehive in silent mode. For more information, refer to the section "Uninstalling Oracle Beehive in Silent Mode" in "Installing Oracle Beehive in Silent Mode (Non-Interactive)".
Oracle Beehive Database Requirements

This section describes Oracle Beehive database requirements, creating databases, and configuring database settings. It covers the following topics:

- General Requirements
- Patches
- Initialization Parameters
- Logging Settings
- Creating a Database
- Using Oracle Real Application Clusters Database
- Customizing Oracle Beehive Tablespaces Layout
- Using Raw Storage
- Post-Installation Procedures for Oracle Beehive Databases

**Note:** The installation scenario "Installing Oracle Beehive for Demilitarized Zone (DMZ)" described in "What You Should Know Before Installing Oracle Beehive" does not require a database. Refer to this section for more information about this scenario.

**General Requirements**

Oracle Beehive requires an existing database with the following characteristics:

- Uses one of the following databases installed on any supported operating system:
  - Oracle Database 10g Release 2 (10.2.0.1) Enterprise Edition with one of the following patch sets:
    * Oracle Database 10g Release 2 (10.2.0.3) Patch Set 2
    * Oracle Database 10g Release 2 (10.2.0.4) Patch Set 3
  - Oracle Database 11g Release 1 (11.1.0.6) Enterprise Edition
  Ensure that you have applied all the patches listed in the section "Patches".

- Uses character set AL32UTF8 (Unicode)

- Contains the following standard database components:
  - Oracle XML DB
  - Oracle interMedia (Oracle Multimedia in Oracle Database 11g)
Contains Rules Manager and Expression Filter (Rules Manager and Expression Filter are installed automatically with Oracle Database 10g Enterprise Edition.)

Patches

Microsoft Windows
For Microsoft Windows (32-bit and 64-bit versions), install the latest patch bundle for Oracle Database 10g Release 2 (10.2.0.3), Oracle Database 10g Release 2 (10.2.0.4), or Oracle Database 11g Release 1 (11.1.0.6).

Operating Systems Other Than Microsoft Windows
For all other operating systems, install the following patches for Oracle Database 10g Release 2 (10.2.0.3):

- Install the following patches if your database is installed on a 64-bit system:
  - 5240469 GENOCCISH GENERATES LOTS OF ERRORS AND FAILS ON AMD64. This patch must be installed before any 64-bit patch. In addition, this patch is required only for Linux.
  - 5252061 ORA-00600: INTERNAL ERROR CODE, ARGUMENTS: [17456], [0X69FCD9BC], [], [], [], []
  - 6880880: OPATCH 11.1

- Merge label patches:
  - 6124210: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 5924208 5705795
  - 6485648: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 5196175 AND 5472702
  - 6671491: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 4033868 4554026 6121260
  - 6449407: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 6349820 6121258
  - 7031761: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 6650096 6121248 4684070 5190392
  - 7280499: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 6725634 6667542
  - 7538968: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 7012423 7357463 5924208 6904068
  - 7563622: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 6782437 6800085
  - 5837795: CONNECT BY PUMP JOINING TABLE SCAN CAUSES ORA-600
  - 5890966: INTERMITTENT ORA-06502 DURING PEAK LOADING
  - 6150438: ORA-00932: COLLECT() DOESN'T WORK CORRECTLY FOR ADTS RESIDING IN DIFF. SCHEMAS
  - 4335601: VALGRIND ERROR OF LXSCNTBY.C
- 6376915: ENQ HW - CONTENTION WITH LOB SEGMENTS
- 5524408: WRONG RESULT WHEN IN LIST HAS MORE THAN 256 BIND VARIABLES
- 7150622: MLR BUG FOR 10.2.0.3 FOR CPUJUL2008
- 6081550: TRACKING BUG FOR INVENTORY OF DG LOGICAL/LOGMINER BUGS ON TOP OF 10.2.0.3
- 6653934: XF11.1SSHR - TRC - KDRWRIC
- 5442919: EXPIRED EXTENTS NOT BEING REUSED, INSTEAD CUSTOMER GETS ORA-30036
- 6600258: DBMS_CDC_SUBSCRIBE.EXTEND_WINDOW THROWS ORA-31462
- 5485914: MUTEX REPORTED SELF DEADLOCK AFTER DBMS_MONITOR.SESSION_TRACE_ENABLE. This patch is required only for Solaris operating system.
- 6145687: BETA4: VERY STRANGE SYSTEM CHANGE NUMBER

The following patches are recommended for Oracle Database 10g Release 2 (10.2.0.3):
- 5907779: "CURSOR: PIN S WAIT ON X" RUNNING DBMS_STATS.GATHER_DATABASE_STATS_JOB_PROC
- 5140631: SQL_ADDRESS AND SQL_HASH_VALUE NOT SET
- 5165885: STAR NT RAC ORA-00600 [KCLCLS_8]
- 6358116: MERGE LABEL REQUEST ON TOP OF 10.2.0.3 FOR BUGS 5983683 6121250
- 6897966: JOBS AREN'T STARTED: SERVICE NAME IS CASE SENSITIVE

Install the following patches for Oracle Database 10g Release 2 (10.2.0.4):
- 6369463: WRONG RESULTS WHEN USING ORA_ROWSCN PSEUDOCOLUMN
- 4033868: COLLECT FUNCTION LEAVES TEMPORARY SYS TYPES BEHIND
- 6653934: XF11.1SSHR - TRC - KDRWRIC
- 6725634: STBH SYNONYMS ARE INVALIDATED WHEN A TABLE PARTITION IS DROPPED
- 6897966: JOBS AREN'T STARTED SERVICE NAME IS CASE SENSITIVE
- 6923450: ORA-07445 [KOTGTSCH] - AFTER UPGRADE TO 10.2.0.4
- 6600258: DBMS_CDC_SUBSCRIBE.EXTEND_WINDOW THROWS ORA-31462
- 6145687: BETA4: VERY STRANGE SYSTEM CHANGE NUMBER

Install the following patches for Oracle Database 11g Release 1 (11.1.0.6):
- 6708565: EXFSYS.DBMS_RLMGR FAILS WITH ORA-38500
- 6168363: UTL_RECOMP.RECOMP_SERIAL(...) DUMPS WITH ORA 7445 [ PHF_COPY_TO_DIANA()+1329 ]
- 6750049: LIBNNZ10.SO DLOPEN FAILED WHEN TRYING TO START ONS (NODEAPPS)
Initialization Parameters

The database requires some initialization parameters to have a minimum value as specified in the following table:

Table 2–1 Minimum Values of Oracle Database Initialization Parameters

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>compatible</td>
<td>10.2.0.0.0</td>
</tr>
<tr>
<td></td>
<td>Note: Do not modify this parameter if it is already set to a higher value.</td>
</tr>
<tr>
<td>db_block_size</td>
<td>Either this parameter must be set to 8192, or one of the following parameters have to be set:</td>
</tr>
<tr>
<td></td>
<td>• db_8k_cache_size</td>
</tr>
<tr>
<td></td>
<td>• db_16k_cache_size</td>
</tr>
<tr>
<td></td>
<td>• db_32k_cache_size</td>
</tr>
<tr>
<td></td>
<td>The db_cache_size parameter specifies in bytes of the cache of standard block size buffers. Oracle Beehive will use this value for the block size of its tablespaces.</td>
</tr>
<tr>
<td></td>
<td>If any of the db_(n)k_cache_size parameters are set, then Oracle Beehive will use the lowest value that is equal or greater than 8192.</td>
</tr>
<tr>
<td></td>
<td>Refer to &quot;Specifying Database Block Sizes&quot; in &quot;Oracle Database Administrator's Guide&quot; for more information.</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>50M (52428800)</td>
</tr>
<tr>
<td>job_queue_processes</td>
<td>10</td>
</tr>
<tr>
<td>processes</td>
<td>150</td>
</tr>
<tr>
<td>streams_pool_size</td>
<td>100M</td>
</tr>
<tr>
<td></td>
<td>If your SGA (System Global Area) of the database is large (more than 3G), then set this parameter to 200M.</td>
</tr>
<tr>
<td>undo_retention</td>
<td>3600</td>
</tr>
</tbody>
</table>

**Note:** You may have to increase the values of processes and sessions if you are using Oracle RAC.

To see all parameters (in alphabetical order) along with their current values, use the following SQL*Plus command:

```
SQL> SHOW PARAMETERS
```

You may display parameters that contain a specified string. For example, to display all parameters having COMPATIBLE in their names, use the following command:

```
SQL> SHOW PARAMETERS COMPATIBLE
```

Set initialization parameters with the ALTER SYSTEM command. For example, to set the COMPATIBLE parameter with the value 10.2.0.3.0, use the following command:
SQL> ALTER SYSTEM SET COMPATIBLE = '10.2.0.3.0' SCOPE = SPFILE;

**Note:** After setting initialization parameters, restart the database.

### Logging Settings

The archive log mode of the database must be ARCHIVELOG, which enables the archiving of the redo logs. Oracle Beehive uses Change Data Capture (CDC), which requires that the archive log mode be turned on. Use the following command to determine the database’s archive log mode:

SQL> SELECT LOG_MODE FROM SYS.V$DATABASE;

To set the archive log mode to ARCHIVELOG, use the following commands:

SQL> shutdown immediate
SQL> startup mount exclusive
SQL> alter database archivelog;
SQL> alter database open;

**Note:** By default, Change Data Capture is in asynchronous HotLog mode. In this mode, change data capture is performed asynchronously on the same database.

For more information about modes of Change Data Capture, refer to "Change Sources and Modes of Change Data Capture" in Chapter 16, "Change Data Capture" in *Oracle Database Data Warehousing Guide*.

### Creating a Database

You may use Database Configuration Assistant (DBCA) to create and configure a database. For more information about this tool, refer to "Using DBCA to Create and Configure a Database" in Chapter 2, "Installing Oracle and Building the Database" in *Oracle Database 2 Day DBA*.

**Tip:** When creating a database for Oracle Beehive with DCBA, you may choose any template. With DCBA, you may also turn on the archive log mode (by selecting the option Enable Archiving), set the character set to AL32UTF8, and set initialization parameters listed in "Initialization Parameters".

### Using Oracle Real Application Clusters Database

Refer to "Configuring and Installing Oracle Beehive Release 1 for Oracle RAC" for pre-installation and post-installation steps required for Oracle Beehive deployments that use Oracle Real Application Clusters (RAC) databases.

### Customizing Oracle Beehive Tablespaces Layout

You may customize the layout of Oracle Beehive tablespaces with the script `<Oracle home>/beehive/db/framework/beehive_custom_ts.sql`. You may change tablespace names, initial size of the datafile, block size, and datafile autoextend options.
By default, Oracle Beehive uses eleven tablespaces. The `beehive_custom_ts.sql` script maps each tablespace to a placeholder. The Oracle Beehive Install Wizard uses these placeholders (instead of the real tablespace name) for configuration.

For example, in the `beehive_custom_ts.sql` script, the tablespace `BEE_DATA` is mapped to the placeholder `ts_data`:

```sql
REM Tables containing transactional data
DEFINE ts_data            = BEE_DATA
DEFINE ts_data_path       = ''
DEFINE ts_data_sz         = 512M
DEFINE ts_data_bsz        = 8192
DEFINE ts_data_ae         = ON
DEFINE ts_data_ae_nx      = 128M
```

You must specify the mapping between the placeholders, such as `ts_data` and `ts_index`, and the corresponding tablespaces. If one tablespace is to be shared across multiple placeholders, adjust the tablespace size accordingly.

This script creates a special view named `bee_tablespaces`, which then is used by the install scripts. You may drop the view after a successful installation. Since the tablespace mapping information can be reused for subsequent product reinstallations, the installation script does not drop it.

The script also produces an output file with the actual CREATE TABLESPACE commands. The output file name is `create_beehive_tablespaces.sql`

After making your changes to the script, run it with SYS privileges.

**Using Raw Storage**

If you want to use a database that uses raw storage, customize the script `<Oracle home>/beehive/db/framework/beehive_custom_ts.sql`. Refer to "Customizing Oracle Beehive Tablespaces Layout" for more information about this script.

To use a raw device (which you have created and properly configured) for a particular tablespace, specify the full path of its datafile in the appropriate variable. For example, if you want to use a raw device for the `BEE_DATA` tablespace, specify the full path of its datafile in the `ts_data_path` variable.

By default, Oracle Beehive uses eleven tablespaces. The `beehive_custom_ts.sql` script maps each tablespace to a placeholder. The Oracle Beehive Install Wizard uses these placeholders (instead of the real tablespace name) for configuration.

To use a raw device (which you have created and properly configured) for a particular tablespace, specify the full path of its datafile in the appropriate variable. For example, if you want to use a raw device for the `BEE_DATA` tablespace, specify the full path of its datafile in the `ts_data_path` variable.

In addition, set the variable `APPEND_FILE_NAME` to `N`.

After making your changes to the script, run it with SYS privileges.

**Post-Installation Procedures for Oracle Beehive Databases**

After you have successfully installed Oracle Beehive, refer to "Oracle Beehive Database Post-Installation Procedures" for tuning recommendations to perform on your Oracle Beehive database.
Oracle Beehive Install Wizard Checklist

This module lists the information the Oracle Beehive Install Wizard requests during the installation process.

The Oracle Beehive Install Wizard asks you to choose from one of the following installation scenarios:

- Oracle Beehive (Standard Installation)
- Oracle Beehive Provisioning Application
- Oracle Beehive for DMZ
- Oracle Beehive Integration for Zimbra
- Oracle Beekeeper (install this product with the Oracle Beekeeper Install Wizard)

Refer to "Oracle Beehive Install Wizard" for detailed information about the Oracle Beehive Install Wizard.

Refer to "Oracle Beekeeper Installation Help" for detailed information about the Oracle Beekeeper Install Wizard.

Oracle Beehive (Standard Installation)

- New Inventory Location: Oracle inventory directory path
  The Oracle Beehive Install Wizard will ask you for the Oracle inventory directory path if Oracle Beehive is the first Oracle product you are installing on your system.

- Specify Home Location: Full path of the location you want to install Oracle Beehive.

- Database Information
  - Host and Port
  - Service Name
  - Admin User Name
  - Admin User Password

- Enterprise Definition Information
  - Enterprise
  - Organization
  - Instance Name
  - Site
- Schema Password or Existing Schema Password
- beeadmin Password

**Note:** The Oracle Beehive Install Wizard will ask for all this information if you select the **Install and Configure** option.

If you choose the **Install Only** option, the Oracle Beehive Install Wizard will only ask you for the Oracle home location.

---

**Oracle Beehive Provisioning Application**

- New Inventory Location
- Specify Home Location: Full path of Oracle Management Service Oracle home
- Repository Database Administrator Password: Password for the SYS account of the database that the Oracle Management Service uses

---

**Oracle Beehive for DMZ**

- New Inventory Location
- Specify Home Location: Full path of the location where you want to install Oracle Beehive and configure as a DMZ

---

**Oracle Beehive Integration for Zimbra**

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

- Specify Home Location: Full path of the location where you want to install Oracle Beehive Integration for Zimbra
- Database Information
  - Host and Port
  - Service Name
  - Admin User Name
  - Admin User Password
- Existing Enterprise Information
  - Enterprise
  - Site
  - Instance
- Existing Schema Password

---

**Oracle Beekeeper**

Oracle Beekeeper is available for Oracle Beehive Release 1 (1.3) and later.

- Specify Home Location: Full path of the location where you want to install Oracle Beekeeper
- Database Information
- Host and Port
- Service Name
- Schema User Password
The following sections describe the Oracle Beehive Install Wizard screens that appear during installation of Oracle Beehive:

- Product Selection Sequence of Screens
- Oracle Beehive (Standard Installation) Sequence of Screens
- Oracle Beehive Provisioning Application Sequence of Screens
- Oracle Beehive for DMZ Sequence of Screens
- Oracle Beehive Integration for Zimbra Sequence of Screens

**Product Selection Sequence of Screens**

The following screens appear before product selection:

- Welcome
- New Inventory Location
- Select Product Type

Once you select a product type, you will proceed to one of the following sequence of screens:

- Oracle Beehive (Standard Installation) Sequence of Screens
- Oracle Beehive Provisioning Application Sequence of Screens
- Oracle Beehive for DMZ Sequence of Screens
- Oracle Beehive Integration for Zimbra Sequence of Screens

**Welcome**

This screen welcomes you to the Oracle Install Wizard. It will guide you through the installation and configuration of Oracle Beehive Release 1.

The following describes the buttons that appear on most of the installation screens:

- Click **Help** to view the online help.

- Click **Save** to save the inputs you have entered to a file that you can use later as a response file. You can use this response file to continue the installation at a later time or perform a silent (non-interactive) installation.

Refer to the module "Installing Oracle Beehive in Silent Mode (Non-Interactive)" in *Oracle Beehive Installation Guide* for detailed information about installing Oracle Beehive with a response file.
- Click **Back** to go back to the previous step.
- Click **Next** to go to the next step.
- Click **Install** to start the installation of the product. This button is available only on the **Summary** screen.
- Click **Uninstall** to uninstall a previously installed Oracle Beehive product.
- Click **Cancel** to exit from the Oracle Install Wizard at any time during the installation.

**Tip:** Press **F1** to open the online help section for the field where your cursor focus is on the installation screen.

### New Inventory Location

If Oracle Beehive Release 1 is the first Oracle product you are installing on a computer, then this screen is displayed.

On this screen, you specify in the **Inventory Directory Path** field the location of an inventory directory (the `oraInventory` directory). The Oracle Beehive Install Wizard will use this inventory directory to keep track of all Oracle products installed on the computer.

**Notes:** The following notes are about the inventory directory:

- If an Oracle product was installed previously on the computer, then the Oracle Beehive Install Wizard uses the existing inventory directory. To ensure that you have write permissions on that directory, run the Oracle Beehive Install Wizard as the same operating system user who installed the existing Oracle product.
- The inventory directory location should be different from the directory path in which you are going to install Oracle Beehive Release 1.
- The Oracle Beehive Install Wizard (as well as other installation programs from other Oracle products) will store its log files in the directory `<inventory directory path>/logs`. However, if this is the first Oracle product you are installing on your computer, the Install Wizard will store its log files in a temporary directory, such as `/tmp` on Linux and UNIX-based operating systems. When you exit the Install Wizard, the Install Wizard will move these log files to `<inventory directory path>/logs`.

On **Linux and UNIX-based platforms**, specify in the **Operating System Group** field the operating system group that has the `write` permission to the target inventory directory location.

### Select Product Type

Choose how you want to install Oracle Beehive from one of the following options:

- Complete installation by using the **Oracle Beehive Release 1** option
- Plug-in installation by using the **Provisioning Application for Oracle Beehive Release 1** option
- Installation for a demilitarized zone by using the Oracle Beehive Release 1 for DMZ option
- Installation of Oracle Beehive Integration for Zimbra, a Web-based client for Oracle Beehive.

The sequence of the following screens depend on the option that you select on this screen.

**Oracle Beehive Release 1**
Use this option to perform a complete installation of Oracle Beehive Release 1 on the specified host.

---

**Note:** One of the prerequisites for selecting the Oracle Beehive Release 1 option is that you must have an existing instance of Oracle Database. This database is not installed by this procedure.

Refer to the module “Oracle Beehive Database Requirements” in the Oracle Beehive Installation Guide of your operating system for database requirements for Oracle Beehive Release 1.

---

See "Oracle Beehive (Standard Installation) Sequence of Screens" to continue installing Oracle Beehive Release 1.

**Provisioning Application for Oracle Beehive Release 1**
Use this option to install the Provisioning Application. This will allow you to install and configure Oracle Beehive Release 1 instances from Oracle Enterprise Manager Grid Control.

The prerequisite for installing this plug-in is that you must have a preinstalled instance of Oracle Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) or later.

See "Oracle Beehive Provisioning Application Sequence of Screens" to continue installing Oracle Beehive Release 1 Provisioning Application.

**Oracle Beehive Release 1 for DMZ**
Use this option to install Oracle Beehive Release 1 and configure the installation location as a demilitarized zone (DMZ).

This option uses a local, file-based configuration and does not require an existing database. In addition, the administration tool beectl will be disabled for this instance.

See "Oracle Beehive for DMZ Sequence of Screens" to continue installing Oracle Beehive Release 1 for DMZ.

**Oracle Beehive Integration for Zimbra**
Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

Use this option to install Oracle Beehive Integration for Zimbra, a Web-based client for Oracle Beehive.

See "Oracle Beehive Integration for Zimbra Sequence of Screens" to continue installing Oracle Beehive Integration for Zimbra.
Oracle Beehive (Standard Installation) Sequence of Screens

The following screens appear during the installation of Oracle Beehive Release 1 (standard installation):

- Specify Home Location
- Prerequisite Checks
- Select Installation Type
- Database Information
- Enterprise Definition Information
- Existing Enterprise Information
- Schema Password
- Existing Schema Password
- beeadmin Password
- Installation Summary
- Progress Indicator
- Configuration Assistants
- End of Installation

Other Oracle Install Wizard Sequence of Screens

If you are installing Oracle Beehive Provisioning Application, refer to "Oracle Beehive Provisioning Application Sequence of Screens".

If you are installing Oracle Beehive for DMZ, refer to "Oracle Beehive for DMZ Sequence of Screens".

Specify Home Location

Enter the full path of the location where you want to install the product. Do not leave the Location field blank.

---

**Note:** If you selected the Provisioning Application for Oracle Beehive Release 1 option on the Select Product Type screen, ensure that you specify the Oracle home for your Oracle Enterprise Manager Grid Control instance. This is a prerequisite for installing the provisioning plug-in.

For more information on prerequisites for installing the provisioning plug-in, refer to "Provisioning Application for Oracle Beehive Release 1". Refer to the module "What You Should Know Before Installing Oracle Beehive" in Oracle Beehive Installation Guide for information on prerequisites for installing Oracle Beehive Release 1.

---

Specifying Oracle Home Directory

Specify the directory where you want to install Oracle Beehive. You must specify a new Oracle home directory for each new installation of Oracle Beehive.

See the following guidelines for specifying the Oracle home directory on different platforms:
Specifying Oracle Home Directory on Linux and UNIX-Based Systems

On Linux and UNIX-based systems, the Oracle Beehive Install Wizard suggests a path similar to the following for the Oracle home directory:

/home_directory/oracle/product/version_number/identifier\_n

- **home_directory** is the home directory of the user running the Oracle Beehive Install Wizard
- **version_number** is the version number of the product being installed
- **identifier** identifies the product installed in this Oracle home directory
- **n** is a number that ensures that this path is unique

**Note:** You must have write permissions in the directory that you specify, if it exists, or you must have permissions to create it.

You may also click **Browse** to choose a directory to install your product. This location is the destination directory in which the product will be installed.

Specifying Oracle Home Directory on Windows Systems

On Windows systems, the Oracle Beehive Install Wizard suggests a path similar to the following for the Oracle home directory:

X:\oracle\product\version_number\identifier\_n

- **X** is the default drive
- **version_number** is the version number of the product being installed
- **identifier** identifies the product installed in this Oracle home directory
- **n** is a number that ensures that this path is unique

If the directory specified does not exist, the Oracle Beehive Install Wizard creates it. Unless you want to install the software on a different drive with sufficient free space, you can accept the default value.

You may also click **Browse** to choose a directory to install your product. This location is the destination directory in which the product will be installed.

Prerequisite Checks

This screen displays the prerequisite checks that the Oracle Beehive Install Wizard runs. It verifies that the host (where you are installing Oracle Beehive Release 1) meets all minimum requirements for installing and configuring the product type that you selected on the Select Product Type screen.

Some of the platform-independent checks that the Oracle Beehive Install Wizard performs include:

- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
Memory
Swap space
Disk space

In Microsoft Windows, ensuring that the Window user for Oracle Beehive installation has administrative privileges.

If an automatic check fails, fix it and click Retry.

---

**Notes:** If the disk space check fails and after clicking Retry (after fixing the low disk space issue) the check states "Not Executed," exit the Oracle Beehive Install Wizard and start it again.

In Microsoft Windows, The Windows user indicated in the **Browse and Select: File or Directory** screen must belong to the "Log on as a batch job" policy of the agent machine. To add a user to this policy, click **Start, Programs, Administrative Tools**, and then **Local Security Policy**. In **Local Security Settings**, expand **Local Policies**, expand **Local Policies**, and then click **User Rights Assignment**. Double-click the policy **Log on as a batch job**. Click **Add User or Group** to add the user.

---

**Tip:** For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

---

**Select Installation Type**

Specify the type of installation you want to perform. You can choose from:

- **Install and Configure**
- **Install Only**

**Install and Configure**
Select this option if you want to install and automatically start the configuration of the product.

If you select this option, the Oracle Beehive Release 1 instance is functional with minimal configuration after the installation is completed.

**Install Only**
Select this option to only install the product. This will only copy files to your system. Until you configure Oracle Beehive, you will not be able to perform any tasks with it nor start any Oracle Beehive managed component.

To configure the product after installation, you must run the Configuration wizard as follows:

1. Navigate to the following directory:
   - **On Linux and UNIX-based platforms:** $ORACLE_HOME/beehive/oobwiz
   - **On Microsoft Windows:** %ORACLE_HOME%\beehive\oobwiz
2. Run the configWizard script as follows:
   - **On Linux and UNIX-based platforms**, enter the following command:
     ```
     ./configWizard
     ```
On Microsoft Windows, run the `configWizard.bat` script.

Database Information

Specify the following details of an existing Oracle Database instance that will be used by this installation:

- **Host and Port**
- **Service Name**
- **Admin User Name**
- **Admin User Password**

**Notes:** The database that you specify on this screen must use the Unicode Standard UTF-8 AL32UTF8 character set.

To determine the character set of an existing database, perform the following steps:

1. Log in to the SQL*Plus console of the target Oracle database.
2. Run the following query:

   ```sql
   select value from nls_database_parameters where parameter='NLS_CHARACTERSET';
   ```

   If the character set of the Oracle database is not Unicode Standard UTF-8 AL32UTF8, then you must create a new Oracle database. You may use Database Configuration Assistant (DBCA) to do this.

   Refer to the module "Oracle Beehive Database Requirements" in the Oracle Beehive Installation Guide of your operating system for database requirements for Oracle Beehive Release 1.

Host and Port

**Host**

Specify the fully qualified domain name (FQDN) of the host where the target database is running.

For example, if the host name is `foo`, its domain is `abc.com`, and the database listener port is 1521, then enter the following:

```
foo.abc.com:1521
```

The default port on which the database listener listens for connection requests is 1521.

To determine this port number, run the command `<Database home>/bin/lsnrctl status`. (Ensure that the environment variable ORACLE_HOME is set to the directory in which Oracle Database is installed and ORACLE_SID is set to the system identifier of your database.)

**Service Name**

Enter the service name for the Oracle Database. This is the same as the global database name, and must be unique across all databases.

A database is identified by its `global database name`. The global database name is comprised of two parts:
database_name.database_domain
For example:
sales.us.yourcompany.com

Admin User Name
Specify the administrative user name (that can perform database administration tasks) for the database instance. Typically, this user is the SYS account.

For more information about the SYS account, refer to Oracle Database Administrator’s Guide.

Admin User Password
Enter the password for the Oracle database administrative user account that you specified in the Admin User Name field.

After clicking Next, the Oracle Beehive Install Wizard verifies the connection to the Oracle Database Server, initialization parameters, and other requirements. If an error occurs, then you must correct the problem before the installation process can continue.

Enterprise Definition Information
Specify the following enterprise site information that identifies this installation of Oracle Beehive Release 1:

- Enterprise
- Organization
- Instance Name

Enterprise
Specify the name for the new enterprise you want to create. An enterprise is the top-level container for all users and objects. An enterprise may contain any number of organizations and workspaces.

The enterprise name is typically a company name, such as Oracle.

The enterprise name may only contain only letters, numbers, spaces, the period (.), the hyphen (-) and the underscore (_). The name cannot be greater than 127 bytes. The name cannot consist of only one or two periods (.. or ..).

In Oracle Beehive Release 1, an Oracle Beehive deployment may have only one enterprise.

Organization
Specify the name of the organization to be created and added to the enterprise you specified previously. An organization is a logical grouping of users, groups, workspaces, and resources at a level lower than the enterprise level. Later, you may add any number of organizations to the enterprise you specified previously.

The organization is typically a sub-level or department under the enterprise, such as Sales or Accounting.

The enterprise name may only contain only letters, numbers, spaces, the period (.), the hyphen (-) and the underscore (_). The name cannot be greater than 127 bytes. The name cannot consist of only one or two periods (.. or ..).
Site
Specify the name of the site. A site consists of all Oracle Beehive services and service instances and the database they use.

A site is typically a reference to a physical location, such as Headquarters or Montreal.

The site name may only contain ASCII letters (a-z, A-Z), numbers, and the underscore (_). The name cannot be greater than 19 characters.

In Oracle Beehive Release 1, an Oracle Beehive deployment may have only one site.

Instance Name
Specify the name of the instance for this Oracle Beehive installation. The instance name is used during server configuration.

The full name of an Oracle Beehive instance consists of the instance, host, and domain names. For example, if you name your instance myinstance1, your host is myhost, and your domain is example.com, the full name of your instance will be myinstance1.myhost.example.com.

The instance name may only contain ASCII letters (a-z, A-Z), numbers, and the underscore (_). The name cannot be greater than 63 characters. The name cannot be tempinst.

Notes: Only enter the instance name; do not specify the host and domain name. Oracle Beehive will append the host and domain name to the instance name. For example, you would specify myinstance1, not myinstance1.myhost.example.com.

All Oracle Beehive Release 1 instances must have a unique name.

Existing Enterprise Information

Note: This screen will only appear if you are installing Oracle Beehive Release 1 against a database that is already configured for an existing Oracle Beehive instance.

The Oracle Beehive Install Wizard will use the enterprise and site of the existing Oracle Beehive instance; the enterprise and site name displayed on this screen are those of this Oracle Beehive instance.

Specify the following information:

- **Enterprise**: Select an enterprise to which this Oracle Beehive installation will belong.
- **Site**: The site to which the selected enterprise belongs will be displayed.
- **Instance**: Specify a name for this Oracle Beehive installation that will distinguish it from others in the selected enterprise. This name has have the following characteristics:
  - Not empty
  - Contain no spaces
  - Contain only valid ASCII characters
- Not longer than 63 characters
- Unique among other Oracle products configured in the same computer

Schema Password

Specify and confirm the password for the new database schema that will be created and used by the instance of Oracle Beehive Release 1.

Password Restrictions
The schema password must have the following characteristics:

- Be between 5 and 30 characters long.
- Only contain alpha-numeric characters (a-z, A-Z, and 0-9) or the underscore (_); the password cannot contain any other punctuation mark character.
- Contain at least one alphabetic character and at least one numeric character
- Begin with an alphabetic character; the password cannot begin with a number or the underscore (_).

Password Recommendations

- Passwords should not be simple or obvious words, such as welcome, account, database, or user.
- Passwords should not be the same as the user name.
- Passwords should not be Oracle reserved words such as ACCESS, AUTHORIZATION, UID, or VARCHAR,

Existing Schema Password

Enter the password for the Oracle database schema that the Oracle Beehive Install Wizard has detected. This schema is used by the Oracle Beehive Release 1 instance.

After clicking Next, the Oracle Beehive Install Wizard verifies the schema password. If an error occurs, then you must correct the password before the installation process can continue.

beeadmin Password

Specify and confirm the password for the beeadmin user. The oc4jadmin and bpeladmin users will have the same password.

The oc4jadmin user will be exposed if you set up monitoring with Oracle Enterprise Manager Grid Control.

Use the bpeladmin user to log in to Oracle BPEL Process Manager. Do not use Oracle BPEL Console to deploy or modify workflows.

**Note:** This screen will not appear if you are installing Oracle Beehive against a database that is already configured for an existing Oracle Beehive instance.

Password Restrictions
The password of the beeadmin user must have the following characteristics:

- Be between 8 and 30 characters long.
- Only contain alpha-numeric characters (a-z, A-Z, and 0-9) or the underscore (_); the password cannot contain any other punctuation mark character.
- Contain at least one uppercase and one lowercase alphabetic character.
- Contain at least one numeric character.
- Begin with an alphabetic character; the password cannot begin with a number or the underscore (_).

**Note:** When entering your password, check that the state of your Caps Lock key is what you want it to be. Passwords are case-sensitive.

**Password Recommendations**
- Passwords should not be simple or obvious words, such as welcome, account, database, or user.
- Passwords should not be the same as the user name.
- Passwords should not be Oracle reserved words such as ACCESS, AUTHORIZATION, UID, or VARCHAR.

**Installation Summary**
The Installation Summary screen presents a summary of the options you have selected so far. Depending on the installation, the information may include the following:

- **Space Requirements:** The disk space required to install the product. The space requirement appears in a different color if the disk space available is less than what is required.

**Notes:** The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Product Type:** A predefined component set that automatically selects which components and dependency groups to install. To change the product type, go back to the Select Product Type screen.
- **Install Type:** The option to only install Oracle Beehive Release 1 or to install and configure Oracle Beehive Release 1. To change the install type, go to the Select Installation Type screen.
- **Inventory Location:** The location of the oraInventory directory where all the installation information about your product will be stored. To change this location, go back to the New Inventory Location screen.
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home where you want to install your product. To change the Oracle home, go back to the Specify Home Location screen.
– **Database Information:** The host name, port, service name, administrator user name, and password of the existing Oracle Database instance that will be used by this installation. To change the details, go back to the Database Information screen.

– **Enterprise Definition Information:** The detailed enterprise site information that identifies this installation. To change the details, go back to the Enterprise Definition Information screen.

– **Schema Password:** The masked password for the Oracle database schema that the Oracle Beehive Install Wizard detects and is used by this Oracle Beehive instance.

– **beeadmin Password:** The masked password for the beeadmin user, which is the administrative user for Oracle Beehive Release 1 instances. To change the details, go back to the beeadmin Password screen.

When you have reviewed your inputs, click **Install** to continue.

**Progress Indicator**

Use this screen to monitor the progress of your installation. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to configure the product type that you selected on the Select Product Type screen.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- Oracle Beehive Product Preparation Assistant
- Oracle Beehive Initialization Assistant
- Oracle Beehive Database Configuration Assistant - SOA schemas
- Base Platform Support Configuration Assistant
- Disabling OC4J Home Instance
- Oracle Beehive Database Configuration Assistant - Beehive schemas
- Oracle Beehive Framework Core Configuration Assistant

If any configuration is flagged as Failed, then you must manually run the assistant to configure it. You do so by selecting the check box against it and clicking **Retry**.

You may also use the Oracle Beehive Config Wizard to complete all pending and failed configuration assistants at a later time. The full path of the command is `<Oracle home>/beehive/oobwiz/configWizard`.

For more information about the Oracle Beehive Config Wizard, refer to the module "Oracle Beehive Install and Config Wizard Command-Line Options" in Oracle Beehive Installation Guide.

**Tip:** For details on why a configuration failed, select the check box against it and see the details in the description box at the bottom of the screen. Also, review the log files in `<Oracle inventory directory>/logs` whose names start with `installActions` or `oraInstall`. 
End of Installation

Click Finish to complete the installation process and close the Oracle Beehive Install Wizard.

Oracle Beehive Provisioning Application Sequence of Screens

The following screens appear during the installation of Oracle Beehive Release 1 Provisioning Application:

- Specify Home Location
- Repository Database Administrator Password
- Software Library Location
- Installation Summary
- Progress Indicator
- Configuration Assistants
- End of Installation

Other Oracle Beehive Install Wizard Sequence of Screens

If you are installing Oracle Beehive (standard installation), refer to "Oracle Beehive (Standard Installation) Sequence of Screens"

If you are installing Oracle Beehive for DMZ, refer to "Oracle Beehive for DMZ Sequence of Screens".

Specify Home Location

In the Location field, specify the full path of Oracle Management Service Oracle home in which you want to install Oracle Beehive Provisioning Application.

Oracle Management Service is part of Oracle Enterprise Manager Grid Control.

You may not leave the Location field blank.

Typically, the name of this directory is oms10g.

Repository Database Administrator Password

In the SYS Password field, specify the password for the SYS account of the repository database that Oracle Management Service uses.

This repository database will be used by Oracle Beehive Provisioning Application to store required information.

The screen displays the details of the Oracle Enterprise Manager Grid Control database that is used as the repository for the Oracle Beehive Release 1 provisioning plug-in that you are installing. It displays the following information:

- Host name where the Oracle database is installed
- Port on which it listens to the incoming requests
- System identifier (SID) that defines the name of the Oracle database instance

The Oracle Beehive Install Wizard verifies the password. If you specified an incorrect password, an error occurs. In this case, you must correct the password before the installation process can continue.
Software Library Location

This screen will only appear if a software library has not been configured for Oracle Enterprise Manager Grid Control.

Specify a directory path on the Oracle Management Service host that will be used as the software library location. Oracle Enterprise Manager Grid Control uses the software library as a repository to store certified software images, such as Oracle Beehive.

Installation Summary

The Installation Summary screen presents a summary of the options you have selected so far. Depending on the installation, the information may include the following interview details:

- **Home Detail**: The location of the Oracle home where you want to install your product. To change the Oracle home, go back to the Specify Home Location screen.
- **Repository Administrator Password**: The masked password for the `SYS` user, which is the administrative user for the database that this Oracle Beehive Release 1 instance uses as a repository.
- **Software Library Location**: The directory path on the Oracle Management Service host that will be used as the software library location by Oracle Enterprise Manager Grid Control.

When you have reviewed your inputs, click **Install** to continue.

Progress Indicator

Use this screen to monitor the progress of your installation. Click **Show Details** to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to configure Oracle Beehive Provisioning Application.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- Configuring Software Library (appears only if the Install Wizard prompted you for a software library location)
- Packaging Product Home Zip
- Repository Upgrade
- OMS Redeployment
- Deploy Provision Application
- Start Oracle Management Server

If any configuration is flagged as Failed, then you must manually run the assistant to configure it. You do so by selecting the check box against it and clicking **Retry**.

**Tip**: For details on why a configuration failed, select the check box against it and see the details in the description box at the bottom of the screen. Also, review the log files in `<Oracle inventory directory>/logs` whose names start with `installActions`. 
End of Installation

The End of Installation screen indicates if the installation of Oracle Beehive Provisioning Application was successful.

Click Finish to complete the installation process and close the Oracle Beehive Install Wizard.

Refer to "Installing Oracle Beehive with Provisioning Application" to install Oracle Beehive with Oracle Beehive Provisioning Application.

Oracle Beehive for DMZ Sequence of Screens

The following screens appear during the installation of Oracle Beehive Release 1 for DMZ:

- Specify Home Location
- Prerequisite Checks
- Installation Summary
- Progress Indicator
- Configuration Assistants
- End of Installation

Other Oracle Beehive Install Wizard Sequence of Screens

If you are installing Oracle Beehive (standard installation), refer to "Oracle Beehive (Standard Installation) Sequence of Screens"

If you are installing Oracle Beehive Provisioning Application, refer to "Oracle Beehive Provisioning Application Sequence of Screens".

Specify Home Location

Enter the complete path for the location where you want to install Oracle Beehive Release 1 and configure as a DMZ.

Prerequisite Checks

This screen displays the prerequisite checks that the Oracle Beehive Install Wizard runs. It verifies that the host (where you are installing Oracle Beehive Release 1 for DMZ) meets all minimum requirements for installing and configuring the product type that you selected on the Select Product Type screen.

Some of the platform-independent checks that the Oracle Beehive Install Wizard performs include:

- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
- Memory
- Swap space
- Disk space
**Tip:** For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

**Installation Summary**

The Installation Summary screen presents a summary of the options you have selected so far. The information includes the following:

- **Space Requirements:** The disk space required to install the product. The space requirement appears in a different color if the disk space available is less than what is required.

  **Note:** The space requirements shown on this screen might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location:** The location of the `oraInventory` directory where all the installation information about your product will be stored. To change this location, go back to the New Inventory Location screen.

- **Interview Details:** The details of your inputs for the other screens:
  - **Home Details:** The location of the Oracle home where you want to install Oracle Beehive Release 1 for DMZ. To change the Oracle home, go back to the Specify Home Location screen.

**Progress Indicator**

Use this screen to monitor the progress of your installation. Click Show Details to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to configure Oracle Beehive Release 1 for DMZ.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- Oracle Beehive for DMZ Product Preparation
- Oracle Beehive for DMZ Initialization
- Disabling OC4J Instances
- BTI (Oracle Beehive Transport Infrastructure) Configuration

If any configuration is flagged as Failed, then you must manually run the assistant to configure it. You do so by selecting the check box against it and clicking Retry.

You may also use the Oracle Beehive Config Wizard to complete all pending and failed configuration assistants at a later time. The full path of the command is `<Oracle home>/beehive/oobwiz/configWizard`.

For more information about the Oracle Beehive Config Wizard, refer to the module "Oracle Beehive Install and Config Wizard Command-Line Options" in Oracle Beehive Installation Guide.
End of Installation

The End of Installation screen indicates if the installation of Oracle Beehive Release 1 for DMZ was successful.

Click **Finish** to complete the installation process and close the Oracle Beehive Install Wizard.

Refer to "Configuring Oracle Beehive Demilitarized Zone Instances" to configure the Oracle Beehive DMZ instance you have just installed.

Oracle Beehive Integration for Zimbra Sequence of Screens

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

The following screens appear during the installation of Oracle Beehive Integration for Zimbra:

- Specify Home Location
- Prerequisite Checks
- Select Installation Type
- Database Information
- Existing Enterprise Information
- Existing Schema Password
- Installation Summary
- Progress Indicator
- Configuration Assistants
- End of Installation

Specify Home Location

Enter the full path of the location where you want to install Oracle Beehive Integration for Zimbra. Do not leave the **Location** field blank.

Prerequisite Checks

This screen displays the prerequisite checks that the Oracle Beehive Install Wizard runs. It verifies that the host (where you are installing Oracle Beehive Integration for Zimbra) meets all minimum requirements for installing and configuring the product type that you selected on the **Select Product Type** screen.

Some of the platform-independent checks that the Oracle Beehive Install Wizard performs include:

- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
- Memory
- Swap space
- Disk space

If an automatic check fails, fix it and click **Retry**.

---

**Notes:** If the disk space check fails and after clicking **Retry** (after fixing the low disk space issue) the check states "Not Executed," exit the Oracle Beehive Install Wizard and start it again.

---

**Tip:** For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

---

**Select Installation Type**

Specify the type of installation you want to perform. You can choose from:

- **Install and Configure**
- **Install Only**

**Install and Configure**

Select this option if you want to install and automatically start the configuration of the product.

If you select this option, Oracle Beehive Integration for Zimbra is functional with minimal configuration after the installation is completed.

**Install Only**

Select this option to only install the product. This will only copy files to your system. Until you configure Oracle Beehive Integration for Zimbra, you will not be able to perform any tasks with it.

To configure the product after installation, you must run the Configuration wizard as follows:

1. Navigate to the following directory:
   - **On Linux and UNIX-based platforms:** `$ORACLE_HOME/beehive/oobwiz`
   - **On Microsoft Windows:** `%ORACLE_HOME%\beehive\oobwiz`

2. Run the `configWizard` script as follows:
   - **On Linux and UNIX-based platforms**, enter the following command:
     
     ```bash
     ./configWizard
     ```
   - **On Microsoft Windows**, run the `configWizard.bat` script.

---

**Database Information**

Specify the following details of an existing Oracle Database instance that will be used by this installation:

- **Host and Port**
- **Service Name**
Host and Port

Host

Specify the fully qualified domain name (FQDN) of the host where the target database is running.

For example, if the host name is foo, its domain is abc.com, and the database listener port is 1521, then you must enter the following:

foo.abc.com:1521

In case of an Oracle Real Application Cluster (Oracle RAC) database, use the following format:

virtual_host1:virtual_port1^host2:virtual_port2^.....

Port

Specify the port on which Oracle database is listening.

You can determine the Oracle database Listener port value from the following file in the Database Oracle home:

- On Linux and UNIX-based platforms:

  $ORACLE_HOME/network/admin/listener.ora

- On Microsoft Windows:

  %ORACLE_HOME%\network\admin\listener.ora

If you are using Oracle Enterprise Manager Grid Control, then to determine the port on which Oracle database is listening, click the Ports link in Oracle Enterprise Manager 10g Database Control for the instance where Oracle database is installed.

The default port on which the database listener listens for connection requests is 1521.

To check if a port is being used, you can use the netstat command to show the used port as follows:

- On Linux and UNIX-based platforms:

  prompt> netstat -an | grep port_num
In the preceding syntax, \textit{port\_num} refers to the port number you want to check.

- **On Microsoft Windows:**
  
  \texttt{Drive\_Letter:~> netstat -an | find "port\_num"}

  In the preceding syntax, \textit{port\_num} refers to the port number you want to check.

  Note that you need quotation marks around the port number.

**Service Name**

Enter the service name for the Oracle Database. This is the same as the global database name, and must be unique across all databases.

A database is identified by its global database name. The global database name is comprised of two parts:

\texttt{database\_name.database\_domain}

For example:

\texttt{sales.us.yourcompany.com}

**Admin User Name**

Specify the administrative user name (that can perform database administration tasks) for the database instance. Typically, this user is the \texttt{SYS} account.

For more information about the \texttt{SYS} account, refer to \textit{Oracle Database Administrator's Guide}.

**Admin User Password**

Enter the password for the Oracle database administrative user account that you specified in the \textit{Admin User Name} field.

After clicking \textbf{Next}, the Oracle Beehive Install Wizard verifies the connection to the Oracle Database Server, initialization parameters, and other requirements. If an error occurs, then you must correct the problem before the installation process can continue.

**Existing Enterprise Information**

Specify the name of the Oracle Beehive instance for this Oracle Beehive Integration for Zimbra installation. The instance name is used during server configuration.

**Enterprise**

Select the enterprise with which you want to configure Oracle Beehive Integration for Zimbra.

**Site**

This is a non-editable field displaying the configured site based on the enterprise chosen.

**Instance**

Specify a unique Oracle Beehive instance name for this Oracle Beehive Integration for Zimbra instance.

The full name of an Oracle Beehive instance consists of the instance, host, and domain name. For example, if you name your instance \texttt{myinstance1}, your host is \texttt{myhost},
and your domain is example.com, the full name of your instance will be
myinstance1.myhost.example.com.

The instance name may only contain ASCII letters (a-z, A-Z), numbers, and the underscore (_). The name cannot be greater than 63 characters. The name cannot be tempinst.

**Notes:** Only enter the instance name; do not specify the host and domain name. Oracle Beehive will append the host and domain name to the instance name. For example, you would specify myinstance1, not myinstance1.myhost.example.com.

All Oracle Beehive instances must have a unique name.

### Existing Schema Password

Enter the password for the Oracle database schema that the Oracle Beehive Install Wizard has detected. This schema is used by Oracle Beehive Integration for Zimbra.

After clicking **Next**, the Oracle Beehive Install Wizard verifies the schema password. If an error occurs, then you must correct the password before the installation process can continue.

### Installation Summary

The Installation Summary screen presents a summary of the options you have selected so far. Depending on the installation, the information may include the following:

- **Space Requirements:** The disk space required to install the product. The space requirement appears in a different color if the disk space available is less than what is required.

  **Notes:** The space requirements shown on this screen do not include the space required in the target database.

  The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Product Type:** A predefined component set that automatically selects which components and dependency groups to install. To change the product type, go back to the **Select Product Type** screen.

- **Install Type:** The option to only install Oracle Beehive Integration for Zimbra or to install and configure Oracle Beehive Integration for Zimbra. To change the install type, go to the **Select Installation Type** screen.

- **Inventory Location:** The location of the **oraInventory** directory where all the installation information about your product will be stored. To change this location, go back to the **New Inventory Location** screen.

- **Interview Details:** The details of your inputs for the other screens, such as:
– **Home Details:** The location of the Oracle home where you want to install the product. To change the Oracle home, go back to the Specify Home Location screen.

– **Database Information:** The host name, port, service name, administrator user name, and password of the existing Oracle Database instance that will be used by this installation. To change the details, go back to the Database Information screen.

– **Enterprise Definition Information:** The detailed enterprise site information that identifies this installation. To change the details, go back to the Existing Enterprise Information screen.

– **Schema Password:** The masked password for the Oracle database schema that the Oracle Beehive Install Wizard detects and is used by this Oracle Beehive instance.

When you have reviewed your inputs, click **Install** to continue.

**Progress Indicator**

Use this screen to monitor the progress of your installation. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to configure the product type that you selected on the Select Product Type screen.

If any configuration is flagged as Failed, then you must manually run the assistant to configure it. You do so by selecting the check box against it and clicking **Retry**.

You may also use the Oracle Beehive Config Wizard to complete all pending and failed configuration assistants at a later time. The full path of the command is `<Oracle home>/beehive/oobwiz/configWizard`.

For more information about the Oracle Beehive Config Wizard, refer to the module "Oracle Beehive Install and Config Wizard Command Line Options" in *Oracle Beehive Installation Guide*.

**Tip:** For details on why a configuration failed, select the check box against it and see the details in the description box at the bottom of the screen.

**End of Installation**

Click **Finish** to complete the installation process and close the Oracle Beehive Install Wizard.
Upgrading Oracle Beehive Release 1 (1.3)

These steps describe how to upgrade the following products:

- Oracle Beehive Release 1 (1.3) to Release 1 (1.4.1)
- Oracle Beehive Provisioning Application version 1.3 to Oracle Beehive Provisioning Application version 1.4.1
- Oracle Beehive for DMZ version 1.3 to version 1.4.1
- Oracle Beehive Integration for Zimbra version 1.3 to 1.4.1

**Note:** Upgrade Oracle Beehive and any other Oracle Beehive application tiers before upgrading any other Oracle Beehive products.

To upgrade an Oracle Beehive Release 1 (1.3) deployment to Release 1 (1.4.1), upgrade the following Oracle Beehive products in the indicated order:

1. Oracle Beehive Release 1 (1.3) application tiers to Release 1 (1.4.1).
   - You must shutdown all Oracle Beehive Release 1 (1.3) application tiers before upgrading them.
   - Ensure that the upgrade process has started your newly upgraded Oracle Beehive application tiers before proceeding to upgrade other Oracle Beehive products.
   - Refer to "Upgrading Multiple Oracle Beehive Application Tiers" if you are upgrading more than one Oracle Beehive application tier.

2. Any standalone Oracle Beehive Integration for Zimbra, Oracle Beehive Provisioning Application, or Oracle Collaboration Coexistence Gateway (Microsoft Windows only) Release 1 (1.3) instances to Release 1 (1.4.1)

3. Any Oracle Beehive Release 1 (1.3) DMZ instances to Release 1 (1.4.1)
   - You must shutdown all Oracle Beehive Release 1 (1.3) DMZ instances before upgrading them.
   - Ensure that the upgrade process has started your newly upgraded Oracle Beehive DMZ instances before proceeding to upgrade other Oracle Beehive products.

4. Any Oracle Beekeeper Release 1 (1.3) instances to Release 1 (1.4.1)

   1. Start the Oracle Beehive Install Wizard.
   2. In the Select Product Type screen, select the Oracle Beehive product you want to upgrade.
3. After the **Select Installation Type** screen, the Oracle Beehive Installation Wizard will automatically detect if you have any existing Oracle Beehive products on the computer from which you started the Oracle Beehive Install Wizard.

If the Install Wizard detects any existing Oracle Beehive products that can be upgraded, you will see the screen **Upgrade Existing Home**. Depending on the product you want to upgrade, refer to one of the following sections:

- **Oracle Beehive Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens**
- **Oracle Beehive Provisioning Application Version 1.3 to Version 1.4.1 Upgrade Process Sequence of Screens**
- **Oracle Beehive for DMZ Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens**
- **Oracle Beehive Integration for Zimbra Version 1.3 to Version 1.4.1 Upgrade Process Sequence of Screens**

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**Note:** After upgrading your deployment to Oracle Beehive Release 1 (1.4.1), apply a deployment template to it. Refer to "Applying Deployment Template after Upgrade" for more information.

---

**Oracle Beehive Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens**

If the Oracle Beehive Wizard detects any existing Oracle Beehive Release 1 (1.3) instances on the computer from which you started the wizard, the following screens will appear:

- **Upgrade Existing Home**
- **Specify Home Location to Upgrade**
- **Running Instances**
- **Database Information for Upgrade**
- **Upgrade Summary**
- **Upgrade Process**
- **Configuration Assistants**
- **End of Upgrade**

---

**Note:** You must shut down all Oracle Beehive Release 1 (1.3) application tiers before upgrading them.

Ensure that the upgrade process has started your newly upgraded Oracle Beehive application tiers before proceeding to upgrade other Oracle Beehive products.

Refer to "Upgrading Multiple Oracle Beehive Application Tiers" if you are upgrading more than one Oracle Beehive application tier.

---

**Upgrade Existing Home**

Specify if you want to upgrade the product you selected in **Select Product Type**.
If the installer detected any existing Oracle Beehive Release 1 (1.3) instances, specify **Yes** to upgrade one of those instances to Oracle Beehive Release 1 (1.4.1).

If you specify **No**, the Install Wizard will proceed to perform a standard installation of Oracle Beehive Release 1 (1.4.1).

**Specify Home Location to Upgrade**

Select from the drop down box the complete path of the Oracle Beehive instance you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains an instance of Oracle Beehive Release 1 (1.3)
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

**Running Instances**

Shut down all instances listed in the table. Once you have shut the instances down, click the **Rescan** button to verify that all managed instances are down.

You must manually verify that all unmanaged instances (listed in red) are shutdown. Unmanaged instances include Oracle Beekeeper instances and Oracle Beehive DMZ instances. Currently, Oracle Beehive cannot determine whether an unmanaged instance has been fully shutdown (regardless of whether the instance is on the same machine as the pending upgrade or not). Once you have shutdown all unmanaged instances, select **Unmanaged Instances Verified** to continue the upgrade.

**Database Information for Upgrade**

Specify the password of the SYS schema for the database with the specified service name.

**Upgrade Summary**

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements**: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

**Notes**: The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location**: The location of the **oraInventory** directory where all the installation information about your product will be stored.
Product: The name of the product you are upgrading, Oracle Beehive Release 1

Interview Details: The details of your inputs for the other screens, such as:

- Home Details: The location of the Oracle home that you are upgrading.
- Database Information for Upgrade: The host name, port, service name, administrator user name, and password of the existing Oracle Database instance that will be used by this upgrade process.
- Enterprise Definition Information: The detailed enterprise site information that identifies this upgrade.
- Schema Password: The masked password for the Oracle database schema that you specified.

When you have reviewed your inputs, click Upgrade to continue.

Upgrade Process

Use this screen to monitor the upgrade process. Click Show Details to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- Upgrading Central Inventory: Upgrades the product metadata to the proper version (1.4.1)
- Applying oneoff patches: Applies patches specific to this release
- Upgrading Beehive Schemas: Upgrades the Oracle Beehive schemas within the Oracle Beehive database
- Upgrading Beehive Midtier: Upgrades the Oracle Beehive application tier configuration

End of Upgrade

This screen indicates if the upgrade of Oracle Beehive is successful.

Oracle Beehive Provisioning Application Version 1.3 to Version 1.4.1

Upgrade Process Sequence of Screens

If the Oracle Beehive Wizard detects that Oracle Beehive Provisioning Application version 1.3 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Specify Home Location to Upgrade
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
Upgrade Existing Home

Specify if you want to upgrade the product you selected in Select Product Type. If the installer detected that Oracle Beehive Provisioning Application version 1.3 is installed in your computer, specify Yes to upgrade it to version 1.4.1. If you specify No, the Install Wizard will proceed to install Oracle Beehive Provisioning Application version 1.4.1 in a new Oracle home.

Specify Home Location to Upgrade

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade. The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains Oracle Beehive Provisioning Application version 1.3
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Database Information for Upgrade

Specify the password of the SYS schema for the database with the specified service name.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements:** The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

**Notes:** The space requirements shown on this screen do not include the space required in the target database. The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location:** The location of the oraInventory directory where all the installation information about your product will be stored.
- **Product:** The name of the product you are upgrading, Oracle Beehive Provisioning Application
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.
Upgrade Process

Use this screen to monitor the upgrade process. Click Show Details to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive.

End of Upgrade

This screen indicates if the upgrade of Oracle Beehive Provisioning Application is successful.

Note: After upgrading Oracle Beehive Provisioning Application to version 1.4.1, a component named after the version number to which you upgraded will be added to the Oracle Enterprise Manager Grid Control software library.

Oracle Beehive for DMZ Release 1 (1.3) to Release 1 (1.4.1) Upgrade Process Sequence of Screens

If the Oracle Beehive Wizard detects that Oracle Beehive for DMZ version 1.3 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Specify Home Location to Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

Note: You must shutdown all Oracle Beehive Release 1 (1.3) DMZ instances before upgrading them.

Ensure that the upgrade process has started your newly upgraded Oracle Beehive DMZ instances before proceeding to upgrade other Oracle Beehive products.

Upgrade Existing Home

Specify if you want to upgrade the product you selected in Select Product Type.

If the installer detected that Oracle Beehive for DMZ version 1.3 is installed in your computer, specify Yes to upgrade it to version 1.4.1.

If you specify No, the Install Wizard will proceed to install Oracle Beehive for DMZ version 1.4.1 in a new Oracle home.
Specify Home Location to Upgrade

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains Oracle Beehive for DMZ version 1.3
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements:** The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

  **Notes:** The space requirements shown on this screen do not include the space required in the target database.

  The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location:** The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product:** The name of the product you are upgrading, Oracle Beehive for DMZ
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

Upgrade Process

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive for DMZ.

End of Upgrade

This screen indicates if the upgrade of Oracle Beehive for DMZ is successful.
Oracle Beehive Integration for Zimbra Version 1.3 to Version 1.4.1
Upgrade Process Sequence of Screens

If the Oracle Beehive Wizard detects that Oracle Beehive Integration for Zimbra version 1.3 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Location to Upgrade
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

Upgrade Existing Home

Specify if you want to upgrade the product you selected in Select Product Type.

If the installer detected that Oracle Beehive Integration for Zimbra version 1.3 is installed in your computer, specify Yes to upgrade it to version 1.4.1.

If you specify No, the Install Wizard will proceed to install Oracle Beehive Integration for Zimbra version 1.4.1 in a new Oracle home.

Location to Upgrade

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains Oracle Beehive Integration for Zimbra version 1.3
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Database Information for Upgrade

Specify the password of the SYS schema for the database with the specified service name.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- Space Requirements: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.
Notes: The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location**: The location of the oraInventory directory where all the installation information about your product will be stored.
- **Product**: The name of the product you are upgrading, Oracle Beehive Integration for Zimbra
- **Interview Details**: The details of your inputs for the other screens, such as:
  - **Home Details**: The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

**Upgrade Process**

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive Integration for Zimbra

The Oracle Beehive Install Wizard performs the following configuration assistants:

- **Upgrading Central Inventory**: Upgrades the product metadata to the proper version (1.4.1)
- **Applying oneoff patches**: Applies patches specific to this release
- **Upgrading Oracle Beehive Integration for Zimbra Schemas**: Upgrades the Oracle Beehive Integration for Zimbra schemas within the Oracle Beehive database
- **Upgrading Oracle Beehive Integration for Zimbra Midtier**: Upgrades the Oracle Beehive Integration for Zimbra application tier configuration

**End of Upgrade**

This screen indicates if the upgrade of Oracle Beehive Integration for Zimbra is successful.
Upgrading Oracle Beehive Release 1 (1.4.1)

These steps describe how to upgrade the following products:

- Oracle Beehive Release 1 (1.4.1) to Release 1 (1.4.3)
- Oracle Beehive Provisioning Application version 1.4.1 to Oracle Beehive Provisioning Application version 1.4.3
- Oracle Beehive for DMZ version 1.4.1 to version 1.4.3
- Oracle Beehive Integration for Zimbra version 1.4.1 to 1.4.3

**Note:** Upgrade Oracle Beehive and any other Oracle Beehive application tiers before upgrading any other Oracle Beehive products.

To upgrade an Oracle Beehive Release 1 (1.4.1) deployment to Release 1 (1.4.3), upgrade the following Oracle Beehive products in the indicated order:

1. Oracle Beehive Release 1 (1.4.1) application tiers to Release 1 (1.4.3).
   You must shutdown all Oracle Beehive Release 1 (1.4.1) application tiers before upgrading them.
   Ensure that the upgrade process has started your newly upgraded Oracle Beehive application tiers before proceeding to upgrade other Oracle Beehive products.
   Refer to "Upgrading Multiple Oracle Beehive Application Tiers" if you are upgrading more than one Oracle Beehive application tier.

2. Any standalone Oracle Beehive Integration for Zimbra, Oracle Beehive Provisioning Application, or Oracle Collaboration Coexistence Gateway (Microsoft Windows only) Release 1 (1.4.1) instances to Release 1 (1.4.3)

3. Any Oracle Beehive Release 1 (1.4.1) DMZ instances to Release 1 (1.4.3)
   You must shutdown all Oracle Beehive Release 1 (1.4.1) DMZ instances before upgrading them.
   Ensure that the upgrade process has started your newly upgraded Oracle Beehive DMZ instances before proceeding to upgrade other Oracle Beehive products.

4. Any Oracle Beekeeper Release 1 (1.4.1) instances to Release 1 (1.4.3)

1. Start the Oracle Beehive Install Wizard.

2. In the **Select Product Type** screen, select the Oracle Beehive product you want to upgrade.
3. After the **Select Installation Type** screen, the Oracle Beehive Installation Wizard will automatically detect if you have any existing Oracle Beehive products on the computer from which you started the Oracle Beehive Install Wizard.

If the Install Wizard detects any existing Oracle Beehive products that can be upgraded, you will see the screen **Upgrade Existing Home**. Depending on the product you want to upgrade, refer to one of the following sections:

- **Oracle Beehive Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens**
- **Oracle Beehive Provisioning Application Version 1.4.1 to Version 1.4.3 Upgrade Process Sequence of Screens**
- **Oracle Beehive for DMZ Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens**
- **Oracle Beehive Integration for Zimbra Version 1.4.1 to Version 1.4.3 Upgrade Process Sequence of Screens**

---

**Note:** After upgrading your deployment to Oracle Beehive Release 1 (1.4.3), apply a deployment template to it. Refer to "Applying Deployment Template after Upgrade" for more information.

---

**Oracle Beehive Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens**

If the Oracle Beehive Wizard detects any existing Oracle Beehive Release 1 (1.4.1) instances on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Specify Home Location to Upgrade
- Running Instances
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

---

**Note:** You must shutdown all Oracle Beehive Release 1 (1.4.1) application tiers before upgrading them.

Ensure that the upgrade process has started your newly upgraded Oracle Beehive application tiers before proceeding to upgrade other Oracle Beehive products.

Refer to "Upgrading Multiple Oracle Beehive Application Tiers" if you are upgrading more than one Oracle Beehive application tier.

---

**Upgrade Existing Home**

Specify if you want to upgrade the product you selected in **Select Product Type**.
If the installer detected any existing Oracle Beehive Release 1 (1.4.1) instances, specify Yes to upgrade one of those instances to Oracle Beehive Release 1 (1.4.3).

If you specify No, the Install Wizard will proceed to perform a standard installation of Oracle Beehive Release 1 (1.4.3).

**Specify Home Location to Upgrade**

Select from the drop down box the complete path of the Oracle Beehive instance you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains an instance of Oracle Beehive Release 1 (1.4.1)
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

**Running Instances**

Shut down all instances listed in the table. Once you have shut the instances down, click the Rescan button to verify that all managed instances are down.

You must manually verify that all unmanaged instances (listed in red) are shutdown. Unmanaged instances include Oracle Beekeeper instances and Oracle Beehive DMZ instances. Currently, Oracle Beehive cannot determine whether an unmanaged instance has been fully shutdown (regardless of whether the instance is on the same machine as the pending upgrade or not). Once you have shutdown all unmanaged instances, select Unmanaged Instances Verified to continue the upgrade.

**Database Information for Upgrade**

Specify the password of the SYS schema for the database with the specified service name.

**Upgrade Summary**

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements**: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

  **Notes**: The space requirements shown on this screen do not include the space required in the target database.

  The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

  - **Inventory Location**: The location of the oraInventory directory where all the installation information about your product will be stored.
- **Product**: The name of the product you are upgrading, Oracle Beehive Release 1
- **Interview Details**: The details of your inputs for the other screens, such as:
  - **Home Details**: The location of the Oracle home that you are upgrading.
  - **Database Information for Upgrade**: The host name, port, service name, administrator user name, and password of the existing Oracle Database instance that will be used by this upgrade process.
  - **Enterprise Definition Information**: The detailed enterprise site information that identifies this upgrade.
  - **Schema Password**: The masked password for the Oracle database schema that you specified.

When you have reviewed your inputs, click **Upgrade** to continue.

**Upgrade Process**

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- **Upgrading Central Inventory**: Upgrades the product metadata to the proper version (1.4.3)
- **Applying oneoff patches**: Applies patches specific to this release
- **Upgrading Beehive Schemas**: Upgrades the Oracle Beehive schemas within the Oracle Beehive database
- **Upgrading Beehive Midtier**: Upgrades the Oracle Beehive application tier configuration

**End of Upgrade**

This screen indicates if the upgrade of Oracle Beehive is successful.

**Oracle Beehive Provisioning Application Version 1.4.1 to Version 1.4.3**

**Upgrade Process Sequence of Screens**

If the Oracle Beehive Wizard detects that Oracle Beehive Provisioning Application version 1.4.1 is installed on the computer from which you started the wizard, the following screens will appear:

- **Upgrade Existing Home**
- **Specify Home Location to Upgrade**
- **Database Information for Upgrade**
- **Upgrade Summary**
- **Upgrade Process**
- **Configuration Assistants**
End of Upgrade

Upgrade Existing Home

Specify if you want to upgrade the product you selected in Select Product Type.
If the installer detected that Oracle Beehive Provisioning Application version 1.4.1 is installed in your computer, specify Yes to upgrade it to version 1.4.3.
If you specify No, the Install Wizard will proceed to install Oracle Beehive Provisioning Application version 1.4.3 in a new Oracle home.

Specify Home Location to Upgrade

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:
- Contains Oracle Beehive Provisioning Application version 1.4.1
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Database Information for Upgrade

Specify the password of the SYS schema for the database with the specified service name.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:
- **Space Requirements**: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

---

**Notes**: The space requirements shown on this screen do not include the space required in the target database.
The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location**: The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product**: The name of the product you are upgrading, Oracle Beehive Provisioning Application
- **Interview Details**: The details of your inputs for the other screens, such as:
  - **Home Details**: The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.
Upgrade Process

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive.

End of Upgrade

This screen indicates if the upgrade of Oracle Beehive Provisioning Application is successful.

---

**Note:** After upgrading Oracle Beehive Provisioning Application to version 1.4.3, a component named after the version number to which you upgraded will be added to the Oracle Enterprise Manager Grid Control software library.

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**Oracle Beehive for DMZ Release 1 (1.4.1) to Release 1 (1.4.3) Upgrade Process Sequence of Screens**

If the Oracle Beehive Wizard detects that Oracle Beehive for DMZ version 1.4.1 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Specify Home Location to Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

---

**Note:** You must shutdown all Oracle Beehive Release 1 (1.4.1) DMZ instances before upgrading them.

Ensure that the upgrade process has started your newly upgraded Oracle Beehive DMZ instances before proceeding to upgrade other Oracle Beehive products.

---

Upgrade Existing Home

Specify if you want to upgrade the product you selected in **Select Product Type**.

If the installer detected that Oracle Beehive for DMZ version 1.4.1 is installed in your computer, specify **Yes** to upgrade it to version 1.4.3.

If you specify **No**, the Install Wizard will proceed to install Oracle Beehive for DMZ version 1.4.3 in a new Oracle home.
Specify Home Location to Upgrade

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains Oracle Beehive for DMZ version 1.4.1
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements:** The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.

---

**Notes:** The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

---

- **Inventory Location:** The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product:** The name of the product you are upgrading, Oracle Beehive for DMZ
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

Upgrade Process

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive for DMZ.

End of Upgrade

This screen indicates if the upgrade of Oracle Beehive for DMZ is successful.
Oracle Beehive Integration for Zimbra Version 1.4.1 to Version 1.4.3
Upgrade Process Sequence of Screens

If the Oracle Beehive Wizard detects that Oracle Beehive Integration for Zimbra version 1.4.1 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Location to Upgrade
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

Upgrade Existing Home
Specify if you want to upgrade the product you selected in Select Product Type.

If the installer detected that Oracle Beehive Integration for Zimbra version 1.4.1 is installed in your computer, specify Yes to upgrade it to version 1.4.3.

If you specify No, the Install Wizard will proceed to install Oracle Beehive Integration for Zimbra version 1.4.3 in a new Oracle home.

Location to Upgrade
Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:

- Contains Oracle Beehive Integration for Zimbra version 1.4.1
- Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard.

Database Information for Upgrade
Specify the password of the SYS schema for the database with the specified service name.

Upgrade Summary
The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements**: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.
**Notes:** The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location:** The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product:** The name of the product you are upgrading, Oracle Beehive Integration for Zimbra
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

**Upgrade Process**

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beehive Integration for Zimbra

The Oracle Beehive Install Wizard performs the following configuration assistants:

- **Upgrading Central Inventory:** Upgrades the product metadata to the proper version (1.4.3)
- **Applying oneoff patches:** Applies patches specific to this release
- **Upgrading Oracle Beehive Integration for Zimbra Schemas:** Upgrades the Oracle Beehive Integration for Zimbra schemas within the Oracle Beehive database
- **Upgrading Oracle Beehive Integration for Zimbra Midtier:** Upgrades the Oracle Beehive Integration for Zimbra application tier configuration

**End of Upgrade**

This screen indicates if the upgrade of Oracle Beehive Integration for Zimbra is successful.
Run `runInstaller` (UNIX-based operating systems) or `setup.exe` (Microsoft Windows) from the Oracle Beekeeper installation media to start the Install Wizard for this product.

Refer to "Starting the Oracle Beekeeper Uninstall Wizard" to uninstall Oracle Beekeeper.

**Oracle Beekeeper Sequence of Screens**

The following screens appear during the installation of Oracle Beekeeper:

- Welcome
- New Inventory Location
- Specify Home Location
- Prerequisite Checks
- Database Information
- Installation Summary
- Installation Process
- Configuration Assistants
- End of Installation

**Welcome**

This screen welcomes you to the Oracle Install Wizard. It will guide you through the installation and configuration of Oracle Beekeeper.

The following describes the buttons that appear on most of the installation screens:

- Click **Help** to view the online help.
- Click **Save** to save the inputs you have entered to a file that you can use later as a response file. You can use this response file to continue the installation at a later time.
- Click **Back** to go back to the previous step.
- Click **Next** to go to the next step.
- Click **Install** to start the installation of the product.

This button is available only on the **Summary** screen.
- Click **Uninstall** to uninstall a previously installed Oracle Beehive product
- Click **Cancel** to exit from the Oracle Install Wizard at any time during the installation.

**Tip:** Press F1 to open the online help section for the field where your cursor focus is on the installation screen.

### New Inventory Location

If Oracle Beekeeper is the first Oracle product you are installing on a computer, then this screen is displayed.

On this screen, you specify in the **Inventory Directory Path** field the location of an inventory directory (the `oraInventory` directory). The Install Wizard will use this inventory directory to keep track of all Oracle products installed on the computer.

---

**Notes:** The following notes are about the inventory directory:

- If an Oracle product was installed previously on the computer, then the Install Wizard uses the existing inventory directory. To ensure that you have write permissions on that directory, run the Install Wizard as the same operating system user who installed the existing Oracle product.

- The inventory directory location should be different from the directory path in which you are going to install Oracle Beekeeper.

- The Install Wizard (as well as other installation programs from other Oracle products) will store its log files in the directory `<inventory directory path>/logs`.

  However, if this is the first Oracle product you are installing on your computer, the Install Wizard will store its log files in a temporary directory, such as `/tmp` on Linux and UNIX-based operating systems. When you exit the Install Wizard, the Install Wizard will move these log files to `<inventory directory path>/logs`.

---

On **Linux and UNIX-based platforms**, specify in the **Operating System Group** field the operating system group that has the `write` permission to the target inventory directory location.

### Specify Home Location

Enter the full path of the location where you want to install the product. Do not leave the **Location** field blank. The location you provide must not already be present in the Oracle inventory and must be empty.

**Note:** You may not install Oracle Beekeeper into an existing Oracle home.

### Prerequisite Checks

This screen displays the prerequisite checks that the Install Wizard runs. It verifies that the host (where you are installing Oracle Beekeeper) meets all minimum requirements.

Some of the platform-independent checks that the Oracle Beehive Install Wizard performs include:
- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
- Memory
- Swap space
- Disk space
- In Microsoft Windows, ensuring that the Window user for Oracle Beehive installation has administrative privileges.

If an automatic check fails, fix it and click Retry.

**Notes:** If the disk space check fails and after clicking Retry (after fixing the low disk space issue) the check states "Not Executed," exit the Install Wizard and start it again.

In Microsoft Windows, The Windows user indicated in the Browse and Select: File or Directory screen must belong to the "Log on as a batch job" policy of the agent machine.

To add a user to this policy, click Start, Programs, Administrative Tools, and then Local Security Policy. In Local Security Settings, expand Local Policies, expand Local Policies, and then click User Rights Assignment. Double-click the policy Log on as a batch job. Click Add User or Group to add the user.

**Tip:** For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

**Database Information**

Specify the following details of an existing Oracle Beehive database that will be used by this installation:

- **Host and Port**
- **Service Name**
- **Schema User Password**

**Host and Port**

Specify the fully qualified domain name (FQDN) of the host where the target database is running.

For example, if the host name is foo, its domain is abc.com, and the database listener port is 1521, then enter the following:

foo.abc.com:1521

The default port on which the database listener listens for connection requests is 1521.

To determine this port number, run the command `<Database home>/bin/lsnrctl status`. (Ensure that the environment variable ORACLE_HOME is set to the directory in which Oracle Database is installed and ORACLE_SID is set to the system identifier of your database.)
**Service Name**
Enter the service name for the Oracle database. This is the same as the global database name, and must be unique across all databases.

A database is identified by its *global database name*. The global database name is comprised of two parts:

database_name.database_domain

For example:

sales.us.yourcompany.com

**Schema User Password**
Enter the password for the Oracle Beehive database schema that is stored in the database whose information you have specified in this screen.

After clicking **Next**, the Install Wizard verifies the connection to the Oracle Database Server, initialization parameters, and other requirements. If an error occurs, then you must correct the problem before the installation process can continue.

**Installation Summary**

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements**: The disk space required to install the product. The space requirement appears in a different color if the disk space available is less than what is required.

  **Notes**: The space requirements shown on this screen do not include the space required in the target database.

  The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location**: The location of the oraInventory directory where all the installation information about your product will be stored.

- **Product**: The name of the product you are installing, Oracle Beekeeper.

- **Interview Details**: The details of your inputs for the other screens, such as:
  - **Home Details**: The location of the Oracle home where you are installing the product.
  - **Database Information**: The host name, port, and service name of the existing Oracle Beehive database that will be used by this installation process.
  - **Schema Password**: The masked password for the Oracle database schema that you specified.

When you have reviewed your inputs, click **Install** to continue.
Installation Process

Use this screen to monitor the installation process. Click **Show Details** to see the details in the description box that appears.

Configuration Assistants

This screen displays the configuration assistants that the Install Wizard runs to install Oracle Beekeeper.

End of Installation

This screen indicates if the installation of Oracle Beekeeper was successful.

Starting the Oracle Beekeeper Uninstall Wizard

Start the Oracle Beekeeper Uninstall Wizard by running the Oracle Beekeeper Install Wizard and clicking the **Uninstall** button. Alternatively, run the Oracle Beekeeper Config Wizard (or Oracle Beekeeper Install Wizard) with the `-uninstall` command-line option.

Oracle Beekeeper Uninstall Wizard Sequence of Screens

The following screens appear during the uninstallation of Oracle Beekeeper:

- **Select Oracle Home to Uninstall:** This screen will not appear if you started Oracle Beekeeper Uninstall Wizard with Oracle Beekeeper Config Wizard.
- **Start Uninstallation**
- **End of Uninstallation**

Select Oracle Home to Uninstall

This screen lists all the Oracle Beekeeper instances you have installed and their respective Oracle homes.

Select the Oracle Beehive home you want to uninstall.

This screen will not appear if you started the uninstall process by running the Config Wizard. In this case, the Config Wizard will uninstall the current Oracle home.

Start Uninstallation

This screen will list actions that the Oracle Beekeeper Uninstall Wizard must perform to uninstall your chosen Oracle Beekeeper instance.

**Note:** If you started the uninstall process with the Config Wizard, the "Delete Oracle Home" action will not be displayed. This action will be performed after you have exited the Config Wizard graphical user interface.

Click **Start Uninstall** to proceed with the uninstallation of your chosen Oracle Beekeeper instance.
Note: On Microsoft Windows, if you receive an error message from the Oracle Beekeeper Uninstall Wizard that it was unable to delete the Oracle home folder, delete it manually, then restart your computer.

End of Uninstallation

This screen indicates that the uninstallation of the chosen Oracle Beekeeper instance is successful.
These steps describe how to upgrade Oracle Beekeeper version 1.3 to Oracle Beekeeper version 1.4.1.

Start the Oracle Beekeeper Install Wizard. If the Install Wizard detects that Oracle Beekeeper version 1.3 is installed in your computer, Oracle Beehive, you will see the screen **Upgrade Existing Home.** Refer to "Oracle Beekeeper Upgrade Process Sequence of Screens" for a summary of the upgrade process.

**Oracle Beekeeper Upgrade Process Sequence of Screens**

If the Oracle Beekeeper Install Wizard detects that Oracle Beekeeper version 1.3 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Location to Upgrade
- Prerequisite Checks
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

**Upgrade Existing Home**

Specify if you want to upgrade the product you selected in **Select Product Type.**

If the Install Wizard detected that Oracle Beekeeper version 1.3 is installed in your computer, specify **Yes** to upgrade it to Oracle Beekeeper version 1.4.1.

If you specify **No,** the Install Wizard will proceed to install Oracle Beekeeper version 1.4.1 in a new Oracle home.

**Location to Upgrade**

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:
Contains Oracle Beekeeper version 1.3

Is registered in the central Oracle Universal Installer inventory of the computer from which you started the Install Wizard

Prerequisite Checks

This screen displays the prerequisite checks that the Install Wizard runs. It verifies that the host (where you are upgrading to Oracle Beekeeper) meets all minimum requirements.

Some of the platform-independent checks that the Install Wizard performs include:

- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
- Memory
- Swap space
- Disk space
- In Microsoft Windows, ensuring that the Windows user for Oracle Beehive installation has administrative privileges.

If an automatic check fails, fix it and click Retry.

Notes: If the disk space check fails and after clicking Retry (after fixing the low disk space issue) the check states "Not Executed," exit the Install Wizard and start it again.

In Microsoft Windows, The Windows user indicated in the Browse and Select: File or Directory screen must belong to the "Log on as a batch job" policy of the agent machine.

To add a user to this policy, click Start, Programs, Administrative Tools, and then Local Security Policy. In Local Security Settings, expand Local Policies, expand Local Policies, and then click User Rights Assignment. Double-click the policy Log on as a batch job. Click Add User or Group to add the user.

Tip: For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

Database Information for Upgrade

Specify the password of the BEE_CODE schema for the database with the specified service name.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- Space Requirements: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.
Notes: The space requirements shown on this screen do not include the space required in the target database. The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location**: The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product**: The name of the product you are upgrading, Oracle Beekeeper
- **Interview Details**: The details of your inputs for the other screens, such as:
  - **Home Details**: The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

**Upgrade Process**

Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**

This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beekeeper.

The Oracle Beehive Install Wizard performs the following configuration assistants:

- Oracle Beekeeper Initialization
- Upgrading Required Applications
- Deconfiguring Oracle Beekeeper Instance
- Oracle Beekeeper Service Creation
- Starting OC4J Instance
- Oracle Beekeeper Application Deployment
- Configuring OC4J Application Settings
- Stopping OC4J Instance
- Starting OC4J Instance

**End of Upgrade**

This screen indicates if the upgrade of Oracle Beekeeper is successful.
These steps describe how to upgrade Oracle Beekeeper version 1.4.1 to Oracle Beekeeper version 1.4.3.

Start the Oracle Beekeeper Install Wizard. If the Install Wizard detects that Oracle Beekeeper version 1.4.1 is installed in your computer, Oracle Beehive, you will see the screen **Upgrade Existing Home**. Refer to "Oracle Beekeeper Upgrade Process Sequence of Screens" for a summary of the upgrade process.

**Oracle Beekeeper Upgrade Process Sequence of Screens**

If the Oracle Beekeeper Install Wizard detects that Oracle Beekeeper version 1.4.1 is installed on the computer from which you started the wizard, the following screens will appear:

- Upgrade Existing Home
- Location to Upgrade
- Prerequisite Checks
- Database Information for Upgrade
- Upgrade Summary
- Upgrade Process
- Configuration Assistants
- End of Upgrade

**Upgrade Existing Home**

Specify if you want to upgrade the product you selected in **Select Product Type**.

If the Install Wizard detected that Oracle Beekeeper version 1.4.1 is installed in your computer, specify **Yes** to upgrade it to Oracle Beekeeper version 1.4.3.

If you specify **No**, the Install Wizard will proceed to install Oracle Beekeeper version 1.4.3 in a new Oracle home.

**Location to Upgrade**

Select from the drop down box the complete path of the Oracle Beehive product you want to upgrade.

The drop down box will only contain Oracle Beehive home paths with the following characteristics:
Prerequisite Checks

This screen displays the prerequisite checks that the Install Wizard runs. It verifies that the host (where you are upgrading to Oracle Beekeeper) meets all minimum requirements.

Some of the platform-independent checks that the Install Wizard performs include:

- Operating system certification (or version)
- Operating system patches and packages
- Security kernel parameters
- Memory
- Swap space
- Disk space
- In Microsoft Windows, ensuring that the Window user for Oracle Beehive installation has administrative privileges.

If an automatic check fails, fix it and click Retry.

Notes: If the disk space check fails and after clicking Retry (after fixing the low disk space issue) the check states "Not Executed," exit the Install Wizard and start it again.

In Microsoft Windows, The Windows user indicated in the Browse and Select: File or Directory screen must belong to the "Log on as a batch job" policy of the agent machine.

To add a user to this policy, click Start, Programs, Administrative Tools, and then Local Security Policy. In Local Security Settings, expand Local Policies, expand Local Policies, and then click User Rights Assignment. Double-click the policy Log on as a batch job. Click Add User or Group to add the user.

Tip: For details on why a check failed, select the check box against it and see the details in the description box at the bottom of the screen.

Database Information for Upgrade

Specify the password of the BEE_CODE schema for the database with the specified service name.

Upgrade Summary

The Upgrade Summary screen presents a summary of the options you have specified so far:

- **Space Requirements**: The disk space required to upgrade the product. The space requirement appears in a different color if the disk space available is less than what is required.
Notes: The space requirements shown on this screen do not include the space required in the target database.

The space requirements shown on this screen also might differ slightly from the actual space the component occupies on the installation disk. This is because of the differences in the disk configurations. For example, the space required on one hard drive might differ from the space required on another hard drive that uses different block size or that is managed by a different file system.

- **Inventory Location:** The location of the `oraInventory` directory where all the installation information about your product will be stored.
- **Product:** The name of the product you are upgrading, Oracle Beekeeper
- **Interview Details:** The details of your inputs for the other screens, such as:
  - **Home Details:** The location of the Oracle home that you are upgrading.

When you have reviewed your inputs, click **Upgrade** to continue.

**Upgrade Process**
Use this screen to monitor the upgrade process. Click **Show Details** to see the details in the description box that appears.

**Configuration Assistants**
This screen displays the configuration assistants that the Oracle Beehive Install Wizard runs to upgrade Oracle Beekeeper.

The Oracle Beehive Install Wizard performs the following configuration assistants:
- Oracle Beekeeper Initialization
- Upgrading Required Applications
- Deconfiguring Oracle Beekeeper Instance
- Oracle Beekeeper Service Creation
- Starting OC4J Instance
- Oracle Beekeeper Application Deployment
- Configuring OC4J Application Settings
- Stopping OC4J Instance
- Starting OC4J Instance

**End of Upgrade**
This screen indicates if the upgrade of Oracle Beekeeper is successful.
Installing Oracle Beehive with Provisioning Application

This module describes how to install Oracle Beehive with Oracle Beehive Provisioning Application.

Refer to the section "Oracle Beehive Provisioning Application Sequence of Screens" in "Oracle Beehive Install Wizard" for information on how to install Oracle Beehive Provisioning Application.

This process consists of the following steps:

**Note:** Steps 1 and 2 are required only for Oracle Beehive Release 1 (1.3) and earlier.

For Oracle Beehive Release 1 (1.4) and later, steps 1 and 2 are automatically performed. However, if you want to install Oracle Beehive with Oracle Beehive Provisioning Application for an operating system other than Solaris, perform the following steps:

1. Obtain the zipped installable version of Oracle Beehive from Disk1/install/beehive_home.zip or <Oracle Beehive installation media directory>/install/beehive_home.zip.
2. Perform "Step 2: Upload Zipped Installable Version of Oracle Beehive to Oracle Enterprise Manager Grid Control Software Library".
3. Perform "Step 3: Run Oracle Beehive Provisioning Application".

To change the shiphome (an installable version of Oracle Beehive) that Oracle Beehive Provisioning Application uses to install Oracle Beehive, refer to the section "Uploading Oracle Beehive Shiphome to Oracle Enterprise Manager Grid Control".

To uninstall Oracle Beehive Provisioning Application, refer to "Uninstalling Oracle Beehive Provisioning Application".

**Step 1: Zip Installable Version of Oracle Beehive**

**Step 2: Upload Zipped Installable Version of Oracle Beehive to Oracle Enterprise Manager Grid Control Software Library**

**Step 3: Run Oracle Beehive Provisioning Application**

**Note:** If you install Oracle Beehive with Oracle Beehive Provisioning Application, you may use only test certificates, not self-signed certificates.
For more information about Oracle Beehive Provisioning Application and other Oracle Beehive installation scenarios, refer to "What You Should Know Before Installing Oracle Beehive".

---

**Note:** For Oracle Beehive Release 1 (1.3) and earlier, you must specify the location of the Oracle Enterprise Manager Grid Control software library before installing Oracle Beehive Provisioning Application. Refer to "Specifying Location of Oracle Beehive Shiphome Binaries in Grid Control" in "What You Should Know Before Installing Oracle Beehive" for more information.

Follow these steps if you have not specified the software library location before installing Oracle Beehive Provisioning Application:

1. Follow the directions listed in "Specifying Location of Oracle Beehive Shiphome Binaries in Grid Control".

2. In a browser, navigate to Oracle Enterprise Manager Grid Control. Click the Deployments tab. Click Deployment Procedures (from the Deployment Procedure Manager section). Select Oracle Beehive Release 1 Deployment and click Upload. Upload the PAR file `<Oracle Management Service home>/sysman/prov/paf/beeprovs.par`.

---

**Step 1: Zip Installable Version of Oracle Beehive**

Zip into one file, named `beeshiphome.zip`, the contents of the Oracle Beehive installation media.

Use the following commands to create a zip file from the Oracle Beehive installation media:

```shell
cd <Oracle Beehive installation media directory>
zip -9rv beeshiphome.zip *
```

You must use the name `beeshiphome.zip` for the zip file.

Save the file `beeshiphome.zip` on a computer or host that the Oracle Management Agent can access.

**Step 2: Upload Zipped Installable Version of Oracle Beehive to Oracle Enterprise Manager Grid Control Software Library**

Follow these steps to upload to the Oracle Enterprise Manager Grid Control software library the zip file you created in the previous step:

1. In a browser, navigate to the instance of Oracle Enterprise Grid Control that contains Oracle Beehive Provisioning Application.

2. Click the Deployments tab. Click Provisioning in the menu bar. You will see a list of software you may provision through Oracle Enterprise Manager Grid Control.

3. In the TreeTable, expand the Components entry until you see Oracle Beehive Release 1 Shiphome. More than one shiphome entry may be available if you have installed Oracle Beehive Provisioning Application for more than one operating system. Select the shiphome you want to upload. Click Edit.

4. In the Edit Component page, click Upload File in the menu bar. Select Update from Agent Machine. Select Target and specify the zip file you created in the previous step.
5. In the Host Credentials window, enter your user name and password. Select the Save as Preferred Credential check box (otherwise the upload will fail).

6. Click Finish.

Step 3: Run Oracle Beehive Provisioning Application
Refer to "Provisioning Oracle Beehive" in "Provisioning Oracle Beehive" for information on running Oracle Beehive Provisioning Application.

Uploading Oracle Beehive Shiphome to Oracle Enterprise Manager Grid Control
You may upload a new shiphome (an installable version of Oracle Beehive) to the central software library of Oracle Enterprise Manager Grid Control. Oracle Beehive Provisioning Application uses this shiphome to install Oracle Beehive.

To upload a new shiphome to the central library of Oracle Enterprise Manager Grid Control, follow these steps:

1. Click the Deployments tab. Click Provisioning in the menu bar. You will see a list of software you may provision through Oracle Enterprise Manager Grid Control.

2. In the TreeTable, expand the Components entry until you see Oracle Beehive Release 1 Shiphome. More than one shiphome entry may be available if you have installed Oracle Beehive Provisioning Application for more than one operating system. Select the shiphome you want to replace with a new shiphome. Click Edit.

   Caution: Do not click Delete.

3. In the Edit Component page, select Update from Agent Machine. Specify the zip file that contains the new shiphome. Click Finish.

Uninstalling Oracle Beehive Provisioning Application
Uninstall Oracle Beehive Provisioning Application with the Oracle Beehive Universal Installer, <Oracle home>/oui/bin/runInstaller.

Notes: You cannot uninstall the Provisioning Application with the Oracle Beehive Uninstall Wizard.

The Oracle Beehive Uninstall Wizard will not uninstall any changes made to the Oracle Enterprise Manager Grid Control repository database.
Introduction to Oracle Beehive Provisioning Application

Oracle Beehive Provisioning Application consists of the following components:

- Provisioning Advisor Framework
- Software Library
- Job System

Provisioning Advisor Framework

Provisioning Advisor Framework (PAF) provides a seamless process to integrate tasks that are associated with an application. The framework automates, orchestrates, and tracks the tasks of various applications, such as installers, upgrade assistants, and custom scripts.

PAF is built on top of the Enterprise Manager Grid Control structure. This structure comprises of Oracle Management Server (OMS), Job System, Oracle Enterprise Manager (EM) Repository, Agent and the Software Library. PAF uses an XML file called the Deployment Procedure (DP) as an input from an application. The different tasks of the application are broken down and listed in the Deployment Procedure. Each individual task is referred to as a step. A step could be further classified based on the task it performs. The step could be a manual step that requires user interaction or could be a host command step that runs a command on a specified list of targets. A group of step is referred to as a Phase. This feature enables the execution of a group of steps either in parallel or serially on the target nodes. A Deployment Procedure Engine maintains the state of the procedure while executing the phases and steps in the supplied DP.

The following figure illustrates the Provisioning Advisor Framework architecture:
Software Library
The Software Library is an infrastructure entity for storing and retrieving files and packages. This provides a common repository for storing software binaries, scripts and other files that are used by provisioning, cloning, and other applications.

Job System
Enterprise Manager Job System is a repository-based system that enables you to schedule and execute jobs on target computers. The Job System supports preconfigured job types, such as OS Commands and File Transfer. The Job System also enables the applications to create job types.
Provisioning Oracle Beehive

**Note:** Before provisioning Oracle Beehive Release 1 (1.4.3) for Solaris, follow these steps:

1. Unzip the file bhprereqpsolaris.zip from beeprov.par:
   
   ```
   cd <Oracle Management Server home>/sysman/prov/paf
   unzip beeprov.par compEntities/bhprereq-solaris.zip
   ```
2. Unzip the file prerequisite.properties from bhprereq-solaris.zip:
   
   ```
   cd compEntities
   unzip bhprereq-solaris.zip
   bhprereq/prereqs/prerequisite.properties
   ```
3. Edit the file bhprereq/prereqs/prerequisite.properties and remove bee/s_bee_prereq.xml from the first line.
4. Zip the edited bhprereq/prereqs/prerequisite.properties in the file bhprereq-solaris.zip:
   
   ```
   zip bhprereq-solaris.zip
   bhprereq/prereqs/prerequisite.properties
   ```

**Notes:** For versions of Oracle Beehive Release 1 (1.3) and earlier, if you are installing Oracle Beehive with Oracle Beehive Provisioning Application, and you are not on the sudoers list of the target computer, follow these steps:

1. Select the Deployments tab. Click Deployment Procedures (from the Deployment Procedure Manager section). Select Oracle Beehive Release 1 Deployment and click Create Like.
2. In the Create Like Procedure page, fill in the fields as follows:
   In the TreeTable, select Verify and fix Beehive system requirements. Change the Run Privilege to Normal (from sudo).
3. Click Save.
4. Follow the steps in this section, except run this copy of Oracle Beehive Provisioning Application.

For Oracle Beehive Release 1 (1.4), you do not have to be on the sudoers list of the target computer.

Follow these steps to run Oracle Beehive Provisioning Application:

1. Select the Deployments tab.
2. Click Deployment Procedures (from the Deployment Procedure Manager section).
3. Select Oracle Beehive Release 1 Deployment.
4. Click Schedule Deployment....
Oracle Beehive Provisioning Application will present you with the following pages in which you will enter required parameters for Oracle Beehive installation:

1. **Target List Page**
2. **Upload**
3. **Install Inputs Page**
4. **Credentials/Schedule Page**
5. **Summary Page**

---

**Notes:** The parameters are similar to the installation procedure described in "Oracle Beehive (Standard Installation) Sequence of Screens" in "Oracle Beehive Install Wizard" in the Oracle Beehive Installation Guide of your operating system.

For Oracle Enterprise Manager Grid Control Release 4 (10.2.0.4) only, ensure that the information you input in the following pages contain only ASCII characters.

---

**Target List Page**

The following describes the parameters for the Target List page:

- **Host targets for Oracle Beehive installation:** Select the hosts on which you want to install Oracle Beehive. You may select more than one host, add a host to the list, and remove a host from the list.

**Upload**

If you have not already uploaded a zipped installable version of Oracle Beehive to Oracle Beehive Enterprise Manager Grid Control Software Library, this page will prompt you to do so.

**Linux and UNIX-Based Operating Systems**

Upload the zipped installable version of Oracle Beehive from `<Oracle Beehive installation media directory>/install/beehive_home.zip`.

**Microsoft Windows**

Upload the zipped installable version of Oracle Beehive from `<Oracle Beehive installation media directory>\install\beehive_home.zip`.

---

**Note:** When you install Oracle Beehive Provisioning Application, a zipped installable version of Oracle Beehive is automatically uploaded to Oracle Enterprise Manager Grid Control Software Library. However, it will only upload a version of Oracle Beehive for the same operating system as Oracle Beehive Provisioning Application. Consequently, if you want to install Oracle Beekeeper for an operating system different than the one already in the software library, you will first have to upload a zipped installable version of Oracle Beehive for that operating system.
Install Inputs Page

The following describes the parameters for the Install Inputs page:

- **Install Input**
  - **Oracle home**: Specify the directory where you want to install Oracle Beehive. You must specify a new Oracle home directory for each new installation of Oracle Beehive.

- **Database Details**: Specify the following details of an existing Oracle Database instance that will be used by this installation. Refer to the module "Oracle Beehive Database Requirements" in the Oracle Beehive Installation Guide of your operating system for database requirements for Oracle Beehive Release 1.

---

**Oracle RAC Notes**: If you are specifying details for an Oracle Real Application Cluster (Oracle RAC) database, ensure that you have entered the following information correctly; Oracle Beehive Provisioning Application will not verify it by trying to connect to each database host. Instead, Oracle Beehive Provisioning Application constructs the connect descriptor with the database information you provide, then verifies if the connect descriptor can reach the database.

If you are installing Oracle Beehive in a high availability environment (you are installing multiple instances of Oracle Beehive) with the provisioning application, and you are using an Oracle RAC database, you may only use test certificates; you may not use self-signed certificates in this situation.

- **Hostname and Port**: Specify the fully qualified domain name (FQDN) of the host where the target database is running followed by the database listener port.

  For example, if the host name is *foo*, its domain is *abc.com*, and the database listener port is *1521*, then you must enter the following:

  *foo.abc.com:1521*

---

**Note**: In case of an Oracle RAC database, use the following format:

*virtual_host1:virtual_port1^virtual_host2:virtual_port2* ...

---

- **Service Name**: Enter the service name for the Oracle Database. This is the same as the global database name, and must be unique across all databases. This is also the same as the Service Name the Oracle Beehive Install Wizard asks you when you choose to install Oracle Beehive against an existing database.

  In the Oracle Beehive Installation Guide of your operating system, refer to "Installing Oracle Beehive Against an Existing Database" for more information. Refer to "Database Information" in "Oracle Beehive Install Wizard" for more information about the service name.

- **Username**: Specify the administrative user name (that can perform database administration tasks) for the database instance. Typically, this user is the *SYS* account.
- **Password**: Enter the password for the Oracle database administrative user account that you specified in the **Username** field.

**Enterprise Information**

- **Enterprise**: Specify the name for the new enterprise you want to create. An enterprise is the top-level container for all users and objects. An enterprise may contain any number of organizations and workspaces.

  The enterprise name is typically a company name, such as Oracle.

  In Oracle Beehive Release 1, an Oracle Beehive deployment may have only one enterprise.

- **Organization**: Specify the name of the organization to be created and added to the enterprise you specified previously. An organization is a logical grouping of users, groups, workspaces, and resources at a level lower than the enterprise level. Later, you may add any number of organizations to the enterprise you specified previously.

  The organization is typically a sub-level or department under the enterprise, such as Sales or Accounting.

- **Instance Name**: Specify the name of the instance for this Oracle Beehive installation. The instance name is used during server configuration.

  The full name of an Oracle Beehive instance consists of the instance, host, and domain names. For example, if you name your instance `myinstance1`, your host is `myhost`, and your domain is `example.com`, the full name of your instance will be `myinstance1.myhost.example.com`.

---

**Note:** Only enter the instance name; do not specify the host and domain name. Oracle Beehive will append the host and domain name to the instance name. For example, you would specify `myinstance1`, not `myinstance1.myhost.example.com`.

All Oracle Beehive Release 1 instances must have a unique name.

---

- **Site**: Specify the name of the site. A site consists of all Oracle Beehive services and service instances and the database they use.

  A site is typically a reference to a physical location, such as Headquarters or Montreal.

  In Oracle Beehive Release 1, an Oracle Beehive deployment may have only one site.

**beadmin Credentials**

- **Password**: Specify and confirm the password for the beadmin user. The oc4jadmin and bpeladmin users will have the same password.

- **Confirm Password**: Re-enter the password you entered in the previous field.

**Oracle Beehive Schema Information**

- **Password**: Use this screen to specify and confirm the password for the new database schema that will be created and used by the Oracle Beehive instance.

- **Confirm Password**: Re-enter the password you entered in the previous field.
Credentials/Schedule Page

The following describes the parameters for the Credentials/Schedule page:

- **Oracle Home Credentials**: The user credentials you will specify on this page must already exist on the target nodes. Also, ensure that the specified user is a part of the osinstall group.

  **Note**: Ensure that you have entered the following user credentials correctly; Oracle Beehive Provisioning Application will not verify them.

- **Specify Credentials for**: Specify the Oracle homes that the Provisioning Application will access with the credentials (username and password) that you will specify in the following fields.
  - **Username**, **Password**, and **Confirm Password**: Specify the username and the password of the user that can access the Oracle homes you specified in Specify Credentials for.

- **Schedule**
  - **One Time (Immediately)**: Starts the installation immediately
  - **One Time (Later)**: Starts the installation at the specified time. If you do not want the procedure to start immediately, select this option and use the **Time Zone**, **Start Date**, and **Start Time** to schedule the procedure. If you change the date or time to a time in the future, the procedure will start on the specified date and time.
  - **Grace Period**
    - **Indefinite**: Use this option if you want the Oracle Management Service to continue to attempt to start the patching job for an infinite amount of time.
    - **End After n Hours m Minutes**: In addition, you can specify the End After option of Grace Period to allow the Oracle Management Service to continue to attempt to start the job up to the specified time. This is useful, if the Oracle Management Agent is down and the Oracle Management Service is unable to start the patching job, because if the patching job is not started within the allotted time frame, the Oracle Management Service marks the patching job as skipped.

Summary Page

Review the installation parameters in the Summary page and click Finish to start the installation of Oracle Beehive.
Installing Oracle Beehive in Silent Mode (Non-Interactive)

This module describes how to install Oracle Beehive in silent mode, which allows minimal input from the user. This process involves creating a response file, which is an XML file that contains values required by the Oracle Beehive Install Wizard. Use this process if you want to install Oracle Beehive with a batch process or do not want to use the GUI provided by the Oracle Beehive Install Wizard.

This module covers the following silent mode processes:

- Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard
- Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard and Config Wizard
- Installing Oracle Beehive Provisioning Application in Silent Mode
- Installing Oracle Beehive for DMZ in Silent Mode
- Verifying Oracle Beehive Installation
- Recovering from Failed Oracle Beehive Configuration
- Upgrading Oracle Beehive in Silent Mode
- Uninstalling Oracle Beehive in Silent Mode

Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard

This process installs and configures Oracle Beehive by running the Oracle Beehive Install Wizard only once. It consists of the following steps:

1. Verify that Oracle Database is installed and running
2. Create a response file
3. Start the installation and configuration in silent mode
4. Verify the installation

**Step 1 Verify that Oracle Database is installed and running**

To verify that Oracle Database is running, connect to it and run a query as follows:

1. Ensure that the environment variables ORACLE_HOME is set to the home directory of Oracle Database and ORACLE_SID is set to the SID of the database you want to configure with this installation of Oracle Beehive.
2. Run the following commands to check the version of Oracle Database and verify that it is running (\texttt{<Database home> is where you installed Oracle Database>)}:

\begin{verbatim}
<Database home>/bin/sqlplus '/ as sysdba'
SQL> select version from v$instance;
VERSION
----------
10.2.0.3.0
SQL> exit;
\end{verbatim}

3. Verify that the listener is listening to a service with the same name as ORACLE\_SID:

\begin{verbatim}
<Database home>/bin/lsnrctl status
\end{verbatim}

\begin{center}
\textbf{Note:} Refer to "Oracle Beehive Database Requirements" for more information about minimum database requirements.
\end{center}

\section*{Step 2 Create a response file}
A response file is an XML file that contain values required for installation and configuration.

To create a response file, edit the response file according to the comments in it. Use one of the following methods to create a response file:

\begin{itemize}
\item Use the existing response file, \texttt{response/beehive\_response\_template.xml} in the installation media.
\item Generate this response file in your home directory with the following command (from the installation media):
\begin{verbatim}
runInstaller -generateResponseTemplate
\end{verbatim}
\end{itemize}

\textbf{Tip:} Create a fully configured response file by running the Oracle Beehive Install Wizard (not in silent mode) until you reach the Installation Summary screen. Click \texttt{Save}. The Oracle Beehive Install Wizard saves the inputs you entered and options you selected in a response file.

Note that the Oracle Beehive Install Wizard will not save the passwords you entered in the response file. You must edit this response file and add the required passwords.

\section*{Step 3 Start the installation and configuration in silent mode}
Run the following command (from the installation media) to start the installation and configuration of Oracle Beehive in silent mode:

\begin{verbatim}
runInstaller -responseFile full_path_of_response_file -silent
\end{verbatim}

After the installation and configuration are completed, Oracle Beehive servlet URLs are displayed. You will also find this information in a log file with a name similar to \texttt{<Oracle inventory>/logs/installActions*.log} (where \texttt{<Oracle inventory> is the Oracle inventory directory}).

If there is no Oracle inventory directory (the directory that stores information about the Oracle products in your computer) or this is the first installation of an Oracle
product in the computer, you will be asked to run the <Oracle inventory>/orainstRoot.sh script as the root user.

**Step 4  Verify the installation**
Run the administration tool beectl as described in "Verifying Oracle Beehive Installation".

**Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard and Config Wizard**

This process consists of two phases: an installation-only (or software-only) phase that installs Oracle Beehive by running the Oracle Beehive Install Wizard and a configuration-only phase that configures Oracle Beehive by running the Oracle Beehive Config Wizard.

This process consists of the following steps:

1. Verify that Oracle Database installed and running
2. Create a response file
3. Start the installation-only phase in silent mode
4. Start the configuration-only phase in silent mode
5. Verify the installation

**Step 1  Verify that Oracle Database installed and running**
This step is the same as *** 'Verify that Oracle Database is installed and running' on page 1 *** in "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard".

**Step 2  Create a response file**
This step is the same as *** 'Create a response file' on page 2 *** in "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard", except you only need to specify the values homeLocation and softwareOnly. (For the configuration-only phase, Step 4, you will need to specify all the other values.) The following is an excerpt from a response file that has these two values specified:

```xml
*********************************************************************
Oracle Home Information
*********************************************************************
-->
<object class="oracle.ocs.install.wizard.framework.beans.HomeInfoBean">
  <!--
  # This string property holds the oracle home location.
  # Specify an absolute path here.
  # The path should not contain special characters
  -->
  <void property="homeLocation">
    <string/>
  </void>
</object>
```

```xml
<!--
*********************************************************************
Install Type Information
*********************************************************************
```
Step 3  Start the installation-only phase in silent mode
Run the following commands (from the installation media) to start the installation-only phase in silent mode:

```
runInstaller -responseFile full_path_of_response_file -silent
```

Step 4  Start the configuration-only phase in silent mode
Wait until the installation-only phase is finished and successful. Ensure that you have specified all required values in the response file. Run the following commands to start the configuration-only phase (<Oracle home> is where you installed Oracle Beehive):

```
  cd <Oracle home>/beehive/oobwiz
  ./configWizard -responseFile full_path_of_response_file -silent
```

Log files with names similar to `<Oracle home>/beehive/oobwiz/logs/configActions*.log` contain information about this configuration-only phase.

If there is no Oracle inventory directory (the directory that stores information about the Oracle products in your computer) or this is the first installation of an Oracle product in the computer, you will be asked to run the `<Oracle inventory>/orainstRoot.sh` script as the root user.

Step 5  Verify the installation
Run the administration tool `beectl` as described in "Verifying Oracle Beehive Installation".

Installing Oracle Beehive Provisioning Application in Silent Mode
You may install Oracle Beehive Provisioning Application in silent mode.

The process is similar to "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard" except that you do not verify that a database is running and you use the response file (from the installation media) `response/provplugin_response_template.xml`. You can also generate this response file with the command `runInstaller -generateResponseTemplate`. The response file will be in your home directory.

Installing Oracle Beehive for DMZ in Silent Mode
You may install Oracle Beehive for DMZ in silent mode.
The process is similar to "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard" except that you use the response file (from the installation media) `response/dmz_response_template.xml`. You can also generate this response file with the command (from the installation media) `runInstaller -generateResponseTemplate`. The response file will be in your home directory.

**Verifying Oracle Beehive Installation**

Run the `beectl status` command:

```
<Oracle home>/beehive/bin/beectl status
```

If Oracle Beehive is installed and configured successfully, you should see output similar to the following:

```
---------------------------------------------+----------------+-----------------
Component identifier                         | Component type | Status           
---------------------------------------------+----------------+-----------------
BTI_instance1.example.com                    | Bti            | RUNNING          
---------------------------------------------+----------------+-----------------
BEEMGMT_instance1.example.com                | ManagedOc4j    | RUNNING          
---------------------------------------------+----------------+-----------------
BEEAPP_instance1.example.com                 | ManagedOc4j    | RUNNING          
---------------------------------------------+----------------+-----------------
oc4j_soa_instance1.example.com               | ManagedOc4j    | RUNNING          
---------------------------------------------+----------------+-----------------
BEECORE_instance1.example.com                | ManagedOc4j    | RUNNING          
---------------------------------------------+----------------+-----------------
ohs_instance1.example.com                    | HttpServer     | RUNNING          
```

If some of these components have not been started, review the log files in the following directories:

- `<Oracle inventory>/logs`
- `<Oracle home>/beehive/logs`

**Recovering from Failed Oracle Beehive Configuration**

If Oracle Beehive configuration failed, run the `configWizard` command. This command will automatically detect that Oracle Beehive configuration was not successful. It will then run only the configuration tools that failed or were aborted.

**Upgrading Oracle Beehive in Silent Mode**

**Note:** You may only upgrade an Oracle Beehive Release 1 (1.4.1) deployment to Oracle Beehive Release 1 (1.4.3). You must upgrade an Oracle Beehive Release 1 (1.3) deployment to Oracle Beehive Release 1 (1.4.1) before upgrading it to Oracle Beehive Release 1 (1.4.3).

You may upgrade the following Oracle Beehive products in silent mode:

- Oracle Beehive
- Oracle Beehive Integration for Zimbra
- Oracle Beehive Provisioning Application. (You may not upgrade any version of Oracle Beehive Provisioning Application earlier than 1.2.1.0.0.)
- Oracle Beehive for DMZ
- Oracle Beekeeper

The upgrade process to upgrade any of these Oracle Beehive products is the same as "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard" except that you create a response file from a different template depending on the product you are upgrading. The following lists the names of the response file templates to use for each Oracle Beehive product to upgrade:
- Oracle Beehive Release 1: beehive_upgrade_response_template.xml
- Oracle Beehive Integration for Zimbra: client_upgrade_response_template.xml
- Oracle Beehive Provisioning Application: provplugin_upgrade_response_template.xml
- Oracle Beehive for DMZ: dmz_upgrade_response_template.xml
- Oracle Beekeeper: beeker_upgrade_response_template.xml

Uninstalling Oracle Beehive in Silent Mode

You may uninstall Oracle Beehive in silent mode.

The process is similar to "Installing and Configuring Oracle Beehive in Silent Mode, Running Install Wizard" except for the following:
- You do not need to verify that a database is running.
- Use the response file (from the installation media) /response/beehive_uninstall_response_template.xml. You can also generate this response file with the command runInstaller -generateResponseTemplate. The response file will be in your home directory.
- Run the following command (from the installation media):
  runInstaller -uninstall
  -responseFile full_path_of_uninstall_response_file -silent

You may also run the following command:
<Oracle home>/beehive/oobwiz/configWizard -uninstall
  -responseFile full_path_of_uninstall_response_file -silent
Oracle Beehive Install and Config Wizard
Command-Line Options

This module describes command-line options for the Oracle Beehive Install Wizard and Config Wizard.

Oracle Beehive Install Wizard

Starts the installation wizard, which in turn can start the configuration wizard.

Usage

runInstaller [-option name]

Options

The following table describes the Oracle Beehive Install Wizard command-line options.

Table 13–1  runInstaller Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-debug</td>
<td>Turns on all levels of logging.</td>
</tr>
<tr>
<td>-entryPoint entry_point</td>
<td>Specifies the product-specific prerequisite set that will be run. For Oracle Beehive, this is oracle.bee_allProducts.</td>
</tr>
<tr>
<td>-force</td>
<td>Allows silent mode installation into a non-empty directory. Valid for install time use only.</td>
</tr>
<tr>
<td>-generateResponseTemplate</td>
<td>Generates response files (for Oracle Beehive installation, Oracle Beehive Provisioning Application, and Oracle Beehive uninstallation) in the user's home directory.</td>
</tr>
<tr>
<td>-help</td>
<td>Outputs help about runInstaller command-line arguments.</td>
</tr>
</tbody>
</table>
Oracle Beehive Config Wizard

Starts the configuration wizard. The full path of the command is `<Oracle home>/beehive/oobwiz/configWizard`.

Usage

configWizard [-option name]

Table 13–1  (Continued)runInstaller Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-invPtrLoc absolute_path_to_oraInst.loc_file</td>
<td>UNIX-based systems only: Specifies the location of an oraInst.loc file other than the default (which is <code>/etc/oraInst.loc</code>). For Solaris operating system (SPARC 64-Bit): Specifies the location of an oraInst.loc file other than the default (which is <code>/var/opt/oracle/oraInst.loc</code>). The oraInst.loc file contains the following lines: inventory_loc=inventory_directory_path inst_group=INVGROUP INVGROUP is the UNIX OS group that has write access to the inventory directory.</td>
</tr>
<tr>
<td>-logLevel level</td>
<td>Filters messages that have a lesser priority level than level. Valid levels are severe, warning, info, config, fine, finer, and finest.</td>
</tr>
<tr>
<td>-noconsole</td>
<td>Windows only: Suppresses display of messages to the console.</td>
</tr>
<tr>
<td>-nowait</td>
<td>Windows only: Does not prompt the user for exit confirmation.</td>
</tr>
<tr>
<td>-prereq_config_loc location</td>
<td>Specifies the fully qualified path to the prereq directory that contains the prerequisite.properties file.</td>
</tr>
<tr>
<td>-prereqcheck</td>
<td>Runs the prerequisite checker only.</td>
</tr>
<tr>
<td>-record</td>
<td>Records the user’s response from the installation wizard to a response file. Specify the name of the file to be created with the -responseFile option.</td>
</tr>
<tr>
<td>-responseFile path</td>
<td>Specifies the response file and path to use.</td>
</tr>
<tr>
<td>-silent</td>
<td>Installs Oracle Beehive in silent mode operation. You must also specify a response file with the -responseFile option.</td>
</tr>
<tr>
<td>-target_loc directory</td>
<td>Checks available disk space in directory.</td>
</tr>
<tr>
<td>-uninstall</td>
<td>Launches the wizard in uninstall mode only if any product homes are detected in the install inventory. Silent uninstallation can be performed by additionally using the options -silent and -responseFile uninstall_responsefile. Windows only: This option will work only from setup.exe on the installation media.</td>
</tr>
<tr>
<td>-waitforcompletion</td>
<td>Causes the installer process to execute in the foreground; it will not return until execution completes.</td>
</tr>
</tbody>
</table>
The following table describes the configWizard command options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-entryPoint entry_point</td>
<td>Specifies the product-specific prerequisite set that will be run. For Oracle Beehive, this is oracle.bee_allProducts.</td>
</tr>
<tr>
<td>-force</td>
<td>Allows silent mode installation into a non-empty directory. Valid for install time use only.</td>
</tr>
<tr>
<td>-generateResponseTemplate</td>
<td>Generates response files in user's home directory.</td>
</tr>
<tr>
<td>-help</td>
<td>Outputs help about configWizard command-line arguments.</td>
</tr>
<tr>
<td>-invPrtLoc absolute_path_to_oraInst.loc_file</td>
<td>UNIX-based systems only: Specifies the location of an oraInst.loc file other than the default (which is /etc/oraInst.loc). For Solaris operating system (SPARC 64-Bit): Specifies the location of an oraInst.loc file other than the default (which is /var/opt/oracle/oraInst.loc). The oraInst.loc file contains the following lines: inventory_loc=inventory_directory_path inst_group=INVGROUP INVGROUP is the UNIX OS group that has write access to the inventory directory.</td>
</tr>
<tr>
<td>-logLevel level</td>
<td>Filters log messages that have a lesser priority level than level. Valid levels are: severe, warning, info, config, fine, finer, finest.</td>
</tr>
<tr>
<td>-prereq_config_loc location</td>
<td>Specifies the fully qualified path to the prereq directory that contains the prerequisite.properties file.</td>
</tr>
<tr>
<td>-prereqcheck</td>
<td>Runs only the prerequisite checker.</td>
</tr>
<tr>
<td>-record</td>
<td>Records the user’s response from the installation wizard to a response file. Specify the name of the file to be created with the -responseFile option.</td>
</tr>
<tr>
<td>-responseFile path</td>
<td>Specifies the response file and path to use.</td>
</tr>
<tr>
<td>-silent</td>
<td>Configures Oracle Beehive in silent mode operation. You must also specify a response file with the -responseFile option.</td>
</tr>
<tr>
<td>-target_loc directory</td>
<td>Checks available disk space in directory.</td>
</tr>
<tr>
<td>-uninstall</td>
<td>Launches the wizard in uninstall mode only if any product homes are detected in the install inventory. Silent uninstallation can be performed by additionally using the options -silent and -responseFile uninstall_responsefile. Windows only: You cannot perform uninstallations with the configWizard. This includes silent uninstallations. To uninstall Oracle Beehive, run setup.exe -uninstall from the installation media.</td>
</tr>
</tbody>
</table>
You may uninstall the following products with the Oracle Beehive Uninstall Wizard:

- Oracle Beehive Release 1
- Oracle Beehive Provisioning Application
- Oracle Beehive for DMZ
- Oracle Beehive Integration for Zimbra

The following topics about uninstalling Oracle Beehive are covered:

- Starting the Oracle Beehive Install Wizard
- Oracle Beehive Uninstall Wizard Sequence of Screens
- Uninstalling Multiple Instances
- Manually Uninstalling Oracle Beehive
- Manually Deleting Oracle Beehive Tablespaces and Datafiles

**Starting the Oracle Beehive Install Wizard**

Start the Oracle Beehive Uninstall Wizard by running the Oracle Beehive Install Wizard and clicking the *Uninstall* button. Alternatively, run the Oracle Beehive Config Wizard (or Oracle Beehive Install Wizard) with the `-uninstall` command-line option.

**Oracle Beehive Uninstall Wizard Sequence of Screens**

The following screens appear during the uninstallation of Oracle Beehive:

- **Select Oracle Home to Uninstall**: This screen will not appear if you start Oracle Beehive Uninstall Wizard with Oracle Beehive Config Wizard.
- **Option to Remove Database Schema**: This screen will only appear if you are uninstalling Oracle Beehive Release 1 and it is the last one configured in your database.
- **Start Uninstallation**
- **End of Uninstallation**

**Select Oracle Home to Uninstall**

This screen lists all the Oracle Beehive products you have installed and their respective Oracle homes.
Select the Oracle Beehive home you want to uninstall.

This screen will not appear if you started the uninstall process by running the Config Wizard. In this case, the Config Wizard will uninstall the current Oracle Beehive home.

**Option to Remove Database Schema**

You will see this screen if you are uninstalling Oracle Beehive Release 1 and it is the last instance configured in your database.

Choose from one of the following options:

**Remove Oracle Beehive Instance Only**
This option will only deconfigure the Oracle Beehive instance.

**Remove Oracle Beehive and Schema**
This option will deconfigure the Oracle Beehive instance and remove the Oracle Beehive schema from the database. If you choose this option, you must provide the following information:

- **Admin User Name**: Specify the administrative user name (that can perform database administration tasks) for the database instance. Typically, this user is the SYS account.

- **Admin User Password**: Enter the password for the Oracle database administrative user account that you specified in the Admin User Name field.

**Start Uninstallation**

This screen will list actions that the Oracle Beehive Uninstall Wizard must perform to uninstall your chosen Oracle Beehive product.

---

**Note:** If you started the uninstall process with the Config Wizard, the "Delete Oracle Home" action will not be displayed. This action will be performed after you have exited the Config Wizard graphical user interface.

---

Click **Start Uninstall** to proceed with the uninstallation of your chosen Oracle Beehive product.

---

**Note:** On Microsoft Windows, if you receive an error message from the Oracle Beehive Uninstall Wizard that it was unable to delete the Oracle home folder, delete it manually, then restart your computer.

---

**End of Uninstallation**

This screen indicates that the uninstallation of the chosen Oracle Beehive product is successful.

**Uninstalling Multiple Instances**

If you wish to uninstall multiple instances of Oracle Beehive (which share the same database), uninstall each instance one at a time; do not run the Uninstall Wizard of each instance at the same time.
If you have multiple instances that share the same database, and you run the Uninstall Wizard of each instance at the same time, each Uninstall Wizard will assume that the instance it is uninstalling is not the last one to be uninstalled. As a result, the Oracle Beehive schema will not be removed from the database.

Manually Uninstalling Oracle Beehive

If you are unable to uninstall Oracle Beehive with the Uninstall Wizard because it was not able to remove the Oracle Beehive schemas from the database, follow these steps:

1. Stop all Oracle Beehive processes:
   ```bash
   <Oracle Beehive home>/beehive/bin/beectl stop --all
   ```

2. Manually stop any Oracle Beehive processes:
   **Linux and UNIX-Based Operating Systems:**
   a. Look up remaining Oracle Beehive processes:
      ```bash
      ps -ef --forest --columns 2000 | grep beehive
      ```
   b. Kill any remaining Oracle Beehive processes.

3. Deinstall the Oracle Beehive repository with the following command:
   ```bash
   perl schema_install.pl
   -deinstall
   -oracle_home <database home>
   -connect_string '<database connect string>'
   ```

   The Perl script `schema_install.pl` is located in `<Oracle Beehive home>/beehive/db`. Perl can be found in `<Oracle Beehive home>/perl`.


Manually Deleting Oracle Beehive Tablespaces and Datafiles

To manually delete Oracle Beehive tablespaces and datafiles, run the following SQL*Plus commands as a user with SYSDBA privileges. Ensure that the environment variable `ORACLE_SID` is set to the SID of the database that contains the Oracle Beehive tablespaces and datafiles.

**Note:** You may need to manually delete Oracle Beehive database users. Run the SQL command `DROP USER <user name> CASCADE` for the following users:

- BEE_DATA
- BEE_CDCPUB
- BEE_CODE
- ORABPEL
- ORAWSM
- ORAESB

1. SQL> SET LINE 1000 PAGES 0
This command sets the line size to a large number and suppresses other formatting information so that the next command can output additional SQL*Plus commands without any line breaks.

2. SQL> SELECT 'DROP TABLESPACE ' || tablespace_name || ' INCLUDING CONTENTS AND DATAFILES;' FROM dba_tablespaces WHERE tablespace_name LIKE 'BEE%';

This command outputs a list of tablespace DROP commands. Review each command before running them.

The following is an example of running these two commands, then running each of the generated tablespace DROP commands:

SQL> SET LINE 1000 PAGES 0
SQL> SELECT 'DROP TABLESPACE ' || tablespace_name || ' INCLUDING CONTENTS AND DATAFILES;' FROM dba_tablespaces WHERE tablespace_name LIKE 'BEE%';
DROP TABLESPACE BEE_ARCHIVE INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_AUDIT INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_DATA INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_INDEX INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_INTERFACE INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_LOBS INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_QUEUES INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_SEARCH_DATA INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_SEARCH_INDEX INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_SEARCH_LOBS INCLUDING CONTENTS AND DATAFILES;
DROP TABLESPACE BEE_SEED INCLUDING CONTENTS AND DATAFILES;
11 rows selected.
SQL> DROP TABLESPACE BEE_ARCHIVE INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_AUDIT INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_DATA INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_INDEX INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_INTERFACE INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_LOBS INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_QUEUES INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
SQL> DROP TABLESPACE BEE_SEARCH_DATA INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
Tablespace dropped.

SQL> DROP TABLESPACE BEE_SEARCH_INDEX INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.

SQL> DROP TABLESPACE BEE_SEARCH_LOBS INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.

SQL> DROP TABLESPACE BEE_SEED INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.

Manually Deleting Customized Oracle Beehive Customized Tablespaces and Datafiles

If you have customized the Oracle Beehive tablespace layouts, run the following SQL*Plus commands as a user with SYSDBA privileges:

1. SQL> SET LINE 1000 PAGES 0
   This command sets the line size to a large number and suppresses other formatting information so that the next command can output additional SQL*Plus commands without any line breaks.

2. SQL> SELECT 'DROP TABLESPACE "'|| ts_name || '" INCLUDING CONTENTS AND DATAFILES;' AS "Drop tablespace commands" FROM sys.bee_tablespaces;
   This command generates a list of tablespace DROP commands. Review each command before running them.

3. SQL> DROP VIEW sys.bee_tablespaces;
   This command drops the view that contains the customized tablespaces.
Oracle Beehive Post-Installation Configuration

This part describes how to configure Oracle Beehive. In particular, it describes how to configure security-related issues, install Oracle Beehive Integration for Outlook, and create Oracle Beehive clones ideal for testing changes to an Oracle Beehive instance before applying them to a production instance.

This part contains the following chapters:

- Oracle Beehive Post-Installation Procedures
- Oracle Beehive Database Post-Installation Procedures
- Configuring Oracle Beehive Demilitarized Zone Instances
- Integrating and Synchronizing LDAP with Oracle Beehive
- Configuring SSL
- Configuring TLS with Oracle Wallet
- Configuring SSL for LDAP Integration
- Enabling AJPS
- Configuring E-Mail with SSL
- Configuring XMPP
- Configuring Oracle Secure Enterprise Search
- Configuring Single Sign-On with Oracle Beehive
- Configuring External Oracle BPEL Process Manager with Oracle Beehive
- Installing Oracle Beehive Integration for Outlook
- Configuring Oracle Beehive Integration for Zimbra
- Cloning Oracle Beehive Application Tiers and Sites
- Oracle Beekeeper Post-Installation Procedures
Oracle Beehive Post-Installation Procedures

Depending on the installation scenario you have chosen, your security requirements, the standards-based clients you want to use with Oracle Beehive, or any other issue particular to your deployment, perform one or more of the following procedures:

- Using Oracle Beehive Command-Line Utility
- Configuring Oracle Beehive to Listen on Ports Less Than 1024
- Opening Ports Required by Oracle Beehive for FTP
- Configuring DMZ Instances
- Integrating and Synchronizing LDAP with Oracle Beehive
- Configuring SSL
- Configuring TLS
- Configuring SSL for LDAP Integration
- Enabling AJPS
- Configuring Oracle Beehive E-mail
- Configuring XMPP
- Configuring Notifications to Use SMS
- Configuring Oracle Secure Enterprise Search
- Configuring Oracle Single Sign-On
- Configuring External Oracle BPEL Process Manager with Oracle Beehive
- Installing Oracle Beehive Integration for Outlook
- Configuring Oracle Beehive Integration for Zimbra
- Configuring Remote Media Server for Oracle Beehive Conferencing
- Cloning Oracle Beehive
- Performing Oracle Beekeeper Post-Installation Procedures

Using Oracle Beehive Command-Line Utility

Many of the following post-installation procedures use the Oracle Beehive command-line utility beectl. For more information about beectl, refer to "Oracle Beehive Command-Line Utility" in Oracle Beehive Administrator’s Reference Guide.
Performing Post-Installation Procedures on Oracle Beehive Database

After successfully installing Oracle Beehive, refer to "Oracle Beehive Database Post-Installation Procedures" for tuning recommendations to perform on your Oracle Beehive database.

Configuring Oracle Beehive to Listen on Ports Less Than 1024

Follow one of these series of steps to change a port number to which Oracle Beehive listens to a privileged port number (less than 1024):

- Changing HTTP Port
- Changing Other Ports
- Enabling BPEL Workflows to Use New Port Number

Changing HTTP Port

Follow these steps to change the HTTP port to 80 or HTTPS port to 443 (or any other port less than 1024):

1. As the root user, change the owner of .apachectl to the root user, set its user ID to root, and give all users permission to execute it:

```bash
chown root <Oracle home>/Apache/Apache/bin/.apachectl
chmod a+x <Oracle home>/Apache/Apache/bin/.apachectl
chmod a+s <Oracle home>/Apache/Apache/bin/.apachectl
```

   **Tip:** Alternatively, instead of changing to the root user, you may use the `sudo` command instead:

   ```bash
   sudo chown root <Oracle home>/Apache/Apache/bin/.apachectl
   sudo chmod a+x <Oracle home>/Apache/Apache/bin/.apachectl
   sudo chmod a+s <Oracle home>/Apache/Apache/bin/.apachectl
   ```

2. Determine the name of the listening component and property name of the port you want to change. Run the `beectl list_ports` command to list all available ports (the --format option is optional):

   ```bash
   beectl list_ports --format xml
   ...
   ...
   <row>
   <column name="Protocol">HTTP</column>
   <column name="Listening Port">7777</column>
   <column name="Virtual Port">7777</column>
   <column name="Defining Component">ohs_site1.example.com</column>
   <column name="Property Name">HttpListenPort</column>
   <column name="Listening Component">ohs_site1.example.com</column>
   </row>
   ...
   <row>
   <column name="Protocol">HTTPS</column>
   <column name="Listening Port">4443</column>
   <column name="Virtual Port">4443</column>
   <column name="Defining Component">ohs_site1.example.com</column>
   <column name="Property Name">HttpSSLListenPort</column>
   <column name="Listening Component">ohs_site1.example.com</column>
   </row>
   ```
In the previous example, the HTTP (and HTTPS) listening component is `ohs_sitel.example.com`. The property name of the HTTP port is `HttpListenPort`, and the property name of the HTTPS port is `HttpSslListenPort`.

3. Change the listening port with the `beectl modify_property` command with the appropriate listening component and property name. The following example changes the HTTP port to 80:

   ```bash
   beectl modify_property
   --component ohs_sitel.example.com --name HttpListenPort --value 80
   ```

4. Change the HTTP (or HTTPS) port number in the `_VIRTUAL_SERVER` component. The following example changes the HTTP port number. (Use the property name `HttpSslPort` to change the HTTPS port number):

   ```bash
   beectl modify_property --component _VIRTUAL_SERVER --name HttpPort --value 80
   ```

5. Activate configuration and commit changes:

   ```bash
   beectl activate_configuration
   beectl modify_local_configuration_files
   ```

   **Note:** The `beectl modify_local_configuration_files` command will ask you to run this command on all your other instances. **Do not run this command on all your other instances at this time.** For each instance, perform steps 1 to 3 before running the `beectl modify_local_configuration_files` command.

---

**Changing Other Ports**

Follow these steps to change ports of Oracle Beehive-specific protocols such as BTP/BTPS, IMAP/IMAPS and SMTP.

**Note:** If you are changing e-mail port numbers, refer to "Configuring E-Mail with SSL" for additional information about changing the ports that SMTP and IMAP listen to.

1. As the *root* user, change the owner of `hasbind` to the *root* user, set its user ID to *root*, and give all users permission to execute it:

   ```bash
   chown root <Oracle home>/beehive/bin/hasbind
   chmod a+x <Oracle home>/beehive/bin/hasbind
   chmod a+s <Oracle home>/beehive/bin/hasbind
   ```

   **Note:** For `hasbind` to work, ensure that *root* only has write permission to the `/etc` directory, while all other users and groups have only read permission.

2. As the *root* user, create a text file named `/etc/cap.ora` (that contains the following, where `instuser` is the user who installed Oracle Beehive:

   ```ini
   +user instuser: bind port 80
   ```

   Ensure the owner and user ID of `cap.ora` is `root`, give `root` read and write access to it, and all other users only read access:
3. If you have configured your Oracle Beehive deployment with Oracle Beehive DMZ instances, perform the following steps on all your DMZ instances:

   a. As the root user, change the owner of hasbind to the root user, set its user ID to root, and give all users permission to execute it:

      ```
      chown root <DMZ home>/beehive/bin/hasbind
      chmod a+x <DMZ home>/beehive/bin/hasbind
      chmod a+s <DMZ home>/beehive/bin/hasbind
      ```

      **Note:** For hasbind to work, ensure that root only has write permission to the `/etc` directory, while all other users and groups have only read permission.

   b. As the root user, create a text file named `/etc/cap.ora` as described in Step 2 of this section.

   c. Restart your Oracle Beehive DMZ instance.

4. Determine the name of the listening component and property name of the port you want to change. Run the `beectl list_ports` command to list all available ports (the `--format` option is optional):

   ```
   beectl list_ports --format xml
   ...
   <row>
      <column name="Protocol">BTP</column>
      <column name="Listening Port">21401</column>
      <column name="Virtual Port">21401</column>
      <column name="Defining Component">SitewideBtiConfiguration</column>
      <column name="Property Name">ClientPort</column>
      <column name="Listening Component">BTI_site1.example.com</column>
   </row>
   <row>
      <column name="Protocol">BTPS</column>
      <column name="Listening Port">21451</column>
      <column name="Virtual Port">21451</column>
      <column name="Defining Component">SitewideBtiConfiguration</column>
      <column name="Property Name">SecureClientPort</column>
      <column name="Listening Component">BTI_site1.example.com</column>
   </row>
   ```

   In the previous example, the BTP (and BTPS) listening component is `BTI_site1.example.com`. The property name of the BTP port is `ClientPort`, and the property name of the BTPS port is `SecureClientPort`.

5. Change the listening port with the `beectl modify_property` command with the appropriate listening component and property name. The following example changes the BTP port:

   ```
   beectl modify_property
   --component BTI_site1.example.com --name ClientPort --value <new port number>
   ```

6. Change the appropriate property in the `_VIRTUAL_SERVER` component to the new port number. The following example changes the BTI port to the new port number (to list the properties of `_VIRTUAL_SERVER`, run the command `beectl list_properties --component _VIRTUAL_SERVER`):

   ```
   beectl modify_property
   ```
Enabling BPEL Workflows to Use New Port Number

If you changed the HTTP port number that Oracle Beehive listens to, follow these directions to enable BPEL workflows to use this new port number:

1. Modify the value element of the following properties in the file `<Oracle home>/bpel/system/config/collaxa-config.xml` to reflect the new HTTP port number:
   - clusterName
   - soapCallbackUrl
   - soapServerUrl

   The following is an example:

   ```
   <property id="clusterName">
     <name>Cluster Id</name>
     <value>www.example.com:80</value>
   </property>

   <property id="soapCallbackUrl">
     <name>BPEL soap callback URL</name>
     <value>http://www.example.com:80</value>
   </property>

   <property id="soapServerUrl">
     <name>BPEL soap server URL</name>
     <value>http://www.example.com:80</value>
   </property>
   ```

2. Restart the oc4j_soa component:
   ```
   beectl restart --component oc4j_soa_instance1.example.com
   ```

   Retrieve the component identifier of oc4j_soa with the `beectl status` command.

3. Re-deploy the SerialWorkflow and ParallelVoteWorkflow sample workflows by copying the jar files from `<Oracle home>/beehive/seed/workflows` into `<Oracle home>/bpel/domains/default/deploy`. Since the BPEL Process Manager is in auto-deploy mode, it will redeploy these processes after a few minutes.

---

**Note:** The `beectl modify_local_configuration_files` command will ask you to run this command on all your other instances. **Do not run this command on all your other instances at this time.** For each instance, perform steps 1 to 3 before running the `beectl modify_local_configuration_files` command.
Opening Ports Required by Oracle Beehive for FTP

If your Oracle Beehive instance is behind a firewall, ensure that the following ports are open in your firewall to enable FTP connections:

**Table 15-1  Ports Required Open**

<table>
<thead>
<tr>
<th>Default Port Number</th>
<th>Property Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2121</td>
<td>Port</td>
<td>The FTP server listens at this port to accept new connections from clients</td>
</tr>
<tr>
<td>2120</td>
<td>DefaultDataPort</td>
<td>Port used by the FTP server in PORT (ACTIVE) mode to make active connections (outbound connections) to clients</td>
</tr>
<tr>
<td>12121</td>
<td>DataConnectionPort</td>
<td>In PASSIVE mode, the FTP server listens on a range of ports starting from DataConnectionPort to create new data connections, which will be used for data transfer operations. The property MaxDCPortCount indicates the number of ports in the range. For example, if the value of DataConnectionPort is 12121 and MaxDCPortCount is 10, then ensure that all the ports from 12121 to 12130 (inclusively) are open in your firewall.</td>
</tr>
</tbody>
</table>

You may change the value of these ports as well as the value of MaxDCPortCount.

To retrieve a list of all available ports, call the `beectl list_ports` command (the `--format` option is optional):

```
beectl list_ports --format xml
```

```
...<row>
  <column name='Protocol'>FTP</column>
  <column name='Listening Port'>2121</column>
  <column name='Virtual Port'>2121</column>
  <column name='Defining Component'>_FtpService</column>
  <column name='Property Name'>Port</column>
  <column name='Listening Component'>BTI_instance1.example.com</column>
</row>

...<row>
  <column name='Protocol'>FTP</column>
  <column name='Listening Port'>2120</column>
  <column name='Virtual Port'>2120</column>
  <column name='Defining Component'>_FtpService</column>
  <column name='Property Name'>DefaultDataPort</column>
  <column name='Listening Component'>BTI_instance1.example.com</column>
</row>

...<row>
  <column name='Protocol'>FTP</column>
  <column name='Listening Port'>12121</column>
  <column name='Virtual Port'>12121</column>
  <column name='Defining Component'>_FtpService</column>
  <column name='Property Name'>DataConnectionPort</column>
  <column name='Listening Component'>BTI_instance1.example.com</column>
</row>
```
To retrieve a list of all the properties for the FTP service, call the `beectl list_properties` command:

```
beectl list_properties --component _FtpService
```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias</td>
<td>_FtpService</td>
</tr>
<tr>
<td>ChannelSecurity</td>
<td>PLAIN_AND_TLS</td>
</tr>
<tr>
<td>DMSInstrumentation</td>
<td>false</td>
</tr>
<tr>
<td>DataConnectionPort</td>
<td>12121</td>
</tr>
<tr>
<td>DefaultCommandCharset</td>
<td>UTF-8</td>
</tr>
<tr>
<td>DefaultDataPort</td>
<td>2120</td>
</tr>
<tr>
<td>FtpServerEnabled</td>
<td>true</td>
</tr>
<tr>
<td>InternalIP</td>
<td>DEFAULT</td>
</tr>
<tr>
<td>LightweightThreadCount</td>
<td></td>
</tr>
<tr>
<td>ListeningPoint</td>
<td>DEFAULT</td>
</tr>
<tr>
<td>MaxDCPortCount</td>
<td>200</td>
</tr>
<tr>
<td>Port</td>
<td>2121</td>
</tr>
<tr>
<td>ServiceApplication</td>
<td>svcapp_ftp</td>
</tr>
<tr>
<td>ServiceInstances</td>
<td>instance_ftp_BEEAPP_site1.example.com</td>
</tr>
<tr>
<td>SessionTimeout</td>
<td>900000</td>
</tr>
<tr>
<td>Site</td>
<td>_CURRENT_SITE</td>
</tr>
<tr>
<td>Status</td>
<td>ENABLED</td>
</tr>
<tr>
<td>UploadBufferSize</td>
<td>260096</td>
</tr>
</tbody>
</table>

To change a property (such as the Port property), call the `beectl modify_property` command on all of your instances:

```
beectl modify_property
    --component _FtpService
    --name Port
    --value <new port value>
```

To save the your changes and activate them, call the following command:

```
beectl activate_configuration
```
Configuring DMZ Instances
Refer to "Configuring Oracle Beehive Demilitarized Zone Instances" for instructions on how to configure DMZ instances and Oracle Wallet with DMZ instances.

Integrating and Synchronizing LDAP with Oracle Beehive
Oracle Beehive user data may be mastered in Oracle Beehive User Directory Service (UDS) or in an external LDAP-based directory, such as Oracle Internet Directory. "Mastered" means that a master source is used as the point of reference to determine the correct value for any user account attribute, and this source is used for making any changes to any account details.

After you have installed and configured Oracle Beehive, you may synchronize your external LDAP-based directory with UDS so that you may continue to manage your users and groups through your LDAP server. For more information, refer to "Integrating and Synchronizing LDAP with Oracle Beehive".

Configuring SSL
Refer to "Configuring SSL" for information about configuring SSL with Oracle Beehive and DMZ instances.
If you do not want to use SSL with your Oracle Beehive deployment, follow the steps described in "Installing Non-SSL Oracle Beehive Site".

Configuring TLS
Some services, such as XMPP, require a Transport Layer Security (TLS) encrypted communication channel. Use Oracle Wallet to provide this.
To configure Oracle Beehive with Oracle Wallet so that clients may access it with a TLS connection, refer to "Configuring TLS with Oracle Wallet".

Configuring SSL for LDAP Integration
After configuring LDAP and Oracle Wallet with Oracle Beehive, you may configure Oracle Beehive authentication with Certificate Authority verification. For more information, refer to "Configuring SSL for LDAP Integration".

Enabling AJPS
To enable secure Apache JServ Protocol (AJPS), which is used instead of HTTP for communication between Oracle HTTP Server and OC4J, refer to "Enabling AJPS".

Note: If the beectl activate_configuration command asks you to run the beectl modify_local_configuration_files command, then run this command. It will then ask you to run the command on all your other instances. Run this command on all your instances.
Configuring Oracle Beehive E-mail

The default installation of Oracle Beehive includes a basic configuration of e-mail services. This configuration does not include any filtering, dispatch rules, relay configuration, attachment blocking, or other common settings. For detailed configuration options and procedures, refer to "Managing Oracle Beehive E-Mail" in Oracle Beehive Administrator’s Guide.

To secure Oracle Beehive e-mail with SSL, refer to "Configuring E-Mail with SSL". This involves configuring Oracle Beehive and your e-mail client.

Configuring XMPP

Extensible Messaging and Presence Protocol (XMPP) is an open XML technology for presence and real-time communication. For users to authenticate against Oracle Beehive’s XMPP Service, you must perform the steps described in "Configuring XMPP" to configure it.

Configuring Notifications to Use SMS

Oracle Beehive can send users notifications as email messages, instant messages, or as mobile messages in the form of SMS. SMS notifications are only possible if the Oracle Beehive SMS delivery channel is enabled and configured to point to an SMS Aggregator.

For more information, refer to the section "Configuring Notifications to use SMS" in "Managing Oracle Beehive Subscriptions and Notifications” in Oracle Beehive Administrator’s Guide.

Configuring Oracle Secure Enterprise Search

Oracle Secure Enterprise Search 10g is a stand-alone enterprise search solution. It incorporates best-in-class indexing crawling and security capabilities to create a reliable and comprehensive search solution for any organization. Refer to "Configuring Oracle Secure Enterprise Search”.

Configuring Oracle Single Sign-On

You may register Oracle Beehive as a partner application with Oracle Single Sign-On, which means that you may delegate the authentication function to the single sign-on server. Refer to "Configuring Single Sign-On with Oracle Beehive”.

Configuring External Oracle BPEL Process Manager with Oracle Beehive

If you have an existing instance of Oracle BPEL Process Manager, you may configure Oracle Beehive to use it instead of the one that is included with Oracle Beehive. Refer to "Configuring External Oracle BPEL Process Manager with Oracle Beehive”.

Installing Oracle Beehive Integration for Outlook

Oracle Beehive Integration for Outlook extends the functionality of Microsoft Outlook by providing Outlook users with unified access to Oracle Beehive-based collaborative features and data in a familiar environment.
Oracle Beehive Integration for Outlook is supported in Windows operating systems with the following versions of Microsoft Outlook:

- Microsoft Outlook 2000
- Microsoft Outlook 2002
- Microsoft Outlook 2003
- Microsoft Outlook 2007

Oracle Beehive Integration for Outlook requires installation on the computers of individual users. For information about installing Oracle Beehive Integration for Outlook, refer to "Installing Oracle Beehive Integration for Outlook".

## Configuring Oracle Beehive Integration for Zimbra

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

Oracle Beehive Integration for Zimbra is installed in an Oracle home separate from Oracle Beehive. As a result, Oracle Beehive Integration for Zimbra acts like an application tier and should be configured as such.

If you have not configured TLS or SSL for your Oracle Beehive deployment, you do not need to perform any post-installation steps; simply install Oracle Beehive Integration for Zimbra as described in "Installing Oracle Beehive Integration for Zimbra".

If you have configured TLS or SSL for your Oracle Beehive deployment, follow the steps described in "Configuring Oracle Beehive Integration for Zimbra" to install Oracle Beehive Integration for Zimbra (these steps are similar to "Configuring SSL with Self-Signed Certificates During Installation of Oracle Beehive").

## Configuring Remote Media Server for Oracle Beehive Conferencing

Oracle Beehive Conferencing requires a media server for its voice conferencing feature. However, Oracle Beehive for Solaris Operating System (SPARC 64-Bit) does not have a media server.

The following steps describe how to configuring a remote media server for Oracle Beehive for Solaris Operating System (SPARC 64-Bit). It involves using a media server from an Oracle Beehive for Linux x86 instance.

1. Install Oracle Beehive for Linux x86; use the same database as the one your Oracle Beehive for Solaris Operating System (SPARC 64-Bit) instance uses.

2. From your Oracle Beehive for Solaris Operating System (SPARC 64-Bit) instance, in the _ConferenceService component, set the OwcUseRemoteMediaSessions to true:

   ```bash
   beectl modify_property --component _ConferenceService
   --name OwcUseRemoteMediaSessions
   --value true
   ```

3. Activate the configuration:

   ```bash
   beectl activate_configuration
   ```

4. Restart the BEEAPP component in both the Linux and Solaris Oracle Beehive instances:
beectl status

------------------------------------------------+--------
<table>
<thead>
<tr>
<th>Component identifier</th>
<th>Component type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTI_instance1.example.com</td>
<td>BTI</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEEAPP_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEEMGMT_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEECORE_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>oc4j_soa_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>ohs_instance1.example.com</td>
<td>HTTP_Server</td>
<td>RUNNING</td>
</tr>
</tbody>
</table>

beectl restart --component BEEAPP_instance1.example.com

Cloning Oracle Beehive

Cloning is the process of copying an existing installation to a different location while preserving its configuration. For more information, refer to "Cloning Oracle Beehive Application Tiers and Sites".

Performing Oracle Beekeeper Post-Installation Procedures

Oracle Beekeeper is available for Oracle Beehive Release 1 (1.3) and later.

If you have installed Oracle Beekeeper, perform one or more of the procedures described in "Oracle Beekeeper Post-Installation Procedures", depending on your security requirements or any other issue particular to your deployment.
Oracle Beehive Database Post-Installation Procedures

After successfully installing Oracle Beehive, perform the following tuning recommendations on your Oracle Beehive database:

- Set the `disable_on_error` parameter to `N` in the `DBMS_APPLY_ADM` package so that errors are skipped:
  ```sql
  BEGIN
  exec dbms_apply_adm.set_parameter (
    apply_name => 'CDC$A_SEARCH_CHANGE_SET',
    parameter => 'disable_on_error',
    value => 'N'
  );
  END;
  ```

- Configure the `DBMS_CAPTURE_ADM` package as follows:
  ```sql
  BEGIN
  exec dbms_capture_adm.set_parameter (
    'CDC$C_SEARCH_CHANGE_SET',
    '_checkpoint_frequency',
    '1000'
  );
  END;

  BEGIN
  exec dbms_capture_adm.alter_capture (
    'CDC$C_SEARCH_CHANGE_SET',
    checkpoint_retention_time => 14
  );
  END;
  ```

- Oracle Beehive uses Oracle LogMiner extensively, which enables you to query online and archived redo log files through an SQL interface. By default, Oracle LogMiner stores its data in the `SYSAUX` tablespace. By default, the `SYSAUX` tablespace contains one datafile (bigfile) in auto-extensible mode. This means that if `SYSAUX` is almost out of space, the RDBMS kernel will physically increase the size of the datafile, which is a time-consuming operation.

  To prevent this operation from occurring too frequently, perform one of the following recommendations:

  1. Make sure that there is enough space in the `SYSAUX` tablespace, and follow the steps described in OracleMetaLink Note 429599.1, "How to reduce the Highwater of LOGMNR_RESTART_CKPT$ in 10.2."
2. Make sure that there is enough space in SYSAUX, and increase the size of disk space to be allocated automatically when more extends are required. (The default is the size of one data block). Specify this size in the NEXT clause of the autoextend_clause in the SQL statement ALTER TABLESPACE.

For example, the following statement modifies the SYSAUX tablespace datafile so that 500 Mb will be allocated to it when more extends are required:

```
ALTER DATABASE DATAFILE '&location of SYSAUX datafile>' AUTOEXTEND ON NEXT 500M;
```

Refer to Oracle Database SQL Language Reference for more information.

3. Call the DBMS_LOGMNR_D.SET_TABLESPACE procedure to re-create all Oracle LogMiner tables in an alternate tablespace. Ensure that the alternate tablespace has the characteristics specified in recommendation 2 (specifying a larger amount of disk space to be allocated when more extends are required).

Refer to the SET_TABLESPACE procedure from the DBMS_LOGMNR_D package in Oracle Database PL/SQL Packages and Types Reference for more information.
Configuring Oracle Beehive Demilitarized Zone Instances

This module describes how to configure Oracle Beehive DMZ instances. It involves the following steps:

- **Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances**
- **Step B: Configuring Oracle Beehive DMZ Instances**

**Note:** If you want to configure your DMZ instances with SSL, follow the directions described in "Configuring SSL with Oracle Beehive DMZ Instances" in "Configuring SSL." These steps involve configuring your entire Oracle Beehive deployment for SSL.

**Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances**

Follow these steps on all DMZ instances. Refer to "Configuring TLS with Oracle Wallet" for more information about Oracle Wallet.

1. Set the ORACLE_HOME environment variable to the Oracle home of the DMZ instance.

2. Run the following command to create a wallet:

   ```
   <Oracle home of DMZ instance>/bin/orapki wallet create
   -wallet <Oracle home of DMZ instance>/Apache/Apache/conf/ssl.wlt/default
   -auto_login
   -pwd <new password for wallet>
   ```

   **Note:** The default Oracle Wallet directory is `<Oracle home of DMZ instance>/Apache/Apache/conf/ssl/default`. Alternatively, you may create a new Oracle Wallet in a different directory (by changing the value of the `-wallet` option).

3. Edit the file `<Oracle home of DMZ instance>/beehive/conf/bti.properties` and change the value of WalletDir to the wallet directory you specified in the previous step:

   ```
   WalletDir=
   <Oracle home of DMZ instance>/Apache/Apache/conf/ssl.wlt/default
   ```
4. Edit the file `<Oracle home of DMZ instance>/opmn/conf/opmn.xml` and change the value of `wallet-file` to the wallet directory you specified in Step 2:

```xml
<notification-server interface="ipv4">
    <!-- ... -->
    <ssl enabled="true">
        wallet-file="<Oracle home of DMZ instance>/Apache/Apache/conf/ssl.wlt/default"/>
    </ssl>
</notification-server>
```

5. Restart the DMZ instance:

   opmnctl stopall  
   opmnctl startall

---

**Step B: Configuring Oracle Beehive DMZ Instances**

1. If you have not already done so, configure Oracle Wallet with your Oracle Beehive DMZ instance. Refer to "Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances".

2. If you have configured your Oracle Beehive DMZ instances for SSL, then ignore this step.

   By default, Oracle Beehive DMZ instances are configured to receive secure ONS notifications. If you specifically do not want to use SSL, you must configure ONS to receive non-SSL notifications.

   To do this, edit the file `<Oracle home of DMZ instance>/opmn/conf/opmn.xml` as follows in all Oracle Beehive DMZ instances. In the `<ssl>` element, set the `enable` attribute to `false`:

   ```xml
   <ssl enabled="false">
       wallet-file="$ORACLE_HOME/opmn/conf/ssl.wlt/default"/>
   </ssl>
   ```

3. Update the file `<Oracle home of DMZ instance>/opmn/conf/opmn.xml` as follows in all Oracle Beehive DMZ instances to add the topology definition for all Oracle Beehive (non-DMZ) application tiers that are part of this configuration:

   ```xml
   <notification-server>
       <!-- ... -->
   <topology>
       <nodes list="[Application tier 1 host name]:<OPMN remote port of application tier 1>,
                   [Application tier 2 host name]:<OPMN remote port of application tier 2>,
                   ..."/>
   </topology>
</notification-server>
```

   For example, if you have two Oracle Beehive application tiers with host names `example1.com` and `example2.com` and OPMN remote port numbers 6200 and 6300, respectively, add the following topology definition to the `opmn.xml` file in your DMZ instances:

   ```xml
   <notification-server>
       <!-- ... -->
   <topology>
       <nodes list="example1.com:6200,example2.com:6300"/>
   </topology>
</notification-server>
```
**Tip:** Retrieve the OPMN port of an Oracle Beehive application tier from the file `<Oracle Beehive home>/opmn/conf/opmn.xml` (of a non-DMZ application tier). The OPMN port is specified by the `remote` attribute of the `port` element in the `notification-server` element.

4. Restart each DMZ instance whose `opmn.xml` file you changed with the `<Oracle home of DMZ instance>/opmn/bin/opmnctl` command:

   opmnctl stopall
   opmnctl startall

5. From every DMZ instance, retrieve the following values from the specified files:
   - `<Oracle home of DMZ instance>/opmn/conf/opmn.xml`:
     - `opmn_request_port`
     - `opmn_remote_port`
   - `<Oracle home of DMZ instance>/beehive/conf/bti.properties`:
     - `bti_server_port`
     - `bti_unique_id` (PersistentId)
     - `NumberOfClientWorkers`

6. Open the following ports in your firewall:
   - OPMN ports between your DMZ instances and non-DMZ instances
   - AJP ports between your intranet and your DMZ instances: This is required for connectivity between Oracle HTTP Server (OHS) and OC4J. By default, Oracle Beehive OC4J instances listens on port numbers in the range 12501-12600. Oracle Beehive OC4J instances will try to listen on the lowest port number in this range.
     Consequently, you only have to open the range of ports 12501-12504. Ensure that no other applications on Oracle Beehive servers occupy this range. As long as these ports are not occupied, Oracle Beehive OC4J instances will listen on this range of ports.
   - If you have installed Oracle Beehive Integration for Zimbra, open two additional ports (12505-12506).
7. On any Oracle Beehive non-DMZ instance, **but not on a DMZ instance**, run the following commands:
   a. Add the first DMZ instance to the non-DMZ instance by calling the `beectl add_dmz_home_instance` command on a non-DMZ instance:

```
beectl add_dmz_home_instance
    --hostname <Host name of first DMZ instance>
    --oracle_home <Oracle home of DMZ instance>
    --opmn_request_port <OPMN request port of first DMZ instance>
    --opmn_remote_port <OPMN remote port of first DMZ instance>
    --bti_server_port <BTI server port of first DMZ instance>
    --bti_unique_id <BTI unique ID of first DMZ instance>
    --no_of_client_workers <NumberOfClientWorkers from bti.properties>
```

   b. After the successful completion of the `beectl add_dmz_home_instance` command, immediately run the command `beectl activate_configuration` on the same non-DMZ instance. Do not execute any other other `beectl` commands on any other non-DMZ instance.

   c. Repeat steps a and b for each of your other DMZ instances.

8. Run the following command on all the other non-DMZ instances:

```
beectl list_components --type ManagedOc4j
```

<table>
<thead>
<tr>
<th>Component type</th>
<th>Component identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagedOc4j</td>
<td>BEEAPP_site.example.com</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```
beectl list_properties --component BEEAPP_site.example.com
```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdminPassword</td>
<td>[Protected Value]</td>
</tr>
<tr>
<td>AdminUsername</td>
<td>oc4jadmin</td>
</tr>
<tr>
<td>AjpPortMaxValue</td>
<td>12600</td>
</tr>
<tr>
<td>AjpPortMinValue</td>
<td>12501</td>
</tr>
</tbody>
</table>

You may open a range of ports other than 12501-12504 (or 12501-12506 if you have installed Oracle Beehive Integration for Zimbra); however, you must make the necessary changes in the Oracle Beehive configuration.

Notes: You do not need to open any OPMN ports between your DMZ instances and any Oracle RAC database host(s).

The AJP port number range is defined in the AjpPortMinValue and AjpPortMaxValue parameters in each of Oracle Beehive’s managed OC4J components:

```
beectl list_components --type ManagedOc4j
```

The AJP port number range is defined in the AjpPortMinValue and AjpPortMaxValue parameters in each of Oracle Beehive’s managed OC4J components:

```
beectl list_components --type ManagedOc4j
```

You may open a range of ports other than 12501-12504 (or 12501-12506 if you have installed Oracle Beehive Integration for Zimbra); however, you must make the necessary changes in the Oracle Beehive configuration.

---

4 Oracle Beehive Installation Guide
Troubleshooting DMZ Configuration

If you receive an HTTP 404 error when accessing and HTTP resource from a DMZ instance, verify that you have properly configured your DMZ instances. Do this by running the command `<Oracle home>/opmn/bin/opmnctl @cluster status` from any Oracle Beehive instance. If you have properly configured your DMZ instances, then this command will display all your application tiers in your site.
Integrating and Synchronizing LDAP with Oracle Beehive

Oracle Beehive user data may be mastered by the Oracle Beehive User Directory Service (UDS) or an external LDAP-based directory. "Mastered" means that a master source is used as the point of reference to determine the correct value for any user account attribute, and this source is used for making any changes to any account details.

This module describes how to integrate and synchronize UDS with an external LDAP-based directory, such as Oracle Internet Directory, so that all user data is mastered by the LDAP-based directory.

If UDS is synchronized with an external LDAP server, it will contact the LDAP server at regular intervals for all records that were changed. UDS will update its records accordingly. You may change the frequency that UDS contacts the LDAP server.

If you make a change in UDS, it will not update the LDAP server with which it is synchronized.

The process of synchronizing an LDAP server with UDS involves creating the following files:

- **LDAP mapping profile**: This is an XML file that contains LDAP server settings and specifies how to convert entries in your LDAP server to Oracle Beehive users and groups. This involves specifying attribute mappings between those defined in your LDAP server and those used by Oracle Beehive.

- **User file**: This is an XML file that represents all the users you want to synchronize in a format specified by Oracle Beehive. To create this, you use the LDAP mapping profile you created and the `beectl download_ldap_user_data` command.

This module covers the following topics:

- **How Synchronization Works**
- **Requirements**
- **Synchronizing LDAP with Oracle Beehive User Directory Service**
- **Configuring Authentication Service to Use LDAP Server**

---

**Note**: It is not necessary to master all user account attributes in an LDAP server; some attributes may be mastered in LDAP and others in UDS. However, all users that need to authenticate or login must be mastered in the same place.
How Synchronization Works

An LDAP server maintains a change log in which it stores incremental changes made to directory objects. It stores these changes sequentially based on the change log number.

UDS contacts the LDAP server at regular intervals (whose duration is determined by the LDAP mapping profile) and requests the latest change log number and all records that were changed since the last stored change log number.

**Note:** If any change is made to the LDAP server that alters the change log number, such as restoring the LDAP server from a backup or switching to a cloned instance, you must export all users and groups from LDAP and import them into UDS again as described in “Step 3: Loading Users and Groups”.

Because any LDAP server may be synchronized with UDS, you must provide UDS with an LDAP mapping profile. This file specifies how to convert entries in your LDAP server to Oracle Beesive users and groups and which entries to synchronize.

Requirements


Synchronizing LDAP with Oracle Beesive User Directory Service

Synchronizing LDAP with UDS consists of the following steps:

- Step 1: Creating an LDAP Mapping Profile
- Step 2: Enabling Synchronization
- Step 3: Loading Users and Groups
This section also covers these topics:

- Controlling How Often UDS Contacts the LDAP Server
- Retrieving Information About the LDAP Server

**Step 1: Creating an LDAP Mapping Profile**

The LDAP mapping profile is an XML file that tells UDS the following information:

- Which LDAP entries should be synchronized
- How to treat entries with specific attributes or domain names (DNs) (for example, whether to map them as `ENTERPRISE_USER`, `EXTENDED_ENTERPRISE_USER`, or `EXTERNAL_PERSON`)
- How to map the attributes of each user type to Oracle Beehive attributes.

Creating the LDAP mapping profile consists of the following steps:

- **Step A: Creating an LDAP Mapping Profile from a Template**
- **Step B: Renaming the Profile**
- **Step C: Specifying LDAP Server Settings**
- **Step D: Providing Mapping Details for Each User Type and Static Group**
- **Step E: Providing Scope and Membership Mapping Information**
- **Step F: Providing Attribute Mapping for Each User Type and Static Group**
- **Step G: Adding Profile to Oracle Beehive**

**Step A: Creating an LDAP Mapping Profile from a Template**

Navigate to the directory `<Oracle home>/beehive/templates/uds`. It contains LDAP mapping profile templates for the following LDAP servers. These templates must be edited and customized depending on how your LDAP directory is configured and structured:

<table>
<thead>
<tr>
<th>File Name</th>
<th>Directory Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>adprofile_template.xml</td>
<td>Microsoft Active Directory</td>
</tr>
<tr>
<td>ibmprofile_template.xml</td>
<td>IBM Tivoli Directory Server</td>
</tr>
<tr>
<td>oidprofile_template.xml</td>
<td>Oracle Internet Directory</td>
</tr>
</tbody>
</table>
Depending on your LDAP server, copy one of these files to another location, such as your home directory. Edit this file to create your LDAP mapping profile.

These steps use `oidprofile_template.xml`.

**Step B: Renaming the Profile**

Rename the profile in the `<profile_name>` tag. The following is an excerpt from an LDAP mapping profile:

```xml
<profile>
    <profile_name>myProfile</profile_name>
    <!-- ... -->
</profile>
```

**Step C: Specifying LDAP Server Settings**

Enter the LDAP server’s host and port, administrator’s username and password (which must be obfuscated), and the users and groups base search. The following is an excerpt from an LDAP mapping profile:

```xml
<ldap_server>
    <host>www.ldapserver.com</host>
    <port>389</port>
    <!-- <ssl_port>636</ssl_port> -->
    <connection_timeout>120</connection_timeout>
    <ldap_user_name>cn=orcladmin</ldap_user_name>
    <ldap_user_password>fCgF4UPWg+Vm7IkSBSY07NOSkJ2XXTYRwGynrIM0mx/CHQF4W58Mab0izRX6Bzb6</ldap_user_password>
    <user_search_base>dc=oracle,dc=com</user_search_base>
    <group_search_base>cn=groups,dc=us,dc=oracle,dc=com</group_search_base>
    <primary_authentication_attribute>uid</primary_authentication_attribute>
    <!-- The primary authentication attribute is required only for DEFAULT profile -->
</ldap_server>

**Table 18-1  (Continued) LDAP Mapping Profile Templates**

<table>
<thead>
<tr>
<th>File Name</th>
<th>Directory Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>sunprofile_template.xml</td>
<td>Sun Directory Server</td>
</tr>
<tr>
<td>openldap_profile_template.xml</td>
<td>OpenLDAP Directory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>File Name</th>
<th>Directory Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>sunprofile_template.xml</td>
<td>Sun Directory Server</td>
</tr>
<tr>
<td>openldap_profile_template.xml</td>
<td>OpenLDAP Directory</td>
</tr>
</tbody>
</table>
In this excerpt, only users under `dc=oracle,dc=com` will be mapped to Oracle Beehive users. Similarly, only groups under `cn=groups,dc=us,dc=oracle,dc=com` will be mapped to Oracle Beehive groups.

The `<connection_timeout>` element is used by UDS to establish a connection to an external directory. If UDS cannot establish a connection within the number of seconds specified in this element, it aborts the connection attempt. The default value is 120 seconds. This element is available for Oracle Beehive Release 1 (1.3) and later.

For more information about the DigestAuthentication property, refer to "Configuring Digest Authentication".

---

**Notes:** The LDAP user specified in `<ldap_user_name>` must have access to the change logs. If you later update the profile with a different LDAP user, then UDS will be synchronized with the state of the LDAP server corresponding to the latest change log number.

To obfuscate the LDAP administrator’s password, use the `beectl obfuscate` command:

```
beectl obfuscate --expiration_time_in_minutes 0
Enter value for password:
Confirm value of password:
Successfully obfuscated the string.
```

Other `beectl` commands require obfuscated passwords. Use the same command to obfuscate them.

---

**Step D: Providing Mapping Details for Each User Type and Static Group**

Provide the mapping details for each user type and static group. The following is an excerpt from an LDAP mapping profile:

```
<user_type_map>
  <user_type_map_entry>
    <source_field_type>DN</source_field_type>
    <source_field_value>
      cn=users,dc=partners,dc=oracle,dc=com
    </source_field_value>
    <user_type>EXTENDED_ENTERPRISE_USER</user_type>
  </user_type_map_entry>
  <user_type_map_entry>
    <source_field_type>DN</source_field_type>
    <source_field_value>
      cn=users,dc=us,dc=oracle,dc=com
    </source_field_value>
    <user_type>ENTERPRISE_USER</user_type>
  </user_type_map_entry>
</user_type_map>

<group_type_map>
  <group_type_map_entry>
    <source_field_type>DN</source_field_type>
    <source_field_value>
      cn=groups,dc=us,dc=oracle,dc=com
    </source_field_value>
    <group_type>STATIC_GROUP</group_type>
  </group_type_map_entry>
</group_type_map>
```
This excerpt maps the following entries:

- A user that is under the DN specified in `<user_search_base>` (in this example, it is `dc=oracle,dc=com`) and whose DN contains `cn=users,dc=partners,dc=oracle,dc=com` will be mapped to `EXTENDED_ENTERPRISE_USER`.
- An entry that is under the DN specified `<user_search_base>` and whose DN contains `cn=users,dc=us,dc=oracle,dc=com` will be mapped to `ENTERPRISE_USER`.

---

**Note:** Users of type `EXTENDED_ENTERPRISE_USER` must be specified before users of type `ENTERPRISE_USER`.

Once the users have been created in Oracle Beehive, they cannot be converted or updated to another type of user. For example, a user of type `ENTERPRISE_USER` cannot be converted to a user of type `EXTENDED_ENTERPRISE_USER` (and the other way around).

Similarly, an `EXTERNAL_PERSON` cannot be converted to an `ENTERPRISE_USER` or `EXTENDED_ENTERPRISE_USER`.

---

**Exclusion and Inclusion**  Consider the following example:

```
<user_type_map>
  <user_type_map_entry>
    <source_field_name>UserStatus</source_field_name>
    <source_field_type>ATTRIBUTE</source_field_type>
    <source_field_value>true</source_field_value>
    <user_type>ENTERPRISE_USER</user_type>
  </user_type_map_entry>
</user_type_map>
```

In this example, a user (created in your LDAP directory) whose `UserStatus` attribute is set to `true` will be mapped to `ENTERPRISE_USER`.

However, if `UserStatus` is changed to any value other than `true` or nullified, then UDS synchronization will set the user’s status as `DISABLED` in Oracle Beehive because the user no longer satisfies the condition specified in this `<user_type_map>`.

If `UserStatus` is changed back to `true`, then UDS synchronization will set the user’s status as `ENABLED` in Oracle Beehive.

If a user in LDAP is deleted, UDS synchronization will set the user’s status as `MARKED_FOR_DELETE` in Oracle Beehive.

---

**Note:** The attribute specified in `<source_field_name>` (in the previous example, this would be `UserStatus`) must be of a string data type in your LDAP directory. UDS synchronization does not support any other LDAP data types.

---

**Step E: Providing Scope and Membership Mapping Information**

Provide community mapping information. Enter this information in an `<scope_type_map>` element. Users specified in a `<scope_type_map>` will be added to, or scoped within, the community (organization or enterprise) specified in the same element. A user may only be scoped within a single community.
You may optionally specify a <membership_type_map> element. Users specified in this element will be scoped within the community (organization or enterprise) specified by <scope_type_map>. In addition, users will become a member of the community specified in the <membership_type_map> element. A user may be a member of zero or more communities.

The following is an excerpt from an LDAP mapping profile.

<scope_type_map>

  <scope_type_map_entry>
    <source_field_name>OU</source_field_value>
    <source_field_type>ATTRIBUTE</source_field_type>
    <source_field_value>Alpha</source_field_value>
    <scope>
      <name>My_Organization</name>
      <identifier>orgn=My_Organization, enpr=My_Enterprise</identifier>
    </scope>
  </scope_type_map_entry>

  <scope_type_map_entry>
    <source_field_type>DN</source_field_type>
    <source_field_value>dc=us, dc=example, dc=com</source_field_value>
    <scope>
      <name>Entr1</name>
      <identifier>enpr=Oracle</identifier>
    </scope>
    <membership_type_map>
      <membership_type_map_entry>
        <source_field_type>DN</source_field_type>
        <source_field_value>dc=external, dc=us, dc=example, dc=com</source_field_value>
        <name>My_Organization</name>
        <identifier>orgn=My_Organization, enpr=My_Enterprise</identifier>
      </membership_type_map_entry>
    </membership_type_map>
  </scope_type_map_entry>
</scope_type_map>

This excerpt maps the following entries:

- A user that is under the attribute OU=Alpha will be scoped within the organization My_Organization.
- A user that is under the DN dc=us, dc=oracle, dc=com will scoped within the enterprise My_Enterprise. A user that is under the DN dc=external, dc=us, dc=example, dc=com will scoped within the same enterprise (My_Enterprise). The same user will be a member of the organization My_Organization.
**Step F: Providing Attribute Mapping for Each User Type and Static Group**

Provide the attribute mapping for each user type and static group. The following is an excerpt from an LDAP mapping profile:

```xml
<directory_attribute_map>
  <directory_attribute_map_entry>
    <source_object>ENTERPRISE_USER</source_object>
    <AttributeMap>
      <Field>
        <source_attribute>givenname</source_attribute>
        <target_attribute>GIVENNAME</target_attribute>
        <target_attribute_type>ATTRIBUTE</target_attribute_type>
      </Field>
    </AttributeMap>
  </directory_attribute_map_entry>
  <directory_attribute_map_entry>
    <source_object>EXTENDED_ENTERPRISE_USER</source_object>
    <AttributeMap>
      <Field>
        <source_attribute>givenname</source_attribute>
        <target_attribute>GIVENNAME</target_attribute>
        <target_attribute_type>ATTRIBUTE</target_attribute_type>
      </Field>
      <Field>
        <source_attribute>sn</source_attribute>
        <target_attribute>FAMILYNAME</target_attribute>
        <target_attribute_type>ATTRIBUTE</target_attribute_type>
      </Field>
    </AttributeMap>
  </directory_attribute_map_entry>
  <directory_attribute_map_entry>
    <source_object>STATIC_GROUP</source_object>
    <AttributeMap>
      ...
    </AttributeMap>
  </directory_attribute_map_entry>
</directory_attribute_map>
```

**Tips:** To retrieve the identifier for an enterprise, call the following `beectl` command:

```
beectl list_enterprises
```

<table>
<thead>
<tr>
<th>Enterprise Name</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>MyEnterprise</td>
<td>enpr=My_Enterprise</td>
</tr>
</tbody>
</table>

To retrieve the identifier for an organization, call the following `beectl` command:

```
beectl list_organizations --scope enpr=My_Enterprise
```

Organization name: **My_Organization**
Description: **Unknown**
Identifier: **orgn=My_Organization,enpr=My_Enterprise**

...
In this excerpt, for each ENTERPRISE_USER, the givenname LDAP attribute will be mapped to the GIVENNAME attribute in Oracle Beehive. Similarly, for each STATIC_GROUP, the displayname LDAP attribute will be mapped to the NAME attribute in Oracle Beehive.

**Mapping Postal Addresses** You may use the ORAPOSTAL user account address field scheme to map the postal address attributes of the users in your LDAP directory.

The ORAPOSTAL scheme contains the following fields:

- **l1**: Address line 1
- **l2**: Address line 2
- **box**: Post box number
- **cy**: City
- **st**: State
- **code**: Postal code
- **c**: Country

Map your LDAP postal address attributes to these fields. The following excerpt demonstrates how to map to the fields of the ORAPOSTAL scheme:

```xml
<Field>
  <source_attribute>l1=street?cy=l?st=st?code=postalcode?c=c</source_attribute>
  <target_attribute>BUSINESS</target_attribute>
  <target_extended_attribute>ORAPOSTAL</target_extended_attribute>
  <target_attribute_type>ADDRESS</target_attribute_type>
</Field>
```

In this excerpt, LDAP postal address attributes will be mapped to ORAPOSTAL fields as follows:

- street maps to l1
- l maps to cy
- st maps to st
- postalcode maps to code
- c maps to c

The entire postal address will be mapped to an address user account field (as specified by `<target_attribute_type>`) of type business (as specified by `<target_attribute>`).

**Mapping Active Directory Proxy Addresses** An Active Directory user’s entry contains an attribute named proxyAddresses that holds all the e-mail addresses of a particular user.

The following is an example of a proxyAddresses attribute:
Consider the following example:

```xml
<Field>
  <source_attribute>proxyAddresses</source_attribute>
  <target_attribute>PROXY</target_attribute>
  <target_extended_attribute>MAILTO</target_extended_attribute>
  <target_attribute_type>ADDRESS</target_attribute_type>
  <source_special_handling>PROXY</source_special_handling>
</Field>
```

If the `<source_special_handling>` element is omitted, UDS synchronization will map the Active Directory `proxyAddresses` value of a user to the Oracle Beehive address type `PROXY` with the scheme `MAILTO`. This creates the following:

```
proxy1:mailto:smtp:rholmes@example.com
proxy2:mailto:smtp:robert.holmes@example.com
...
proxy8:mailto:RFAX: Holmes, Robert
```

If the `<source_special_handling>` element is included, Oracle Beehive will only synchronize values that start with `smtp:` and remove the text `smtp:`. As a result, the actual values in Oracle Beehive become the following:

```
proxy1:mailto:rholmes@example.com
proxy2:mailto:robert.holmes@example.com
```

Consequently, the `<source_special_handling>` element properly formats Active Directory e-mail addresses for Oracle Beehive and ignores values that start with `MBX`, `RFAX`, and other protocols not used by Oracle Beehive. This kind of mapping enables you to incorporate your legacy e-mail addresses into Oracle Beehive by synchronizing it with Active Directory’s method of inbound mail lookup resolution.

**Step G: Adding Profile to Oracle Beehive**

A default directory profile is the one used by both authentication and UDS. This profile stores and reads LDAP server information from the site. For non-default directory profiles, the LdapServer object is stored within the profile itself.

For a default directory profile, the value of the `<profile_flag>` element (found in the `<profile>` element) is `DEFAULT`. For a non-default profile, the value is `NON_DEFAULT`.

Follow these steps to add a non-default directory profile:

1. Add the profile with the following `beectl` command:

   ```bash
   beectl add_directory_profile --file oidprofile_template.xml
   ```

   The utility may return an error similar to the following:

   ```
   Failed to add directory profiles. See the log file.
   ```

   The log file is `<Oracle home>/beehive/logs/oc4j/BEEMGMT/log.txt`.

2. Activate the configuration and commit changes.

   ```bash
   beectl activate_configuration
   beectl modify_local_configuration_files
   ```
To add a default directory profile, follow these steps:

1. Add the profile with the following beectl command:
   ```bash
   beectl add_directory_profile --file oidprofile_template.xml
   ```

2. Modify the AuthStoreType property of the Authentication Service to ldap with the beectl modify_property command. Refer to "Configuring Authentication Service to Use LDAP Server" for more information. (This is required so that the beectl modify_local_configuration_files works properly after you call beectl add_directory_profile to add the default profile.)

3. Activate the configuration:
   ```bash
   beectl activate_configuration
   ```

Modifying Directory Profile  To modify a directory profile, you may use the beectl modify_directory_profile command, delete the existing directory profile and then add the updated profile, or modify one or more properties of the existing directory profile with the beectl modify_property command. In either case, you do not have to restart the LDAP server.

To modify a default profile to a non-default profile, modify the AuthStoreType property of the Authentication Service to db with the beectl modify_property command before activating the configuration and committing changes. Conversely, to modify a non-default profile to a default profile, modify the AuthStoreType property to ldap before activating the configuration and committing changes.

Directory Profile Validation  When you add a directory profile, Oracle Beehive validates the following in the XML file:

1. LDAP credentials
2. `<poll_interval>`, `<profile_flag>`, and `<directory_type>`
3. The existence of `<user_search_base>` and `<group_search_base>` in your LDAP server
4. For `<scope_type_map>` and `<membership_type_map>`, the following are validated:
   a. `<source_field_type>` (either DN or ATTRIBUTE)
   b. `<source_field_value>`: If `<source_field_type>` is DN (if `<source_field_type>` is ATTRIBUTE, then this validation is skipped)
   c. Values defined in `<identifier>` are validated for their existence; if you have specified an invalid enterprise or organization identifier, then an appropriate error message is returned
5. For `<user_type_map>`, the following are validated:
   a. `<source_field_type>` (either DN or ATTRIBUTE)
   b. `<source_field_value>`: If `<source_field_type>` is DN (if `<source_field_type>` is ATTRIBUTE, then this validation is skipped)
   c. `<user_type>` (either ENTERPRISE_USER, EXTENDED_ENTERPRISE_USER, or EXTERNAL_PERSON)
6. For `<group_type_map>` the following are validated:
   a. `<source_field_type>` (either DN or ATTRIBUTE)
b. `<source_field_value>`: If `<source_file_type>` is DN (if `<source_field_type>` is ATTRIBUTE, then this validation is skipped)

c. `<group_type>` (only valid value is STATIC_GROUP)

7. For `<directory_attribute_map>` the following are validated:

a. `<target_attribute>`: If `<source_object>` is ENTERPRISE_USER or EXTENDED_ENTERPRISE_USER, attribute mappings for the PRINCIPAL and FAMILYNAME target attributes must exist. If `<source_object>` is STATIC_GROUP, attribute mappings for the NAME target attribute must exist. If `<source_object>` is EXTERNAL_PERSON, attribute mappings for the FAMILYNAME target attribute must exist.

b. `<target_attribute_type>`

c. `<target_extended_attribute>`

---

**Step 2: Enabling Synchronization**

Enable the synchronization profile with the following commands: These commands enable a profile named `oidldapdirectoryprofile`:

```
beectl list_properties --component oidldapdirectoryprofile
beectl modify_property --component oidldapdirectoryprofile
    --name ProfileState --value ENABLE
beectl activate_configuration
```

**Note:** Your users will not be able to login yet, even though they are provisioned. Your users will be able to login once you have completed the step described in "Configuring Authentication Service to Use LDAP Server".

---

**Step 3: Loading Users and Groups**

The following steps describe how to load all users and groups from the LDAP server to UDS:

1. Generate an XML file from the LDAP server based on the mapping profile you loaded into Oracle Beehive in the previous step. The following command will create a file named `UsersFromLDAP.xml` in your home directory based on the profile named `oidldapdirectoryprofile`:

```
beectl download_ldap_user_data
    --file UsersFromLDAP.xml
    --profile oidldapdirectoryprofile
```
2. In a text editor, open the file you generated (UsersFromLDAP.xml), and check for the following:
   - primary_principal is mapped to the attribute your LDAP server is configured for authentication, for example, sAMAccountName for Active Directory or uid (by default) for Oracle Internet Directory, otherwise authentication will fail.
   - Enterprise and organization identifiers are correct for your Oracle Beehive deployment and all the organizations already exist in Oracle Beehive.
   - The element familyname is defined and contains a value for each user.

   **Notes:** If you receive many errors or inconsistencies in the generated XML file, delete it, correct the LDAP mapping profile, and recreate the generated XML file.

3. Add the users in the generated XML file to Oracle Beehive with the `beectl add_user` command:
   ```bash
   beectl add_user --file UsersFromLDAP.xml
   --ldapbootstrap
   ```

4. Make sure that the users were added successfully with the `beectl list_users` command:
   ```bash
   beectl list_users
   ```

**Controlling How Often UDS Contacts the LDAP Server**

By default, UDS contacts the LDAP server’s change log every 30 seconds for updates. You may change this interval in either of the following ways:

- In your LDAP mapping profile, change the value in the `<poll_interval>` tag.

The following is an excerpt from an LDAP mapping profile with an interval set to 15 seconds:

```
<profile>
  <profile_name>oidldapdirectoryprofile</profile_name>
  <poll_interval>15</poll_interval>
  <profile_state>DISABLE</profile_state>
  <profile_flag>DEFAULT</profile_flag>
```
If you make any changes to your LDAP mapping profile, use the command `modify_directory_profile` to update the existing profile.

**Notes:** The value of the `<profile_flag>` element may be DEFAULT or NON_DEFAULT.

A DEFAULT profile is the one used by both authentication and UDS. This profile stores and reads LDAP server information from the site.

For NON_DEFAULT profiles, the LdapServer object is stored within the profile itself.

When adding a default profile, modify the AuthStoreType property of the Authentication Service to ldap with the `beectl modify_property` command. Refer to "Configuring Authentication Service to Use LDAP Server" for more information. (This is required so that the `beectl modify_local_configuration_files` works properly after you call `beectl add_directory_profile` to add the default profile.)

- Use the `beectl modify_property` command. The following commands set the value of the property PollInterval to 15 seconds:

```
beectl list_properties --component oidldapdirectoryprofile
beectl modify_property
    --component oidldapdirectoryprofile
    --name PollInterval
    --value 15
beectl activate_configuration
```

**Note:** If the LDAP server’s change log is cleaned up or purged more frequently than the UDS update frequency, data might be lost.

---

**Retrieving Information About the LDAP Server**

When you create a profile, Oracle Beehive creates an LdapServer configuration object. Use the `beectl list_properties` to get information about it:

```
beectl list_properties --component _CURRENT_SITE:LdapServer
```

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Property Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LdapServerHostName</td>
<td>ldapserver.com</td>
</tr>
<tr>
<td>LdapServerPort</td>
<td>389</td>
</tr>
<tr>
<td>LdapServerSslPort</td>
<td>636</td>
</tr>
<tr>
<td>SslEnabled</td>
<td>false</td>
</tr>
<tr>
<td>LdapServerUser</td>
<td>cn=orcladmin</td>
</tr>
<tr>
<td>LdapServerPassword</td>
<td>[Protected Value]</td>
</tr>
<tr>
<td>SslMode</td>
<td>0</td>
</tr>
<tr>
<td>UserSearchBase</td>
<td>cn=users,dc=us,dc=oracle,dc=com</td>
</tr>
<tr>
<td>UserSearchBaseForSync</td>
<td></td>
</tr>
<tr>
<td>GroupSearchBase</td>
<td>cn=groups,dc=us,dc=oracle,dc=com</td>
</tr>
<tr>
<td>UserObjectClass</td>
<td></td>
</tr>
<tr>
<td>GroupObjectClass</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>PrimaryAuthenticationAttribute</td>
<td>uid</td>
</tr>
<tr>
<td>PrimaryAuthenticationCredential</td>
<td>not applicable</td>
</tr>
<tr>
<td>ProtocolAuthenticationAttribute</td>
<td>not applicable</td>
</tr>
<tr>
<td>ProtocolAuthenticationCredential</td>
<td>not applicable</td>
</tr>
<tr>
<td>VoiceAuthenticationAttribute</td>
<td>not applicable</td>
</tr>
<tr>
<td>VoiceAuthenticationCredential</td>
<td>not applicable</td>
</tr>
<tr>
<td>DirectoryType</td>
<td>ORACLE_INTERNET_DIRECTORY</td>
</tr>
<tr>
<td>Alias</td>
<td>OracleInternetDirectory</td>
</tr>
</tbody>
</table>

The following table describes the properties of the `LdapServer` object:

**Table 18–2  LdapServer Properties**

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LdapServerHostName</td>
<td>Required</td>
<td>LDAP server host name</td>
</tr>
<tr>
<td>LdapServerPort</td>
<td>Required</td>
<td>LDAP server port for non-SSL connections</td>
</tr>
<tr>
<td>LdapServerSslPort</td>
<td>Required</td>
<td>LDAP server port for SSL connections</td>
</tr>
<tr>
<td>SslEnabled</td>
<td>Required</td>
<td>If set to true, only SSL connections are used</td>
</tr>
<tr>
<td>LdapServerUser</td>
<td>Required</td>
<td>LDAP server user with bind and search privileges. This user must be able to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>look up attributes for all LDAP users provisioned to use Oracle Beehive</td>
</tr>
<tr>
<td>LdapServerPassword</td>
<td>Required</td>
<td>Password for LdapServerUser</td>
</tr>
<tr>
<td>SSLMode</td>
<td>Not used</td>
<td>Ignore this property</td>
</tr>
<tr>
<td>UserSearchBase</td>
<td>Required</td>
<td>User search base dn. The search scope is always subtree (recursive search).</td>
</tr>
<tr>
<td>GroupSearchBase</td>
<td>Required</td>
<td>Group search base dn. Search Scope is always subtree (recursive search).</td>
</tr>
<tr>
<td>UserObjectClass</td>
<td>Optional</td>
<td>Name of the user object class in the directory. This attribute is used to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>construct a search filter for the users.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If this value is not specified, a default value is used, described in &quot;Default</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UserObjectClass and GroupObjectClass Values&quot;.</td>
</tr>
</tbody>
</table>
**Default UserObjectClass and GroupObjectClass Values**

Depending on the LDAP directory type, the values of UserObjectClass and GroupObjectClass are set to one of the values specified in the following table, if those properties have not been explicitly set:

**Table 18–3  Default UserObjectClass and GroupObjectClass Values**

<table>
<thead>
<tr>
<th>Directory/Property</th>
<th>UserObjectClass</th>
<th>GroupObjectClass</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM_TIVOLI_DIRECTORY</td>
<td>inetOrgPerson</td>
<td>groupOfNames</td>
</tr>
<tr>
<td>MICROSOFT_ACTIVE_DIRECTORY</td>
<td>user</td>
<td>group</td>
</tr>
<tr>
<td>ORACLE_INTERNET_DIRECTORY</td>
<td>orclUserV2</td>
<td>orclGroup</td>
</tr>
<tr>
<td>SUN_ONE_DIRECTORY</td>
<td>inetOrgPerson</td>
<td>groupOfUniqueNames</td>
</tr>
<tr>
<td>OPENLDAP_DIRECTORY</td>
<td>inetOrgPerson</td>
<td>groupOfNames</td>
</tr>
</tbody>
</table>

**Configuring Authentication Service to Use LDAP Server**

The following steps describe how to configure the Authentication Service so that it uses your LDAP server. These steps assume that you have already enabled a synchronization profile for your LDAP server.
1. Modify the AuthStoreType property of the Authentication Service to ldap with the beectl modify_property command:

```
beectl list_components --type AuthenticationService
```

```
<table>
<thead>
<tr>
<th>Component Type</th>
<th>Component Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuthenticationService</td>
<td>_AuthenticationService</td>
</tr>
</tbody>
</table>
```

```
beectl modify_property --component _AuthenticationService
--name AuthStoreType --value ldap
```

```
beectl activate_configuration
```

```
beectl modify_local_configuration_files
```

**Notes:**
If you are using Active Directory as your LDAP server, refer to "Active Directory Considerations" before proceeding with these steps.

Before configuring the Authentication Service to use Active Directory, you must ensure that host names returned in an LDAP referral by Active Directory can be resolved by the Domain Name System (DNS) on the host on which you installed Oracle Beehive.

If you installed Oracle Beehive Integration for Zimbra in a separate Oracle home other than Oracle Beehive, then after configuring the Authentication Service to use your LDAP server, run the `beectl modify_local_configuration_files` command on both your Oracle Beehive Integration for Zimbra and Oracle Beehive homes.

2. To test the Authentication Service, log in with any user:

```
beectl login
--authuser newuser
--authpassword <Password of newuser, obfuscated. To use non-obfuscated passwords, run beectl in shell mode>
```

User newuser is successfully authenticated and logged in.

To test connectivity with the LDAP server use either the commands `ldapbind` or `ldapsearch`. Refer to the documentation of your LDAP server for more information about these commands.

3. Grant administration privileges to another LDAP user or group in your system.
Configuring Digest Authentication

Digest authentication is an authentication method that involves using some known secrets (or passwords) from both the client and server to calculate a hash value. This hash value is transmitted instead of the actual secret (or password). One of the major benefits of digest authentication is that the password is not exposed while being transmitted.

To use digest authentication with a particular LDAP directory, the directory must be able to do one of the following:

- Store the user password in clear text or reversible encrypted form
- Store an A1 hash value of the password. An A1 hash value is an intermediate value used for the calculation of the authentication methods HTTP digest and SASL digest-MD5. The A1 hash value is created from a user’s password, principal name (userid) and realm.

Configuring digest authentication, using an LDAP directory as the authentication repository, involves the following steps:

- Step A: Configure SSL for Oracle Beehive and LDAP Directory
- Step B: Determine Digest Mechanism Depending on LDAP Directory
- Step C: Configure Oracle Beehive

For OpenLDAP Directory, refer to "Configuring Digest Authentication for OpenLDAP Directory".

Step A: Configure SSL for Oracle Beehive and LDAP Directory

Digest authentication requires that your Oracle Beehive instance and the corresponding LDAP server to be configured in SSL mode. Refer to "Configuring SSL" to configure your Oracle Beehive instance for SSL. Refer to the documentation of your LDAP directory to configure it in SSL mode.

Step B: Determine Digest Mechanism Depending on LDAP Directory

Determine the digest mechanism Oracle Beehive will use by referring to the following table. The digest mechanism used depends on the availability of a clear-text user password, reversible encrypted password, or a secure A1 hash value of the password. You may have to configure your LDAP directory to use certain digest mechanisms.
In the following table, each cell in the **Digest Mechanism** column specifies a digest mechanism and a list of password formats; the specified digest mechanism requires that your LDAP server is configured to store only one of these password formats.

**Table 18–4 Supported Digest Authentication Mechanisms**

<table>
<thead>
<tr>
<th>Digest Mechanism</th>
<th>Active Directory</th>
<th>IBM Tivoli Directory</th>
<th>Oracle Internet Directory</th>
<th>Sun One Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>SASL CRAM-MD5</td>
<td>Not supported; Active directory does not allow any passwords to be read; the password attribute is write-only</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>■ Plain text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Reversible encryption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SASL Digest-MD5</td>
<td>Supported; extend the schema to store the A1 hash value</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported; extend the schema to store the A1 hash value</td>
</tr>
<tr>
<td>■ Plain text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Reversible encryption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ A1 hash value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTTP Digest</td>
<td>Supported; extend the schema to store the A1 hash value</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported; extend the schema to store the A1 hash value</td>
</tr>
<tr>
<td>■ Plain text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Reversible encryption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ A1 hash value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyncML v1.0 Digest</td>
<td>Not supported; Active directory does not allow any passwords to be read; the password attribute is write-only</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>■ Plain text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Reversible encryption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyncML v1.1 Digest</td>
<td>Not supported; Active directory does not allow any passwords to be read; the password attribute is write-only</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>■ Plain text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Reversible encryption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step C: Configure Oracle Beehive**

These steps assume that you have already configured Oracle Beehive to authenticate with an LDAP directory.

1. **Set the properties** `UseSecureHash` and `AuthenticationRealm` **in the AuthenticationService component**:
   - **UseSecureHash**: Set this property to `true` to use the A1 hash value. Set this property to `false` to use the plain or reversible encrypted password. This depends on which digest authentication method you are going to use. Refer to **Table 18–4, "Supported Digest Authentication Mechanisms"**.
   - **AuthenticationRealm**: Default authentication realm. This value is returned to clients when digest authentication is initiated. For example, HTTP and SASL digest authentication requires that the realm value to be sent with the authentication challenge.

The following **beectl commands** set `UseSecureHash` to `true` and `AuthenticationRealm` to `myrealm@example.com`:

```
beectl modify_property
   --component AuthenticationService
   --name UseSecureHash
   --value true
```
2. Set the DigestAuthenticationAttribute property in the LdapServer configuration object. Refer to "Retrieving Information About the LDAP Server" for more information about this object.

The DigestAuthentication property specifies which attributes from the user object (in the LDAP directory) are required for the digest authentication. This property can have multiple values. The format of the property value is 
\(<\text{Mechanism Type}>: <\text{Attribute Name}>\). The following table lists the possible values for <Mechanism Type> and the type of attribute with which it is associated:

<table>
<thead>
<tr>
<th>&lt;Mechanism Type&gt; Value</th>
<th>Type of Attribute to Specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFAULT</td>
<td>Attribute name for reversible encrypted or plain password</td>
</tr>
<tr>
<td>SASL.DIGEST_MD5</td>
<td>Attribute name for SASL digest authentication</td>
</tr>
<tr>
<td>HTTP.DIGEST</td>
<td>Attribute name for HTTP digest authentication</td>
</tr>
</tbody>
</table>

For example, suppose you are using Oracle Internet Directory as your LDAP server. Oracle Internet Directory stores the user password in reversible encrypted format in the attribute orclrevpwd. If you have also specified that Oracle Internet Directory stores the A1 hash value in the attribute authpassword;beehive, set DigestAuthenticationAttribute as follows:

```
beectl modify_property
 --component <ID of LdapServer object>
 --name DigestAuthenticationAttribute
 --value DEFAULT:orclrevpwd
 --value SASL.DIGEST_MD5:authpassword;beehive
 --value HTTP.DIGEST:authpassword;beehive
```

**Note:** To compute and set the A1 hash value, refer to the documentation of your LDAP server. You may also use a third-party tool to create this value or create this value yourself by using the information in RFC 2617, *HTTP Authentication: Basic and Digest Access Authentication*.

3. Activate the configuration and commit changes.

```
beectl activate_configuration
beectl modify_local_configuration_files
```

**Configuring Digest Authentication for OpenLDAP Directory**

If you are using OpenLDAP Directory, follow these steps to configure digest authentication:

1. Ensure your directory type is OPENLDAP_DIRECTORY, your Oracle Beehive instance is configured for SSL, and OpenLDAP Directory is in SSL mode.
2. Add the value OPENLDAP_Directory:oracle.ocs.csi.authentication.handlers.impl.jaas.callback.impl.OcsLdapPasswordAccessor to the list of values in the PwdAccessorPlugin property of the AuthenticationService component:

   beectl append_value
   --component AuthenticationService
   --name PwdAccessorPlugin

3. Ensure that you are storing user passwords as clear text (plain) in OpenLDAP. Simply use the ldapmodify command to add or modify a user’s password.

4. Activate the configuration and commit changes.

   beectl activate_configuration
   beectl modify_local_configuration_files

Changing LDAP Administrator's Password

To change the administrator’s password of an LDAP server synchronized with Oracle Beehive, follow these steps:

1. Stop Oracle Beehive with the beectl stop --all command.
2. Change the password of the LDAP administrator in your LDAP server.
3. Start Oracle Beehive with the beectl start command.
4. Change the password for the LDAP administrator in Oracle Beehive with the following command (obfuscate the password with the beectl obfuscate command.)

   beectl modify_secure_property
   --component <LdapServer of the profile>
   --name LdapServerPassword
   --value <Password of LDAP administrator, obfuscated>
   --obfuscated

5. Run the beectl modify_local_configuration_files command.

Oracle Internet Directory Considerations

This section covers the following topics:

- Synchronizing with Directory Replication Group
- Migrating Oracle Internet Directory from One Server to Another
- Troubleshooting Synchronization between Oracle Beehive and Oracle Internet Directory

Synchronizing with Directory Replication Group

A directory replication group (DRG) consists of the directory servers that participate in the replication of a given naming context. If you have synchronized Oracle Beehive with an Oracle Internet Directory server that belongs to a multimaster DRG, then ensure that the attribute orclDIPRepository is set to true.

This ensures changes made to any server in the multimaster DRG are synchronized with Oracle Beehive.
For more information about directory replication groups, refer to Chapter 29, "Oracle Internet Directory Replication Concepts" in Oracle Internet Directory Replication Concepts.

Migrating Oracle Internet Directory from One Server to Another

If you migrate an Oracle Internet Directory server (that is synchronized with Oracle Beehive) to another Oracle Internet Directory server, modify the LdapServer property in the _CURRENT_SITE component with the name of the new Oracle Internet Directory server:

```
beectl list_properties --component _CURRENT_SITE
```

```
| EventListenerDatabase |                                      |
| SearchDatabase       |                                      |
| BusinessDatabase     |                                      |
| VirusScanEngineCluster |                                      |
| SiteId               | 17378                                |
| LdapServer           | OLD_OID_server_example.com           |
| LanguagePack         | byte array of size 656902           |
| ClusteringEnabled    | true                                 |
| DiagnosabilityProperties | 1f9fcf0e-7b46-427c-a6ef-636bcb88f89 |
| DebugProperties      | 19804e92-9028-49b3-af36-be4ac4abb4f5 |
| BtiGlobalConfiguration |                                      |
| Name                 | R1                                    |
```

```
beectl modify_property --component _CURRENT_SITE
--name LdapServer
--value <new Oracle Internet Directory server>
```

```
beectl modify_change_number
--profile <name of your LDAP profile>
--number <Changelog number of your new Oracle Internet Directory server>
```

```
beectl activate_configuration
beectl modify_local_configuration_files
```

Troubleshooting Synchronization between Oracle Beehive and Oracle Internet Directory

- Check the files oidldapd.log and oidrepld.log from Oracle Internet Directory.
- To retrieve change log information, the Oracle Directory Integration Server Control tool (odisrv) must be up and running. Refer to Chapter 2, "odisrv" in Oracle Identity Management User Reference.
- Make sure that the orcldiprepository parameter is set to true. Refer to Chapter 9, "Oracle Identity Management Attribute Reference in Oracle Identity Management User Reference.
- Make sure that the value of changeid from the bee_data.uds_sync_profile table is updated with the chg_no value from ods.ods_chg_log (which is a table from the Oracle Internet Directory schema). For more information about this table, see the section "LDAP-Based Replication" in Chapter 29, "Oracle Internet Directory Replication Concepts" in Oracle Internet Directory Administrator’s Guide.

Note: Take the chg_no value from Oracle Internet Directory used with the cloned system and not the information from the LDAP server used by the production system.
- In Oracle Internet Directory, ensure that the attributes `krbaPrincipalName` and `orclUserApplnProvStatus` exist, otherwise create them. The `bulkload` bulk management tool might fail if these aren’t defined.

  For more information about Oracle Internet Directory attributes, refer to Chapter 9, "Oracle Identity Management Attribute Reference in Oracle Identity Management User Reference.

  For more information about `orclUserApplnProvStatus`, refer to the section "Provisioning Status in Oracle Internet Directory" in Chapter 12, "Oracle Directory Integration Platform Service Concepts" in Oracle Identity Management Integration Guide.

  For more information about `bulkload`, refer to the section "bulkload" in Chapter 9, "Using Bulk Tools" in Oracle Internet Directory Administrator’s Guide.

- For more information about troubleshooting Oracle Internet Database, refer to Appendix J, "Troubleshooting Oracle Internet Directory" in Oracle Internet Directory Administrator's Guide.

**Active Directory Considerations**

During authentication, the Oracle Beehive Authentication Service may request Active Directory to perform an operation, such as a search. When Active Directory has referrals enabled, instead of the search results, Active Directory may respond with an LDAP referral. This referral may point to an Active Directory instance on another host.

Ensure that the host names returned in the referral can be resolved by the Domain Name System (DNS) on the host on which you installed Oracle Beehive.

For more information about LDAP referrals, refer to the Active Directory documentation.

**Troubleshooting General LDAP Synchronization Issues**

Call the command `beectl validate_directory_entry` to reconcile any LDAP directory entries that are not synchronized with Oracle Beehive.
This module describes various ways to configure Oracle Beehive with SSL. It covers the following topics:

- SSL Checklist
- Configuring SSL with Oracle Beehive
- Configuring SSL with Oracle Beehive DMZ Instances
- Procedures Related to Configuring SSL

**Notes:** Refer to "Configuring Oracle Beekeeper for SSL Access" to configure SSL for Oracle Beekeeper.

If you do not want to use SSL with your Oracle Beehive deployment, follow the steps described in "Installing Non-SSL Oracle Beehive Site".

### SSL Checklist

After following the steps described in this module, ensure the following for all your application tiers:

- A properly configured Oracle wallet resides in `<Oracle home>/Apache/Apache/conf/ssl.wlt/default` for each application tier.
- For each Oracle Beehive instance, the property `WalletDir` is set to the properly configured Oracle wallet. In addition, the property `WalletDir` refer to the same location for each application tier.
- Each Oracle Beehive instance’s wallet contains a valid certificate.
- The file `<Oracle home of DMZ instance>/beehive/conf/bti.properties` is configured properly for each Oracle Beehive DMZ instance.
- The file `<Oracle home>/opmn/conf/opmn.xml` is configured properly for each application tier.

### Configuring SSL with Oracle Beehive

This section covers the following procedures:

- Configuring SSL with Test Certificates for Oracle Beehive
- Configuring SSL with Self-Signed Certificates During Installation of Oracle Beehive
Configuring SSL with Self-Signed Certificates After Installation of Oracle Beehive

Configuring SSL with Test Certificates for Oracle Beehive

The following steps describe how to configure SSL with test certificates during or after the installation of one or more Oracle Beehive instances:

1. Enable secure ONS notification for your database by following the steps described in "Configuring Oracle Wallet for Oracle Database and Oracle RAC".

2. Install your first Oracle Beehive instance, if you have not already done so.

3. By default, an Oracle wallet with test certificates for OPMN is created in Oracle Beehive. This Oracle wallet is located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default`.

   Copy the contents of `<Oracle Beehive home>/opmn/conf/ssl.wlt/default` to the `<Database home>/opmn/conf/ssl.wlt/default` directory. This will overwrite the Oracle wallet files in this directory.

   If you are using Oracle RAC, copy the contents of `<Oracle Beehive home>/opmn/conf/ssl.wlt/default` to the `<Database home>/opmn/conf/ssl.wlt/default` directory on each Oracle RAC node.

4. Configure TLS on your first Oracle Beehive instance. Refer to "Configuring TLS with Oracle Wallet".

5. Perform the post-install steps for configuring Oracle RAC except step 7 (Register for ONS Notification). Refer to "Post-Install Steps" in "Configuring and Installing Oracle Beehive Release 1 for Oracle RAC".

6. Configure the virtual server of your Oracle Beehive instance with a load balancer. Refer to "Configuring High Availability Environment with Load Balancer" in "Installing Oracle Beehive in High Availability Environment".

7. If you have more than one Oracle Beehive instance, configure TLS on all your other Oracle Beehive instances. Refer to "Configuring TLS on Multiple Instances" in "Configuring TLS with Oracle Wallet".

8. Enable ORMIS on all your Oracle Beehive instances. Refer to "Enabling ORMIS with Password-Protected Oracle Wallet" in "Configuring TLS with Oracle Wallet".

9. Enable AJPS on all your Oracle Beehive instances. Refer to "Enabling AJPS".
The following steps describe how to configure SSL with self-signed certificates during the installation of one or more Oracle Beehive instances:

1. Enable secure ONS notification on your database by following the steps described in "Configuring Oracle Wallet for Oracle Database and Oracle RAC".

2. Remove all test certificates using Oracle Wallet Manager from the wallet you created for Oracle Database in Step 1, if any. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate.

3. For the wallet of Oracle Database you created in Step 1, create a self-signed server certificate for each Oracle RAC node using a root certificate (from a certificate authority). Import these self-signed server certificates as well as the root certificate to the wallet for Oracle Database. Refer to "Creating Self-Signed Certificate and Importing it into Wallet".

4. Install your first Oracle Beehive instance.

5. Configure TLS on your first Oracle Beehive instance. Refer to "Configuring TLS with Oracle Wallet".

6. Remove the test certificates using Oracle Wallet Manager from the wallets in Oracle Beehive. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate. These wallets should be located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default` and `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`.

7. For the wallet located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default`, create a self-signed server certificate for the Oracle Beehive server using a root certificate (from a certificate authority). Import this self-signed server certificate as well as the root certificate to this wallet. Refer to "Creating Self-Signed Certificate and Importing it into Wallet". Repeat this step for the wallet located in `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`.

8. Perform the post-install steps for configuring Oracle RAC except Step 7 (Register for ONS Notification).

**Note:** After configuring SSL with test (self-signed) certificates for an Oracle Beehive environment with multiple instances, you may receive an alert message similar to the following:

You have received an invalid certificate.... Your certificate contains the same serial number as another certificate issued by the certificate authority. Please get a new certificate containing a unique serial number.

In this scenario, create a self-signed certificate for each Oracle Beehive instance with a unique serial number. If you are using OpenSSL to create self-signed certificates, use the -set_serial option:

```
openssl x509 -req -in certreq.csr -CA cacert.crt -CAkey cakey.pem
-CACreateserial -set_serial 01 -days 365 > server.crt
```

For more information about creating self-signed certificates with OpenSSL (and then importing them into Oracle Wallet), refer to "Creating Self-Signed Certificate and Importing it into Wallet".

---

**Configuring SSL with Self-Signed Certificates During Installation of Oracle Beehive**

The following steps describe how to configure SSL with self-signed certificates during the installation of one or more Oracle Beehive instances:

1. Enable secure ONS notification on your database by following the steps described in "Configuring Oracle Wallet for Oracle Database and Oracle RAC".

2. Remove all test certificates using Oracle Wallet Manager from the wallet you created for Oracle Database in Step 1, if any. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate.

3. For the wallet of Oracle Database you created in Step 1, create a self-signed server certificate for each Oracle RAC node using a root certificate (from a certificate authority). Import these self-signed server certificates as well as the root certificate to the wallet for Oracle Database. Refer to "Creating Self-Signed Certificate and Importing it into Wallet".

4. Install your first Oracle Beehive instance.

5. Configure TLS on your first Oracle Beehive instance. Refer to "Configuring TLS with Oracle Wallet".

6. Remove the test certificates using Oracle Wallet Manager from the wallets in Oracle Beehive. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate. These wallets should be located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default` and `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`.

7. For the wallet located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default`, create a self-signed server certificate for the Oracle Beehive server using a root certificate (from a certificate authority). Import this self-signed server certificate as well as the root certificate to this wallet. Refer to "Creating Self-Signed Certificate and Importing it into Wallet". Repeat this step for the wallet located in `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`.

8. Perform the post-install steps for configuring Oracle RAC except Step 7 (Register for ONS Notification).
9. Configure the virtual server of each Oracle Beehive instances with a load balancer. Refer to "Configuring High Availability Environment with Load Balancer" in "Installing Oracle Beehive in High Availability Environment".

10. Install an additional Oracle Beehive instance (software only install). In the following steps, this instance will be referred to as the second instance.

11. Replace `orapki` and Oracle Wallet Manager (`owm`) binaries of the second instance with those from the first instance. Create new wallets located in `<Oracle Beehive new instance home>/opmn/conf/ssl.wlt/default` and `<Oracle Beehive new instance home>/Apache/Apache/conf/ssl.wlt/default`. Refer to "Configuring TLS with Oracle Wallet".

12. Remove test certificates using Oracle Wallet Manager from the wallets in `<Oracle Beehive new instance home>/opmn/conf/ssl.wlt/default` and `<Oracle Beehive new instance home>/Apache/Apache/conf/ssl.wlt/default`, if any. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate.

13. Repeat Step 8 for the second instance.

14. Run the Config Wizard for the second instance and complete the configuration.

15. Configure TLS on all Oracle Beehive instances.

16. If you want to install another Oracle Beehive instance, repeat Steps 11 to 15.

17. Enable ORMIS on all Oracle Beehive instances. Refer to "Enabling ORMIS with Password-Protected Oracle Wallet" in "Configuring TLS with Oracle Wallet".

18. Enable AJPS on all Oracle Beehive instances. Refer to "Enabling AJPS".

### Configuring SSL with Self-Signed Certificates After Installation of Oracle Beehive

The following steps describe how to configure SSL with self-signed certificates after the installation of one or more Oracle Beehive instances:

1. Enable secure ONS notification on your database by following the steps described in "Configuring Oracle Wallet for Oracle Database and Oracle RAC".

2. Remove all test certificates using Oracle Wallet Manager from the wallet you created for Oracle Database in Step 1, if any. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate.

3. For the wallet of Oracle Database you created in Step 1, create a self-signed server certificate for each Oracle RAC node using a root certificate (from a certificate authority). Import these self-signed server certificates as well as the root certificate to the wallet for Oracle Database. Refer to "Creating Self-Signed Certificate and Importing it into Wallet".

4. Choose one of your Oracle Beehive instances on which to perform Steps 4 to 7 (you will repeat these steps on your other instances later). Configure TLS on the Oracle Beehive instance. Refer to "Configuring TLS with Oracle Wallet".

5. Remove the test certificates from the wallets of the Oracle Beehive instance. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate. These wallets should be located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default` and `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`. 

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6. For the wallet located in `<Oracle Beehive home>/opmn/conf/ssl.wlt/default`, create a self-signed server certificate for Oracle Beehive using a root certificate (from a certificate authority). Import this self-signed server certificate as well as the root certificate to this wallet. Refer to "Creating Self-Signed Certificate and Importing it into Wallet". Repeat this step for the wallet located in `<Oracle Beehive home>/Apache/Apache/conf/ssl.wlt/default`.

7. Register for ONS Notification. By default, Oracle Beehive is configured to receive secure ONS notifications. If SSL ONS notification is disabled on the Oracle Beehive instance, enable it by changing the value of NotificationServerSslEnabled property of OpmnCluster component to true. Refer to Step 7, "Register for ONS Notification" in "Configuring and Installing Oracle Beehive Release 1 for Oracle RAC".

8. If you have multiple Oracle Beehive instances, repeat Steps 4 to 7 for each of your instances.

9. Enable ORMIS on all Oracle Beehive instances. Refer to "Enabling ORMIS with Password-Protected Oracle Wallet" in "Configuring TLS with Oracle Wallet"

10. Enable AJPS on all Oracle Beehive instances. Refer to "Enabling AJPS".

**Configuring SSL with Oracle Beehive DMZ Instances**

This section covers the following procedures:

- Configuring SSL with Test Certificates After Installation of DMZ Instances
- Configuring SSL with Self-Signed Certificates After Installation of DMZ Instances

**Configuring SSL with Test Certificates After Installation of DMZ Instances**

The following steps describe how to configure SSL with test certificates during the installation of one or more Oracle Beehive instances:

1. Install your DMZ instance.

2. Configure Oracle Wallet for the DMZ instance. For more information, refer to "Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances" in "Configuring Oracle Beehive Demilitarized Zone Instances". This step involves creating an Oracle Wallet for your DMZ instance and editing the file `<Oracle home of DMZ instance>/opmn/conf/opmn.xml` so that it refers to the new Oracle Wallet.

3. Follow the steps described in "Step B: Configuring Oracle Beehive DMZ Instances" in "Configuring Oracle Beehive Demilitarized Zone Instances"

4. Configure the virtual server of your Oracle Beehive DMZ instances with a load balancer. For more information, refer to "Configuring High Availability Environment with DMZ Instances and Load Balancer" in "Installing Oracle Beehive in High Availability Environment".

**Configuring SSL with Self-Signed Certificates After Installation of DMZ Instances**

The following steps describe how to configure SSL with self-signed certificates after the installation of one or more Oracle Beehive DMZ instances:

1. Install your DMZ instance.
2. Configure Oracle Wallet for the DMZ instance. For more information, refer to "Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances" in "Configuring Oracle Beehive Demilitarized Zone Instances". This step involves creating an Oracle Wallet for your DMZ instance and editing the file <Oracle home of DMZ instance>/opmn/conf/opmn.xml so that it refers to the new Oracle Wallet.

3. For the wallet located in <Oracle Beehive DMZ home>/opmn/conf/ssl.wlt/default, create a self-signed server certificate for the Oracle Beehive DMZ instance using a root certificate (from a certificate authority). Import this self-signed server certificate as well as the root certificate to this wallet. For more information, refer to "Creating Self-Signed Certificate and Importing it into Wallet"

Repeat this step for the wallet located in <Oracle Beehive DMZ home>/Apache/Apache/conf/ssl.wlt/default.

4. Follow the steps described in "Step B: Configuring Oracle Beehive DMZ Instances" in "Configuring Oracle Beehive Demilitarized Zone Instances"

5. Configure the virtual server of your Oracle Beehive DMZ instances with a load balancer. For more information, refer to "Configuring High Availability Environment with DMZ Instances and Load Balancer" in "Installing Oracle Beehive in High Availability Environment".

Procedures Related to Configuring SSL

This section covers the following procedures related to configuring SSL:

- Configuring Oracle Wallet for Oracle Database and Oracle RAC
- Creating Self-Signed Certificate and Importing it into Wallet

Configuring Oracle Wallet for Oracle Database and Oracle RAC

These steps create an Oracle Wallet for OPMN for Oracle Database. If you are using Oracle RAC, these steps configure Oracle Wallet for Oracle Cluster Ready Services (CRS) for each Oracle RAC node.

In the following steps, <Database home> refers to the location of Oracle Database, and <CRS home> refers to the location of CRS of your Oracle RAC node.

1. Create the directory <Database home>/opmn/conf/ssl.wlt/default.

2. Create the wallet with the orapki tool:

   ```bash
   <Database home>/bin/orapki wallet create
   -wallet <Database home>/opmn/conf/ssl.wlt/default
   -auto_login -pwd welcome
   ```

   This command will create a wallet in the default location, <Database home>/opmn/conf/ssl.wlt/default.

3. Add the following line to the file <Database home>/opmn/conf/ons.config:

   ```bash
   walletfile=<Database home>/opmn/conf/ssl.wlt/default
   ```

4. If you are using Oracle RAC, then for each Oracle RAC node, repeat Steps 1, 2, and 3, and then add the following line to <CRS home>/opmn/conf/ons.config:

   ```bash
   walletfile=<Database home>/opmn/conf/ssl.wlt/default
   ```
Creating Self-Signed Certificate and Importing it into Wallet

The following steps create a self-signed server certificate and imports it into an Oracle Wallet. You may also create a certificate signed by a certificate authority (CA) and import that into an Oracle Wallet. Refer to “Creating CA-Signed Certificate and Importing it into Wallet” for more information.

You will be performing these steps for the wallet you created in the following procedures:

- "Configuring Oracle Wallet for Oracle Database and Oracle RAC" (which creates a wallet for OPMN for Oracle Database)
- "Configuring TLS with Oracle Wallet" (which creates a wallet for Oracle Beehive)
- "Step A: Configuring Oracle Wallet with Oracle Beehive DMZ Instances" (which creates a wallet for an Oracle Beehive DMZ instance)

1. Create your own certificate authority. This step uses OpenSSL. For more information about OpenSSL, refer to http://www.openssl.org/.

   On Linux and other UNIX-based operating systems, the command openssl is typically located in /usr/bin.

   openssl req -new -x509 -keyout cakey.pem -out cacert.crt -days 365

   This command generates two files named cakey.pem and cacert.crt.

2. Create and export a certificate request with Oracle Wallet Manager:

   a. Run Oracle Wallet manager, <Oracle Beehive home>/bin/owm. (Use <Database home>/bin/owm instead if you have not installed any Oracle Beehive instances.)

   b. Open the wallet (to which you want to add the certificate).

   c. Create a certificate request. Click the Operations tab. Click Add Certificate Request. Fill out the form. The Common Name should be the name of the server for which you are creating the certificate (such as the name of the Oracle RAC node). Click OK.

   d. Save the wallet.

   e. Click the Operation tab. Click Export Certificate Request. Enter the path and file name of the certificate request. These steps assume that the name of this file is certreq.csr. (Keep Oracle Wallet Manager open; you will use it in Step 4.)

3. From a command prompt, generate a server certificate with the following command:

   openssl x509 -req -in certreq.csr -CA cacert.crt -CAkey cakey.pem -CAcreateserial -days 365 > server.crt

   This command generates two files, cacert.crt and server.crt (which is the server certificate).

4. In Oracle Wallet Manager, click the Operations tab. Click Import Trusted Certificate. Select the file cacert.crt. Click OK.

5. Click Import User Certificate. Select the file server.crt. Click OK.
6. Repeat Steps 2 to 5 (except Step 1; you can use the same cakey.pem and cacert.crt files for other servers) for each server for which you want to create a certificate. (In particular, you would repeat these steps for each Oracle RAC node.)

Using Oracle Wallet to Create Self-Signed Certificate
Alternatively, you may use Oracle Wallet to create a self-signed certificate.

Add a self-signed certificate to the wallet with the following command:

```bash
orapki wallet add
    -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
    -dn CN=user
    -keysize 2048
    -self_signed
    -validity 365
```

CN=user is the distinguished name of an arbitrary user who will be the certificate owner.

Creating CA-Signed Certificate and Importing it into Wallet
Alternatively, you may create a certificate signed by a certificate authority (CA), and import that into the Oracle Beehive wallet:

1. Add a certificate request to the Oracle Beehive wallet:

```bash
orapki wallet add
    -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
    -dn CN=user
    -keysize 2048
    -validity 365
```

The directory `<Oracle home>/Apache/Apache/conf/ssl.wlt/default/` is the Oracle Beehive default wallet directory. CN=user is the distinguished name of an arbitrary user who will be the certificate owner.

2. Export the certificate request to a file:

```bash
orapki wallet export
    -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
    -dn CN=user
    -request certificate_request.txt
```

The file `certificate_request.txt` is the exported certificate request.

3. With your certificate authority (CA) and your certificate request (`certificate_request.txt`), create a signed user certificate. In addition, export the trusted certificate from your CA. These steps use the file `user_certificate.txt` as the signed user certificate and the file `trusted_certificate.txt` as the trusted certificate exported from your CA.

You may use Oracle Wallet as a CA for testing purposes by following these steps.

a. Create an auto-login wallet to act as a certificate authority. These steps assume that this wallet is stored in `/private/ca_wallet`. Create a signed certificate from the request for test purposes:

```bash
orapki cert create
    -wallet /private/ca_wallet
    -request certificate_request.txt
    -cert user_certificate.txt
    -validity 365
```
The file `user_certificate.txt` is the signed user certificate.

b. Export the trusted certificate from the CA wallet:

```bash
orapki wallet export
  -wallet /private/ca_wallet
  -dn CN=ca_user
  -cert trusted_certificate.txt
```

The file `trusted_certificate.txt` is the exported (test) trusted certificate from the CA wallet.

4. Add the trusted certificate from the CA to the Oracle Beehive wallet:

```bash
orapki wallet add
  -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
  -trusted_cert
  -cert trusted_certificate.txt
```

5. Add the user certificate to the Oracle Beehive wallet:

```bash
orapki wallet add
  -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
  -user_cert user_certificate.txt
```

### Installing Non-SSL Oracle Beehive Site

The following steps describe how to install a non-SSL Oracle Beehive site in which none of its tiers communicate using SSL:

---

**Note:** Because Oracle Beehive DMZ instances have SSL enabled by default, the following steps will not work for DMZ instances unless you configure them to receive non-SSL notifications as described in "Step B: Configuring Oracle Beehive DMZ Instances" in "Configuring OracleBeehiveDemilitarizedZoneInstances".

---

1. Install your first Oracle Beehive application tier. Note that this application tier, by default, will have SSL disabled for Oracle Notification Service (ONS), which is used by OPMN of this application tier to communicate with other OPMNs in the site. In the next step, you will disable SSL (if necessary).

2. Ensure that the value of `NotificationServerSslEnabled` in the `_current_site:OpmnCluster` component in the first Oracle Beehive application tier is false:

   ```bash
   beectl list_properties
   --component _current_site:OpmnCluster
   --name NotificationServerSslEnabled
   ```

   If `NotificationServerSslEnabled` is true, then set it to false:

   ```bash
   beectl modify_property
   --component _current_site:OpmnCluster
   --name NotificationServerSslEnabled
   --value false
   --activate_configuration
   ```
3. In the first Oracle Beehive application tier, set the value of
HttpServerSslEnabled in the _current_site:HttpServerCluster
component to false, then run beectl modify_local_configuration_files:

```bash
beectl modify_property
  --component _current_site:HttpServerCluster
  --name HttpServerSslEnabled
  --value false
  --activate_configuration

beectl modify_local_configuration_files
```

4. If you are using Oracle Real Application Clusters (RAC) as your database, ensure
that you have disabled SSL ONS notifications. Refer to Section 7, "Register for
ONS Notification" in "Configuring and Installing Oracle Beehive Release 1 for
Oracle RAC".

5. Install any additional Oracle Beehive application tiers. You do not need to perform
any additional steps for these application tiers.
Configuring TLS with Oracle Wallet

This module describes how to configure TLS (Transport Layer Security) with Oracle Wallet.

A wallet is a password-protected container that stores authentication and signing credentials, including private keys, certificates, and trusted certificates, all of which are used by SSL for strong authentication.

Oracle Wallet provides a TLS encrypted communication channel that some services support or require, such as XMPP, FTPS, and the Workflow Service. The following steps configure Oracle Beehive to use Oracle Wallet so that clients may access Oracle Beehive with a TLS connection.

- **Step 1: Creating Auto-Login Oracle Wallet**
- **Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet**

Refer to the section "Changing Oracle Wallet Password" to change the password of your Oracle Wallet.

Refer to the section "Configuring TLS on Multiple Instances" if you have more than one Oracle Beehive instance.

Refer to the section "Enabling ORMIS with Password-Protected Oracle Wallet" if you want to enable Oracle Remote Method Invocation over SSL.

**Step 1: Creating Auto-Login Oracle Wallet**

1. Ensure that the environment variable ORACLE_HOME is set to the home directory of Oracle Beehive.

2. Run the following command:

```bash
<Oracle home>/bin/orapki wallet create
  -wallet <Oracle home>/Apache/Apache/conf/ssl.wlt/default/
  -auto_login -pwd welcome
```

This command creates a wallet with auto login enabled in the directory `<Oracle home>/Apache/Apache/conf/ssl.wlt/default/` (which is the default wallet directory) with the password `welcome`.

**Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet**

The following steps describe how to configure your Oracle Beehive instance to use Oracle Wallet.

1. Run the following `beectl` command:
beectl modify_property
--component beehive_instance_<instance>.<host name>
--name WalletDir
--value <Oracle home>/Apache/Apache/conf/ssl.wlt/default

<instance> is the instance name you specified when you installed Oracle Beehive. To retrieve the full instance name, run the command beectl list_components --type BeehiveInstance.

2. Activate the configuration and restart by running the following beectl command:

beectl activate_configuration

---

Notes: If the beectl activate_configuration command asks you to run the beectl modify_local_configuration_files command, run this command.

The beectl modify_local_configuration_files will ask you to run this command on all your other instances. Do not run this command on all your other instances at this time. For each instance, you must perform steps 1 and 2 before running the beectl modify_local_configuration_files command.

---

Changing Oracle Wallet Password

Refer to "Changing the Password" in Chapter 11, "Managing Wallets and Certificates" in Oracle Application Server Administrator’s Guide. This involves using Oracle Wallet Manager. Run <Oracle home>/bin/owm to run Oracle Wallet Manager.

Configuring TLS on Multiple Instances

For each instance, run all the steps required to configure TLS with Oracle Wallet.

Enabling ORMIS with Password-Protected Oracle Wallet

ORMIS is ORMI over SSL or Oracle Remote Method Invocation over Secure Socket Layer. For more information about ORMIS, refer to "Using ORMI/SSL (ORMIS) in OC4J" in Chapter 6, "Using Remote Method Invocation” in Oracle Containers for J2EE Services Guide.

By default, Oracle Beehive is ORMIS enabled using an anonymous cipher suite.

This section covers the following topics:

- Disable ORMIS
- Enable ORMIS with Default SSL
- Enable ORMIS with Password Protection

Disable ORMIS

1. Modify the property _CURRENT_SITE:ManagedOc4jCluster:OrmisEnabled to false and activate the configuration:

beectl modify_property
--component _CURRENT_SITE:ManagedOc4jCluster
--name OrmisEnabled
2. Activate the configuration:
   beectl activate_configuration

3. Run the command beectl modify_local_configuration_files. This command may restart your application tier:
   beectl modify_local_configuration_files

Enable ORMIS with Default SSL

1. Modify the property _CURRENT_SITE:ManagedOc4jCluster to true and activate the configuration:
   beectl modify_property
   --component _CURRENT_SITE:ManagedOc4jCluster
   --name OrmisEnabled
   --value true

2. Activate the configuration:
   beectl activate_configuration

3. Run the command beectl modify_local_configuration_files. This command may restart your application tier:
   beectl modify_local_configuration_files

Enable ORMIS with Password Protection

1. Create a wallet as described in this module.

2. Modify the property _CURRENT_SITE:ManagedOc4jCluster to true:
   beectl modify_property
   --component _CURRENT_SITE:ManagedOc4jCluster
   --name OrmisEnabled
   --value true

3. Modify the property WalletDir of your Oracle Beehive instance to the path of your Oracle Wallet directory you just created with the following beectl commands:
   beectl list_components --type BeehiveInstance
<table>
<thead>
<tr>
<th>Component type</th>
<th>Component identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>BeehiveInstance</td>
<td>beehive_instance_example.com</td>
</tr>
</tbody>
</table>
   ...
   beectl modify_property
   --component beehive_instance_example.com
   --name WalletDir
   --value <Your wallet directory>
   Successfully stored the property for component id 09386579-b66c-41d7-96e6-88f44673ec55.

4. Set the wallet password:
   beectl modify_secure_property
   --component <Component ID or alias of your Oracle Beehive instance; for example, the previous step used beehive_instance_example.com>
--name WalletPassword

This command will prompt you for the wallet password.

5. Activate the configuration:
   beectl activate_configuration

6. Run the command beectl modify_local_configuration_files. This command may restart your application tier:
   beectl modify_local_configuration_files
Configuring SSL for LDAP Integration

This module describes how to configure Oracle Beehive LDAP-based authentication with certificate authority (CA) verification. It covers the following topics:

- Requirements
- Configure SSL for LDAP Verification
- Configure Apache HTTP Server for WebDAV Folders

Requirements

Complete these tasks before configuring SSL for LDAP integration:

1. Configure your LDAP server for SSL so that your directory server authenticates itself to the client. If you are using Oracle Internet Directory as your LDAP server, choose SSL Server Authentication as your SSL authentication method. For more information, refer to Section 17.4.2, "Configure Oracle Internet Directory for SSL" in Chapter 17, "Secure Sockets Layer (SSL) and the Directory" in Oracle Internet Directory Administrator’s Guide.

2. Request a certificate from your CA for your Oracle Beehive instance. When the CA sends the signed user certificate and its associated trusted certificate, import them into a wallet configured for your Oracle Beehive instance. Enable auto login for the wallet.

To configure an Oracle Beehive instance to use a wallet, refer to "Configuring TLS with Oracle Wallet". Refer to the following sections in Oracle Application Server Administrator’s Guide for more information about certificates, importing certificates into Oracle Wallet, and enabling auto login:

- Section 10.5, "Certificates and Oracle Wallets" in Chapter 10, "Overview of Secure Sockets Layer (SSL) in Oracle Application Server"
- Section 11.1.3, "How to Create a Complete Wallet: Process Overview" and Section 11.1.4.14, "Using Auto Login" in Chapter 11, "Managing Wallets and Certificates"

You may use Oracle Application Server Certificate Authority as your CA. For more information, refer to Oracle Application Server Certificate Authority Administrator’s Guide.

3. Configure LDAP with Oracle Beehive as described in "Integrating and Synchronizing LDAP with Oracle Beehive".
Configure SSL for LDAP Verification

Follow these steps to specify that your LDAP server is SSL-enabled and the location of your wallet that contains your CA certificates.

1. Get the value of LdapServer of your LDAP directory. This example assumes that you are using Oracle Internet Directory as your directory:

   ```
   beectl list_properties --component oidldapdirectoryprofile
   ```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LdapServer</td>
<td>oidldapdirectoryprofile_example.com</td>
</tr>
<tr>
<td>PollInterval</td>
<td>15</td>
</tr>
<tr>
<td>DirectoryAttributeMap</td>
<td>c1bd400e-8dbe-4cf1-97c5-89b725c02f7b</td>
</tr>
<tr>
<td>ProfileState</td>
<td>DISABLE</td>
</tr>
<tr>
<td>DefaultFlag</td>
<td>DEFAULT</td>
</tr>
<tr>
<td>ProfileMode</td>
<td>SYNC</td>
</tr>
<tr>
<td>EnterpriseMap</td>
<td>dd33e82e-6842-4b24-8bf7-9a7b968ac9f1</td>
</tr>
<tr>
<td>UserTypeMap</td>
<td>fca1999e-7b1d-4c05-9e19-b71e52ed9c25</td>
</tr>
<tr>
<td>GroupTypeMap</td>
<td>35571103-caaf-4d7a-8601-90e8a5be389</td>
</tr>
<tr>
<td>Alias</td>
<td>oidldapdirectoryprofile</td>
</tr>
</tbody>
</table>

2. In the LdapServer object, set the value of SslEnabled to true:

   ```
   beectl modify_property
   --component oidldapdirectoryprofile_example.com
   --name SslEnabled
   --value true
   ```

   Changes to configuration repository are not activated.
   Successfully stored the property for component id 9d2cc036-01a3-4ee6-94c8-c90311624070.

3. Get the name of your Oracle Beehive instance:

   ```
   beectl list_components --type BeehiveInstance
   ```

<table>
<thead>
<tr>
<th>Component type</th>
<th>Component identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>BeehiveInstance</td>
<td>beehive_instance_example.com</td>
</tr>
</tbody>
</table>

4. In your Oracle Beehive instance, set the value of WalletDir to the location of the wallet that contains your CA certificates:

   ```
   beectl modify_property
   --component beehive_instance_example.com
   --name WalletDir
   --value <Your wallet directory>
   ```

   Successfully stored the property for component id 09386579-b66c-41d7-96e6-88f44673ec55.

5. Run the following commands to activate your changes:

   ```
   beectl activate_configuration
   beectl modify_local_configuration_files
   ```

6. Restart BEECORE:

   ```
   beectl restart --component BEECORE_example.com
   ```
Configure Apache HTTP Server for WebDAV Folders

After you have configured Oracle Beehive authentication with CA verification, users may get the following request every time they perform an operation on a WebDAV folder: "Choose a digital certificate. The website you want to view requests identification. Please choose a certificate."

To eliminate this request, edit the file `<Oracle home>/Apache/Apache/conf/httpd.conf` as follows:

```bash
DocumentRoot "Oracle_home/Apache/Apache/htdocs"

<Directory "Oracle_home/Apache/Apache/htdocs">
  <LimitExcept GET POST OPTIONS>
    deny from all
  </LimitExcept>
  Options -FollowSymLinks -Includes -Indexes
  AllowOverride None
  Order allow,deny
  Allow from all
</Directory>
```

The only change is to append `OPTIONS` after `GET POST` in the `<LimitExcept> tag.

With this change, when the WebDAV folder issues the OPTIONS HTTP access method on the document root, Apache HTTP Server will return 200 status and not issue the request for a client certificate.
Enabling AJPS

This module describes how to enable (and disable) secure Apache JServ Protocol (AJPS), so that it could be used instead of HTTP for communication between Oracle HTTP Server and OC4J.

By default, AJPS is not enabled when you install Oracle Beehive.

This module covers the following topics:
- Enabling AJPS
- Disabling AJPS

Enabling AJPS

These steps involve creating wallets and certificates. Because both of these are specific to an Oracle Beehive instance, you must perform the following steps on every Oracle Beehive instance:

1. Create a keystore with an RSA private/public key pair using the `keytool` utility.

   ```
   <Oracle home>/jdk/bin/keytool -genkey -keyalg RSA -keystore mykeystore.jks -storepass 123456
   ```

   **Note:** A keystore stores certificates, including the certificates of all trusted parties, for use by an application. Through its keystore, an entity such as OC4J (for example) can authenticate other parties, as well as authenticate itself to other parties. (Oracle HTTP Server uses a wallet for the same purpose.

   In Java, a keystore is a java.security.KeyStore instance that you can create and manipulate using the `keytool` utility that is provided with the Sun Microsystems JDK. The underlying physical manifestation of this object is a file.

   For more information about the keytool utility, refer to http://java.sun.com/j2se/1.5.0/docs/tooldocs/solaris/keytool.html.

   For additional information, refer to "Using Keys and Certificates with OC4J and Oracle HTTP Server" and "Using SSL with Standalone OC4J" in Chapter 15, "SSL Communication with OC4J" in Oracle Containers for J2EE Security Guide.

The following example generates a keystore in a file named `mykeystore.jks`, which has a password of 123456, using the RSA key pair generation algorithm:

```
<Oracle home>/jdk/bin/keytool -genkey -keyalg RSA -keystore mykeystore.jks -storepass 123456
```
In this utility:

- The **keystore** option sets the filename where the keys are stored.
- The **storepass** option sets the password for protecting the keystore. You can optionally omit this from the command line and be prompted for a password instead.

The **keytool** utility prompts you for additional information, as follows:

What is your first and last name?
[Unknown]: Test User

What is the name of your organizational unit?
[Unknown]: Support

What is the name of your organization?
[Unknown]: Oracle

What is the name of your City or Locality?
[Unknown]: Redwood Shores

What is the name of your State or Province?
[Unknown]: CA

What is the two-letter country code for this unit?
[Unknown]: US

Is <CN=Test User, OU=Support, O=Oracle, L=Redwood Shores, ST=CA, C=US> correct?
[no]: yes

Enter key password for <mykey>
(RETURN if same as keystore password):

---

**Note:** Always press RETURN for the key password. The keystore password must be the same as the key entry password.

---

The **mykeystore.jks** file is created in the current directory. The default alias of the key is **mykey**.

---

2. Export the certificate from the keystore you just created to a file with the **keytool** utility. The following example exports the certificate into a file named `/home/user/cert.txt`:

```
<Oracle home>/jdk/bin/keytool -export -file /home/user/cert.txt
-keystore mykeystore.jks -storepass 123456
```

Ensure you specify the same password you used to create the keystore.

3. Import the certificate file into Oracle Wallet.
   a. If you have not already done so, create a wallet and configure it for Oracle Beehive by following the steps described in "Configuring TLS with Oracle Wallet".
   b. Use Oracle Wallet Manager to import the certificate. Select **Menu, Operations, Import Trusted Certificate**. Save the wallet.

4. Modify the KeystoreFile property of your Oracle Beehive instance:

```
beectl modify_property
    --component <Oracle Beehive instance identifier>
    --name KeystoreFile
    --value <full path name of the keystore file>
```
For example, if the identifier of your Oracle Beehive instance is `beehive_instance_instance1.example.com` and the full path name of your keystore file is `/home/user/cert.txt`, then run the following command:

```
beectl modify_property
--component beehive_instance_instance1.example.com
--name KeystoreFile
--value /home/user/cert.txt
```

To retrieve the identifier of your Oracle Beehive instance, call the following command, where `example.com` is the host name of your Oracle Beehive instance:

```
beectl list_properties --component example.com
```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PrimaryHostName</td>
<td>example.com</td>
</tr>
<tr>
<td>Site</td>
<td>_CURRENT_SITE</td>
</tr>
<tr>
<td>AlternateHostNames</td>
<td></td>
</tr>
<tr>
<td>BeehiveInstances</td>
<td>beehive_instance_instance1.example.com</td>
</tr>
<tr>
<td>Alias</td>
<td>example.com</td>
</tr>
</tbody>
</table>

5. Modify the KeystoreFilePassword property (the command will prompt you for the password):

```
beectl modify_secure_property
--component <Oracle Beehive instance identifier>
--name KeystoreFilePassword
--value
```

6. Modify the AjpsEnabled property of the ManagedOc4jCluster object if it is false:

```
beectl modify_property
--component _CURRENT_SITE:ManagedOc4jCluster
--name AjpsEnabled
--value true
```

7. Modify the AjpsEnabled property of the HttpServerCluster object if it is false:

```
beectl modify_property
--component _CURRENT_SITE:HttpServerCluster
--name HttpServerSslEnabled
--value true
```

8. Commit configuration changes by calling the following `beectl` command:

```
beectl activate_configuration
```

**Note:** If the `beectl activate_configuration` command asks you to run the `beectl modify_local_configuration_files` command, run this command. The command may restart your application tier.
Disabling AJPS

1. Set the AjpsEnabled property of the ManagedOc4jCluster object to false (this example also commits configuration changes):

   beectl modify_property
   --component _CURRENT_SITE:ManagedOc4jCluster
   --name AjpsEnabled
   --value false
   --activate_configuration true

2. Modify local files (the following command may restart the application tier):

   beectl modify_local_configuration_files
Configuring E-Mail with SSL

You may add and configure multiple sending SMTP and receiving IMAP endpoints. As a result, you may configure Oracle Beehive e-mail so that SMTP and IMAP both listen on multiple ports; in particular, you may have SMTP and IMAP ports secured with Secure Socket Layer (SSL), and other ports with SSL not enabled.

The following topics are covered in this module:

- Securing E-Mail with SSL
- Enabling Both Non-SSL and SSL Ports
- Adding an Endpoint to SMTP
- Modifying an Endpoint in SMTP
- Modifying or Adding an Endpoint in IMAP
- Creating and Configuring an Endpoint
- Configuring E-Mail Client

Notes: The steps in this module involve changing the property AssumeSingleEndpoint to false in SMTPProperty and IMAPProperty, properties that store e-mail ports and endpoints.

If AssumeSingleEndpoint is true, then it will use the port number defined in SMTPProperty or IMAPProperty.

SMTPProperty and IMAPProperty contain a property named EndpointPropertiesList that contains a list of endpoints. If AssumeSingleEndpoint is false, then the port number defined in SMTPProperty or IMAPProperty will be ignored. Instead, the port numbers defined in the endpoints contained in EndpointPropertiesList will be used.

If you use the command beectl modify_port to change an e-mail port, the command assumes you want to use only one e-mail port. As a result, the command sets AssumeSingleEndpoint to true and modifies the port number defined in SMTPProperty or IMAPProperty.

Securing E-Mail with SSL

To secure Oracle Beehive e-mail with SSL, follow these steps:

1. Modify the endpoint in SMTP so that it uses an SSL-enabled port. Follow the directions in "Modifying an Endpoint in SMTP".
2. Modify the endpoint in IMAP so that it uses an SSL-enabled port. Follow the directions in "Modifying an Endpoint in SMTP" except use the property IMAPProperty in place of SMTP property.

Note: You may call the command beectl activate_configuration after modifying the endpoints in SMTP and IMAP, instead of calling it twice (once after modifying SMTP and again after modifying IMAP.)

Enabling Both Non-SSL and SSL Ports

1. Add or modify the endpoints in SMTP so that there are two endpoints: one endpoint that has an SSL-secured port, and one endpoint that has a non-SSL port. To add an endpoint to SMTP, refer to "Adding an Endpoint to SMTP". To modify an endpoint in SMTP, refer to "Modifying an Endpoint in SMTP".

2. Add or modify the endpoints in IMAP so that there are two endpoints: one endpoint that has an SSL-secured port, and one endpoint that has a non-SSL port. To add or modify an endpoint in IMAP, refer to "Modifying or Adding an Endpoint in IMAP".

Note: You may call the command beectl activate_configuration after making all your modifications in SMTP and IMAP instead of calling the command every time you make a change to either SMTP or IMAP.

Modifying an Endpoint in SMTP

1. If you want to modify the endpoint so that its port is SSL-enabled, follow the directions described in "Configuring TLS with Oracle Wallet" (if you have not already done so.)

2. Set AssumeSingleEndpoint to false in SMTPProperty by calling the following beectl commands.

Note: Setting AssumeSingleEndpoint to false in SMTPProperty disables the non-SSL port specified in SMTPProperty. (In the following example, the non-SSL port number is 25.) Instead, the configuration specified in the property EndpointPropertiesList (of SMTPProperty) is used.

The property EndpointPropertiesList contains endpoint objects. Each endpoint specifies a port that SMTPProperty uses (if AssumeSingleEndpoint is false). For each endpoint object, you may also specify whether the port is SSL-enabled or not.

```
beectl list_properties --component _EmailService:SMTPProperties
```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias</td>
<td></td>
</tr>
<tr>
<td>AssumeSingleEndpoint</td>
<td>true</td>
</tr>
</tbody>
</table>
...  
beectl modify_property --component _EmailService:SMTPProperties  
   --name AssumeSingleEndpoint  
   --value false  
Changes to configuration repository are not activated.  
Successfully stored the property for component id  
bf429057-98d4-4990-928d-a90dd6466832.  

3. Choose an endpoint to modify from EndpointProperties list. Set EndpointScheme to MX:*:<port number> or MXS:*:<port number>, where <port number> is any port number not being used. Use MX if you do not want the port to be SSL-enabled, MXS otherwise. The following example sets EndpointScheme to MXS:*:2226:

beectl modify_property --component _EmailService:SMTPProperties  
   --name EndpointScheme  
   --value MXS:*:2226  
Changes to configuration repository are not activated.  
Successfully stored the property for component id  
4aa9767b-5110-4392-8717-a3c57724986b.  

4. Commit configuration changes by calling the following beectl commands:

beectl activate_configuration  

Notes: If the beectl activate_configuration command asks you to run the beectl modify_local_configuration_files command, run this command.  
The beectl modify_local_configuration_files command will ask you to run this command on all your other instances.  

Adding an Endpoint to SMTP  
1. If you want to add an endpoint with an SSL-enabled port, follow the directions described in "Configuring TLS with Oracle Wallet".  
2. Set AssumeSingleEndpoint to false in SMTPProperty by calling the following beectl commands.
Note: Setting AssumeSingleEndpoint to false in SMTPProperty disables the non-SSL port specified in SMTPProperty. (In the following example, the non-SSL port number is 25.) Instead, the configuration specified in the property EndpointPropertiesList (of SMTPProperty) is used.

The property EndpointPropertiesList contains endpoint objects. Each endpoint specifies a port that SMTPProperty uses (if AssumeSingleEndpoint is false). For each endpoint object, you may also specify whether the port is SSL-enabled or not.

```bash
beectl modify_property --component _EmailService:SMTPProperties
--name AssumeSingleEndpoint
--value false
Changes to configuration repository are not activated.
Successfully stored the property for component id bf429057-98d4-4990-928d-a90dd6466832.
```

3. Create and configure a new endpoint object as described in "Creating and Configuring an Endpoint". You will need the object ID of this endpoint object for the next step.

4. Add the new endpoint to the EndpointPropertiesList of SMTPProperties. Specify the new endpoint’s object ID in the --component option:

```bash
beectl append_value --component bf429057-98d4-4990-928d-a90dd6466832
--name EndpointPropertiesList
--value f477dfe5-400d-41a2-b2a5-394ebba67293
Changes to configuration repository are not activated.
Successfully appended the value(s) to property EndpointPropertiesList.
```

```bash
beectl list_properties --component bf429057-98d4-4990-928d-a90dd6466832
--------------------------------------------------------------------
<table>
<thead>
<tr>
<th>Property Name</th>
<th>Property Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>25</td>
</tr>
<tr>
<td>*AssumeSingleEndpoint</td>
<td>false</td>
</tr>
<tr>
<td>*EndpointPropertiesList</td>
<td>4aa9767b-5110-4392-8717-a3c57724986b ,</td>
</tr>
<tr>
<td></td>
<td>f477dfe5-400d-41a2-b2a5-394ebba67293</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>
```

NOTE: * indicates that property value is changed and change is not yet activated.

5. Commit configuration changes by calling the following beectl commands:

```bash
beectl activate_configuration
```

Notes: If the beectl activate_configuration command asks you to run the beectl modify_local_configuration_files command, run this command.

The beectl modify_local_configuration_files command will ask you to run this command on all your other instances.
Modifying or Adding an Endpoint in IMAP

Perform the steps described in or "Modifying an Endpoint in SMTP" or "Adding an Endpoint to SMTP" except use the property IMAPProperty in place of SMTPProperty.

Creating and Configuring an Endpoint

1. Create a new endpoint object with the beectl add_configuration_object command. This command will return the endpoint object's ID. Use this ID to configure the endpoint and view its properties:

   beectl add_configuration_object
   --type 'oracle.ocs.management.model.EmailService.EndpointProperties'
   Successfully created configuration object of type
   oracle.ocs.management.model.EmailService.EndpointProperties. This object
   can be referenced by the object-id displayed below.
   Changes to configuration repository are not activated.
   CONFIG_OBJECT_ID=f477dfe5-400d-41a2-b2a5-394ebba67293

   **Note:** Use single quotes (') instead of double quotes (" ) for the
   --type option. Some command line shells may interpret strings
   enclosed in double quotes as variables.

2. Modify the values of the new endpoint object: The following example sets the
   property EndpointName to My New Endpoint, and EndpointScheme to
   MX:\*:2227, where 2227 is a random port that is not being used.

   beectl list_properties --component f477dfe5-400d-41a2-b2a5-394ebba67293
   -----------------------------------------------
<table>
<thead>
<tr>
<th>Property Name</th>
<th>Property Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EndpointName</td>
<td>default</td>
</tr>
<tr>
<td>EndpointScheme</td>
<td>default</td>
</tr>
<tr>
<td>Alias</td>
<td></td>
</tr>
</tbody>
</table>
   -----------------------------------------------

   beectl modify_property --component f477dfe5-400d-41a2-b2a5-394ebba67293
   --name EndpointName --value "My New Endpoint"
   Changes to configuration repository are not activated.
   Successfully stored the property for component id
   f477dfe5-400d-41a2-b2a5-394ebba67293.

   beectl modify_property --component f477dfe5-400d-41a2-b2a5-394ebba67293
   --name EndpointScheme --value MX:\*:2227
   Changes to configuration repository are not activated.
   Successfully stored the property for component id
   f477dfe5-400d-41a2-b2a5-394ebba67293.

   **Note:** To secure this endpoint with SSL, set EndpointScheme to
   MXS:\*:<port number>. Use MX instead of MXS if you do not want
   it SSL-secured.

   For example, if you want your endpoint to listen on port 2227 and
   secure it with SSL, you would set EndpointScheme to MXS:\*:2227

beectl list_properties --component f477dfe5-400d-41a2-b2a5-394ebba67293
--------------------------------------------------------------------------
| Property Name | Property Value |
--------------------------------------------------------------------------
| EndpointName  | default        |
| EndpointScheme| default        |
| Alias         |                |
--------------------------------------------------------------------------

beectl modify_property --component f477dfe5-400d-41a2-b2a5-394ebba67293
   --name EndpointName --value "My New Endpoint"
Changes to configuration repository are not activated.
Successfully stored the property for component id
f477dfe5-400d-41a2-b2a5-394ebba67293.

beectl modify_property --component f477dfe5-400d-41a2-b2a5-394ebba67293
   --name EndpointScheme --value MX:\*:2227
Changes to configuration repository are not activated.
Successfully stored the property for component id
f477dfe5-400d-41a2-b2a5-394ebba67293.
beectl list_properties --component f477dfe5-400d-41a2-b2a5-394ebba67293

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Property Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EndpointName</td>
<td>My New Endpoint</td>
</tr>
<tr>
<td>EndpointScheme</td>
<td>MX:*:2227</td>
</tr>
<tr>
<td>Alias</td>
<td></td>
</tr>
</tbody>
</table>

Configuring E-Mail Client

In your e-mail client, configure your Oracle Beehive e-mail account so that the SMTP and IMAP servers use SSL and the new port numbers you specified. If you are using Outlook Express, follow these steps:

1. From the menu bar, click Tools, then Accounts....
2. In the Internet Accounts window, select your Oracle Beehive e-mail account and click Properties.
3. Click the Advanced tab.

   For **Outgoing mail (SMTP)**, enter the port number of your SSL-enabled SMTP endpoint. For example, if the EndpointScheme of your SSL-enabled SMTP endpoint is MXS:*:2226, you would enter 2226. Select the check box **This server requires a secure connection (SSL)**.

   For **Incoming Mail (IMAP)**, enter the port number of your SSL-enabled IMAP endpoint. For example, if the EndpointScheme of your SSL-enabled IMAP endpoint is MXS:*:5144, you would enter 5144. Select the check box **This server requires a secure connection (SSL)**.

   Click OK.
Extensible Messaging and Presence Protocol (XMPP) is an open XML technology for presence and real-time communication. For users to authenticate against Oracle Beehive’s XMPP Service, you must perform the following steps to configure it:

1. Follow the steps described in "Configuring TLS with Oracle Wallet"; XMPP Service requires a TLS connection.

2. Set the DomainName property of XMPP Service. By default, the value of DomainName is example.com. Change it to the name of your domain. Call the following beectl commands.

These commands assume the name of your domain is mydomain.com and the component identifier of BEEAPP is BEEAPP_mysite.mydomain.com:

```
beectl list_properties --component _XmppService --name DomainNames
```

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DomainNames</td>
<td>example.com</td>
</tr>
</tbody>
</table>

```
beectl modify_property
 --component _XmppService
 --name DomainNames
 --value mydomain.com
```

Changes to configuration repository are not activated.
Successfully stored the property for component id a471ba52-b384-b31-afe2-45ea8c38a658.

```
beectl activate_configuration
```

Proposed configuration is saved successfully and activated now.

```
beectl restart --component BEEAPP_mysite.mydomain.com
```
Configuring Oracle Secure Enterprise Search

Oracle Secure Enterprise Search 10g is a stand-alone enterprise search solution. It incorporates best-in-class indexing crawling and security capabilities to create a reliable and comprehensive search solution for any organization.

Follow these steps to configure Oracle Secure Enterprise Search 10g so that Oracle Beehive uses it as its search engine:

**Step A: Configure Oracle Beehive**

1. Create a special user account that has administrator rights to the content managed by Oracle Beehive. The command will prompt your for a password. Enter any valid password; you will need this password later:

   ```
   beectl add_trusted_identity
   --is_service false
   --service_name sessearch
   --type SES
   --name BeehiveSesTrustedEntity
   --password
   ```

2. Configure the host and port number of your Oracle Beehive instance:

   ```
   beectl modify_property
   --component _SesEndptService
   --name Host
   --value <Host name of your Oracle Beehive instance>
   ```

   ```
   beectl modify_property
   --component _SesEndptService
   --name Port
   --value <Oracle Beehive HTTP listening port>
   ```

   ```
   beectl modify_property
   --component _SesEndptService
   --name SesEndptServiceEnabled
   --value true
   ```

   To determine the HTTP listening port, run the `beectl list_ports` command and search for the property name `HttpListenPort`.

3. Activate and commit changes:

   ```
   beectl activate_configuration
   beectl modify_local_configuration_files
   ```
Step B: Configure Oracle Secure Enterprise Search

1. Login to the oracle Secure Enterprise Search administrator page. The URL typically has the form http://<Oracle SES host name>:<HTTP listening port>/search/admin.

2. Click the Sources tab. From the Source type drop-down list, select Federated. Click the Create button.

3. Enter the following values to define the source:
   - **Source Name**: Enter any name to identity your source
   - **Web Services URL**: http://<Oracle Beehive host name>:<Oracle Beehive HTTP listening port>/ses-endpt/OracleSearch
   - **Remote Entity Name**: BeehiveSesTrustedEntity
   - **Remote Entity Password**: Enter the password for the BeehiveSesTrustedEntity user you created previously.
   - **Search User Attribute**: You do not have to enter a value for this field unless Oracle Secure Enterprise Search is using a different authentication attribute than Oracle Beehive.
This module describes how to register Oracle Beehive as a partner application with Oracle Single Sign-On (OSSO), which means that you may delegate the authentication function to the single sign-on server, Oracle Beehive. For more information, refer to Chapter 4, “Configuring and Administering Partner Applications in Oracle Application Server Single Sign-On Administrator’s Guide.”

1. In the _AuthenticationService component, set the property SsoType to osso, then activate the configuration:

    ```
    beectl modify_property
    --component _AuthenticationService
    --name SsoType
    --value osso
    
    beectl activate_configuration
    ```

2. Run the OSSO registration tool, `<OSSO home>/sso/bin/ssoreg.sh` to register Oracle Beehive with the OSSO server:

    ```
    ssoreg.sh
    --oracle_home_path /private/oracle/appserver
    --site_name example.com
    --config_mod_osso TRUE
    --mod_osso_url http://example.com:7777
    --remote_midtier
    --config_file
    /private/oracle/appserver/Apache/Apache/conf/osso/osso.example.conf
    ```

- **oracle_home_path**: Specify the installation directory of the Oracle product that comes with Oracle Single Sign-On (in this example, OSSO is installed in /private/oracle/appserver/sso).
- **site_name**: Specify the host name (including domain) of your Oracle Beehive instance.
- **config_mod_osso**: Specify TRUE so that a configuration file is generated.
- **mod_osso_url**: Specify the host name and HTTP listening port of your Oracle Beehive instance. To determine the HTTP listening port, run the beectl list_ports command.
- **remote_midtier**: You must specify this option because Oracle Beehive is installed in a different home than OSSO.
- **config_file**: The specified configuration file will be created.
3. Copy the configuration file you created in the previous step (osso.example.com) to <Oracle Beehive home>/Apache/Apache/conf/osso. Rename the file to osso.conf.

4. In the _AuthenticationService component, set the property OssoConfigFile to <Oracle Beehive home>/Apache/Apache/conf/osso/osso.conf, activate the configuration, then commit changes:

   beectl modify_property
   --component _AuthenticationService
   --name OssoConfigFile
   --value <Oracle Beehive home>/Apache/Apache/conf/osso/osso.conf

   beectl activate_configuration
   beectl modify_local_configuration_files
Configuring External Oracle BPEL Process Manager with Oracle Beehive

If you have an existing instance of Oracle BPEL Process Manager, you may configure Oracle Beehive to use it instead of the one that is included with Oracle Beehive.

Note: It is recommended that you configure an external Oracle BPEL process manager immediately after installing Oracle Beehive.

It is not recommended that you switch from using the Oracle BPEL Process Manager that comes installed with Oracle Beehive to an external one in an Oracle Beehive currently in production.

Configuring an external Oracle BPEL Process Manager involves the following steps:

- **Step A: Configure Oracle Beehive**
- **Step B: Configure External Oracle BPEL Process Manager**

After performing these steps, refer to "Deploying Custom Workflows with External Oracle BPEL Process Manager" to deploy custom workflows.

**Step A: Configure Oracle Beehive**

1. Create an external Oracle BPEL Process Manager component to represent your Oracle BPEL Process Manager. Use the `beectl add_external_bpel_pm` command:

   ```
   beectl add_external_bpel_pm
   --oc4j_instance_name oc4j_soa
   --oc4j_admin_password my_obfuscated_OC4J_admin_password
   --domain default
   --domain_password my_obfuscated_domain_password
   --bpel_application_name orabpel
   --bpel_admin_password my_obfuscated_BPEL_password
   --host_name example.com
   --opmn_port 6003
   
   Successfully created a BpelCluster with following identifier.
   BPEL_CLUSTER_ID=ec542d17-0a13-4974-b6a4-f61526d09215
   Successfully created a ExternalBpelProcessManager with the following id.
   EXT_BPEL_PROCESS_MANAGER_ID=cb5d934a-fe61-44e0-906a-bf2d0b1c80e1
   Workflow service exists with the id 79af98cb-81d1-4318-9f22-84d36e268e86
   Changes to configuration repository are not activated.
   ```
This command will create a BpelCluster component. Note the IDs of this component for the next step.

The following table describes the properties of this command:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>oc4j_instance_name</td>
<td>Name of the OC4J instance in which your Oracle BPEL Process Manager is deployed. Typically, this is <code>oc4j_soa</code>.</td>
</tr>
<tr>
<td>oc4j_admin_password</td>
<td>Administrator’s password of OC4J in which your Oracle BPEL Process Manager is deployed. Use <code>beectl obfuscate</code> to obfuscate the password.</td>
</tr>
<tr>
<td>domain</td>
<td>If you have not created any additional domains in your Oracle BPEL Process Manager, typically, the name of the default domain is <code>default</code>. Refer to Chapter 19, “BPEL Process Deployment and Domain Management” in Oracle BPEL Process Manager Developer’s Guide.</td>
</tr>
<tr>
<td>domain_password</td>
<td>The password to access the specified domain. By default, this is the same as the OC4J administrator’s password. Use <code>beectl obfuscate</code> to obfuscate the password.</td>
</tr>
<tr>
<td>bpel_application_name</td>
<td>Name used by OC4J to refer to the Oracle BPEL Process Manager Web application. Typically, this is <code>orabpel</code>. Refer to the OC4J configuration files of the OC4J instance in which your Oracle BPEL process is deployed to determine this name.</td>
</tr>
<tr>
<td>bpel_admin_password</td>
<td>Oracle BPEL Process Manager administrator’s password. Use <code>beectl obfuscate</code> to obfuscate the password.</td>
</tr>
<tr>
<td>host_name</td>
<td>The name of the server in which Oracle BPEL Process is running.</td>
</tr>
<tr>
<td>opmn_port</td>
<td>OPMN request port number of the Oracle BPEL server. This is typically 6003. If you installed Oracle Application Server SOA Suite, this port number is defined by the property <code>opmn.requestport</code> in <code>&lt;Installation directory&gt;/bpel/utilities/orabpel.properties</code>.</td>
</tr>
</tbody>
</table>

2. Set the property BpelCluster in the component _WorkflowService with the BpelCluster component you just created in the previous step:

```bash
beectl modify_property
    --component _WorkflowService
    --name BpelCluster
    --value ec542d17-0a13-4974-b6a4-f61526d09215
```

3. Activate the configuration and commit changes:

```bash
beectl activate_configuration
beectl modify_local_configuration_files
```

### Step B: Configure External Oracle BPEL Process Manager

1. Create a synonym in the ORABPEL repository for the Oracle Beehive Workflow PL/SQL schema. Typically, ORABPEL and the Oracle Beehive schema are located in the same database instance. If this is the case, run the following SQL*Plus command:

```sql
```
CREATE OR REPLACE SYNONYM ORABPEL.BEE_CODE_WF_BPEL_PKG FOR BEE_CODE.WF_BPEL_PKG

If ORABPEL and the Oracle Beehive schema are in different database instances, use a database link. Refer to "CREATE DATABASE LINK" in Oracle Database SQL Language Reference for more information.

2. Follow these steps to deploy Oracle Beehive Identify Provider.

   **Note:** If you have configured your Oracle BPEL Process Manager for a particular LDAP directory, and you have synchronized Oracle Beehive to work with the same LDAP directory (as described in "Integrating and Synchronizing LDAP with Oracle Beehive"), do not perform the steps described here.

   a. Extract the contents of `<Oracle Beehive home>/beehive/seed/bpel/isprovider.jar` into the `<Oracle BPEL Process Manager home>/bpel/system/classes` directory. The command `jar` is the Java archive tool:

   ```
cd <Oracle BPEL Process Manager home>/bpel/system/classes
jar xvf <Oracle Beehive home>/beehive/seed/bpel/isprovider.jar
   ```

   b. Create a backup of the file `<Oracle BPEL Process Manager home>/bpel/system/config/is_config.xml`. Replace this file with `<Oracle Beehive home>/beehive/seed/bpel/is_config.xml`

After performing these steps, any identity services you have configured for your Oracle BPEL Process Manager will no longer work.

If you want Oracle Beehive Identity Provider and another identity service you have already configured to co-exist in your Oracle BPEL Process Manager, you may merge the details of your identity service configuration and those of Oracle Beehive Identity Provider in the same `is_config.xml` file. Refer to "Configuring the Identity Service" in Chapter 2, "Service Configuration" in Oracle BPEL Process Manager Administrator's Guide.

3. Deploy Oracle Beehive workflows. The Workflow service deploys two BPEL processes, ParallelVoteWorkflow and SerialWorkflow, when you install Oracle Beehive. These BPEL process suitcases (or archives) are located in `<Oracle Beehive home>/beehive/seed/workflows`. Deploy these processes with the Oracle BPEL Admin Console or auto-deploy mode of Oracle BPEL Process Manager. To use auto-deploy mode, copy the BPEL process jar files into `<Oracle BPEL Process Manager home>/bpel/domains/default/deploy`

---

**Deploying Custom Workflows with External Oracle BPEL Process Manager**

To deploy a custom workflow with an external Oracle BPEL Process Manager, you must both register it in Oracle Beehive and deploy it through your Oracle BPEL Process Manager:

1. Use the `beectl add_workflow_schema` command to register your custom workflow:

   ```
   beectl add_workflow_schema
   --file <Absolute path of the suitcase (the jar file) of your BPEL process>
   ```
2. Manually deploy the custom workflow suitcase into your Oracle BPEL Process Manager with the Oracle BPEL Admin Console or auto-deploy mode.
Installing Oracle Beehive Integration for Outlook

This module describes how to install and configure Oracle Beehive Integration for Outlook.

- Requirements
- Installing Oracle Beehive Integration for Outlook Using Remote Downloader
- Installing Oracle Beehive Integration for Outlook Interactively
- Installing Oracle Beehive Integration for Outlook Silently
- Installing Oracle Beehive Integration for Outlook Using Remote Downloader Silently
- Using Oracle Beehive Integration for Outlook as Migration Tool
- Uninstalling Oracle Beehive Integration for Outlook
- Installing Oracle Beehive Integration for Outlook Using Active Directory
- Updating Oracle Beehive Integration for Outlook in the DMS Repository
- Updating the Language Pack for Oracle Beehive Integration for Outlook
- Applying Configuration Settings from the DMS
- Customizing General Installation Settings
- Downgrading your Oracle Beehive Integration for Outlook Installation
- Registry Settings
- INI File Settings
- Enforcing Upgrades
- Sample XML Provisioning File

Requirements

Microsoft Windows XP Service Pack 2 or later is required on Windows XP computers where users intend to leverage non-English locales with Oracle Beehive Integration for Outlook. Attempting to run Oracle Beehive Integration for Outlook with a non-English locale on a computer with Windows XP Service Pack 1 (or earlier) may result in the computer failing to operate normally.
Installing Oracle Beehive Integration for Outlook Using Remote Downloader

You can install Oracle Beehive Integration for Outlook by distributing a **remote downloader** to end users. The remote downloader allows end users to download and install the provisioned Oracle Beehive Integration for Outlook application from the Device Management Service (DMS) repository. By default, the DMS contains a pre-seeded Oracle Beehive Integration for Outlook application that is provisioned for all end users. For more information on how to provision applications for specific users or groups of users, see the "Managing the Device Management Service" module in *Oracle Beehive Administrator’s Guide*.

Retrieve the remote downloader **outlook_integration_downloader.exe** at `<Oracle-Home>/beehive/bootstrap/obio/downloader`, where `<Oracle-Home>` is the name of your Oracle Beehive directory.

You may also retrieve the remote downloader from the download page of Oracle Beehive Central.

**Pre-Seeding a Server Name in the Remote Downloader**

The remote downloader prompts the end user to provide a server name, account name, and password to initiate download and installation. If you wish to pre-seed a server name to prevent end users from having to specify a server name on their own, rename the remote downloader to `<fully qualified server name>.exe`. For example, if your server name is faulkner.oracle.com, your remote downloader name would be faulkner.oracle.com.exe.

**Pre-Seeding Port Number and Secure Connection**

You can pre-seed the port number that Oracle Beehive Integration for Outlook should use when connecting to the server, as well as whether a secure connection should be used, by using commas to delimit the additional information.

For example, if your remote downloader name is faulkner.oracle.com.exe and you wish to pre-seed the port number and secure connection in the downloader, you would rename the file to faulkner.oracle.com,5223,SSL.exe, where 5223 is your port number and SSL is the secure connection.

If you want to use a non-secure connection, replace **SSL** with the string **NOSSL** in the file name. For example, for a non-secure connection, rename the file to faulkner.oracle.com,5223,NOSSL.exe.

**Note:** You can only pre-seed port number and connection type when using the direct connection method for Oracle Beehive Integration for Outlook.

**Installing Oracle Beehive Integration for Outlook Interactively**

You can give end users direct access to the Oracle Beehive Integration for Outlook installer. End users install the product by double-clicking the installer and following the on-screen instructions.

Retrieve the installer **outlook_integration_setup.exe** at `<Oracle-Home>/beehive/bootstrap/obio/setup`, where `<Oracle-Home>` is the name of your Oracle Beehive directory.
Installing Oracle Beehive Integration for Outlook Silently

You can install Oracle Beehive Integration for Outlook silently without users having to provide input or perform an installation themselves.

To install Oracle Beehive Integration for Outlook silently:

Execute the following command:

```
outlook_integration_setup.exe /s UI=<Installer-UI-Option>
```

<Installer-UI-Option> can be one of the four values provided in the table below.

<table>
<thead>
<tr>
<th>Value</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No user interface during install</td>
</tr>
<tr>
<td>2</td>
<td>Displays only a progress bar during install</td>
</tr>
<tr>
<td>3</td>
<td>Presents an install screen with different dialog boxes but does not require user input to run</td>
</tr>
<tr>
<td>4</td>
<td>Runs a fully interactive installer requiring user input</td>
</tr>
</tbody>
</table>

To uninstall Oracle Beehive Integration for Outlook in silent mode, use the `Msiexec.exe /x {A634A2AF-2495-4F36-B88F-0B24B84A183C} /qn` command.

Installing Oracle Beehive Integration for Outlook Using Remote Downloader Silently

The Oracle Beehive Integration for Outlook downloader can also be used to provide a full, non-interactive deployment option. To do so, use the silent switch, `/s`.

Specify the required connection parameters through the command line or through an initialization file.

**Command Line Example**

```
outlook_integration_downloader.exe
/server example.com
/user OracleBeehiveUserName
/pass Welcome1
/direct port=5224 secure=true
/https port=443 secure=true
/s
```

**Initialization File Example**

```
outlook_integration_downloader.exe /s c:\testSilentDownloader.ini
```

If you use the silent switch with a `UI=1` parameter, the connection dialog will be presented in which all the controls are disabled and only the password field is enabled:

```
outlook_integration_downloader.exe /s UI=1 c:\testSilentDownloader.ini
```

The return result of the downloader is set accordingly to represent the failure/success (1/0) of the operations done by the downloader.

Use the following template to create a silent initialization file:
Using Oracle Beehive Integration for Outlook as Migration Tool

You can also use the Oracle Beehive Integration for Outlook downloader as a tool to migrate and integrate some configurations settings into an Oracle Beehive Integration for Outlook profile. This includes the following options:

- Migrating existing personal folder data files (files with a .pst extension) from previous profiles
- Migrating LDAP settings from previous profiles
- Adding new LDAP settings
- Adding a new personal folders data file

Use the /migrate switch as follows:

```
outlook_integration_downloader.exe /migrate c:\migrateinifile.ini
```

If you do not provide an initialization file, you will be presented with an interactive user interface that enables you to choose the personal folders data files and the LDAP settings from previous profiles to migrate.

Use the following template to create a migration initialization file:

```
[OBIO]
Server=
User=
Password=
Direct_Port=
Direct_Secure=
HTTPS_PORT=
HTTPS_Secure=
Proxy_Type=
Proxy=
```

**Table 28–2  Silent Initialization File Parameters**

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>Oracle Beehive server address</td>
</tr>
<tr>
<td>User</td>
<td>Oracle Beehive user account</td>
</tr>
<tr>
<td>Password</td>
<td>User’s password</td>
</tr>
<tr>
<td>Direct_Port</td>
<td>Valid port number to be used to establish a direct connection</td>
</tr>
<tr>
<td>Direct_Secure</td>
<td>Boolean value; specifies whether to use a direct connection (TRUE) or not (FALSE)</td>
</tr>
<tr>
<td>HTTPS_PORT</td>
<td>Valid port number to be used to establish an HTTPS connection</td>
</tr>
<tr>
<td>HTTPS_Secure</td>
<td>Boolean value; specifies whether to use an HTTPS connection (TRUE) or not (FALSE)</td>
</tr>
<tr>
<td>Proxy_Type</td>
<td>Specifies the proxy type. It may have a value of 0, 1, or 2:</td>
</tr>
<tr>
<td></td>
<td>■ 0: Automatic proxy setting</td>
</tr>
<tr>
<td></td>
<td>■ 1: Use Web browser’s proxy settings</td>
</tr>
<tr>
<td></td>
<td>■ 2: Manual proxy configuration as specified in the Proxy parameter</td>
</tr>
<tr>
<td>Proxy</td>
<td>Manual proxy configuration (for example, myproxy.us.oracle.com:123</td>
</tr>
</tbody>
</table>
Template for Migration Initialization File

```
[migrate_psts]
Src=
Dest=
CopyFile=
```

```
[migrate_ldaps]
Src=
Dest=
```

```
[add_pst]
Path=
Dest=
```

```
[add_ldap]
Name=
Host=
Port=
Base=
SSL=
Dest=
```

### Table 28–3 Migration Initialization File Parameters

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[migrate_psts]</td>
<td>Src</td>
<td>Migrates existing personal folder data files (files with a .pst extension) from the specified profile or profiles. It may have one of the following values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Name of an existing profile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ <code>\OCFO\</code> (Migrates from all Oracle Beehive Integration for Outlook profiles that already exist in the system)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ <code>\ALL\</code> (Migrates from all profiles that already exist in the system)</td>
</tr>
<tr>
<td></td>
<td>Dest</td>
<td>An existing Oracle Beehive Integration for Outlook profile to which the migrated settings should be added. This may be the Oracle Beehive profile created with the downloader.</td>
</tr>
<tr>
<td></td>
<td>CopyFile</td>
<td>One of the following values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ TRUE (The migrated PST file will be copied to the offline storage of the destination profile and added to it from the new location)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ FALSE (The destination profile will only have a link to the existing PST file)</td>
</tr>
<tr>
<td>[migrate_ldaps]</td>
<td>Src</td>
<td>Migrates LDAP settings from the specified profile or profiles. It may have one of the following values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Name of an existing profile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ <code>\OCFO\</code> (Migrates from all Oracle Beehive Integration for Outlook profiles that already exist in the system)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ <code>\ALL\</code> (Migrates from all profiles that already exist in the system)</td>
</tr>
</tbody>
</table>
Uninstalling Oracle Beehive Integration for Outlook

End users can remove Oracle Beehive Integration for Outlook from their computers by clicking **Add/Remove Programs**, selecting Oracle Beehive Integration for Outlook from the list, and clicking **Remove**.

Installing Oracle Beehive Integration for Outlook Using Active Directory

If your end users are running systems on Windows 2000, Windows XP, or Windows Vista that are locked down, they can install Oracle Beehive Integration for Outlook using Active Directory Group Policy. To perform an Active Directory installation, the domain administrator must create a package for Oracle Beehive Integration for Outlook in the Active Directory Administrative Tool and then assign the package to the organization units that contain the intended end users. The software will then be installed on end users’ computers during startup.

Creating an msi installation package for Oracle Beehive Integration for Outlook

Active Directory only recognizes software packaged in the **msi** file format, which contains information about the application setup and installation.

To create an msi installation package for Oracle Beehive Integration for Outlook:

1. Extract the `outlook_integration_application.msi` file from the Oracle Beehive Integration for Outlook package using the `outlook_integration_setup.exe /export type=client <Extracted folder path>` command.

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| Dest         | Path           | Adds the settings from a specified PST file. It may have one of the following values:  
- Absolute path to a PST file  
- Name of a PST file (its location is determined from the offline storage of the destination profile) |
| Dest         | [add_pst]      | An existing Oracle Beehive Integration for Outlook profile to which the settings should be added. This may be the Oracle Beehive profile created with the downloder. |
| [add_ldap]   | Name           | Display name of LDAP |
|              | Host           | LDAP host name |
|              | Port           | LDAP port number |
|              | Base           | LDAP base distinguished name (DN) |
|              | SSL            | Boolean value; specifies whether SSL is enabled (TRUE) or not (FALSE) |
| Dest         | [add_ldap]     | An existing Oracle Beehive Integration for Outlook profile to which the settings should be added. This may be the Oracle Beehive profile created with the downloder. |
2. Extract the prerequisite.msi file from the Oracle Beehive Integration for Outlook package using the `outlook_integration_setup.exe /export type=system <Extracted folder path>` command.

### Deploying Oracle Beehive Integration for Outlook using Active Directory Group Policy

Before proceeding, make sure you have extracted the msi files for Oracle Beehive Integration for Outlook to an accessible location.

**To deploy Oracle Beehive Integration for Outlook using Active Directory Group Policy:**

1. From the Start menu, select Control Panel, then Administrative Tools.
2. Click Active Directory Users and Computers.
3. Create an organization unit that includes all the computers on which you want to install Oracle Beehive Integration for Outlook. Alternatively, select an existing organization unit.
4. Right-click your chosen organization unit in the Active Directory Users and Computers tree.
5. From the Shortcut menu, click Properties.
6. In the Properties dialog box, click the Group Policy tab.
7. Click Edit if you are modifying an existing group policy, or Add if you are creating a group policy.

---

**Note:** The following steps will ensure that Oracle Beehive Integration for Outlook is installed on all computers in your chosen organization unit. It also ensures that all users of a given computer have access to Oracle Beehive Integration for Outlook.

---

8. Select and expand the Computer Configuration node.
10. Right-click Software Installation and select New.
11. From the Shortcut menu, click Package.
12. Enter the path to your extracted prerequisite.msi file.
13. Selected Assigned and click OK.

---

**Note:** For more information on how to obtain msi files for Oracle Beehive Integration for Outlook, see Creating an msi installation package for Oracle Beehive Integration for Outlook.

---

15. In the Properties dialog box, click OK.
Verifying that Oracle Beehive Integration for Outlook is available for installation

To verify that Oracle Beehive Integration for Outlook is available to end users for installation, restart any computer in the domain and make sure that Oracle Beehive Integration for Outlook installation starts when the computer restarts.

Updating Oracle Beehive Integration for Outlook in the DMS Repository

You can update the existing version of the Oracle Beehive Integration for Outlook package in the DMS repository using the `beectl` command-line tool located at `<Oracle-Home>/beehive/bin`. If Oracle Beehive Integration for Outlook is running on an end user’s computer, it will automatically prompt the end user to download and install updates from the DMS repository. End users can also manually search for updates by selecting About Oracle Beehive Integration for Outlook from the Help menu and clicking Check for Updates.

To update Oracle Beehive Integration for Outlook in the DMS repository:

1. Make sure the application package for the updated version of Oracle Beehive Integration for Outlook is accessible to the Oracle Beehive server.
2. Upload the updated version of Oracle Beehive Integration for Outlook to the DMS by executing the following command:

   ```
   beectl upload_client_application
   --file <Path to Oracle Beehive Integration for Outlook zip file>
   ```

   **Note:** This command will upload the new version of the Oracle Beehive Integration for Outlook application to the DMS repository and will make it available for those who are already provisioned to it.

   If you have not provisioned Oracle Beehive Integration for Outlook, run the provisioning commands (such as `beectl add_client_application_provisioning`). Refer to "Managing the Device Management Service" in Oracle Beehive Administrator’s Guide for more information.

Updating the Language Pack for Oracle Beehive Integration for Outlook

You can localize the user interface of Oracle Beehive Integration for Outlook to match Outlook languages by updating the language pack with the one found at the following location:

   `<Oracle-Home>/beehive/bootstrap/obio/languagepack`

The following languages are currently supported in the language pack:

- French
- German
- Italian
- Spanish
- Brazilian Portuguese
- Japanese
- Korean
- Simplified Chinese
To update the language pack for Oracle Beehive Integration for Outlook, you must upload it to the DMS repository using the `beectl` command-line tool located at `<Oracle-Home>/beehive/bin`.

By default, the language pack is uploaded and provisioned to all users.

**To update the language pack for Oracle Beehive Integration for Outlook:**

1. Make sure the language pack for Oracle Beehive Integration for Outlook is accessible to the Oracle Beehive server.

2. Upload the language pack for Oracle Beehive Integration for Outlook to the DMS by executing the following command:

   ```
   beectl upload_client_application
   --file <Path to Oracle Beehive Integration for Outlook language pack>
   ```

   If Oracle Beehive Integration for Outlook is running on an end user’s computer, it will automatically prompt the end user to download and install updates (including language packs) from the DMS repository. End users can also manually search for updates by selecting *About Oracle Beehive Integration for Outlook* from the *Help* menu and clicking *Check for Updates*.

---

**Note:** The language installed by the Oracle Beehive Integration for Outlook language pack will automatically match the Outlook language installed by the end user, provided that Oracle Beehive Integration for Outlook supports the language. If the end user has installed Outlook in an unsupported language, Oracle Beehive Integration for Outlook will default to English.

---

**Applying Configuration Settings from the DMS**

When deploying Oracle Beehive Integration for Outlook from the DMS, you can apply customized configuration settings to end users’ computers.

**To apply configuration settings from the DMS:**

1. Create an XML provisioning file that includes all the setting parameters you want to apply. For more information, see Customizing General Installation Settings.

2. Obtain your Oracle Beehive Integration for Outlook identifier by executing the `beectl list_client_applications` command and locating the identifier from the generated list.

3. Obtain your Oracle Beehive Integration for Outlook version identifier by executing the following command:

   ```
   beectl list_client_application_versions --application <Identifier>
   ```

   `<Identifier>` is the Oracle Beehive Integration for Outlook identifier you obtained in the previous step.

4. Include the obtained Oracle Beehive Integration for Outlook version identifier in your XML provisioning file. For more information on `beectl` commands, see the module "Oracle Beehive Command-Line Utility" in the Oracle Beehive Administrator's Reference Guide.

5. Upload your XML provisioning file to the server by executing the following command:
beectl add_client_application_configuration --file
<Path-to-XML-Provisioning-File>

6. Provision end users for the uploaded application configuration object by executing
the following command:

beectl add_client_application_provisioning
--community <Your-Enterprise-ID>
--configuration <Your-Application-Configuration-ID>

Customizing General Installation Settings

You can control general settings by creating an XML provisioning file and adding or
modifying Property nodes in the config section of the file. Each Property node
should contain two parameters: name and value.

You can modify the default public properties in your provisioning file by changing the
value parameter associated with any of the INSTALL:<X> Property nodes.

<table>
<thead>
<tr>
<th>Property</th>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>USERNAME</td>
<td>Sets the name of the registered Oracle Beehive Integration for Outlook end user that appears in the About box.</td>
<td>Edith Wharton</td>
</tr>
<tr>
<td>COMPANYNAME</td>
<td>Sets the name of the registered company that appears in the About box.</td>
<td>Oracle</td>
</tr>
<tr>
<td>INSTALLDIR</td>
<td>Sets the location of the Oracle Beehive Integration for Outlook installation.</td>
<td>C:\Program Files \Oracle\myinstall</td>
</tr>
<tr>
<td>CREATE_PROFILE</td>
<td>Determines if an Oracle Beehive Integration for Outlook profile should be created on the user's computer during installation. This parameter can be assigned one of the following values:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>PROFILE_NAME</td>
<td>Changes the name of the profile created during installation of Oracle Beehive Integration for Outlook. The default profile name is Beehive.</td>
<td></td>
</tr>
</tbody>
</table>

The values you set for the first three parameters in the table only apply when you are
installing Oracle Beehive Integration for Outlook for the first time and do not apply to
product upgrades.
Downgrading your Oracle Beehive Integration for Outlook Installation

By default, Oracle Beehive Integration for Outlook will only detect updates if the server version is newer than the currently installed version. If you wish to allow end users to install downgraded versions of Oracle Beehive Integration for Outlook as updates, set the value of the INSTALL:AllowDowngrade Property node to TRUE in your provisioning file.

Registry Settings

You can modify the registry information on end-user computers by changing the values for certain Property nodes in your provisioning file. Modifying registry information enables you to control end user settings from the server side.

WARNING: If you modify the registry incorrectly, serious problems may occur that could require you to reinstall your operating system. Modify the registry at your own risk.

Add a key or registry value using the following coding structure:

<Property name="REG:ADD:{HIVE}\{keypath}:\{Value Name}:\{DataType:" value="\{Value Data}""></Property>

- The value for {HIVE} can be either HKLM or HKCU, which are the two locations where user registry information can be stored and which correspond to the HKEY_LOCAL_MACHINE and HKEY_CURRENT_USER hives.
- The value for {DataType} can be String, Binary, or Dword.
- If you are adding a key, you do not need to provide values for {Value Name}, {DataType}, or {Value Data}.

Delete a key or registry value using the following coding structure:

<Property name="REG:Delete:{HIVE}\{keypath}:\{Value Name}" value=""></Property>

- If you are deleting a key, do not provide a value for {Value Name}. Additionally, the key must reside at least two levels under the user hive.

INI File Settings

You can modify Oracle Beehive Integration for Outlook ini settings by including a property with the following coding structure:

<Property name="FILE:Beehive.ini:{Section Name}:\{Property Name}" value="\{Value Data}" ></Property>

Enforcing Upgrades

You can force end users to upgrade to a new version of Oracle Beehive Integration for Outlook that you have uploaded to the DMS. End users will not be able to use Oracle Beehive Integration for Outlook until they upgrade.

To force end users to upgrade to a new version of Oracle Beehive Integration for Outlook:

In your XML provisioning file, add a property with the following coding structure:
<Property name="INSTALL:ForceClientVersion: {Comparison Operation}" value="{Build-Number}"></Property>

{Build-Number} is the Oracle Beehive Integration for Outlook build number which will be used for the comparison operation.

Allowing a Grace Period Before Enforcing Upgrades

Optionally, you can allow end users to continue using their old version of Oracle Beehive Integration for Outlook for a specific period of time or for a fixed number of log-ins to Oracle Beehive.

To allow end users to use an older version of Oracle Beehive Integration for Outlook until a certain date:
In your XML provisioning file, add a property with the following coding structure:

<Property name="INSTALL:graceperioddate" value="{YYYYMMDD}"></Property>

{YYYYMMDD} is the final date on which the user can use Oracle Beehive Integration for Outlook without having to upgrade.

To allow end users to use an older version of Oracle Beehive Integration for Outlook for a fixed number of log-ins:
In your XML provisioning file, add a property with the following coding structure:

<Property name="INSTALL:graceperioditerations" value="{Number-of-Log-ins}"></Property>

{Number-of-Log-ins} is the number of times end users are allowed to log in to Oracle Beehive Integration for Outlook before they are forced to upgrade.

Sample XML Provisioning File

<xml version="1.0" encoding="UTF-8">
<ClientAppConfig>
  <Name>Oracle Beehive Integration for Outlook-test2</Name>
  <Version CollabId="6EAB:574C:capv:4672A63200D4B462E040548C17821C2E0000000014C0A"/>
  <Config>
    <!--Install Company name-->
    <Property name="INSTALL:COMPANYNAME" value="TestCompany"></Property>
    <!--Install user name -->
    <Property name="INSTALL:USERNAME" value="Edith Wharton"></Property>
    <!--Install directory--> 
    <Property name="INSTALL:INSTALLDIR" value="C:\Program Files\Oracle\myinstall"></Property>
    <!--Allow Downgrade-->
  </Config>
</ClientAppConfig>
<Property name="INSTALL:AllowDowngrade" value="TRUE"></Property>

<!--Install Create Profile-->
(Property name="INSTALL:CREATE_PROFILE" value="2"></Property>

<!--Install Profile Name-->
(Property name="INSTALL:PROFILE_NAME" value="OracleBeehive"></Property>

<!--Install ForceUpgrade-->
(Property name="INSTALL:ForceClientVersion:Larger" value="20201"></Property>

<!--Install Grace Period for ForceUpgrade-->
(Property name="INSTALL:graceperioddate" value="20080215"></Property>
(Property name="INSTALL:graceperioditerations" value="3"></Property>

<!--ini File Modification-->
(Property name="FILE:Beehive.ini:OBIO:APP-AUTOUPDATE-STARTUP" value="FALSE"></Property>

<!--Registry Modification-->
<!--ADD Section-->
<!--ADD Key-->
(Property name="REG:ADD:HKCU\Software\1\2\3:" value=""></Property>
<!--ADD String Value (remove line breaks from the value of the name parameter) -->
(Property name="REG:ADD:HKLM\Software\Microsoft\Exchange\Client\Extensions:
Outlook Setup Extension1:String" value="4.0;Outxxx.dll;7;00000000000000;0000000;OutXXX"></Property>
<!--ADD DWORD Value (remove line breaks from the value of the name parameter) -->
(Property name="REG:ADD:HKLM\Software\Microsoft\Exchange\Client\Extensions:
Outlook Setup Extension2:DWORD" value="50"></Property>
<!--ADD Binary Value (remove line breaks from the value of the name parameter) -->
(Property name="REG:ADD:HKLM\Software\Microsoft\Exchange\Client\Extensions:
Outlook Setup Extension3:Binary" value="1234567890ABCDEF"></Property>

<!--Delete Section-->
<!--Delete Key-->
(Property name="REG:DELETE:HKCU\Software\1\2" value=""></Property>
<!--Delete Value (remove line breaks from the value of the name parameter)-->
(Property name="REG:DELETE:HKLM\Software\Microsoft\Exchange\Client\Extensions:
Outlook Setup Extension1" value=""></Property>

</Config>
</ClientAppConfig>
Configuring Oracle Beehive Integration for Zimbra

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

Oracle Beehive Integration for Zimbra is installed in an Oracle home separate from Oracle Beehive. As a result, Oracle Beehive Integration for Zimbra acts like an application tier and should be configured as such.

If you have not configured TLS or SSL for your Oracle Beehive deployment, you do not need to perform any post-installation steps; simply install Oracle Beehive Integration for Zimbra as described in "Installing Oracle Beehive Integration for Zimbra".

This section covers the following topics:

- Configuring Oracle Beehive Integration for Zimbra for SSL-Enabled Oracle Beehive Deployment
- Changing HTTP Port for Oracle Beehive Integration for Zimbra

Configuring Oracle Beehive Integration for Zimbra for SSL-Enabled Oracle Beehive Deployment

If you have configured TLS or SSL for your Oracle Beehive deployment, follow these steps to configure Oracle Beehive Integration for Zimbra (these steps are similar to "Configuring SSL with Self-Signed Certificates During Installation of Oracle Beehive"):

1. If you have configured SSL for your Oracle Beehive deployment, ensure that all your Oracle Beehive application tiers are configured for SSL, including DMZ instances. Refer to "Configuring SSL".

2. Perform a software only install for Oracle Beehive Integration for Zimbra.

3. Replace orapki and Oracle Wallet Manager (owm) binaries of Oracle Beehive Integration for Zimbra with those from your Oracle Beehive instance. Create a new wallet located in <Oracle Beehive Integration for Zimbra home>/Apache/Apache/conf/ssl.wlt/default. Refer to "Step 1: Creating Auto-Login Oracle Wallet" for directions to create a wallet.

4. If you are using self-signed (CA-signed) certificates for your application tier wallets, perform this step.

   Remove the test certificates using Oracle Wallet Manager from the wallets in <Oracle Beehive Integration for Zimbra home>/opmn/conf/ssl.wlt/default and <Oracle Beehive
Integration for Zimbra

/home>/Apache/Apache/conf/ssl.wlt/default, if any. The order of removal should be (1) user certificate, (2) certificate request, and (3) trusted certificate. Refer to "Creating CA-Signed Certificate and Importing it into Wallet" for information about CA-signed certificates.

5. Run the Config Wizard for Oracle Beehive Integration for Zimbra and complete the configuration.

6. Configure TLS for Oracle Beehive Integration for Zimbra. Perform "Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet". (Note that you already created an auto-login wallet for Oracle Beehive Integration for Zimbra in a previous step.

7. If you are using self-signed (CA-signed) certificates for your application tier wallets, perform this step.

Remove the test certificates using Oracle Wallet Manager from the wallets in

<Oracle Beehive Integration for Zimbra
/home>/Apache/Apache/conf/ssl.wlt/default, if any.

---

**Note:** Oracle Beehive Integration for Zimbra installation will fail if the default test certificates are still in the wallets of your Oracle Beehive instances. Configure TLS on the failed Oracle Beehive Integration for Zimbra home, as described in "Configuring TLS with Oracle Wallet", and click Retry from the Install Wizard.

---

**Changing HTTP Port for Oracle Beehive Integration for Zimbra**

If Oracle Beehive Integration for Zimbra and your Oracle Beehive instance are on different hosts, then use the command `beectl modify_port --protocol HTTP` to change the HTTP port. However, do not use this command if Oracle Beehive Integration for Zimbra and your Oracle Beehive instance are on the same host; this will configure all your Oracle Beehive instances to use the same port, which will create a port conflict.

If Oracle Beehive Integration for Zimbra and your Oracle Beehive instance are on the same host, change the HTTP port for Oracle Beehive Integration for Zimbra by changing the HTTP port of your Oracle Beehive instance.

---

**Note:** If you want to change the HTTP port number of your Oracle Beehive instance to a value less than 1024, refer to "Changing HTTP Port" in "Oracle Beehive Post-Installation Procedures".

---

1. Determine the name of the listening component and property name of the port you want to change. Run the `beectl list_ports` command to list all available ports (the --format option is optional):

   `beectl list_ports --format xml`

   ...

   `<row>`
   `<column name="Protocol">HTTP</column>`
   `<column name="Listening Port">7777</column>`
   `<column name="Virtual Port">7777</column>`
   `<column name="Defining Component">ohs_sitel.example.com</column>`
   `<column name="Property Name">HttpListenPort</column>`

---

2 Oracle Beehive Installation Guide
In the previous example, the HTTP (and HTTPS) listening component is ohs_site1.example.com. The property name of the HTTP port is HttpListenPort, and the property name of the HTTPS port is HttpSslListenPort.

2. Change the listening port with the beectl modify_property command with the appropriate listening component and property name. The following example changes the HTTP port to 7779:

```
beectl modify_property
    --component ohs_site1.example.com --name HttpListenPort --value 7779
```

3. Change the HTTP (or HTTPS) port number in the _VIRTUAL_SERVER component. The following example changes the HTTP port number. (Use the property name HttpSslPort to change the HTTPS port number):

```
beectl modify_property --component _VIRTUAL_SERVER --name HttpPort --value 7779
```

4. Activate configuration and commit changes:

```
beectl activate_configuration
beectl modify_local_configuration_files
```

**Note:** The beectl modify_local_configuration_files command will ask you to run this command on all your other instances. **Do not run this command on all your other instances at this time.** For each instance, perform steps 1 to 3 before running the beectl modify_local_configuration_files command.
Cloning Oracle Beehive Application Tiers and Sites

This module covers the following topics:

- Introduction to Cloning
- Preparing Source Application Tier Instance
- Application Tier Cloning
- Site Cloning
- OC4J Instance Cloning
- Oracle Beehive Integration for Zimbra Cloning

This module also covers the following topics about customizing and troubleshooting the cloning process:

- Customizing Files or Directories in a Cloned Image
- Customizing Ports in a Cloned Instance
- Cloning Application Tiers and Sites with Ports Less Than 1024
- Oracle Inventory Location Option of Clone Commands on UNIX-Based Systems
- Cloned Application Tiers Are Not Automatically SSL or AJPS Enabled
- Cloned Application Tiers and LDAP Synchronization
- Replicating LDAP Server for Cloned Instance
- Site Cloning and Multiple Instances
- References to Oracle Application Server Cloning Documentation

Introduction to Cloning

Cloning is the process of copying an existing installation to a different location while preserving its configuration.

Cloning enables you to safely modify an existing Oracle Beehive instance in production, such as installing a new patch or making changes to the database. Clone your existing Oracle Beehive instance and apply your changes to the clone. Once you have verified and certified that your changes work as expected, you may safely apply those changes to your Oracle Beehive instance in production.
A cloned installation behaves the same as the source installation. For example, you can uninstall or patch the cloned instance with the Oracle Beehive Install Wizard. You can also use a cloned installation as the source for another cloning operation.

The cloning process works by copying all files from the source Oracle home to the destination Oracle home. Hence, the cloning process does not copy any files used by the source instance that are located outside the source Oracle home’s directory structure. After the files are copied, a set of beectl commands are used to update the information in key configuration files.

**Note:** A wallet (if one has been configured in the source Oracle home) will be copied to the destination Oracle home. However, the clone will deliberately stop referring to the location of the wallet in the cloned application tier. You will have to manually reconfigure the wallet for the cloned application tier.

**Do not overwrite the wallet in the cloned application tier.**

Oracle Beehive services deployed in the source instance are also copied to the cloned instance and automatically deployed.

This module describes three cloning procedures: "Application Tier Cloning", "Site Cloning" and "OC4J Instance Cloning".

**Application Tier Cloning**

Application tier cloning involves the following steps:

1. **Preparing the source:** This step involves creating an image of the application tier to clone, calling the `beectl clone_preparation` command, and archiving the required files in the Oracle home in a zip file. The cloned application tier is called the *source instance* or *source image*, and the zip file is called the *clone image*.

2. **Cloning the application tier:** This step involves creating a new application tier. It involves unzipping the clone image and calling the `beectl clone_midtier` command. The new application tier is called the *cloned application tier* or *target application tier*.

The following image illustrates where a cloned application tier is located in relation to the database and the source application tier:

**Figure 30–1 Application Tier Cloning**
Site Cloning

Site cloning involves the following steps:

1. **Cloning the information in the database**: Oracle Beehive stores its centralized configuration information and business data in Oracle Database. This step involves cloning this data using standard database backup-recovery procedures (such as RMAN and export-import) into a new instance of Oracle Database. This ensures no overlap or sharing between the existing deployment (the cloned instance) and the new site (the new instance).

2. **Preparing the source**: This step is the same as the one described in "Application Tier Cloning".

3. **Cloning the application tier instance in the new site**: This step creates an application tier in the new site. It involves unzipping the image created during the preparing the source step, and calling the `beectl clone_site` command.

The following image illustrates where a cloned site (a cloned application tier and its database) is located in relation to the source database instance and source application tiers:

**Figure 30–2  Site Cloning**
OC4J Instance Cloning

OC4J instance cloning enables you to clone Oracle Beehive’s managed components. When you clone an Oracle Beehive managed component, a new OC4J instance is created and all the services in the source managed component are deployed in the newly cloned OC4J instance.

Oracle Beehive Integration for Zimbra Cloning

You may clone an instance of Oracle Beehive Integration for Zimbra. Refer to "Oracle Beehive Integration for Zimbra Cloning" for more information.

Preparing Source Application Tier Instance

Follow these steps to create a source image of the application tier you want to clone:

- Step 1: Verify Requirements
- Step 2: Clear or Activate Any Pending Configuration Changes to the Central Configuration Repository
- Step 3: Unset Environment Variables
- Step 4: Shut Down All Processes On the Application Tier
- Step 5: Call beectl clone_preparation Command
- Step 6: Zip Files to Create Clone Image

Step 1: Verify Requirements

Ensure that the chipset and the operating system version of the source computer is the same as the destination computer. (The source computer contains the installation of Oracle Beehive you want to clone.)

Windows

You must have administrator privileges to clone an installation of Oracle Beehive.

Step 2: Clear or Activate Any Pending Configuration Changes to the Central Configuration Repository

The cloning commands update the central configuration repository (the database tables of the Oracle Beehive schema).

If you have made any changes to the central configuration repository (for example, by running the beectl modify_property command), activate those changes by running beectl activate_configuration or clear them by running beectl clear_proposed_configuration.
Not activating or clearing any pending configuration changes may hinder the cloning process.

**Step 3: Unset Environment Variables**

Unset the environment variables `ORACLE_HOME`, `ORACLE_SID`, and `LD_LIBRARY_PATH` (if they have been set or defined in your system).

Oracle application scripts invoked by `beectl` cloning commands may fail if you do not unset these environment variables.

**Step 4: Shut Down All Processes On the Application Tier**

Call the command `beectl stop --all` to shut down all processes running in the source Oracle home.

---

**Note:** Shutting down all processes in the application tier is not strictly required but it is advisable. This ensures that none of the files in the Oracle home are in use. You will later archive the Oracle home into a zip file. You may receive warnings or errors from your zip tool if some files are in use.

---

**Step 5: Call beectl clone_preparation Command**

The `beectl clone_preparation` command calls the Oracle Application Server `prepare_clone.pl` script, which creates local copies of several files that contain information useful for the cloning process. For example, this command creates a file in the Oracle home that contains the current host name and Oracle home path. The cloning process uses this information to search for and replace various strings in local configuration files on the target application tier.

This command also outputs a list of files (relative to the location of Oracle home) required to be zipped up to create the clone image.

The cloning commands (`beectl clone_midtier` and `beectl clone_site`) will fail if you have not called the `beectl clone_preparation` command previously:

```
beectl clone_preparation --file <fully qualified file name>
```

The following table describes the options for the `beectl clone_preparation` command:
Step 6: Zip Files to Create Clone Image

First, verify that the command `<Oracle home>/beehive/bin/hasbind` is owned by the user who installed your Oracle Beehive instance; change the owner of the command if this is not the case.

Archive and compress the files listed in the file generated by the `beectl clone_preparation` command. Use a file archiver tool that can archive and compress a list of files that total at least 2 Gb in size. Also, make sure that the tool preserves the permissions and timestamps of the files. For example, you may use the tool 7-Zip, which you may download from [http://www.7-zip.org/](http://www.7-zip.org/).

Use the following command to archive the Oracle Beehive home with the 7-Zip tool:

```
C:\7-zip\7z.exe a C:\clone_beehive.7z @C:\clone_prepare.txt
```

*C:\clone_prepare.txt* is the file generated by the `beectl clone_preparation` command. *C:\clone_beehive.7z* is the name of the file that contains the archived Oracle Beehive home.

**WARNING:** Only archive and compress those files listed in the file generated by the `beectl clone_preparation` command, not the entire Oracle home you want to clone.

Alternatively, you may use the `tar` and `gzip` commands.

The following example shows how to archive and compress the source on Solaris:

```
cd <source Oracle home>
tar -cf - -I <file created by beectl clone_preparation command> | gzip > clone_image.tar.gz
```
Cloning the application tier consists of the following steps:

- **Step 1: Unzip Compressed Oracle Home**
  1. Copy the compressed Oracle home from the source computer to the destination computer.
  2. Extract the compressed Oracle home into a directory, which will become the new Oracle home at the destination location.

- **Step 2: Set PERL5LIB Environment Variable**

- **Step 3: Modify Oracle Home Path**

- **Step 4: Execute beectl clone_midtier Command**

- **Step 5: Perform Miscellaneous Operations**

---

**Notes:** In some Solaris environments, because of stdout limitations, the gzip command may not be able to create a tar file of the Oracle home properly. In this case, use two commands to archive and compress the Oracle home:

1. Create a tar file:
   ```
   cd $ORACLE_HOME
   tar cf /tmp/clone_beehive.tar -I /tmp/clone_prepare.txt
   ```

2. Compress the tar file with gzip:
   ```
   gzip /tmp/clone_beehive.tar
   ```

   The `tar` command may issue warnings if the sticky bit is set on some files. You can safely ignore these warnings.

   Ensure that the file created by the `tar` command (in the previous example, this would be `clone_image.tar.gz`) is not located in the Oracle home; the `tar` command may fail.

   You may receive an error message similar to the following when using this `tar` command:
   ```
   tar: sqljdbc.dll: Cannot stat: No such file or directory
   tar: instjdbc.sql: Cannot stat: No such file or directory
   tar: sqljdbc.dll: Cannot stat: No such file or directory
   tar: instjdbc.sql: Cannot stat: No such file or directory
   tar: pool.jar: Cannot stat: No such file or directory
   tar: Error exit delayed from previous errors
   ```

   If you encounter this error, shutdown all processes on your Oracle Beehive application tier with the `beectl stop --all` command before creating the clone image again.

   Do not use the `jar` utility to archive and compress the Oracle home. This avoids warnings or errors from the zip tool about zipping open files (for example, the `<Oracle home>/jdk` files).

---

**Application Tier Cloning**

Cloning the application tier consists of the following steps:

- **Step 1: Unzip Compressed Oracle Home**
- **Step 2: Set PERL5LIB Environment Variable**
- **Step 3: Modify Oracle Home Path**
- **Step 4: Execute beectl clone_midtier Command**
- **Step 5: Perform Miscellaneous Operations**

---

**Step 1: Unzip Compressed Oracle Home**

1. Copy the compressed Oracle home from the source computer to the destination computer.
2. Extract the compressed Oracle home into a directory, which will become the new Oracle home at the destination location.
If you are using 7-Zip as your file archiver tool, extract the compressed Oracle home with the following commands:

```
cd C:\new_oracle_home
C:\7-zip\7z.exe x -r C:\clone_beehive.7z
```

If you are using `tar` and `gzip`, extract the compressed Oracle home with the following commands:

```
mkdir -p <destination Oracle home>
cd <destination Oracle home>
gunzip < <directory containing tar file>/clone_image.tar.gz | tar xf -
```

**Notes:** Make sure that the tar and gzip/gunzip versions on the source and destination computers are compatible. You may encounter problems unzipping the archive if these versions differ.

The OS (operating system) user doing this **must** have permission to create and update the Oracle inventory. The Oracle inventory is a repository for all Oracle products installed on a host. This is typically a directory named `oraInventory`. The clone operations (described in the sections "Application Tier Cloning" and "Site Cloning") will try to create or update the existing Oracle inventory. If the OS user does not have permission, then cloning will fail, and it is not possible to recover from such failure. You will have to retry the cloning procedure.

To determine with OS group has permission to update the Oracle inventory on Linux, see the file `/etc/oraInst.loc`. For Solaris, see the file `/var/opt/oracle/oraInst.loc`. For example:

```
prompt> cat /etc/oraInst.loc/var/opt/oracle/oraInst.loc
inventory_loc=/private/beehive/oraInventory
inst_group=g900
```

In this example, OS users that belong to group `g900` have permission to update the Oracle inventory, which is located in `/private/beehive/oraInventory`.

---

**Step 2: Set PERL5LIB Environment Variable**

You must have Perl 5.8.3 or later installed on your system.

Before running the cloning Perl scripts, set the `PERL5LIB` environment variable to the path of the Perl directory in the Oracle home. This path must be the first one listed in the variable definition. For example:

```
setenv PERL5LIB $ORACLE_HOME/perl/lib/5.8.3/sun4-solaris-thread-multi:
$ORACLE_HOME/perl/lib/5.8.3/sun4-solaris-thread-multi/ Site
```

**Step 3: Modify Oracle Home Path**

**Note:** This step applies only to UNIX-based operating systems.

The `beectl` command is a Perl script that has the path to Oracle home embedded in it. Modify this path to the new Oracle home. Execute the following `beectl` command
to update the embedded Oracle home path. Note that in this case you must add the Perl executable path to the command:

\[
\texttt{ORACLE_HOME/perl/bin/perl ORACLE_HOME/beehive/bin/beectl modify_beectl} \\
\text{--new_oracle_home <fully qualified path to new Oracle home>}
\]

The following table describes the options for the `beectl modify_beectl` command:

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--new_oracle_home</td>
<td>Mandatory</td>
<td>Path of the new Oracle home. Specify only a fully qualified path without trailing slashes. For example: /app/oracle</td>
</tr>
</tbody>
</table>

### Step 4: Execute `beectl clone_midtier` Command

The `clone_midtier` command creates a new application tier and configures it:

\[
\texttt{beectl clone_midtier [options]}
\]

**Note:** If cloning fails during this step, you must restart the Oracle Beehive cloning process.

Delete the new Oracle home, and ensure that references to this Oracle home from the Oracle Universal Installer inventory are deleted.

Start the Oracle Beehive cloning process once again, preferably in a different directory Oracle home location.

**Note:** That the `beehive clone_midtier` does not affect the application tier you are trying to clone. Therefore, you do not need to restore this application tier if cloning fails during this step.

The following table describes the options for the `beectl clone_midtier` command:

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--ias_instance_name</td>
<td>Mandatory</td>
<td>The instance name for the clone. [Notes: \ The instance name should not contain the period (.) character nor the host name itself. The instance name must be different from the source instance and any other instances that use the same Oracle Application Server infrastructure or that are part of the same cluster topology.]</td>
</tr>
<tr>
<td>--host_name</td>
<td>Mandatory</td>
<td>The hostname of the computer on which the clone is being created. This must be the fully qualified hostname (with the domain appended). For example, hostB.example.com.</td>
</tr>
</tbody>
</table>
--db_schema_password Mandatory Database password for the BEE_CODE schema.

The password must be the same as the one used during the installation of the source application tier. This is the password of the Oracle Beehive database schema (typically BEE_CODE).

Note: If you are not in shell mode, you must obfuscate the database password and add the --obfuscated option to the beectl clone_midtier command.

To obfuscate a password, use the beectl obfuscate command:

beectl obfuscate
--expiration_time_in_minutes 0
Enter value for password:

Successfully obfuscated the string.

--oui_inv_ptr_loc Optional Oracle Universal Installer inventory location. For more information, refer to "Oracle Inventory Location Option of Clone Commands on UNIX-Based Systems".

The Oracle Beehive cloning process internally uses the Oracle Universal Installer to update the Oracle inventory.

The value of this option specifies the Oracle Universal Installer inventory location. For example:

--oui_inv_ptr_loc
*/var/opt/oracle/oraInst.loc"

Note: This value is platform-dependent. On Solaris it is /var/opt/oracle/oraInst.loc.

--oracle_home_name Optional Oracle home name. The default value is the value for the --ias_instance_name option.
Step 5: Perform Miscellaneous Operations

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
</table>
| --do_not_start_at_end      | Optional          | If true, Oracle Beehive will not start components after cloning. Permitted value is a boolean value. Setting this option to true will prevent the cloned site from contacting external resources (such as LDAP, virus scanner, voicemail gateway, or Oracle Collaboration Coexistence Gateway (Windows only) of the source site. If you run beectl clone_site for the first time from a source site that has an external source enabled, you will receive a warning message similar to the following:
WARNING : Processing
UserDirectoryService : _
UserDirectoryService
WARNING : UserDirectoryService is configured with following ENABLED directory profiles
WARNING : Directory profile id : 880c0691-0d10-4e07-9da0-6d23ab972105
WARNING : LDAP server id : AUTO_DTE_LDAP_example.com
WARNING : LDAP server name : example.com
WARNING : LDAP server port : 389
WARNING : LDAP server SSL port : 636
For this example, you would disable your directory profile before continuing. |

Note: This step applies only to UNIX-based platforms.

1. Run the root.sh script in the new Oracle home so that the cloned instance works properly. You must log in as the root user to run the script. The script is located in the cloned instance’s Oracle home directory, for example: $ORACLE_HOME/root.sh.

2. If this is the first Oracle installation on the host, run the orainstRoot.sh script as the root user to register the Oracle inventory directory. The script is located in the oraInventory directory.

Site Cloning

Run all the steps described in "Application Tier Cloning", except call the beectl clone_site command (instead of beectl clone_midtier).

Step 1: Unzip Compressed Oracle Home

This step is the same as "Step 1: Unzip Compressed Oracle Home".
Step 2: Set PERL5LIB Environment Variable

This step is the same as "Step 2: Set PERL5LIB Environment Variable".

Step 3: Modify Oracle Home Path

This step is the same as "Step 3: Modify Oracle Home Path"

Step 4: Execute beectl clone_site Command

---

**Note:** If cloning fails during this step, you must restart the Oracle Beehive cloning process.

Delete the new Oracle home, and ensure that references to this Oracle home from the Oracle Universal Installer inventory are deleted.

Start the Oracle Beehive cloning process once again, preferably in a different directory Oracle home location.

---

The `beectl clone_site` command creates the first application tier in a site and configures it. This command clears the application tier topology of the old site from the central configuration repository (stored in the database) and creates a new topology for the new site with this as the first and only application tier. It then reconfigures the files on the new Oracle home to work against the new site.

This command is designed and tested so that none of the processes in the new site ever connect to the old site (and vice versa; the old site is ignorant of the new site).

---

**Note:** The `beectl clone_site` also performs the following:

- It clears the configuration of Oracle RAC nodes in the central configuration repository. In particular, it clears the properties XaServiceNames and OnsNodeConfiguration in the database configuration object. Because a new database has been created for the new site, the Oracle RAC configuration for the old database will not be needed.

- It deletes the configuration of UnmanagedBeehiveInstance from the central configuration repository. In particular, the DMZ application tiers and their configurations are deleted.

- UnmanagedOc4j is not deleted.

- The site name is not changed. You may change the site name with the `beectl modify_property` command.

---

The following table describes the options of the `beectl clone_site` command:
<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--ias_instance_name</td>
<td>Mandatory</td>
<td>The instance name for the clone.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Notes:</strong> The instance name should not contain the period (.) character nor the host name itself.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The instance name must be different from the source instance and any other instances that use the same Oracle Application Server infrastructure or that are part of the same cluster topology.</td>
</tr>
<tr>
<td>--host_name</td>
<td>Mandatory</td>
<td>The hostname of the computer on which the clone is being created. This must be the fully qualified hostname (with the domain appended). For example, hostB.example.com.</td>
</tr>
<tr>
<td>--db_connect_string</td>
<td>Mandatory</td>
<td>Database connect string for the new site. This would be the connect string for the cloned database.</td>
</tr>
<tr>
<td>--db_schema_password</td>
<td>Mandatory</td>
<td>Database password for the schema.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> If you are not in shell mode, you must obfuscate the database password and add the --obfuscated option to the beectl clone Site command.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To obfuscate a password, use the beectl obfuscate command:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>beectl obfuscate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--expiration_time_in_minutes 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enter value for password:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Successfully obfuscated the string.</td>
</tr>
<tr>
<td>--db_schema_name</td>
<td>Optional</td>
<td>New database schema name. Typically, this would be the same schema as the old site, which is usually BEE_CODE.</td>
</tr>
<tr>
<td>Option</td>
<td>Mandatory/Optional</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>--db_rac_node_information</td>
<td>Optional</td>
<td>New values for the host:port of Oracle RAC nodes. The host name should not be the VIP hostname. Specify the actual computer name instead.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The port should be the ONS remote port, which is also known as the CRS port. This port number is specified in the file <code>&lt;Oracle RAC database home&gt;/opmn/conf/ons.config</code>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This option is required to configure ONS properly for Fast Connection Failover, which provides failover for a JDBC connection to a RAC database.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This option can be specified more than once and values will form an array in the given order. For example:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_rac_node_information &quot;hostnode1.example.com:1521&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_rac_node_information &quot;hostnode2.example.com:1521&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_rac_node_information &quot;hostnode3.example.com:1525&quot;</td>
</tr>
<tr>
<td>--db_xa_service_name</td>
<td>Optional</td>
<td>New values for the service names of Oracle RAC nodes. This option can be specified more than once and values will form an array in the given order. For example:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_xa_service_name node1_service_name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_xa_service_name node2_service_name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--db_xa_service_name node3_service_name</td>
</tr>
<tr>
<td>--retain_rac_node_information</td>
<td>Optional</td>
<td>Retain existing values for <code>--db_xa_service_name</code> and <code>--db_rac_node_information</code>. This option cannot be specified with <code>--db_xa_service_name</code> and <code>--db_rac_node_information</code>.</td>
</tr>
<tr>
<td>--oracle_home_name</td>
<td>Optional</td>
<td>Oracle home name. The default value is the value provided for the <code>--ias_instance_name</code> option.</td>
</tr>
</tbody>
</table>
Table 30–4  (Continued)beectl clone_site Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
</table>
| --oui_inv_ptr_loc    | Optional            | Oracle Universal Installer inventory location. For more information, refer to "Oracle Inventory Location Option of Clone Commands on UNIX-Based Systems". The Oracle Beehive cloning process internally uses the Oracle Universal Installer to update the Oracle inventory. The value of this option specifies the Oracle Universal Installer inventory location. For example:  
```
--oui_inv_ptr_loc
"/var/opt/oracle/oraInst.loc"
```

**Note:** This value is platform-dependent. On Solaris, it is `/var/opt/oracle/oraInst.loc`.

| --do_not_start_at_end | Optional            | If true, Oracle Beehive will not start components after cloning. Permitted value is a boolean value. Setting this option to true will prevent the cloned site from contacting external resources (such as LDAP, virus scanner, voicemail gateway, or Oracle Collaboration Coexistence Gateway (Windows only) of the source site. If you run `beectl clone_site` for the first time from a source site that has an external source enabled, you will receive a warning message similar to the following:
```
WARNING : Processing
UserDirectoryService : _
UserDirectoryService
WARNING : UserDirectoryService is configured with following ENABLED directory profiles
WARNING :
WARNING : Directory profile id : 880c0691-0d10-4e07-9da0-6d23ab972105
WARNING : LDAP server id : AUTO_DTE_LDAP_example.com
WARNING : LDAP server name : example.com
WARNING : LDAP server port : 389
WARNING : LDAP server SSL port : 636
```
For this example, you would disable your directory profile before continuing.

| --site_name           | Optional (Oracle Beehive Release 1 (1.3) and later) | If you specify this option, the site cloning process will clone Oracle Beehive on the target application tier with this new name as the site name of the cloned application tier. |
Step 5: Prevent Services from Target Application Tiers from Referring to External Resources

In a typical Oracle Beehive installation, Oracle Beehive services may refer to some external resources such as an LDAP server or a virus scan engine. If you perform a site clone of such an installation, the target application tier may also refer to the same external resources.

After running the command `beectl clone_site`, prevent any Oracle Beehive services of the target application tier from referring to the external resources of the source site. Afterwards, you may configure the target application tier to refer to a new set of external resources.

The `beectl clone_site` command will return warning or error messages if the target application tier refers to any external resources. If you do not receive any warning or error messages, proceed to the next step.

If you do receive any warning or error messages from `beectl clone_site` about external resources, stop any Oracle Beehive service from referring to an external resource by following one or more of these steps:

- Stopping User Directory Service from Referring to LDAP Server
- Stopping Authentication Service from Referring to LDAP Server
- Stopping Virus Scanner Process from Referring to External Virus Scan Engine

**Notes:** Only perform these steps on the target application tier; do not perform these steps on the source site.

These steps are only applicable for cloning a site; do not perform these steps if you are cloning an application tier.

The target application tier may not work as expected during the time between the completion of site cloning process and the modification of Oracle Beehive services to refer to a new set of external resources.

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>--ignore_validation_warnings</code></td>
<td>Optional</td>
<td>If you specify this option, the site cloning process will proceed regardless of warnings about target application tiers referring to external resources. Refer to &quot;Step 5: Prevent Services from Target Application Tiers from Referring to External Resources&quot; for more information about external resources.</td>
</tr>
</tbody>
</table>

**Stopping User Directory Service from Referring to LDAP Server**

If you have synchronized User Directory Service (UDS) with an external LDAP server (as described in "Integrating and Synchronizing LDAP with Oracle Beehive"), then disable all the directory profiles from your target application tier:

1. Retrieve a list of all directory profile objects in your target application tier:
   ```bash
   beectl list_components --type "UserDirectoryService\$DirectoryProfile"
   ```

2. For each directory profile ID, run the following command:
beectl modify_property
  --component <directory profile ID>
  --name ProfileState
  --value DISABLE
  --activate_configuration

Stopping Authentication Service from Referring to LDAP Server
If you have followed the steps described in “Configuring Authentication Service to Use LDAP Server”, change the authentication mode to use the database instead in your target application tier:

1. Retrieve the Authentication Service ID of your target application tier:
   
   beectl list_components --type AuthenticationService

2. Change the property AuthStoreType to db:
   
   beectl modify_property
     --component <Authentication Service ID>
     --name AuthStoreType
     --value db
     --activate_configuration

Stopping Virus Scanner Process from Referring to External Virus Scan Engine
To stop the virus scanner process from referring to an external virus scan engine, remove the reference of VirusScannerCluster from _CURRENT_SITE of your target application tier with the following command:

beectl modify_property
  --component _CURRENT_SITE
  --name VirusScanEngineCluster
  --revert_to_default

Step 6: Perform Miscellaneous Operations
Perform the steps described in “Step 5: Perform Miscellaneous Operations”. Afterwards, ensure that the cloned database has the same name as the original database name. (This is required so that Change Data Capture works properly.) If the cloned database name is different from the original database name, change GLOBAL_NAME with the command ALTER DATABASE RENAME GLOBAL_NAME. Refer to Oracle Database SQL Reference for more information.

OC4J Instance Cloning
OC4J instance cloning enables you to clone Oracle Beehive’s managed components, in particular, the OC4J managed components BEEAPP, oc4j_soa, and BEECORE. You may not clone BEEMGMT.

The beectl clone_oc4j_instance command clones an Oracle Beehive managed component by creating a new OC4J instance and deploying all the services in the source managed component in the newly cloned OC4J instance. You may only clone Oracle Beehive managed components with this command; you may not clone non-Oracle Beehive OC4J instances.
The following table describes the options of the `beectl clone_oc4j_instance` command:

<table>
<thead>
<tr>
<th>Option</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--source_oc4j_instance_id</td>
<td>Either this option or --source_oc4j_instance_name is required</td>
<td>ID of the managed component to be cloned, for example, BEEAPP_instance1.example.com</td>
</tr>
<tr>
<td>--source_oc4j_instance_name</td>
<td>Either this option or --source_oc4j_instance_id is required</td>
<td>Prefix of the managed component to be cloned, for example BEEAPP, oc4j_soa, or BEECORE</td>
</tr>
<tr>
<td>--target_oc4j_instance_name</td>
<td>Mandatory</td>
<td>Name of the new OC4J instance to be created. The application tier instance name and the host name will be appended to this name to create the ID of the new OC4J instance. For example, if you specify BEEAPP_CLONE, its ID will be similar to BEEAPP_CLONE_instance1.example.com.</td>
</tr>
<tr>
<td>--exclusion_list</td>
<td>Optional</td>
<td>List of services to exclude from the newly created OC4J instance.</td>
</tr>
<tr>
<td>--working_list</td>
<td>Optional</td>
<td>List of services that will only be deployed on the newly created OC4J instance.</td>
</tr>
</tbody>
</table>

The following example clones BEEAPP_instance1.example.com, which creates a new OC4J instance with the ID BEEAPP_CLONE_instance1.example.com and deploys all the services in BEEAPP in BEEAPP_CLONE except for ClientManagementService:

```
beectl clone_oc4j_instance
    --source_oc4j_instance_name BEEAPP
    --target_oc4j_instance_name BEEAPP_SOURCE
    --exclusion_list ClientManagementService
```

### Oracle Beehive Integration for Zimbra Cloning

Oracle Beehive Integration for Zimbra is available for Oracle Beehive Release 1 (1.3) and later.

You may clone an instance of Oracle Beehive Integration for Zimbra; follow the steps described in "Application Tier Cloning" and apply them to the Oracle Beehive Integration for Zimbra home.
Customizing Files or Directories in a Cloned Image

The `beectl clone_preparation` command controls which files or directories are packaged in the clone image, which you may customize.

The `beectl clone_preparation` command refers to the file `<Oracle home>/beehive/conf/scripts/exclude_while_cloning.txt` to obtain the list of files and directories that will be excluded from the clone image.

You may customize this file before executing the `beectl clone_preparation` command.

The comments section in this file describes how to customize it.

Customizing Ports in a Cloned Instance

The `beectl clone_midtier` and `clone_site` commands retain the port values from the source application tier configuration. That is, the cloned application tier will listen on the same ports as the source application tier.

You may customize the ports before executing the `beectl clone_midtier` and `clone_site` commands by updating the file `<Oracle home>/beehive/conf/scripts/clone_ports.ini`. The comments section in this file describes how to override port values.

This file is just an overriding mechanism and does not contain the existing ports, in particular, the ports on which source application tier instance is listening. You may call the `beectl list_ports` command on the source application tier instance to view the existing port assignments, which will also be the port assignments for the cloned application tier instance.

Cloning Application Tiers and Sites with Ports Less Than 1024

If the source application tier or site has been configured with ports less than 1024, and you want to retain the same ports in the cloned application tier or site, follow these steps during the cloning process:

1. Perform "Step 6: Zip Files to Create Clone Image" as the root user. Certain files, such as `<Oracle home>/beehive/bin/hasbind` and `<Oracle home>/Apache/Apache/bin/.apachectl`, require more permissions to be archived properly.

2. Run the `beectl clone_midtier` or `beectl clone_site` commands with the option `--do_not_start_at_end` to ensure that no Oracle Beehive processes are started after a successful cloning. This will prevent some processes from failing because they still have to be configured for privileged ports (less than 1024).

3. Configure the cloned application tier or site by following the steps described in "Configuring Oracle Beehive to Listen on Ports Less Than 1024".

If you cloned an application tier or a site with ports less than 1024, and you want to reconfigure the ports of the cloned application tier or site to use non-privileged ports (greater than 1024), then follow the steps described in "Customizing Ports in a Cloned Instance".
Oracle Inventory Location Option of Clone Commands on UNIX-Based Systems

Typically, information about Oracle products on a UNIX-based host are stored in a single location, the Oracle inventory. The location of the Oracle inventory is defined in the Oracle inventory location pointer file. For Solaris, the Oracle inventory location pointer file is /var/opt/oracle/oraInst.loc:

```
prompt>cat /var/opt/oracle/oraInst.loc
inventory_loc=/private/beehive/oraInventory
inst_group=g900
```

The beectl clone_midtier and clone_site commands (with the aid of Oracle Application Server scripts) use the Oracle inventory location pointer from its default location (/var/opt/oracle/oraInst.loc on Solaris) to determine the location of the Oracle inventory. The Oracle inventory is updated with any new Oracle Beehive application tier instance information so that the standard Oracle install and upgrade tools such as Oracle Universal Installer and Opatch will work seamlessly on the cloned application tier instance.

The Oracle inventory location pointer file can be located elsewhere. If this file is not located in the platform default location (/var/opt/oracle/oraInst.loc on Solaris), then you must specify its location when executing the beectl clone_midtier and clone_site commands.

Cloned Application Tiers Are Not Automatically SSL or AJPS Enabled

Cloned application tiers are not SSL or AJPS enabled even if the source image is SSL or AJPS enabled.

Enabling SSL and AJPS is a post-install configuration step. Currently, the Oracle Beehive cloning process deliberately does not preserve the SSL and AJPS settings of the source image because the process of enabling them is specific to each application tier and requires administrator input (such as the generation of new certificates).

You must individually enable SSL and AJPS for each of your cloned application tiers. Note that the source application tier is not affected and will remain SSL and AJPS enabled.

For more information about configuring SSL, or more specifically TLS (Transport Layer Security), which is the successor of SSL, and AJPS, refer to the following modules:

- Configuring TLS with Oracle Wallet
- Configuring SSL for LDAP Integration
- Enabling AJPS

Cloning SSL-Enabled Application Tiers

If you have cloned an SSL-enabled application tier with self-signed certificates, then follow these steps to enable SSL for your cloned application tier:

1. Recreate the self-signed certificates on the cloned application tier.
2. Perform "Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet" in "Configuring TLS with Oracle Wallet".
If you have cloned an SSL-enabled application tier with test certificates, you only need to perform "Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet" in "Configuring TLS with Oracle Wallet".

Cloned Application Tiers and LDAP Synchronization

If you have cloned an application tier that you have synchronized with an LDAP server, as described in "Integrating and Synchronizing LDAP with Oracle Beehive", the cloned application tier should still be synchronized with the same LDAP server.

However, if you have configured the Domain Name Service (DNS) on the host of the source instance, as described in "Active Directory Considerations", you must perform the same configurations on the host of the cloned instance.

If you wish to synchronize your cloned Oracle Beehive instance with another LDAP server, that LDAP server must be a clone of the source LDAP server. It must have matching GUIDs as the source LDAP server, although not necessarily matching hostname, port, or administrator credentials. Refer to the next section, "Replicating LDAP Server for Cloned Instance" to create a clone of the source LDAP server (these directions are specific to Oracle Internet Directory).

Replicating LDAP Server for Cloned Instance

If you have cloned an application tier that you have synchronized with an LDAP server, the cloned application tier will be synchronized with the same LDAP server. However, if you wish to synchronize the cloned instance with a replicated LDAP server instead, follow the steps in this section.

These steps only apply to a source instance that is synchronized with Oracle Internet Directory.

1. Install a new instance of an LDAP server for the cloned instance.
   - If you are using Oracle Internet Directory, install it in replicated mode. You may choose any type of replication (LDAP replication or Advanced Replication). However, you probably only need one-way LDAP replication; you probably do not want changes in the cloned LDAP server to be propagated to the source LDAP server.
     For more information about installing Oracle Internet Directory in replicated mode, refer to Chapter 6, "Installing Oracle Internet Directory in Replicated Mode" in Oracle Application Server Installation Guide for Solaris Operating System (SPARC 64-Bit).
   - If you are using Active Directory, create a new domain controller.

2. Add a replica of the supplier (the source LDAP server) to the LDAP server you just created (which is called the consumer). Replicate the nodes specified in the source instance's LDAP mapping profile (in particular, the DNs specified in <user_search_base> and <groups_search_base>).
   - If you are using Oracle Internet Directory, for more information about adding a replica, refer to Chapter 30, "Oracle Internet Directory Replication Installation and Configuration" in Oracle Internet Directory Administrator's Guide.
   - If you are using Active Directory, create a new replica of the application directory partition and add it to the domain controller you created in the previous step. (In particular, replicate the application directory partitions identified by <user_search_base> and <groups_search_base> in the source.
instance’s LDAP mapping profile, then add those replicas to the domain controller you created in the previous step.)

3. Ensure that the names of the LDAP mapping profiles of the source and cloned instances are the same.

4. If you are using Oracle Internet Directory, set the attribute orclDIPRepository to true in your consumer.

5. Retrieve the LDAP mapping profile from the source instance with the following command:

   ```bash
   beectl list_directory_profiles --file <your home directory>/source_profile.xml
   ```

   The LDAP mapping profile will be saved in the file specified by the `--file` option; in this example, this file is `/<your home directory>/source_profile.xml`.

6. Update LDAP mapping profile you just retrieved (`<your home directory>/source_profile.xml`) with values that correspond to the cloned instance and the replicated LDAP server:

   - Set `<profile_state>` to DISABLE
   - Update the obfuscated `<ldap_user_password>`. Call the following command on the cloned instance to get a new obfuscated password for the LDAP administrator’s password:

     ```bash
     beectl obfuscate --expiration_time_in_minutes 0
     ```

   - Ensure that the enterprise and organization IDs are correct for the cloned instance.
   - Change the SSL and non-SSL port, if required.

7. Delete the existing profile on the cloned instance:

   ```bash
   beectl delete_directory_profile --profilename "My Profile"
   ```

   Retrieve the name of the existing profile from the `<profile_name>` element.

8. Add the LDAP mapping profile you modified in step 6 to the cloned instance:

   ```bash
   beectl add_directory_profile --file ~/source_profile.xml
   ```

9. Restart the BEECORE and BEEMGMT processes on the cloned instance:

   ```bash
   beectl status
   ```

<table>
<thead>
<tr>
<th>Component identifier</th>
<th>Component type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTI_instance1.example.com</td>
<td>BTI</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEEAPP_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEEMGMT_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>BEECORE_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>oc4j_soa_instance1.example.com</td>
<td>OC4J</td>
<td>RUNNING</td>
</tr>
<tr>
<td>ohs_instance1.example.com</td>
<td>HTTP_Server</td>
<td>RUNNING</td>
</tr>
</tbody>
</table>
beectl restart --component BEEMGMT_instance1.example.com
beectl restart --component BEECORE_instance1.example.com

10. This step is optional. Temporarily disable LDAP authentication with the following beectl commands:
    
    beectl modify_property --component _AuthenticationService
    --name AuthStoreType --value db
    beectl activate_configuration
    beectl modify_local_configuration_files

11. Update the BEE_DATA.UDS_SYNC_PROFILE table with the changelog information from the replicated LDAP server:

    SELECT chg_no FROM ods.ods_chg_log WHERE rownum = 1 ORDER BY chg_no desc;

    a. If you are using Oracle Internet Directory, retrieve the change log value from the replicated Oracle Internet Directory by executing the following query on the Oracle Directory Server (ODS) schema:

    SELECT chg_no FROM ods.ods_chg_log WHERE rownum = 1 ORDER BY chg_no desc;

    b. If you are using Active Directory, retrieve the change log value from the domain controller that contains your replicated users and groups with the following command:

    ldapsearch
    -p <Port of the domain controller>
    -h <Hostname of the domain controller>
    -D "<Administrator name of the Active Directory's Windows domain>"
    -w "<Administrator Password>"
    -b ""
    -s base "objectclass="*
    highestCommittedUSN

c. Update the BEE_DATA.UDS_SYNC_PROFILE table:

    UPDATE bee_data.uds_sync_profile
    SET changeid = <Value retrieved from previous query>;

12. Re-enable LDAP synchronization:

    beectl modify_property --component <Profile name>
    --name ProfileState --value ENABLE
    beectl activate_configuration
    beectl restart --all

13. Re-enable LDAP authentication:

    beectl modify_property --component _AuthenticationService
    --name AuthStoreType --value ldap
    beectl activate_configuration
    beectl modify_local_configuration_files

**Testing Replicated LDAP in Cloned Instance**

Perform these tasks to ensure that the replicated Oracle Internet Directory server is working in your cloned instance:

1. Create a new user in your source Oracle Internet Directory instance
2. Check your source Oracle Beehive instance; the new user you created should appear in UDS.

3. Check the ODS_CHG_LOG table from the ODS schema from the replicated Oracle Internet Directory instance. You should see your changes; expect a delay of one hour.

4. Between fifteen to thirty minutes later, you should see a change in the cloned Oracle Beehive instance’s UDS.

Troubleshooting Replicated LDAP

- Check the log files from the BEEMGMT and BEECORE processes.
- For more troubleshooting tips, refer to the section "Troubleshooting Synchronization between Oracle Beehive and Oracle Internet Directory" in "Integrating and Synchronizing LDAP with Oracle Beehive".

Site Cloning and Multiple Instances

Oracle Beehive site cloning will result in a single application tier in the cloned site irrespective of the number of application tiers in the source site. To create more application tiers in the cloned site, follow the procedures described in "Application Tier Cloning" in the cloned site. Note that a cloned application tier will not be SSL enabled even if the source image is SSL enabled. Refer to "Cloned Application Tiers Are Not Automatically SSL or AJPS Enabled" for more information.

References to Oracle Application Server Cloning Documentation

Oracle Beehive cloning scripts internally use Oracle Application Server cloning scripts to clone Oracle Application Server components such as OC4J on which Oracle Beehive is based. Refer to the following sections in Chapter 9, "Cloning Application Server Middle-Tier Instances" in Oracle Application Server Administrator’s Guide:

- Section 9.4.4, Locating and Viewing Log Files
- Section 9.5, Considerations and Limitations for Cloning
Oracle Beehive High Availability Configuration

This part describes how to install and configure Oracle Beehive in a high availability environment. It contains the following modules:

- Configuring and Installing Oracle Beehive Release 1 for Oracle RAC
- Installing Oracle Beehive in High Availability Environment
Oracle Beekeeper is available for Oracle Beehive Release 1 (1.3) and later.

Depending on your security requirements or any other issue particular to your deployment, perform one or more of the following procedures after installing Oracle Beekeeper:

- Configuring Oracle Beekeeper for SSL Access
- Configuring Oracle Beekeeper with Oracle Wallet
- Changing Oracle Beekeeper Port
- Extending Java Single Sign-On Session Timeout
- Configuring Oracle Beekeeper for LDAP-Based Authentication
- Configuring Virtual Host
- Restarting OC4J

## Configuring Oracle Beekeeper for SSL Access

1. Create a keystore with the following command. The keytool command is located in `<Oracle Beekeeper home>/jdk/bin`. The following example will create a keystore named `server.keystore` in the directory `<Oracle Beekeeper home>` with the password `welcome`:

   ```
   keytool -genkey -keyalg "RSA" 
   -keystore <Oracle Beekeeper home>/server.keystore 
   -storepass welcome -validity 90
   ```

2. Make a copy of `<Oracle Beekeeper home>/j2ee/home/config/default-web-site.xml` and name it `<Oracle Beekeeper home>/j2ee/home/config/secure-web-site.xml`.

### Note:
For more information about the keytool utility, refer to [http://java.sun.com/j2se/1.5.0/docs/tooldocs/solaris/keytool.html](http://java.sun.com/j2se/1.5.0/docs/tooldocs/solaris/keytool.html).

For additional information, refer to "Using Keys and Certificates with OC4J and Oracle HTTP Server" and "Using SSL with Standalone OC4J" in Chapter 15, "SSL Communication with OC4J" in *Oracle Containers for J2EE Security Guide*. 
3. In secure-web-site.xml, edit the <web-site> element. Set the port attribute to any available port number, secure to true, and protocol to https:

```xml
<web-site
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  port="4443"
  secure="true"
  protocol="https"
  display-name="Default Web Site"
  schema-major-version="11"
  schema-minor-version="1">
```

**Note:** You may also add the attribute virtual-hosts to the <web-site> to use both SSL and virtual hosts. Refer to "Configuring Virtual Host" for more information.

4. Add the following element inside the <web-site> element:

```xml
<ssl-config
  keystore="<Oracle Beekeeper home>/server.keystore"
  keystore-password="welcome"/>
```

Set the attribute keystore to the full path name of the keystore you created previously. Set the attribute keystore-password to the password of the keystore.

5. In <Oracle Beekeeper home>/j2ee/home/config/server.xml, edit the <web-site> element and add the attribute path="./secure-web-site.xml":

```xml
<web-site path="./secure-web-site.xml"/>
```

6. Restart OC4J as described in "Restarting OC4J".

**Configuring Oracle Beekeeper with Oracle Wallet**

If you have configured Oracle Beehive for SSL access and you want to add or modify a directory profile, you must specify the location of an Oracle Wallet configured for Oracle Beehive in the UnmanagedOc4j component in which Oracle Beekeeper runs.

**Note:** For information about directory profiles (or LDAP mapping profiles), refer to "Step 1: Creating an LDAP Mapping Profile" in "Integrating and Synchronizing LDAP with Oracle Beehive".

For more information about configuring Oracle Wallet for Oracle Beehive, refer to "Step 2: Configuring Oracle Beehive Instance to Use Oracle Wallet" in "Configuring TLS with Oracle Wallet".

1. Retrieve the component identifier for UnmanagedOc4j with the beectl list_components command. You may call this command from any Oracle Beehive application tier:

   ```
   beectl list_components --type UnmanagedOc4j
   ```
Component type | Component identifier
----------------+-------------------------------------------------------------
UnmanagedOc4j   | e084c8c8-4a78-4852-8699-480b9bf4f79c
----------------+-------------------------------------------------------------

2. Set the WalletDir property in the UnmanagedOc4j component to the location of your Oracle Wallet:

```bash
beectl modify_property
  --component <UnmanagedOc4J identifier>
  --name WalletDir
  --value <Oracle Wallet directory>
```

3. Activate the configuration:

```bash
beectl activate_configuration
```

**Changing Oracle Beekeeper Port**

1. Edit the file `<Oracle Beekeeper home>/j2ee/home/config/default-web-site.xml` and modify the port attribute in the `<web-site>` element to any available port number:

   ```xml
   <web-site ... port="7779" ...>
   ```

2. Restart OC4J as described in "Restarting OC4J".

**Extending Java Single Sign-On Session Timeout**

To extend the Java Single Sign-On session timeout for Oracle Beekeeper, add the highlighted text to the file `<Oracle Beekeeper home>/j2ee/home/config/jps-config.xml`:

```xml
<serviceInstance name="idm" provider="idm.provider">
  <description>JSSO Authentication Configuration</description>
  <property name="idm.authentication.name" value="JavaSSO"/>
  <property name="idm.token.asserter.class" value="oracle.security.jps.internal.jsso.SSOCookieTokenAsserter"/>
  <property name="idm.token.collector.class" value="oracle.security.jps.internal.jsso.SSOCookieTokenCollector"/>
  <property name="idm.token.type" value="COOKIE_TOKEN"/>
  <property name="idm.token.collector.cookie.1" value="ORA_OC4J_SSO"/>
  <property name="custom.sso.url.login" value="/jsso/SSOLogin"/>
  <property name="custom.sso.url.logout" value="/jsso/SSOLogout"/>
  <property name="custom.sso.cred.key" value="JSSO_KEY"/>
  <property name="custom.sso.cred.alias" value="JSSO_ALIAS"/>
  <property name="custom.sso.session.timeout" value="3600"/>
</serviceInstance>
```

After making changes to the `jps-config.xml` file, restart OC4J as described in "Restarting OC4J".

Configuring Oracle Beekeeper for LDAP-Based Authentication

You may configure Oracle Beekeeper so that it authenticates its users with credentials stored in your LDAP directory. These steps apply only if you have integrated and synchronized your Oracle Beehive instance with Oracle Internet Directory. Refer to "Integrating and Synchronizing LDAP with Oracle Beehive" for more information.

1. Edit the file `<Oracle Beekeeper home>/j2ee/home/application-deployments/javasso/jps-config.xml` and update the values that are highlighted in the following excerpt with configuration information that corresponds to your LDAP directory:

```xml
<serviceInstance name="beehive.ldap.loginmodule" provider="jaas.login.provider">
  <description>Beehive LDAP Login Module</description>
  <property name="loginModuleClassName">
    value="oracle.ocs.csi.authentication.login.modules.OcsLdapLoginModule"/>
  <property name="jaas.login.controlFlag" value="REQUIRED"/>
  <property name="debug" value="true"/>
  <property name="addAllRoles" value="true"/>
  <property name="oracle.security.jaas.ldap.user.object.class" value="inetOrgPerson"/>
  <property name="oracle.security.jaas.ldap.provider.connect.pool" value="true"/>
  <property name="oracle.security.jaas.ldap.provider.credential" value="welcome1"/>
  <property name="oracle.security.jaas.ldap.provider.type" value="other"/>
  <property name="oracle.security.jaas.ldap.provider.url" value="ldap://ldapserver:389"/>
  <property name="oracle.security.jaas.ldap.role.searchscope" value="subtree"/>
  <property name="oracle.security.jaas.ldap.role.searchbase" value="cn=Users,dc=us,dc=oracle,dc=com"/>
  <property name="oracle.security.jaas.ldap.role.object.class" value="groupOfUniqueNames"/>
  <property name="oracle.security.jaas.ldap.role.name.attribute" value="cn"/>
  <property name="oracle.security.jaas.ldap.provider.user" value="orcladmin"/>
  <property name="oracle.security.jaas.ldap.user.name.attribute" value="uid"/>
  <property name="oracle.security.jaas.ldap.membership.searchscope" value="direct"/>
  <property name="oracle.security.jaas.ldap.member.attribute" value="uniqueMember"/>
  <property name="oracle.security.jaas.ldap.im.cache_enabled" value="true"/>
  <property name="authenticated.role.name" value="authenticated-role"/>
</serviceInstance>
```
2. In the same file (jps-config.xml), update the <jpsContexts> element with the highlighted value:
   <jpsContexts default="ldap">

3. Edit the file <Oracle Beekeeper home>/j2ee/home/application-deployments/beekeeper/jps-config.xml and make the same changes as in step 1.

4. In the same file (<Oracle Beekeeper home>/j2ee/home/application-deployments/beekeeper/jps-config.xml), update the <jpsContexts> element with the highlighted value:
   <jpsContexts default="jsso-ldap">

5. Restart OC4J as described in "Restarting OC4J".

Configuring Virtual Host

1. Add virtual-hosts="beehive_admin.us.oracle.com" to the <web-site> element in default-web-site.xml. (Replace beehive_admin.us.oracle.com with the name of your virtual host.)

   <web-site
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      port="7778"
      secure="false"
      protocol="http"
      display-name="Default Web Site"
      schema-major-version="11"
      schema-minor-version="1"  
      virtual-hosts="beehive_admin.us.oracle.com">

2. Restart OC4J as described in "Restarting OC4J".

Restarting OC4J

For information about starting and stopping OC4J, refer to Chapter 5, "Starting and Stopping OC4J" in Oracle Containers for J2EE Configuration and Administrator’s Guide.
Configuring and Installing Oracle Beehive Release 1 for Oracle RAC

This module describes how to install and configure Oracle Beehive to support deployment on multiple Oracle Real Application Clusters (RAC) nodes. It covers the following topics:

- Naming Conventions
- Pre-Install Steps
- Installation
- Post-Install Steps
- Installing Multiple Oracle Beehive Instances with Oracle RAC
- Enabling Oracle Beehive Affinity Service

**Note:** These procedures apply only to Oracle Beehive Release 1 (1.4) and later.

**Note:** You may use Database Configuration Assistant (DBCA) to create Oracle RAC nodes. However, refer to OracleMetaLink Note 342419.1 to properly configure the LOCAL_LISTENER initialization parameter.

### Naming Conventions

This module uses the following naming conventions:

- Global service name of the Oracle RAC database to be used: **MYDB**
- Number of Oracle RAC nodes: **R**
- SID of first Oracle RAC node: **MyDB1**
- SID of second Oracle RAC node: **MyDB2**
- SID of Rth Oracle RAC node: **MyDBR**
- Virtual Internet Protocol (VIP) host names and listener port numbers for each Oracle RAC node: **HOST-VIP1:PORT1** to **HOST-VIPR:PORTR**
- Oracle Notification Services (ONS) host names and remote port numbers for each Oracle RAC node: **ONS_HOST1:ONS_PORT1** to **ONS_HOSTR:ONS_PORTR**
Pre-Install Steps

If your Oracle RAC database uses raw storage, you must manually create the tablespace ORABPEL before running the Oracle Beehive Install Wizard. To do this, run the following command:

```
CREATE TABLESPACE ORABPEL DATAFILE '/dev/raw/raw1' SIZE 100M
  AUTOEXTEND ON NEXT 30M MAXSIZE UNLIMITED;
```

/ dev/ raw/ raw1 is the name of the data file to create for the ORABPEL tablespace.

Installation

```
Note: If you want to install Oracle Beehive with Oracle Beehive Provisioning Application and you require SSL Oracle Notification Services (ONS) notification, you must follow the steps described in "Enabling Secure ONS Notification".

For more information about Oracle Beehive Provisioning Application, refer to "Installing Oracle Beehive with Provisioning Application".
```

Install Oracle Beehive with the Oracle Beehive Install Wizard. Enter the following database information:

- **Host and Port**: HOST-VIP1:PORT1^HOST-VIP2:PORT2^HOST-VIP3:PORT3
- **Service Name**: Use the global service name (MYDB).

```
Note: During the installation of Oracle Beehive, ensure the first Oracle RAC node (MyDB1) remains up. Otherwise, the install will fail due to bug 5693566 (Web Services Manager Configuration Assistant will fail).
```

Post-Install Steps

These steps update Oracle Beehive with the Oracle RAC global service name and the multiple database service names:

1. **Backup Bootstrap File**
2. **Retrieve Site and Database Object System Identifiers**
3. **Update Database System Object**
4. **Commit Configuration Changes**
5. **Restart Oracle Beehive**
6. Enable Secure ONS Notification

7. Register for ONS Notification

Step 1 Backup Bootstrap File
The file `<Oracle home>/beehive/conf/beehiveconfig.xml` contains the bootstrap database connect information. Make a backup of this file before applying any post-install steps.

Step 2 Retrieve Site and Database Object System Identifiers
Retrieve the following system identifiers. You will need them for the following steps:

- **Site System Identifier:** Use the following `beectl` command to retrieve the Oracle Beehive site system identifier. In the following steps, `<site_id>` represents this value:
  ```
  beectl list_components --type Site
  ```

- **Database Object System Identifier:** Use the following `beectl` command to retrieve the default database system identifier. In the following steps, `<database_system_object_id>` represents this value:
  ```
  beectl list_properties --component <site_id>
  ```
  This command lists all the properties of `<site_id>`. The value of `<database_system_object_id>` is the value of the property Database.

Step 3 Update Database System Object
Modify the database system object's configuration to specify the ONS remote ports that are listening on your Oracle RAC nodes. The following example specifies two ONS remote ports with the `ons_entry` option:
```
beectl modify_database
  --database <database_system_object_id>
  --ons_entry ONS_HOST1:ONS_PORT1
  --ons_entry ONS_HOST2:ONS_PORT2
```
To determine the ONS remote port, run the following command:
```
<Oracle RAC database home>/bin/onsctl ping
```
You should see output similar to the following. The ONS remote port is indicated by the highlighted text:
```
Number of onsconfiguration retrieved, numcfg = 2
onscfg[0]
  (node = strasha05.us.oracle.com, port = 6200)
Adding remote host strasha05.us.oracle.com:6200
onscfg[1]
  (node = strasha06.us.oracle.com, port = 6200)
Adding remote host strasha06.us.oracle.com:6200
ons is running ...
```

Step 4 Commit Configuration Changes
Call `beectl activate_configuration` on your Oracle Beehive instance.
Afterwards, call `beectl modify_local_configuration_files` on the same Oracle Beehive instance.
Step 5  Restart Oracle Beehive
Restart your Oracle Beehive instance. You may use the `beectl restart --all` command.

**Note:** You must restart Oracle Beehive (after calling `beectl modify_local_configuration`) if you modify the ONS details in the database system object’s configuration (as you have done previously).

Step 6  Enable Secure ONS Notification
If you have not already done so and you require SSL ONS notification, follow the steps described in "Enabling Secure ONS Notification".

Step 7  Register for ONS Notification
By default, Oracle Beehive is configured to receive secure ONS notifications, which is recommended. If your Oracle RAC nodes are configured for SSL ONS notification, you may ignore this step.

If not, update the file `<Oracle home>/opmn/conf/opmn.xml` as follows in all Oracle Beehive instances to disable SSL ONS notifications:

In the file `opmn.xml`, in the `ssl` element, set the `enabled` attribute to false:

```
<ssl enabled="false" wallet-file="$ORACLE_HOME/opmn/conf/ssl.wlt/default"/>
```

After changing the `opmn.xml` file, run the following `beectl` commands:

```
beectl list_components --type OpmnCluster
```

```
+-----------------+--------------------------------------------------------------
| Component type  | Component identifier                                        |
+-----------------+--------------------------------------------------------------
| OpmnCluster     | 5987aa04-2984-43ab-8752-8c27e0c45130                         |
+-----------------+--------------------------------------------------------------
```

1 Record(s) displayed.

```
beectl list_properties --component 5987aa04-2984-43ab-8752-8c27e0c45130
```

```
+-----------------------------+---------------------------------------------------------------
| Property name               | Property value                                                |
+-----------------------------+---------------------------------------------------------------
| Alias                       |                                                              |
+-----------------------------+---------------------------------------------------------------
| NotificationServerSslEnabled | true                                                          |
+-----------------------------+---------------------------------------------------------------
| Opmns                       | opmn_Beehive_R1.example.com                                   |
+-----------------------------+---------------------------------------------------------------
```

**Note:** The `beectl modify_local_configuration_files` command will ask you to run this command on all your other Oracle Beehive instances. **Do not run this command on all your other instances at this time.**

If you have, or plan to have, more than Oracle Beehive instance, refer to "Installing Multiple Oracle Beehive Instances with Oracle RAC".

**Note:** The `beectl modify_local_configuration_files` command will ask you to run this command on all your other Oracle Beehive instances. **Do not run this command on all your other instances at this time.**

If you have, or plan to have, more than Oracle Beehive instance, refer to "Installing Multiple Oracle Beehive Instances with Oracle RAC".
Enabling Secure ONS Notification

You may ignore this step if your deployment does not require SSL notification.

**Note:** You must perform this step if you wish to install Oracle Beehive with Oracle Beehive Provisioning Application. Refer to "Installing Oracle Beehive with Provisioning Application" for more information.

This step involves specifying the Oracle Wallet directory in the ons.config file. As a result, Oracle Cluster Ready Services (CRS) will use SSL when communicating with other nodes (other Oracle RAC nodes and Oracle Beehive instances) and require SSL certificate authentication from all Oracle Notification Services (ONS) instances that try to connect to it.

To enable SSL ONS notification, add the following line to all `<Oracle Cluster Ready Services home>/opmn/conf/ons.config` files of each Oracle RAC node:

```
walletfile=MY_SECURE_WALLER_DIR
```

`MY_SECURE_WALLER_DIR` is your Oracle Wallet directory. Refer to "Configuring TLS with Oracle Wallet" for information about configuring Oracle Wallet.

Installing Multiple Oracle Beehive Instances with Oracle RAC

Oracle Beehive supports the following ways to install multiple instances Oracle Beehive with Oracle RAC:

- Install All Oracle Beehive Instances, then Apply Post-Install Steps
- Install One Oracle Beehive Instance, Apply Post-Install Steps, then Add Additional Instances

Install All Oracle Beehive Instances, then Apply Post-Install Steps

You can install multiple Oracle Beehive instances, then run the post-install steps afterwards on all those instances as described in this module:
1. Install all your Oracle Beehive instances.
2. For one instance, apply all the post-installation steps.
3. For all the other instances, run the following post-installation steps:
   - Step 1, "Backup Bootstrap File"
   - Step 4, "Commit Configuration Changes", except run only the beectl
     modify_configuration_files command.
   - Step 7, "Register for ONS Notification"

**Install One Oracle Beehive Instance, Apply Post-Install Steps, then Add Additional Instances**

Alternatively, instead of installing multiple Oracle Beehive instances then running the post-install steps on each one, you may install one Oracle Beehive instance, apply the post-install steps on that instance, then add additional Oracle Beehive instances.

After installing one Oracle Beehive instance and applying post-install steps, follow these steps:
1. Install other Oracle Beehive instances.
2. Apply Step 7, "Register for ONS Notification" to all new instances.

**Enabling Oracle Beehive Affinity Service**

Oracle Beehive Affinity Service enables other Oracle Beehive services to take advantage of the enhanced performance when instances or nodes from your Oracle RAC environment has affinity for any data. Currently, only the event framework, or the Object Event Framework (OEF), and the E-mail Service can take advantage of the Affinity Service.

To enable Oracle Beehive Affinity Service, follow these steps:
1. Create one database service for each Oracle RAC node with the following command:
   
   `srvctl add service -d <database global service name> -s <database service name> -r <RAC node instance ID>`

   For example, suppose your database has the global service name BEEHIVE, and has four Oracle RAC nodes with IDs BEEHIVE1, BEEHIVE2, BEEHIVE3, and BEEHIVE4. Create four database services (named afserv1, afserv2, afserv3, and afserv4) with the following commands:
   
   `srvctl add service -d BEEHIVE -s afserv1 -r BEEHIVE1`
   `srvctl add service -d BEEHIVE -s afserv2 -r BEEHIVE2`
   `srvctl add service -d BEEHIVE -s afserv3 -r BEEHIVE3`
   `srvctl add service -d BEEHIVE -s afserv4 -r BEEHIVE4`

2. Set the property AffinityServiceNames with the names of your newly created database services. For example, to set this property with the four database services created in the previous step, call the following command (the example assumes the domain name is example.com):
   
   `beectl modify_property --component _CURRENT_SITE:Database`
-name AffinityServiceNames
-value afserv1.example.com
-value afserv2.example.com
-value afserv3.example.com
-value afserv4.example.com

**Note:** If the global service name has been created with the domain name (such as example.com), all the database services should use the same domain name even though they have not been created with the domain name.

3. Activate the configuration with the following command:

```bash
beectl activate_configuration
```

The database framework will immediately start using the Affinity Service.
Installing Oracle Beehive in High Availability Environment

Installing Oracle Beehive in a high availability environment involves installing a third-party load balancer or an Oracle Beehive DMZ instance (or both) and configuring the virtual server of each Oracle Beehive (non-DMZ) instance. Configuring the virtual server ensures that there is a single point of access to your Oracle Beehive instances.

This module covers the following topics:

- Configuring High Availability Environment with Load Balancer
- Configuring High Availability Environment with a DMZ Instance
- Configuring High Availability Environment with DMZ Instances and Load Balancer

Configuring High Availability Environment with Load Balancer

The following diagram illustrates multiple Oracle Beehive instances and a load balancer in a high availability environment:
Follow these steps to install and configure more than one Oracle Beehive instance with a load balancer:

1. Install an Oracle Beehive instance.

2. Change the ServerName property of the Oracle Beehive virtual server to the load balancer server name. In the following example, `load-balancer.example.com` is the server name of the load balancer:

   ```bash
   beectl modify_property --component _VIRTUAL_SERVER
   --name ServerName
   --value load-balancer.example.com
   ```

3. If the HttpPort property value of the Oracle Beehive virtual server and the HTTP port of the load balancer are different, then change the HttpPort property value of the virtual server to the HTTP port of the load balancer. In the following example, the HTTP port of the load balancer is 80:

   ```bash
   beectl list_properties --component _VIRTUAL_SERVER
   ---------------------------------------------------------------------------
   | Property Name | Property Value |
   ---------------------------------------------------------------------------
   ```
beectl modify_property --component _VIRTUAL_SERVER
   --name HttpPort
   --value 80

4. Commit configuration changes:

```
beectl activate_configuration
beectl modify_local_configuration_files
```

---

**Note:** The `beectl modify_local_configuration_files` command will ask you to run this command on all your other Oracle Beehive instances. **Do not run this command on all your other instances at this time.**

---

5. Ensure that the changes you made in steps 2 and 3 appear in the file `<Oracle home>/Apache/Apache/conf/httpd.conf`.

6. Install another Oracle Beehive instance.

Oracle Beehive will apply these changes to any subsequent Oracle Beehive installation, so you do not have to run `beectl modify_local_configuration_files` on these new instances.

---

**Note:** If you are making these changes after installing two or more Oracle Beehive instances, then follow steps 1-5 on the first instance. Afterwards, only run `beectl modify_local_configuration_files` on the other (previously installed) instances.

---

**Configuring High Availability Environment with a DMZ Instance**

If you do not have a load balancer, you may use an Oracle Beehive DMZ instance as a load balancer and the single point of access to your Oracle Beehive (non-DMZ) instances. The configuration of this high availability environment is similar to configuring one for a load balancer:

1. Configure one Oracle Beehive DMZ instance as described in "Configuring Oracle Beehive Demilitarized Zone Instances".

2. Perform the steps described in "Configuring High Availability Environment with Load Balancer" for your Oracle Beehive (non-DMZ) instances. This involves configuring the virtual server with the load balancer for each Oracle Beehive instance. However, set the ServerName property to the server name of your Oracle
Beehive DMZ instance and the HttpPort property to the HTTP port of your Oracle Beehive DMZ instance.

Note that if you are performing these steps after you have installed all your Oracle Beehive instances, run `beectl modify_local_configuration_files` only after configuring the virtual server for all your Oracle Beehive instances.

**Configuring High Availability Environment with DMZ Instances and Load Balancer**

---

**Note:** If you are planning to install Oracle Beekeeper in a DMZ-based environment, then install Oracle Beekeeper in an Oracle Beehive application tier in a new Oracle home.

Oracle Beekeeper cannot be accessed from a DMZ instance. It should only be accessed from the computer in which you installed Oracle Beekeeper.

---

You may have a high availability environment with both a load balancer and DMZ instances. In this case, your Oracle Beehive instances will be load balanced on multiple levels.

The following diagram illustrates multiple DMZ instances and a load balancer in a high availability environment:
Follow these steps to configure a high availability environment with a load balancer and multiple Oracle Beehive DMZ instances:

1. Perform the steps described in "Configuring High Availability Environment with Load Balancer" for your Oracle Beehive (non-DMZ) instances. This involves
configuring the virtual server with the load balancer for each Oracle Beehive instance.

Note that if you are performing these steps after you have installed all your Oracle Beehive instances, run beectl modify_local_configuration_files only after configuring the virtual server for all your Oracle Beehive instances.

2. Edit the following directives in the file `<Oracle Beehive DMZ home>/Apache/Apache/conf/httpd.conf`:

   - ServerName `<Domain name server (DNS) of the load balancer>`
   - Port `<HTTP port of the load balancer>`

   For example, if `load-balancer.example.com` is the load balancer’s DNS, and 80 is its HTTP port number, then edit the `httpd.conf` file as follows:

   ```
   ServerName load-balancer.example.com
   Port 80
   ```

3. Perform this step only if you need to configure your DMZ instance with SSL.

   Retrieve the location of the file `ssl.conf` from the file `<Oracle home>/Apache/Apache/conf/httpd.conf`. Edit the following directives in the `ssl.conf` file:

   - ServerName `<Domain name server (DNS) of the load balancer>`
   - Port `<HTTPS port of the load balancer>`

   For example, if `load-balancer.example.com` is the load balancer’s DNS, and 4443 is its HTTP port number, then edit the `ssl.conf` file as follows:

   ```
   ServerName load-balancer.example.com
   Port 4443
   ```

4. Restart the Oracle Beehive DMZ instance.

5. Repeat steps 1-3 for each of your Oracle Beehive DMZ instances.
Troubleshooting Oracle Beehive Installation

Unable to Perform FTP Operations
Check the log files of BEEAPP, BEECORE, and BEEMGMT. If you see an exception thrown by oracle.ocs.omb.transport.exception.TimedOutException, ensure the port defined by ServerPort in the BTI component is accessible.

This may occur if you have two Oracle Beehive instances, and you block this port (through your firewall) between these instances.

ORA-12850: Could not allocate slaves on all specified instances, ORA-00018: Maximum number of sessions exceeded
If you receive the error "Failed to access configuration repository (database). Internal error message: java.sql.SQLException: Connection Unavailable" when running a beectl command and in your database alert log see the errors ORA-12850: Could not allocate slaves on all specified instances and ORA-00018: Maximum number of sessions exceeded, increase the processes initialization parameter in your database. Refer to "Initialization Parameters" in "Oracle Beehive Database Requirements" for information on changing initialization parameters in your database.

Oracle Beehive Install Wizard Fails Because Apache HTTP Server Unable to Start
Oracle Beehive Install Wizard may fail because of an error similar to the following:

<ORACLE_HOME>/Apache/Apache/bin/apachectl startssl: execing httpd
Syntax error on line 233 of <ORACLE_HOME>/Apache/Apache/conf/httpd.conf:
Cannot load <ORACLE_HOME>/Apache/Apache/libexec/mod_auth_dbm.so into server:
<ORACLE_HOME>/Apache/Apache/libexec/mod_auth_dbm.so: undefined symbol: dbm_fetch

The undefined symbol error may result from the symbolic link /usr/lib/libdb.so.2 pointing to a different file or an incorrect version of the shared library.

Before starting the Install Wizard, create (or recreate) the following symbolic link as the root user:

ln -s /usr/lib/libgdbm.so.2.0.0 /usr/lib/libdb.so.2

Exporting Configuration Data
You may export the entire system model configuration data into an XML file for any given configuration version with the beectl export_configuration_data command.

You may provide your Oracle support representative the output from this command. This will help your representative investigate any problems with your Oracle Beehive deployment faster. You may also use the output of from this command to compare the
configuration between different Oracle Beehive deployments, such as between a test and a production deployment.

Note that secure values do not appear in the output for security reasons.
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