Oracle® Retail Central Office

Installation Guide, Volume 1 - Oracle Stack

Release 13.3.4

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Value-Added Reseller (VAR) Language

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- Do you need different information or graphics? If so, where, and in what format?
- Are the examples correct? Do you need more examples?

If you find any errors or have any other suggestions for improvement, then please tell us your name, the name of the company who has licensed our products, the title and part number of the documentation and the chapter, section, and page number (if available).

> **Note:** Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the Online Documentation available on the Oracle Technology Network Web site. It contains the most current Documentation Library plus all documents revised or released recently.

Send your comments to us using the electronic mail address: retail-doc_us@oracle.com

Please give your name, address, electronic mail address, and telephone number (optional).

If you need assistance with Oracle software, then please contact your support representative or Oracle Support Services.

If you require training or instruction in using Oracle software, then please contact your Oracle local office and inquire about our Oracle University offerings. A list of Oracle offices is available on our Web site at `http://www.oracle.com`.

Preface

This Installation Guide describes the requirements and procedures to install this Oracle Retail Central Office release.

Audience

This Installation Guide is written for the following audiences:

- Database Administrators (DBA)
- System analysts and designers
- Integrators and implementation staff

Documentation Accessibility

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

Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/support/contact.html or visit http://www.oracle.com/accessibility/support.html if you are hearing impaired.

Related Documents

For more information, see the following document in the Oracle Retail Central Office Release 13.3.4 documentation set:

- *Oracle Retail Central Office Release Notes*

Customer Support

To contact Oracle Customer Support, access My Oracle Support at the following URL:

https://support.oracle.com

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 13.3) or a later patch release (for example, 13.3.4). If you are installing the base release, additional patch, and bundled hot fix releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch and bundled hot fix releases can contain critical information related to the base release, as well as information about code changes since the base release.

Oracle Retail Documentation on the Oracle Technology Network

Documentation is packaged with each Oracle Retail product release. Oracle Retail product documentation is also available on the following Web site:

http://www.oracle.com/technology/documentation/oracle_retail.html

(Data Model documents are not available through Oracle Technology Network. These documents are packaged with released code, or you can obtain them through My Oracle Support.)

Documentation should be available on this Web site within a month after a product release.

Conventions

The following text conventions are used in this document:

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

1

Preinstallation Tasks

This chapter describes the requirements for the Oracle stack that must be met before Oracle Retail Central Office can be installed.

> **Note:** This is the Oracle stack configuration that was tested for this release. While Central Office may work in other configurations, this configuration was tested.

If you will be installing multiple Oracle Retail applications, see Appendix H for a guideline for the order in which the applications should be installed.

Patch Contents

Patch releases include all defect fixes that have been released through bundled hot fix releases since the last patch release. Patch releases may also include new defect fixes and enhancements that have not previously been included in any bundled hot fix release. This patch release contains all fixes from the following bundled hot fix release:

- Oracle Retail Central Office 13.3.3.1
- Oracle Retail Central Office 13.3.3.2

Check for the Current Version of the Installation Guide

Corrected versions of Oracle Retail installation guides may be published whenever critical corrections are required. For critical corrections, the rerelease of an installation guide may not be attached to a release; the document will simply be replaced on the Oracle Technology Network Web site.

Before you begin installation, check to be sure that you have the most recent version of this installation guide. Oracle Retail installation guides are available on the Oracle Technology Network at the following URL:

http://www.oracle.com/technology/documentation/oracle_retail.html

An updated version of an installation guide is indicated by part number, as well as print date (month and year). An updated version uses the same part number, with a higher-numbered suffix. For example, part number E123456-**02** is an updated version of an installation guide with part number E123456-**01**.

If a more recent version of this installation guide is available, that version supersedes all previous versions. Only use the newest version for your installation.

Check Supported Database Server Requirements

Table 1–1 lists the general requirements for a database server running Oracle Retail Central Office and the versions supported for this release.

Table 1–1   Database Server Requirements

Supported on	Versions Supported
Operating System	■ Oracle Linux 5 Update 5 (OL 5.5) for Linux x86-64 ■ Red Hat Enterprise Linux 5 Update 5 (RHEL 5.5) for Linux x86-64
Database	Oracle Database 11gR2 Enterprise Edition 11.2.0.2 (64-bit) **Note:** Oracle Retail Central Office is not certified with Real Application Clusters (RAC).

Required Settings for Database Installation

The following settings must be made during database creation:

■ The database must be set to UTF8.

■ Make the following changes to the system settings:

```
ALTER SYSTEM SET NLS_NUMERIC_CHARACTERS = '.,-' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_DATE_FORMAT ='YYYY-MM-DD' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_TIMESTAMP_FORMAT = 'YYYY-MM-DD HH24:MI:SS.FF'
    SCOPE=SPFILE;
```

Check Supported Application Server Requirements

Table 1–2 lists the general requirements for an application server capable of running Back Office and the versions supported for this release.

Table 1–2   Application Server Requirements

Supported on	Versions Supported
Operating System	■ Oracle Linux 5 Update 5 (OL 5.5) for Linux x86-64 ■ Red Hat Enterprise Linux 5 Update 5 (RHEL 5.5) for Linux x86-64
J2EE Application Server	Oracle WebLogic 10.3.4.0 Standard Edition
J2EE Application Server JVM	Oracle JDK 6 Update 18 (included in Oracle WebLogic)
Messaging Provider	included in Oracle WebLogic

> **Note:** Central Office does not support a clustered environment.

Check for SSL Certificate

Oracle Retail Central Office is accessed through a secure HTTP connection. The installation of an SSL Certificate is required on your application server. If the certificate is not installed, warnings are displayed when trying to access Oracle Retail Central Office.

For information on installing the SSL Certificate, refer to your application server documentation.

Check Oracle Retail Software Dependencies

Table 1–3 lists the Oracle Retail products that Oracle Retail Central Office is integrated with and the required versions.

Table 1–3   Supported Oracle Retail Products

Integrates with	Version
Oracle Retail Back Office	13.3.4
Oracle Retail Merchandising System	13.2.4
Oracle Retail Point-of-Service	13.3.4

Check Third-Party Software Dependencies

The Pager Tag library must be downloaded and the `pager-taglib-2.0.war` file must be extracted. For more information, see "Obtain the Third-Party Library File Required by Central Office" in Chapter 2.

Check Supported Client PC and Web Browser Requirements

The general requirements for the client system include the following:

- Adobe Acrobat Reader or another application capable of rendering Scalable Vector Graphics (SVG) and Portable Data Format (PDF) files

  To view captured signatures through Transaction Tracker, download and install the web browser plug-in at the following Web site:

  `http://www.adobe.com/svg/viewer/install/main.html`

The following web browsers are supported on Microsoft Windows XP SP2:

- Microsoft Internet Explorer 7
- Mozilla Firefox 3.6

Hardware Requirements

Specific hardware requirements for the machines running Oracle Retail Central Office depend on variables including the number of users, number of stores and registers, and other applications running on the same machine.

Please note the following about the hardware requirements:

- The CPU requirement depends on variables including the operating system and middleware selected.
- The memory requirements and performance depend on variables including the operating system and middleware selected.
- Disk size can vary based on the operating system and middleware requirements, as well as the amount of data storage needed. Data storage depends on variables including the data retention period and so on.

You need to determine your hardware requirements, based on the variables mentioned here, as well as any additional variables specific to your environment. For more information, contact Customer Support.

Implementation Guidelines for Security

> **Note:** A demonstration trust store is bundled with Oracle Retail Central Office. It is recommended that the demonstration trust store is replaced with a secure trust store.
>
> It is also recommended that the passwords for key stores and trust stores are changed from the values set by default.

The following document is available through My Oracle Support. Access My Oracle Support at the following URL:

https://support.oracle.com

***Oracle Retail POS Suite Implementation Guide, Volume 2 - Security* (Doc ID: 1277445.1)**

This implementation guide volume describes specific security features and implementation guidelines for the POS Suite products.

2

Installation of the Oracle Stack on Linux

Before proceeding, you must install the database, create the database users, and install the application server software. For a list of supported versions, see Chapter 1.

During installation, the Central Office database schema is created and the Central Office application is deployed to an Oracle WebLogic domain within the WebLogic installation. When the domain was created, the JDK was selected. This is the JDK that is used to run the Central Office application. For the remainder of this chapter, the JDK installation directory is referred to as *<JDK_INSTALL_DIR>*.

Create a New WebLogic Domain for Central Office

You can skip this section if you are redeploying to an existing domain.

The Central Office application must be deployed to its own dedicated domain. For information on how to perform the following steps, consult your Oracle WebLogic documentation.

To create a new domain:

1. Log on to the server, which is running your WebLogic installation, as the user who owns the WebLogic installation.

2. Choose a name for the new domain. In the remainder of this installation guide, *<orco-domain>* is used for the name.

3. Create this domain. If you are using a managed server, add the managed server as part of creating the domain.

   - Oracle Retail Central Office is accessed through a secure HTTP connection. You need to enable SSL when creating the domain.

   - Set the listen port and SSL listen port numbers so that the numbers are unique for each domain in your configuration.

     Note: All domains running Oracle Retail applications must have the same domain credentials.

4. If using a managed server, start the managed server. Start the administration domain.

5. Verify that the administration domain and the managed server are started and are in running mode.

6. If you are using a managed server and WebLogic is installed with Oracle's Sun JDK, you may encounter out-of-memory exceptions during the installation of Central Office.

> **Note:** The out-of-memory exceptions only occur if WebLogic is installed with Oracle's Sun JDK. If WebLogic is installed with Oracle JRockit, do not perform the following steps.

To avoid the out-of-memory exceptions, increase the PermSize space:

a. On the WebLogic Administration console, under Environments, select **Servers**.

b. In Summary of Servers, select *<managedServerName>*.

c. In Settings, select the **Server Start** tab.

d. In the Arguments text box, add the following if it does not already exist:

```
-Xms512m -Xmx512m -XX:PermSize=512m  -XX:MaxPermSize=512m
```

e. Select **Save**.

Deploying to a Managed Server

If you are deploying Central Office to a managed server, note the following.

If any of the servers are remote from the admin server, copy the contents of the `domain/lib` directory to the corresponding directory on the remote systems. Also, a directory for the persistent store needs to be created on the remote systems. It should be located in the following location:

```
<WEBLOGIC_INSTALL_DIR>/user_
projects/domains/<orco-domain>/servers/<serverName>/data/store/orpos-persistent-st
ore
```

Create the Database Schema Owner and Data Source Users

The following recommendations should be considered for schema owners:

■ Database administrators should create an individual schema owner for each application, unless the applications share the same data. In the case of Oracle Retail Back Office and Point-of-Service, the database schema owner are the same because these applications share a database.

■ The schema owners should only have enough privileges to install the database.

For information on best practices for passwords, see Appendix F.

> **Note:** Do not delete the database schema owner after installation. When using Data Import (DIMP), the schema owner privileges are needed for DIMP processing which includes creating and dropping tables. For information on DIMP, see "Enable Data Import".

To create the database schema owner and data source users:

1. Log in using the database administrator user ID.

2. Create a role in the database to be used for the schema owner.

```
CREATE ROLE <schema_owner_role>;
```

3. Grant the privileges, shown in the following example, to the role.

```
GRANT CREATE TABLE, CREATE VIEW, CREATE SEQUENCE, CREATE PROCEDURE, ALTER
SESSION, CONNECT, SELECT_CATALOG_ROLE TO <schema_owner_role>;
```

4. Create a role in the database to be used for the data source user.

```
CREATE ROLE <data_source_role>;
```

5. Grant the privileges, shown in the following example, to the role.

```
GRANT CONNECT, CREATE SYNONYM, SELECT_CATALOG_ROLE TO
<data_source_role>;
```

6. Create the schema owner user in the database.

```
CREATE USER <schema_username>
IDENTIFIED BY <schema_password>
DEFAULT TABLESPACE users
TEMPORARY TABLESPACE TEMP
QUOTA UNLIMITED ON users;
```

7. Grant the schema owner role to the user.

```
GRANT <schema_owner_role> TO <schema_username>;
```

8. Create the data source user.

```
CREATE USER <data_source_username>
IDENTIFIED BY <data_source_password>
DEFAULT TABLESPACE users
TEMPORARY TABLESPACE TEMP
QUOTA UNLIMITED ON users;
```

9. Grant the data source role to the user.

```
GRANT <data_source_role> TO <data_source_username>;
```

The installer grants the data source user access to the application database objects.

Expand the Central Office Distribution

To extract the Central Office files:

1. Extract the Central Office 13.3.4 distribution zip file.

2. Log on to the Linux server as the user who owns the Oracle WebLogic installation. Create a new staging directory for the Central Office application distribution (`ORCO-13.3.4.zip`), for example, `/tmp/j2ee/<orco-domain>/orco-staging`.

   > **Note:** The staging directory (`staging_directory`) can exist anywhere on the system. It does not need to be under `<WEBLOGIC_INSTALL_DIR>`.

3. Copy or upload `ORCO-13.3.4.zip` to `staging_directory` and extract its contents. The following files and directories should be created under `staging_directory`/`ORCO-13.3.4`:

```
ant/
ant-ext/
antinstall/
centraloffice/
connectors/
external-lib/
installer-resources/
ocm-integration/
retail-public-security-api/
.postinstall.cmd
.postinstall.sh
.preinstall.cmd
.preinstall.sh
.preinstall-oas.cmd
.preinstall-oas.sh
.preinstall-was.cmd
.preinstall-was.sh
.preinstall-wl.cmd
.preinstall-wl.sh
antinstall-config.xml
build.xml
build-common.xml
build-common-oas.xml
build-common-retailinv.cmd
build-common-was.xml
build-common-webapps.xml
build-common-wl.xml
checkdeps.cmd
checkdeps.sh
install.cmd
install.sh
jsmconfigration.dat
prepare.xml
retail-OCM-stores.zip
wallet.xml
```

For the remainder of this chapter, `staging_directory`/`ORCO-13.3.4` is referred to as `<INSTALL_DIR>`.

Obtain the Third-Party Library File Required by Central Office

The Central Office application uses the Pager Tag Library from JSPTags. You must download the `pager-taglib.jar` file from the JSPTags Web site before running the Central Office application installer.

1. Download the `pager-taglib-2.0.war` file from the JSPTags Web site:
   http://jsptags.com/tags/navigation/pager/download.jsp

2. Extract the `pager-taglib.jar` file from the `WEB-INF/lib` subdirectory in the `pager-taglib-2.0.war` file. Copy `pager-taglib.jar` into `<INSTALL_DIR>/external-lib/`.

Enable Data Import

Data Import (DIMP) is used by external systems to send data bundles to Back Office for routine data loading of certain types of data. To use DIMP, you need to create a directory for the incoming bundles and a directory where the bundles are archived after being processed.

On the Enable DIMP installer screen, you select whether DIMP will be used. See Figure A–11. If **Yes** is selected on the screen, you then provide the paths to the directories on the DIMP Configuration installer screen. See Figure A–12.

For detailed information on DIMP, see the *Oracle Retail POS Suite/Merchandising Operations Management Implementation Guide*.

Oracle Configuration Manager

The Oracle Retail OCM Installer packaged with this release installs the latest version of OCM.

The following document is available through My Oracle Support. Access My Oracle Support at the following URL:

https://support.oracle.com

Oracle Retail Oracle Configuration Manager (OCM) Installer Guide **(Doc ID: 1071030.1)**

This guide describes the procedures and interface of the Oracle Retail Oracle Configuration Manager Installer that a retailer runs near the completion of its installation process.

OCM Documentation Link

http://www.oracle.com/technology/documentation/oracle_retail.html

Installation Options

During installation, there are options that enable you to select whether the installer completes parts of the installation or if you want to complete those parts manually. For information on the available options, see the following sections:

- "Install Database Options"
- "Manual Deployment of the Central Office Application"
- "Install Parameters Option"

Install Database Options

The database schema must be created and populated before configuring the application server. On the Install Database Option screen, you select whether the installer creates and populates the database schema or if you want to do this manually.

- If you choose **Create schema with sample dataset**, the installer creates and populates the database with sample data, such as item data. This is the default selection on the screen. The sample dataset includes the minimum dataset. If you want data available to use for demonstrating Central Office functionality after installation, you can select this option.

- If you choose **Create schema with minimum dataset**, the installer creates and populates the database with the minimum amount of data needed to launch and run Central Office. If you want to load your own data after installation, you can select this option.

- If you choose **Skip schema creation and data loading**, the installer does not create and populate the database schema. You choose this option if you want to create and populate the database schema manually. For information on manually creating and populating the database, see "Manually Creating the Database Schema".

> **Note:** You must populate the database schema before running the installer. Otherwise, the installer will fail when configuring security.

Manually Creating the Database Schema

To manually create and populate the database schema:

1. Change to the *<INSTALL_DIR>*/centraloffice/db directory.

2. Set the JAVA_HOME and ANT_HOME environment variables.

   ```
   JAVA_HOME=<JDK_INSTALL_DIR>; ANT_HOME=<INSTALL_DIR>/ant; export JAVA_HOME ANT_
   HOME
   ```

3. Add $JAVA_HOME/bin and $ANT_HOME/bin to the front of the PATH environment variable.

   ```
   PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH; export PATH
   ```

4. Expand the centralofficeDBInstall.jar file.

   ```
   jar -xvf centralofficeDBInstall.jar
   ```

5. Modify db.properties.

   a. Uncomment the Oracle properties and comment out the properties for the other vendors such as DB2 and MS-SqlServer.

   b. Set the following properties with your database settings. The values to be set are shown in bold in the examples.

   Set the hash algorithm, for example, to SHA-256.

   ```
   # Hash Algorithm
   inst.hash.algorithm=HASH_ALGORITHM
   ```

Enter the values for the users shown in bold in the following example:

```
inst.app.admin.user=my-pos-admin-user
inst.app.admin.password-encrypted=my-encrypted-pos-admin-password

db.user=DB_USER_ID
db.password-encrypted=DB_PASSWORD_ENCRYPTED

db.owner.user=DB_OWNER_USER_ID
db.owner.password-encrypted=DB_OWNER_PASSWORD_ENCRYPTED
```

The ant target will prompt for the passwords. Run the following ant target to encrypt the passwords:

```
ant -f db.xml encrypt-webapp-passwords
```

Enter the values for the URL used by the Central Office application to access the database schema. See Appendix D for the expected syntax:

```
db.jdbc-url=jdbc:oracle:thin:@DB_HOST_NAME:1521:DB_NAME
```

Enter the value for the store ID shown in the following example:

```
configured.store.id=04241
```

Enter the value for the supported locales shown in the following example:

```
gen.locales=fr,zh
```

c. Set the port number for the `parameters.apphost` property to point to your Central Office installation. Use the rmi, managed server, or application server domain port number.

```
parameters.apphost=t3://localhost:<port_number>
```

d. In the `parameters.classpath` property, replace the semicolons used as separators with colons. This is needed to run with Linux systems.

6. Modify `jndi.properties`. This file is in the `jndi` directory.

a. Uncomment the following property.

```
java.naming.factory.initial=weblogic.jndi.WLInitialContextFactory
```

b. Set the user name and password.

```
java.naming.security.principal=<user>
java.naming.security.credentials=<encrypted_password>
```

7. Run one of the available Ant targets to create the database schema and load data:

- load_sample: creates the database schema containing the sample dataset. The sample dataset includes the minimum dataset.

- load_minimum: creates the database schema containing the minimum dataset.

For example: `ant load_sample`

Securing the JDBC for the Oracle 11g Database

On the Enable Secure JDBC screen, you select whether secure JDBC will be used for communication with the database. See Figure A–9.

- If **Yes** is selected, the installer sets up the secure JDBC.

- If **No** is selected and you want to manually set up the secure JDBC after the installer completes, see Appendix G.

Set Up Masking for Phone Number and Postal Code

The Customer tab in Central Office provides the capability to add and update customer information in a central database. When entering customer information, the formatting of the phone number and postal code entry fields is dependent on the country selected on the screen. The format of the data that is entered by the user is determined by the masking for the phone number and postal code defined for the country.

For each country you will be using, you must define the phone number and postal code masking in the `application.properties` file. The file is found at `<INSTALL_DIR>/centraloffice/templates/applications.properties`.

The masking for the United States and Canada is defined in the released version of the file. The masking for the other countries is set to alphanumeric with a maximum length of 30 characters for the phone number and 20 characters for the postal code.

> **Caution:** If the masking is not defined for a country you are using, the formatting of the entered data will not match the format required for the country. The data entered in these fields may not be correctly saved to the database.

After installation, the `application.properties` file is found in the `properties.jar` file at `<WEBLOGIC_INSTALL_DIR>/user_projects/domains/<orco-domain>/lib/properties.jar`.

Create Queues Required for Parameter Export

When a store is added to the enterprise store hierarchy or the default store number is not used, the `<INSTALL_DIR>centraloffice/appservers/weblogic/jmsconfiguration.dat` file must be updated with the correct queue definitions. The queues used to export parameters to each store must reflect the current store hierarchy for the enterprise.

The `jmsconfiguration.dat` file contains at least one line defining a store queue, for example, for store ID 04241. You can copy the line and replace all the occurrences of the store ID with your store ID. There are several occurrences of the store ID in the line.

The following example shows the queue definition for store ID 04241 in the `jmsconfiguration.dat` file. In the following example, the store ID that you would change is shown in bold.

```
QUEUE:store_04241:jms/store_04241
```

For example, if you have a store numbered 10000, the queue definition for the store should look like the following definition.

```
QUEUE:store_10000:jms/store_10000
```

For information on adding stores to the store hierarchy, see the *Oracle Retail Central Office Operations Guide.*

Run the Central Office Application Installer

Once you have a WebLogic domain that is configured and started, you can run the Central Office application installer. This installer will configure and deploy the Central Office application.

> **Note:** To see details on every screen and field in the application installer, see Appendix A.

1. Change to the *<INSTALL_DIR>* directory.

2. Set the JAVA_HOME environment variable. JAVA_HOME should point to *<JDK_INSTALL_DIR>*.

> **Note:** The installer is not compatible with versions of Java earlier than 6 Update 18.

3. If you are using an X server such as Exceed, set the DISPLAY environment variable so that you can run the installer in GUI mode (recommended). If you are not using an X server, or the GUI is too slow over your network, unset DISPLAY for text mode or use the `install.sh` script.

> **Caution:** Password fields are masked in GUI mode, but in text mode your input is shown in plain text in the console window.

4. Run the installer.

   a. Log on to the Linux server as the user who owns the WebLogic installation.

   b. Change the mode of `install.sh` to executable.

   c. Run the `install.sh` script. This will launch the installer.

   > **Note:** The usage details for `install.sh` are shown below. The typical usage for GUI mode does not use arguments.
   >
   > ```
   > install.sh [text | silent weblogic]
   > ```

After installation is complete, a detailed installation log file is created: `orco-install-app.<timestamp>.log`

The installer leaves behind the `ant.install.properties` and `cwallet.sso` files for repeat installations.

Resolving Errors Encountered During Application Installation

If the application installer encounters any errors, it will halt execution immediately. You can run the installer in silent mode so that you do not have to reenter the settings for your environment. For instructions on silent mode, see Appendix B.

For a list of common installation errors, see Appendix E.

Since the application installation is a full reinstall every time, any previous partial installs will be overwritten by the successful installation.

Manual Deployment of the Central Office Application

Skip this section if you chose the default option of allowing the installer to complete installation to the application server.

The installer includes the option to configure the application locally and skip deployment to the application server. If this option is chosen, the installer will make the configured application files available under `<INSTALL_DIR>/centraloffice/configured-output/`.

If you chose this installer option, you can deploy the Central Office ear file by following these steps:

- To deploy using the ant target:

    1. Update the following property in the `ant.install.properties` file.

       ```
       input.install.to.appserver = true
       ```

    2. Run the following ant target:

       ```
       install.sh ant init app-ear-deploy -propertyfile ant.install.properties
       ```

- To deploy from the application server console:

    > **Note:** When deploying the ear file, provide the same application name and context root you gave to the installer. These values were stored in the `<INSTALL_DIR>/ant.install.properties` file by the installer.

    1. Move your ear file to `<INSTALL_DIR>/centraloffice/ear`.

    2. Change to the `<INSTALL_DIR>` directory.

    3. Configure the ear file.

       ```
       ./install.cmd  ant init configure
       ```

    4. Change to the `<INSTALL_DIR>/centraloffice/appservers/weblogic` directory.

    5. Update the ear file.

       ```
       ant init update_dd
       ```

    6. Manually deploy the ear file from the following location:

       ```
       <INSTALL_DIR>/centraloffice/centraloffice.ear
       ```

Install Parameters Option

The application parameters must be installed before the Central Office application is fully operational. On the Install Parameters Option screen, you select whether the installer completes installation of the parameters or if you want to do this manually.

- If you chose Yes, you do not need to perform any further steps to install the parameters. This is the default selection on the screen.

- If you chose No, the installer did not install the parameters. For information on installing the parameters, see "Import Initial Parameters".

Import Initial Parameters

> **Note:** If you did not choose to have the installer set the initial parameters, you must import an initial set of parameters before you can use Oracle Retail Central Office. For more information on parameters, see the *Oracle Retail POS Suite Configuration Guide*.

This section provides an overview of the procedures for importing an initial set of parameters. You can import the parameters through the Oracle Retail Central Office user interface or by using an ant target. You only need to use one of the procedures. The procedure for importing parameters through the application user interface is described in more detail in the *Oracle Retail Central Office User Guide*.

These instructions assume you have already expanded the `centralofficeDBInstall.jar` file under the `<INSTALL_DIR>` directory as part of the database schema installation earlier in this chapter.

Importing Parameters Through the User Interface

To import the initial parameters through the user interface:

1. Open the Oracle Retail Central Office application in a web browser. The address is provided at the end of the installer output and in the log file.

   `https://<your host name>:<your port number>/<context root>`

2. Log in to the application with a user ID that has full administrative rights.

3. Click the **Data Management** tab. The Available Imports screen appears.

4. To import the master parameter set, click the **File** link in the Import Parameters for Distribution row. Follow the instructions to import `parameterset.xml` from the `<INSTALL_DIR>`/centraloffice/db folder.

5. To import the initial set of Oracle Retail Central Office application parameters, click the **File** link in the Import Application Parameters row. Follow the instructions to import `centraloffice.xml` from the `<INSTALL_DIR>`/centraloffice/db folder.

Importing Parameters by using an Ant Target

To import parameters using an ant target:

1. Change to the `<INSTALL_DIR>`/centraloffice/configured-output/db directory.

2. Edit the db.properties file. Update the following property in the "Properties for Parameter Loading" section.

   Change `<ORA_HOST_NAME>` to your host name and `<port number>` to your RMI port number.

   ```
   parameters.apphost=t3://<ORA_HOST_NAME>:<port number>
   ```

3. Run the following command:

   ```
   ant load_parameters
   ```

Load Optional Purge Procedures

For information on how to invoke the procedures provided for purging aged data, see the *Oracle Retail Central Office Operations Guide*.

To load the purge procedures:

1. Run the available Ant target to load the procedures.

   ```
   ant load_purge_procedures
   ```

2. Log in as the database schema owner, *<schema_username>*.

3. Create a user for running the purge procedures. This user should only have the privileges required to run the purge procedures.

Installing Multibyte Fonts for Transaction Tracker

Transaction Tracker output can be exported to PDF. In order for this PDF file to display and print correctly with multibyte characters, the multibyte fonts must be defined.

Central Office uses Apache Formatting Objects Processor (FOP) to create a PDF that is compatible with Adobe Acrobat. FOP and Adobe Acrobat require information about the fonts to use in the PDF. You must install and configure any multibyte fonts needed for the PDF.

To update the fonts:

1. Install the required fonts.

2. Generate a font metrics file.

   The fop.jar file provides a TTFReader program to generate this file. For information on this file, see the Apache FOP documentation. The fop.jar file is found in `<INSTALL_DIR>`/centraloffice/centraloffice.ear. Extract the fop.jar file into the current directory.

   The following are examples of the commands to use:

   - To specify a collection of fonts (TTC font):

     ```
     java -classpath ./fop.jar org.apache.fop.fonts.apps.TTFReader -ttcname
     "Gulim" /home/oracle/fonts/gulim.ttc gulim.xml
     ```

- To specify a specific font (TTF font):

```
java -classpath ./fop.jar org.apache.fop.fonts.apps.TTFReader
/home/oracle/fonts/SIMSUN.TTF SIMSUN.xml
```

3. Create a `userconfig.xml` file. This file has pointers to the font metrics file and the fonts on your local file system. For information on this file, see the Apache FOP documentation.

The following is an example of the structure of the configuration file based on the commands in the previous step.

```
<configuration>
................
<fonts>
................
................
  <font metrics-file="/home/oracle/config/gulim.xml"
embed-file="/home/oracle/fonts/gulim.ttc" kerning="yes">
     <font-triplet name="Gulim" style="normal" weight="normal"/>
     <font-triplet name="Gulim" style="normal" weight="bold"/>
     <font-triplet name="Gulim" style="italic" weight="normal"/>
     <font-triplet name="Gulim" style="italic" weight="bold"/>
 </font>
................
................
</fonts>
................
</configuration>
```

4. Define the Java system property `pdf.report.userconfig` to point the `userconfig.xml` file for the application server JVM. See the documentation for the application server for more information.

```
-Dpdf.report.userconfig=/home/oracle/fonts/userconfig.xml
```

5. Replace any FOP.xsl file that needs the new font specified in the `userconfig.xml` file. After editing any FOP.xsl files in the ear file, you must redeploy the ear file.

For example, change the font family to SimSun in the following file in the `transaction-webapp-reports.jar` file:

```
oracle/retail/stores/commerceservices/transaction/salereturn/reports/SaleReturn
TransactionDTOFOP.xsl
```

Using the Central Office Application

> **Note:** When you are done installing Central Office, log out and close the browser window. This ensures that your session information is cleared and prevents another user from accessing Central Office with your login information.

After the application installer completes and you have run the initial parameter load, you should have a working Central Office application installation. To launch the application, open a web browser and go to `https://<servername>:<portnumber>/<context root>`.

For example, https://myhost:7002/centraloffice

A

Appendix: Installer Screens for the Oracle Stack

You need specific details about your environment for the installer to successfully deploy the Central Office application on the Oracle stack. Depending on the options you select, you may not see some screens or fields.

For each field on a screen, a table is included in this appendix that describes the field.
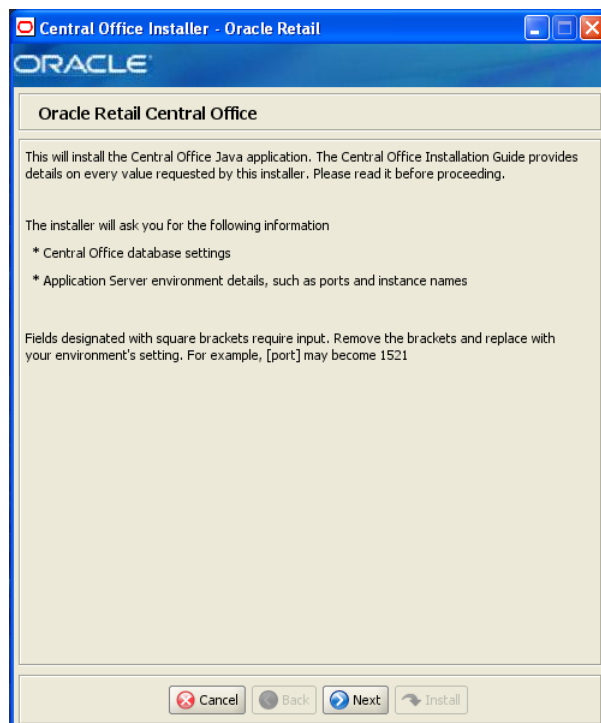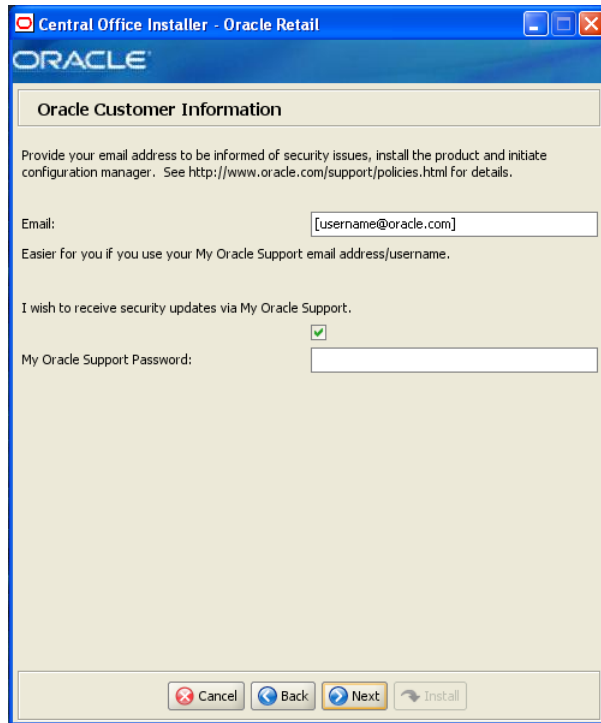
Figure A–1   Introduction

Figure A–2   Oracle Customer Information

This screen is only displayed if Oracle Configuration Manager (OCM) is to be installed. The OCM collector must be registered with your My Oracle Support account so that the uploaded configuration information can be stored properly and be readily available during the resolution of a service request.

After the Central Office installer completes, the OCM installer runs if OCM is not already installed. For information on OCM, see "Oracle Configuration Manager" in Chapter 2.

The fields on this screen are described in the following tables.

Field Title	Email
Field Description	Email address to use for OCM installation.

Field Title	I wish to receive security updates via My Oracle Support.
Field Description	To receive security updates, check the box.

Field Title	My Oracle Support Password
Field Description	Password for the My Oracle Support user to receive security updates.

Figure A–3   Requirements
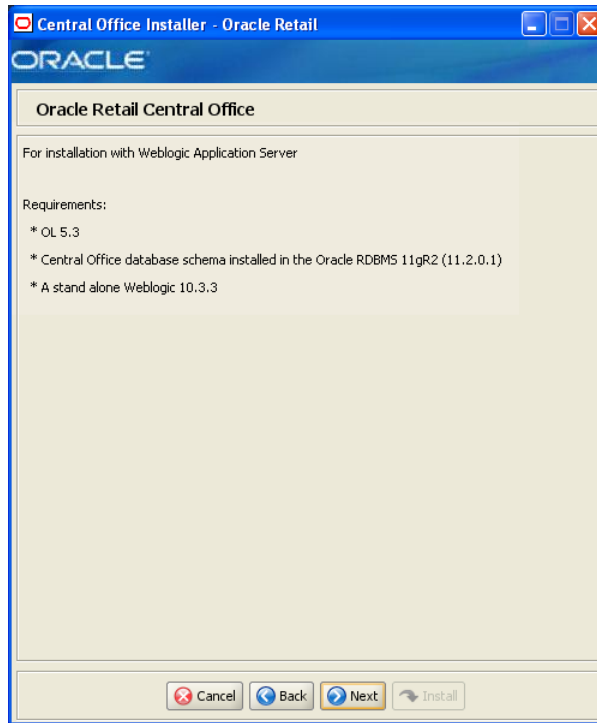
Figure A–4   License Agreement
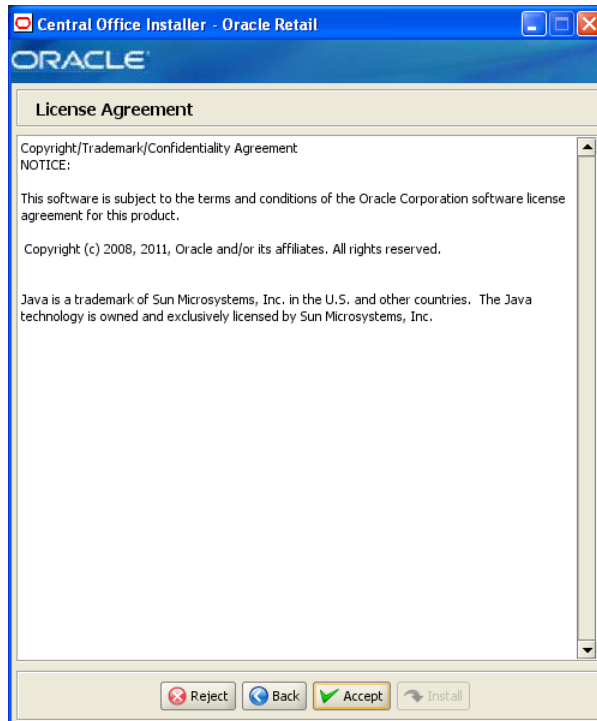
> **Note:** You must choose to accept the terms of the license agreement in order for the installation to continue.

Figure A–5   Supported Languages
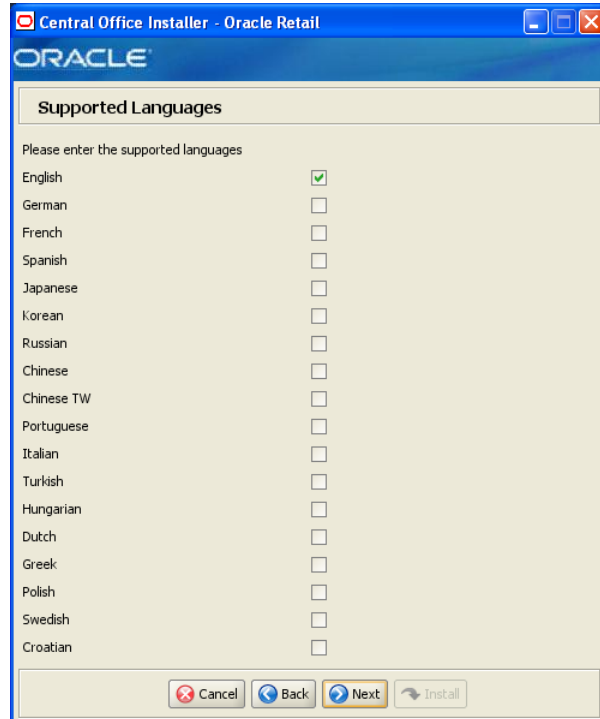
The field on this screen is described in the following table.

Field Title	Please enter the supported languages
Field Description	Select the languages that will be available for the Central Office application.
	The languages selected on this screen determine the available choices on the Enter Default Locale screen.
Example	English

Figure A–6   Enter Default Locale
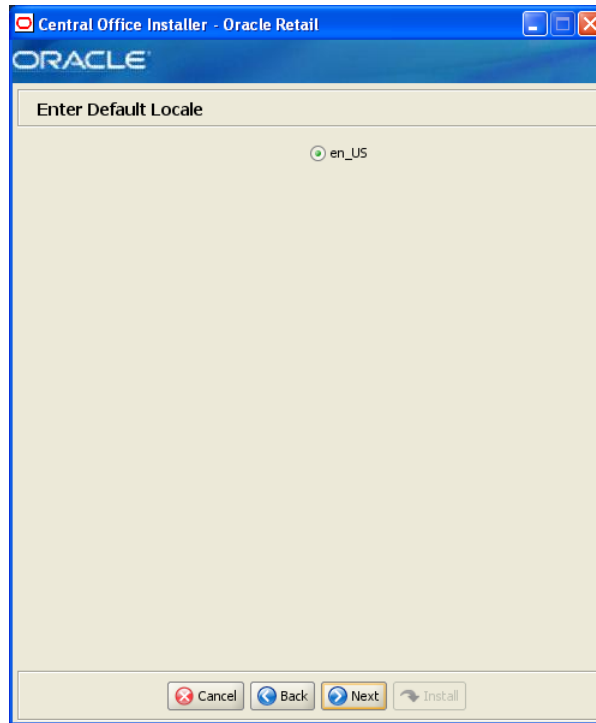
The field on this screen is described in the following table.

Field Title	Enter Default Locale
Field Description	Locale support in Central Office enables the date, time, currency, calendar, address, and phone number to be displayed in the format for the selected default locale.
	The choices for default locale are dependent on the selections made on the Supported Languages screen. For each selected language, the default locale for that language is displayed on the Enter Default Locale screen. For example, if English and French are selected on the Supported Languages screen, en_US and fr_FR are the available choices for the default locale.
Example	en_US

Figure A–7   Database Owner
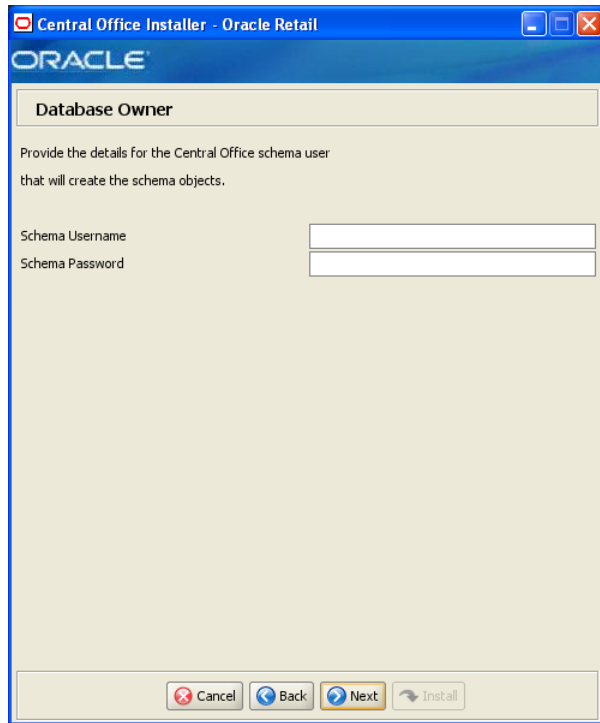
The fields on this screen are described in the following tables.

Field Title	Schema Username
Field Description	Schema user name that manages the objects in the schema. This user has Create, Drop, and Alter privileges in the schema, that is, Data Definition Language (DDL) execution privileges. For information on creating this user, see "Create the Database Schema Owner and Data Source Users" in Chapter 2. **Note:** This user creates the database objects used by Central Office.
Example	DBOWNER

Field Title	Schema Password
Field Description	Password for the database owner.

Figure A–8   Data Source User
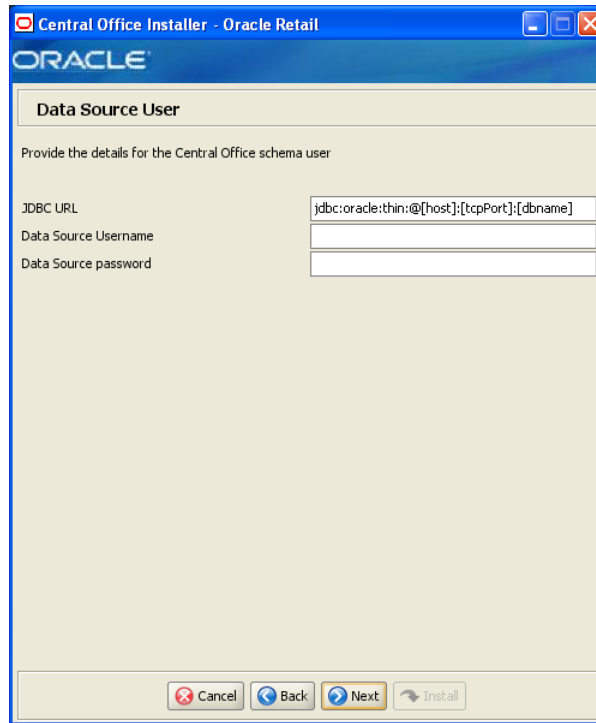
The fields on this screen are described in the following tables.

Field Title	JDBC URL
Field Description	URL containing the specific parameters used by Central Office to access the database schema. See Appendix D for the expected syntax.
Example	`jdbc:oracle:thin:@myhost:1521:mydatabase`

Field Title	Data Source Username
Field Description	Database user name that can access and manipulate the data in the schema. This user can have Select, Insert, Update, Delete, and Execute privileges on objects in the schema, that is, Data Manipulation Language (DML) execution privileges. For information on creating this user, see "Create the Database Schema Owner and Data Source Users" in Chapter 2. **Note:** This schema user is used by Central Office to access the database.
Example	DBUSER

Field Title	Data Source Password
Field Description	Password for the data source user.

Figure A–9   Enable Secure JDBC
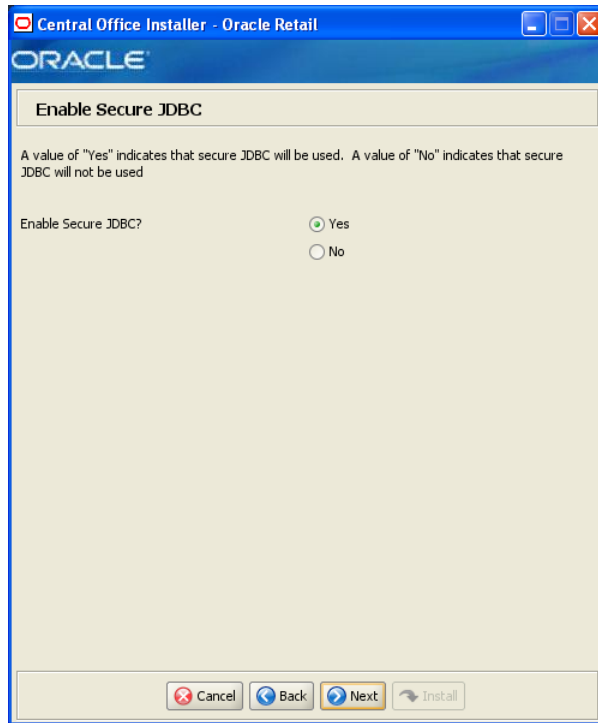
The field on this screen is described in the following table.

Field Title	Enable Secure JDBC?
Field Description	Select whether secure JDBC is to be used for communication with the database.
Example	Yes

Figure A−10   Data Source SSL Configuration
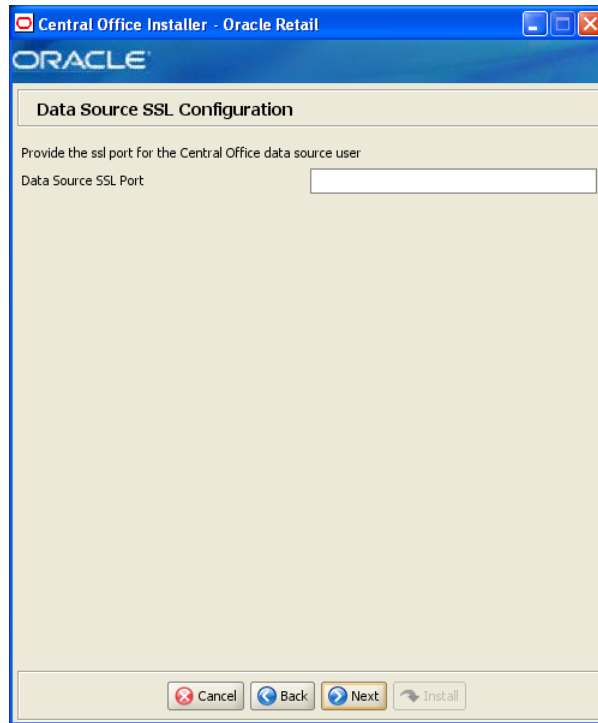
This screen is only displayed if **Yes** is selected on the Enable Secure JDBC screen.

The field on this screen is described in the following table.

Field Title	**Data Source SSL Port**
Field Description	SSL port used to access the database.
Example	7004

Figure A–11   Enable DIMP
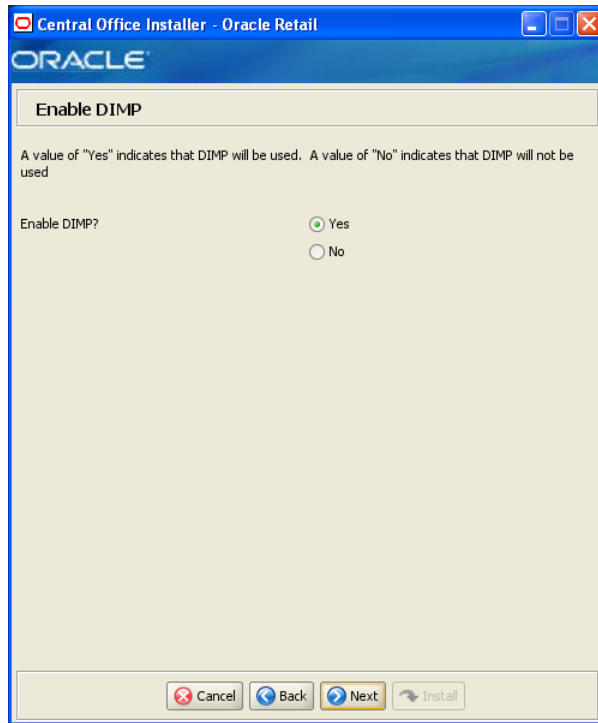
The field on this screen is described in the following table.

Field Title	Enable DIMP?
Field Description	Select whether DIMP will be used. For information on DIMP, see "Enable Data Import" in Chapter 2.
Example	Yes

Figure A−12   DIMP Configuration
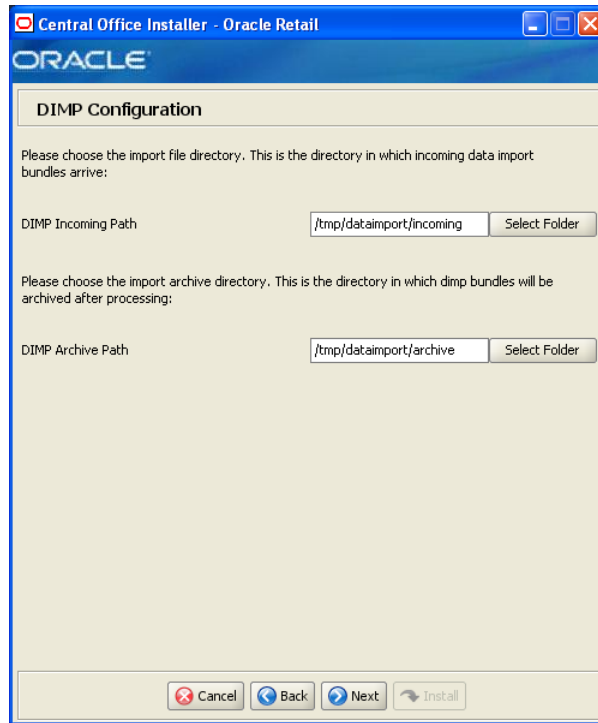
This screen is only displayed if **Yes** is selected on the Enable DIMP screen.

The fields on this screen are described in the following tables.

Field Title	DIMP Incoming Path
Field Description	Directory where the incoming data import bundles arrive.
Example	`/tmp/dataimport/incoming`

Field Title	DIMP Archive Path
Field Description	Directory where the incoming data import bundles are archived after processing.
Example	`/tmp/dataimport/archive`

Figure A–13   Install Database Option
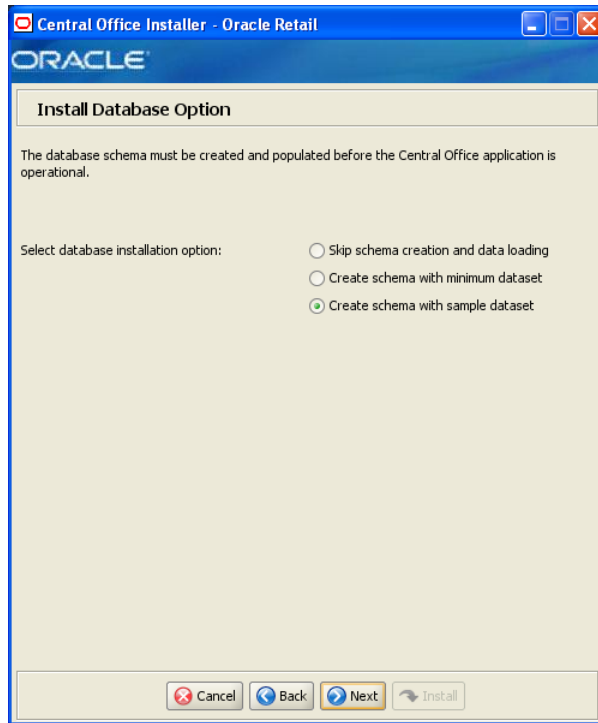
The field on this screen is described in the following table.

Field Title	Select database installation option
Field Description	The database schema must be created and populated before starting Central Office. This screen gives you the option to have the installer create and populate the database schema or leave the database schema unmodified.
	■ To have the installer leave the database schema unchanged, select **Skip schema creation and data loading**.
	■ To have the installer create and populate the database schema with the minimum dataset, select **Create schema with minimum dataset**.
	■ To have the installer create and populate the database schema with the sample dataset, select **Create schema with sample dataset**.
	For more information, see "Install Database Options" in Chapter 2.
Example	Yes

Figure A–14   Central Office Administrator User
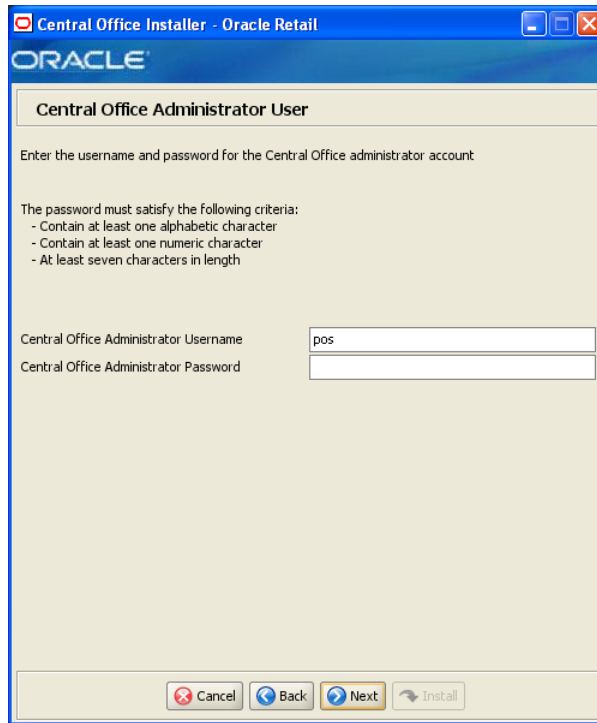
The fields on this screen are described in the following tables.

Field Title	Central Office Administrator Username
Field Description	User name used for performing Central Office administrative functions.
Example	pos

Field Title	Central Office Administrator Password
Field Description	Password for the administrator user.

Figure A–15   Cryptology Settings
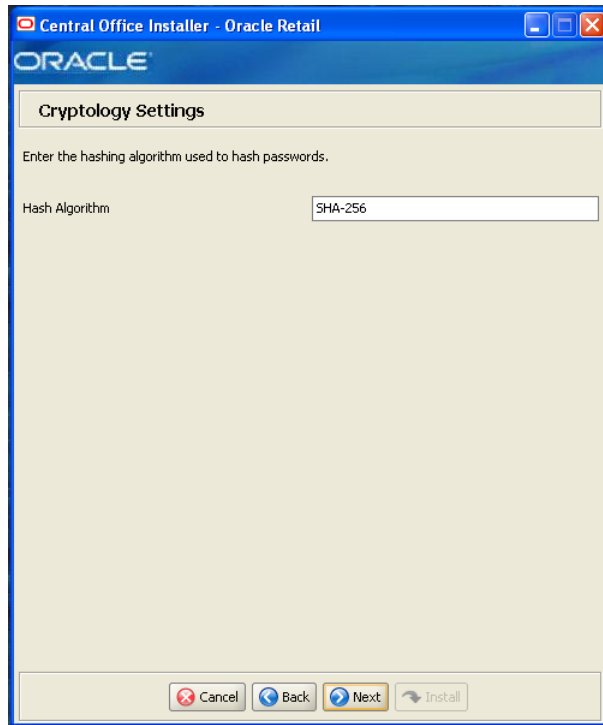
The field on this screen is described in the following table.

Field Title	Hash Algorithm
Field Description	Name of the algorithm used by to hash passwords.
Example	SHA-256

Figure A–16   App Server WL_HOME
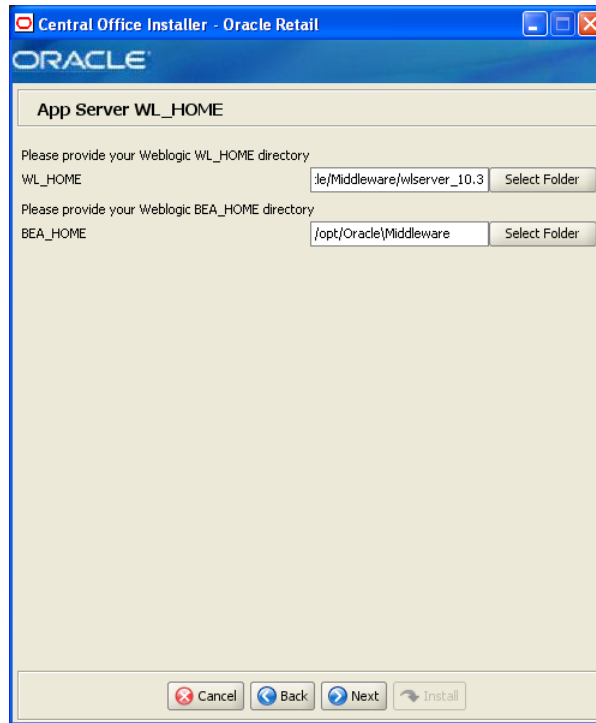
The fields on this screen are described in the following tables.

Field Title	WL_HOME
Field Description	WL_HOME directory for the Oracle WebLogic Server installation.
Example	`/opt/Oracle/Middleware/wlserver_10.3`

Field Title	BEA_HOME
Field Description	BEA_HOME directory for the Oracle WebLogic Server installation.
Example	`/opt/Oracle/Middleware`

Figure A–17   Mail Session Details
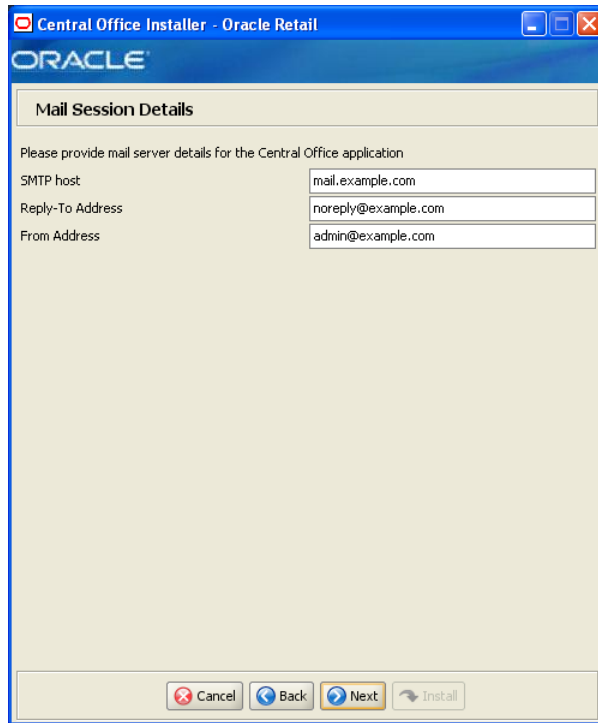
The fields on this screen are described in the following tables.

Field Title	SMTP host
Field Description	Host where the SMTP server is running.
Example	`mail.example.com`

Field Title	Reply-To Address
Field Description	Reply-to address in e-mails generated by Central Office.
Example	`donotreply@example.com`

Field Title	From Address
Field Description	From address in e-mails generated by Central Office.
Example	`admin@example.com`

Figure A–18   Domain Details
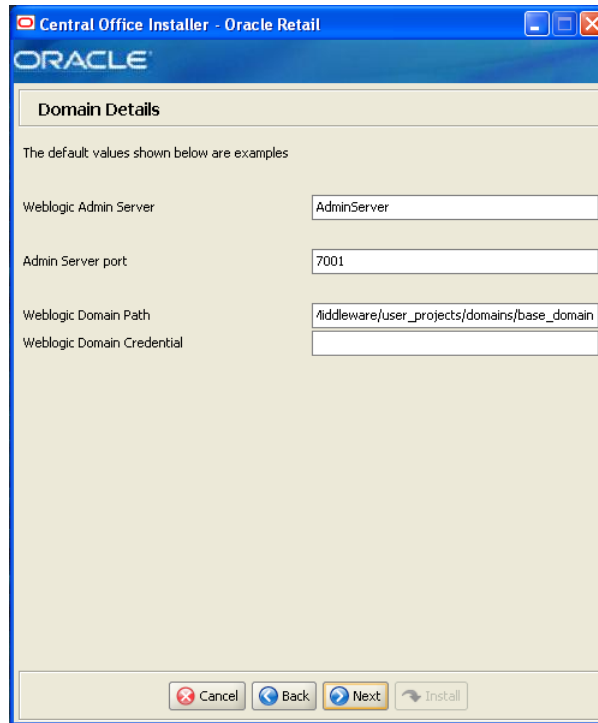
The fields on this screen are described in the following tables.

Field Title	Weblogic Admin Server
Field Description	Name of the admin server to which the Central Office application is being deployed.
Example	AdminServer

Field Title	Admin Server port
Field Description	Port used by the administration server. This port was selected when the administration domain was created.
Example	7001

Field Title	Weblogic Domain Path
Field Description	Path to the domain to which the Central Office application is being deployed.
Example	/opt/Oracle/Middleware/user_projects/domains/base_domain

Field Title	Weblogic Domain Credential
Field Description	Password shared between domains in order to establish a trust relationship. **Note:** Use the same password for all Oracle Retail applications in the trust relationship in your configuration.

Figure A–19   Weblogic Administrative User
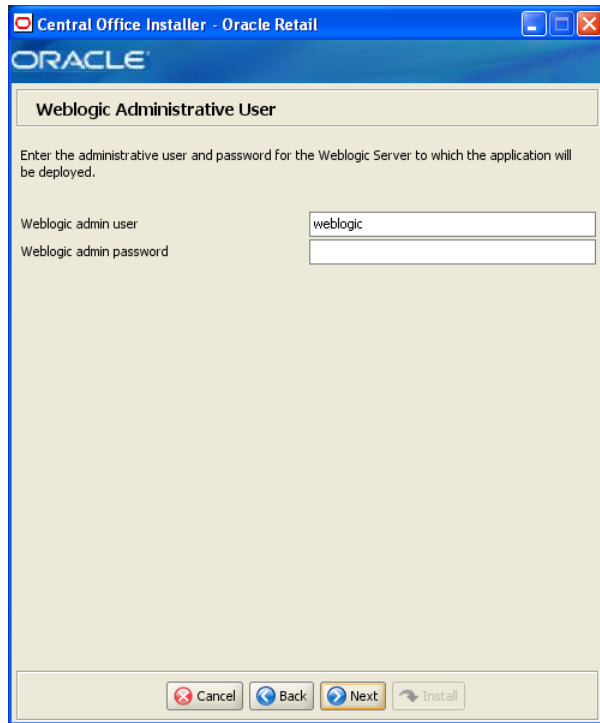
The fields on this screen are described in the following tables.

Field Title	Weblogic admin user
Field Description	User name of the administrative user for the WebLogic server to which the Central Office application is being deployed.
Example	weblogic

Field Title	Weblogic admin password
Field Description	Password for the WebLogic administrative user. You chose this password when you created the WebLogic server.

Figure A–20   Weblogic Deploy Server Type
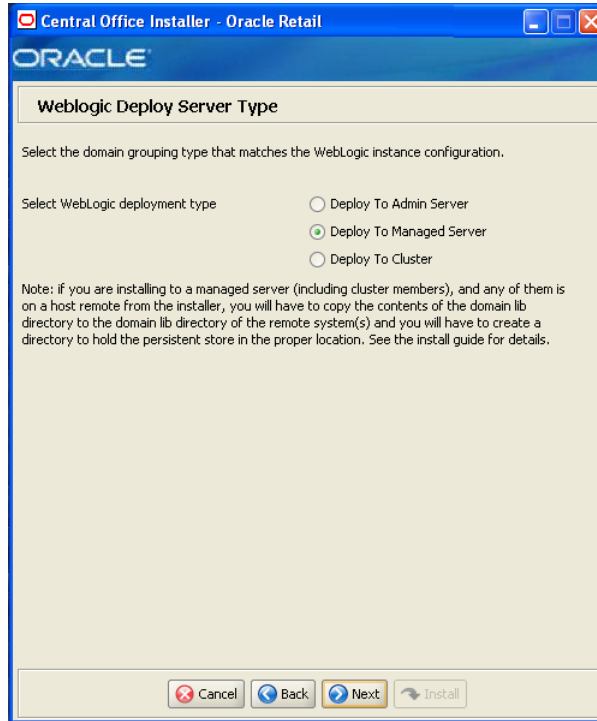
The field on this screen is described in the following table.

Field Title	Deploy Server Type?
Field Description	Select how the Central Office application is deployed. ■ Deploy to Admin Server ■ Deploy to Managed Server ■ Deploy to Cluster **Note:** Central Office does not support a clustered environment For more information, see "Deploying to a Managed Server" in Chapter 2.
Example	Deploy to Managed Server

Figure A–21   Managed Server Details
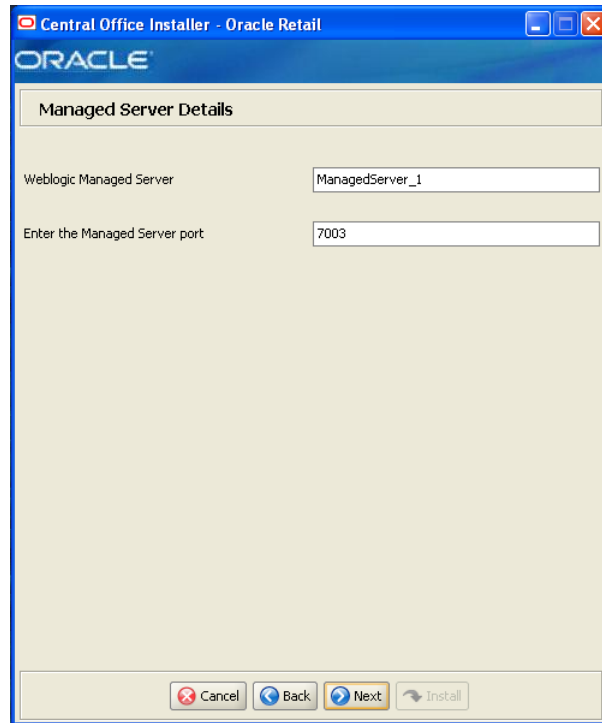
This screen is only displayed if **Deploy to Managed Server** is selected on the Weblogic Deploy Server Type screen.

The fields on this screen are described in the following tables.

Field Title	Weblogic Managed Server
Field Description	Name of the managed server.
Example	ManagedServer_1

Field Title	Enter the Managed Server port
Field Description	Port number used to access the managed server.
Example	7003

Figure A–22   Cluster Details
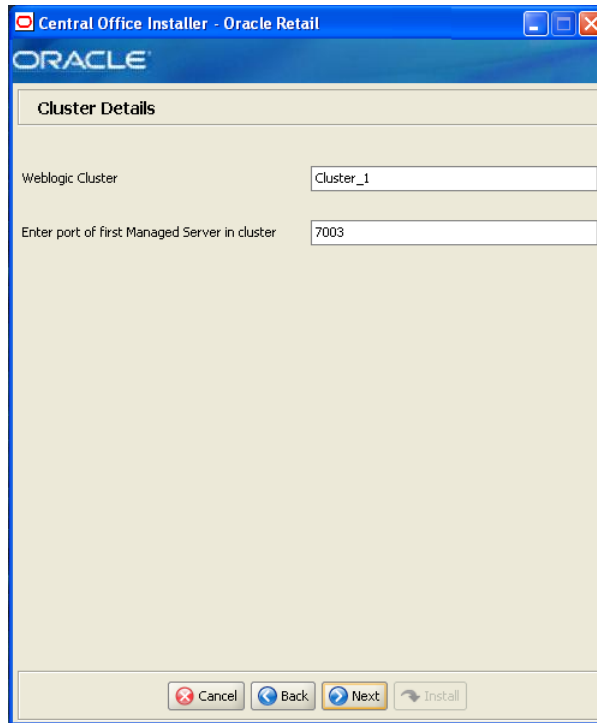
This screen is only displayed if **Deploy to Cluster** is selected on the Weblogic Deploy Server Type screen.

The fields on this screen are described in the following tables.

Field Title	Weblogic Cluster
Field Description	Name of the cluster.
Example	Cluster_1

Field Title	Enter port of first Managed Server in cluster
Field Description	Port number used to access the cluster.
Example	7003

Figure A–23 Manual Deployment Option
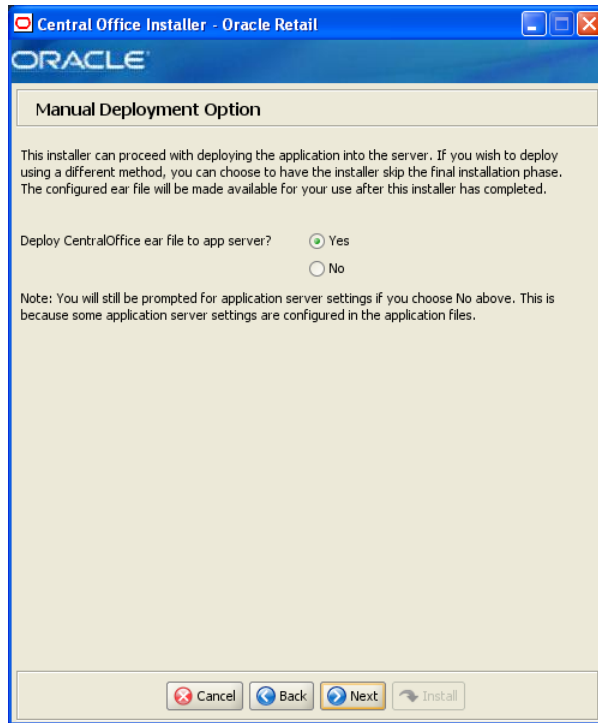
The field on this screen is described in the following table.

Field Title	Install files to app server?
Field Description	By default, the installer will deploy the ear file and copy files under the application server ORACLE_HOME. This screen gives you the option to leave ORACLE_HOME unmodified and configure the application in the staging area for use in a manual installation at a later time. This option can be used in situations where modifications to files under ORACLE_HOME must be reviewed by another party before being applied.
	If you choose No, see "Manual Deployment of the Central Office Application" in Chapter 2 for the manual steps you need to perform after the installer completes.
Example	Yes

Figure A–24 Application Deployment Details
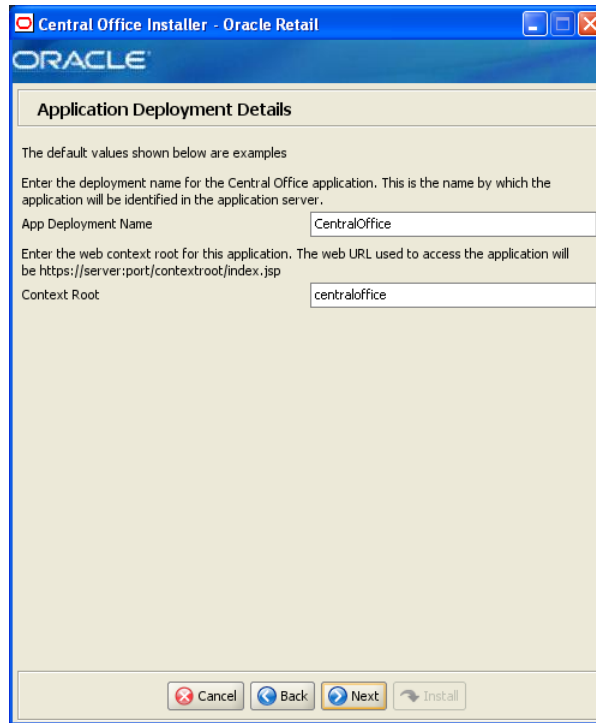
The fields on this screen are described in the following tables.

Field Title	App Deployment Name
Field Description	Name by which this Central Office application will be identified in the application server.
Example	CentralOffice

Field Title	Context Root
Field Description	Path under the HTTPS URL that will be used to access the Central Office application. For example, a context root of 'centraloffice' will result in the application being accessed at `https://<host>:<port>/centraloffice/index.jsp`.
Example	centraloffice

Figure A–25   Install Parameters Option
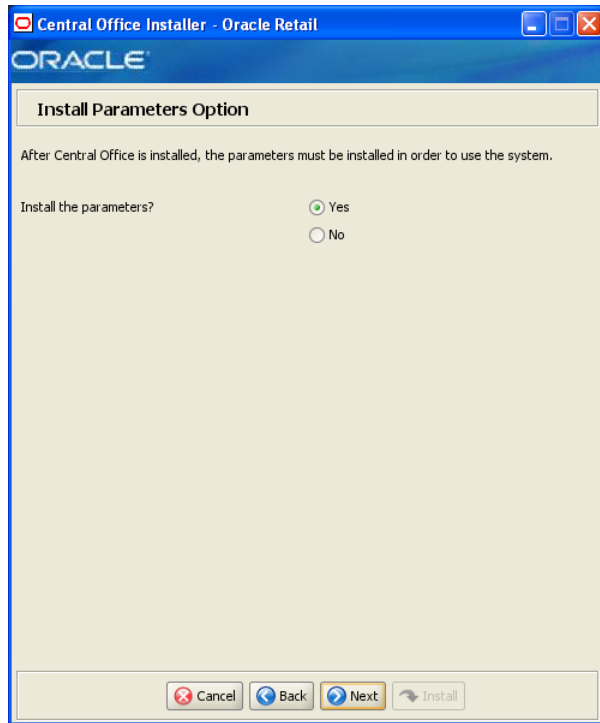
The field on this screen is described in the following table.

Field Title	Install the parameters?
Field Description	The application parameters must be set up before Central Office can be used. This screen gives you the option to set up the parameters manually. If you choose No, see "Import Initial Parameters" in Chapter 2 for the manual steps you need to perform after the installer completes.
Example	Yes

Figure A–26   Installation Progress
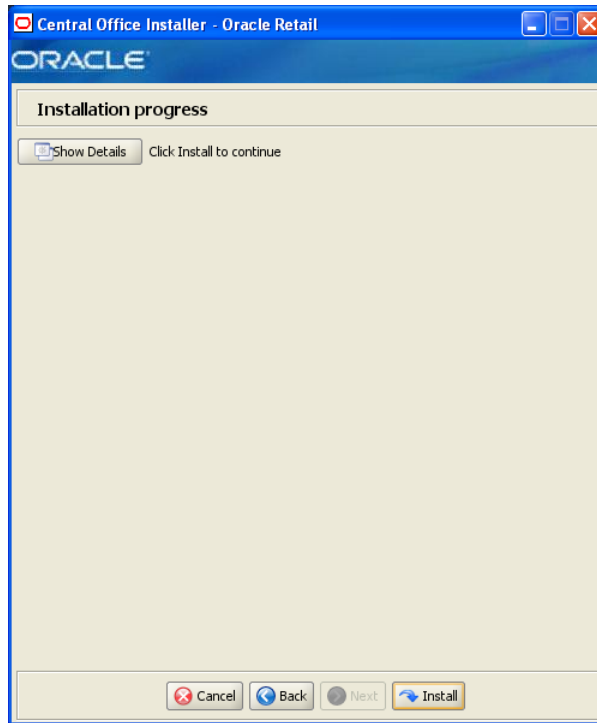
Figure A–27   Installation Complete
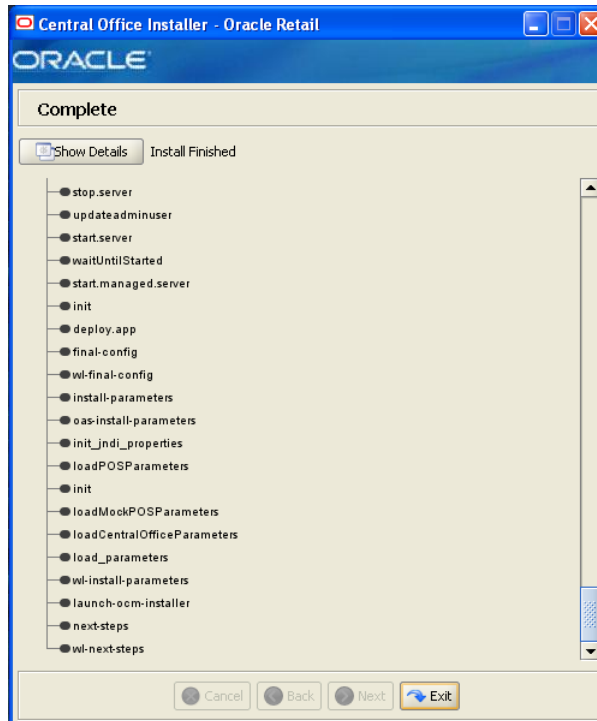
After the installer completes, the Oracle Configuration Manager (OCM) installer runs
if OCM is not already installed. For information on OCM, see "Oracle Configuration
Manager" in Chapter 2.

B

Appendix: Installer Silent Mode

In addition to the GUI and text interfaces of the Central Office installer, there is a silent mode that can be run. This mode is useful if you wish to run a new installation and use the settings you provided in a previous installation. It is also useful if you encounter errors during an installation and wish to continue after resolving them.

The installer runs in two distinct phases. The first phase involves gathering settings from the user. At the end of the first phase, a properties file named `ant.install.properties` is created with the settings that were provided and the `cwallet.sso` file is created. In the second phase, this properties file is used to provide your settings for the installation.

To skip the first phase and re-use the `ant.install.properties` and `cwallet.sso` files from a previous run, follow these instructions:

1. Edit the `ant.install.properties` file and correct any invalid settings that may have caused the installer to fail in its previous run.

2. If the previous install was successful, the `cwallet.sso` file is found in the installation directory for that install. Copy the `cwallet.sso` file to `<INSTALL_DIR>` for this silent install.

3. Run the installer again with the silent argument.

   ```
   install.sh silent weblogic
   ```

C

Appendix: Reinstalling Central Office

Central Office does not provide the capability to uninstall and reinstall the application. If you need to run the Central Office installer again, perform the following steps.

To reinstall:

1. If you are using a managed server, stop the managed server. Stop the WebLogic server.

2. Delete the domain.

3. Recreate the Central Office domain. If you are using a managed server, add the managed server as part of recreating the domain.

4. If you are using a managed server, start the managed server. Start the administration domain.

5. Run the Central Office installer. For more information, see "Run the Central Office Application Installer" in Chapter 2.

D

Appendix: URL Reference

Both the database schema and application installers for the Central Office product will ask for several different URLs. These include the following.

JDBC URL for a Database

Used by the Java application and by the installer to connect to the database.

Syntax: `jdbc:oracle:thin:@<host>:<port>:<sid>`

- `<host>`: host name of the database server
- `<port>`: database listener port
- `<sid>`: system identifier for the database

For example, `jdbc:oracle:thin:@myhost:1525:mysid`

JNDI Provider URL for an Application

Used for server-to-server calls between applications.

Syntax: `t3://<host>:<port>`

- `<host>`: host name selected when the WebLogic domain was created
- `<port>`: port number selected when the WebLogic domain was created

For example, `t3://adminserver:7001`

Deployer URI

Used by the Oracle Ant tasks to deploy an application to a WebLogic. The application installer does not ask the user for this value. It is constructed based on other inputs and written to the `ant.install.properties` file for input to the installation script. For repeat installations using silent mode, you may need to correct mistakes in the deployer URI.

Syntax: `input.deployer.uri = t3://<host>:<port>`

- `<host>`: host name selected when the WebLogic domain was created
- `<port>`: port number selected when the WebLogic domain was created

For example, `input.deployer.uri = t3://localhost:7003`

E

Appendix: Common Installation Errors

This appendix describes some common errors encountered during installation of Central Office.

Unreadable Buttons in the Installer

If you are unable to read the text within the installer buttons, it probably means that your JAVA_HOME needs to be set to a version 6 JDK. Set JAVA_HOME to a Java development kit of version 6 or later and run the installer again.

WebLogic Domain Does Not Exist

Symptom:

The application installer quits with the following error message:

```
BUILD FAILED
/tmp/j2ee/orco/staging/ORCO-trunk/build.xml:941: The following error occurred
 while executing this line:
/tmp/j2ee/orco/staging/ORCO-trunk/build-common-wl.xml:83: startWebLogic.sh under
 /opt/Oracle/Middleware/user_projects/domains/base_domain is missing.
 Installation cannot continue.
```

Solution:

This error occurs because the WebLogic domain provided does not exist.

Make sure that the domain exists, and then check the `ant.install.properties` file for entry mistakes. Pay close attention to the input.deployer.uri (see Appendix D), input.admin.user, and input.admin.password properties. If you need to make a correction, you can run the installer again with this file as input by running silent mode (see Appendix B).

WebLogic Domain Server is Not Started

Symptom:

The application installer quits with the following error message:

```
BUILD FAILED
C:\tmp\j2ee\orco\staging\ORCO-trunk\build.xml:1022: The following error occurred w
hile executing this line:
C:\tmp\j2ee\orco\staging\ORCO-trunk\build-common-wl.xml:152: url http://localhost:
7001/console is not available. Installation cannot continue.
```

Solution:

This error occurs because the WebLogic domain server provided is not running.

Make sure that the WebLogic domain server is running, and then check the `ant.install.properties` file for entry mistakes. Pay close attention to the input.deployer.uri (see Appendix D), input.oc4j.instance, input.admin.user, and input.admin.password properties. If you need to make a correction, you can run the installer again with this file as input by running silent mode (see Appendix B).

"Could not create system preferences directory" Warning

Symptom:

The following text appears in the installer Errors tab:

```
[May 22, 2006 11:16:39 AM java.util.prefs.FileSystemPreferences$3 run
WARNING: Could not create system preferences directory. System preferences are
unusable.
May 22, 2006 11:17:09 AM java.util.prefs.FileSystemPreferences
checkLockFile0ErrorCode
WARNING: Could not lock System prefs. Unix error code -264946424
```

Solution:

This is related to Java bug 4838770. The `/etc/.java/.systemPrefs` directory may not have been created on your system. See http://bugs.sun.com for details.

This is an issue with your installation of Java and does not affect the Oracle Retail product installation.

F

Appendix: Best Practices for Passwords

This appendix has information on the practices that should be followed for passwords. The following topics are covered:

- "Password Guidelines"
- "Special Security Options for Oracle Databases"

Password Guidelines

To make sure users and their passwords are properly protected, follow these guidelines. The guidelines are based on the Payment Card Industry Data Security Standard (PCI-DSS):

- Verify the identity of the user before resetting any passwords.

- Set first-time passwords to a unique value for each user and require the password to be changed immediately after the first use.

- Immediately revoke access for any terminated users.

- Remove inactive user accounts at least every 90 days.

- Enable accounts used by vendors for remote maintenance only during the time period when access is needed.

- Communicate password procedures and policies to all users who have access to cardholder data.

- Do not use group, shared, or generic accounts and passwords.

- Require user passwords to be changed at least every 90 days.

- Require a minimum password length of at least seven characters.

- Require that passwords contain both numeric and alphabetic characters.

- Do not accept a new password that is the same as any of the last four passwords used by a user.

- Limit the number of repeated access attempts by locking out the user ID after not more than six attempts.

- Set the lockout duration to thirty minutes or until an administrator enables the user ID.

Special Security Options for Oracle Databases

The following information is based on Oracle Database version 11.2.0.1.

Enforcing Password Policies Using Database Profiles

Password policies can be enforced using database profiles. The options can be changed using a SQL statement, for example:

```
alter profile appsample limit
```

Option	Setting	Description
FAILED_LOGIN_ATTEMPTS	4	Maximum number of login attempts before the account is locked.
PASSWORD_GRACE_TIME	3	Number of days a user has to change an expired password before the account is locked.
PASSWORD_LIFE_TIME	90	Number of days that the current password can be used.
PASSWORD_LOCK_TIME	30	Amount of time in minutes that the account is locked.
PASSWORD_REUSE_MAX	10	Number of unique passwords the user must supply before the first password can be reused.
PASSWORD_VERIFY_FUNCTION	*<routine_name>*	Name of the verification script that is used to ensure that the password meets the requirements of the password policy. See "Enforcing Password Policies Using a Verification Script".

Enforcing Password Policies Using a Verification Script

Password policies can be enforced using a password complexity verification script, for example:

```
UTLPWDMG.SQL
```

The password complexity verification routine ensures that the password meets the following requirements:

- Is at least four characters long

- Differs from the user name

- Has at least one alpha, one numeric, and one punctuation mark character

- Is not simple or obvious, such as welcome, account, database, or user

- Differs from the previous password by at least three characters

For example, to set the password to expire as soon as the user logs in for the first time:

```
CREATE USER jbrown
IDENTIFIED BY zX83yT
...
PASSWORD EXPIRE;
```

G

Appendix: Secure JDBC with Oracle 11g Database

This appendix has information on setting up and communicating with a secured Oracle 11g database server based on the following assumptions:

- Client authentication is not needed.

- The Oracle wallet is used as a trust store on the database server.

SSL encryption for Oracle JDBC has been supported in the JDBC-OCI driver since Oracle JDBC 9.2.x, and is supported in the THIN driver starting in 10.2. SSL authentication has been supported in the JDBC-OCI driver since Oracle JDBC 9.2.x. The THIN driver supports Oracle Advanced Security SSL implementation in Oracle Database 11g Release 2 (11.2).

For more information, see the following Web sites:

- http://www.oracle.com/technetwork/database/enterprise-edition/wp-oracle-jdbc-thin-ssl-130128.pdf

- http://download.oracle.com/docs/cd/E11882_01/network.112/e10746/toc.htm

- http://download.oracle.com/docs/cd/B28359_01/java.111/b31224/toc.htm

Creating the Oracle Wallet and Certificate for the Database Server

Note the following information:

- If you want have a user interface, run the server administration console.

- The wallet you create must support Auto Login. It must be enabled on the new wallet.

- The following is the wallet directory default:

  - For UNIX–`ORACLE_HOME/admin/ORACLE_SID`

  - For Microsoft Windows–`%USERPROFILE%\ORACLE\WALLETS`

  - Test server wallet information:

    * Wallet password: securedb11g

    * Wallet directory: `/u01/oracle/admin/SECURDB11G`

- When generating a self-signed certificate, note the following:

  – Do not use keytool to create a certificate for using Oracle wallets. They are incompatible.

  – Two wallets are needed to generate a self-signed certificate. One wallet is needed to sign the certificate and another wallet is needed to use the certificate.

  – For command line wallet access, use `orapki`.

  – For instructions on generating a self-signed certificate, see *APPENDIX B CREATING TRUSTSTORES AND KEYSTORES* in the following document:

    http://www.oracle.com/technetwork/database/enterprise-edition/wp-oracle-jdbc-thin-ssl-130128.pdf

  – The following are examples of `orapki` commands:

    * To create the wallet:

      ```
      orapki wallet create -wallet <wallet directory>
      ```

    * To add the self-signed certificate:

      ```
      orapki wallet add -wallet <wallet directory> -dn
      CN=<certificate name>,C-US -keysize 2048 -self_signed -validity 3650
      ```

    * To view the wallet:

      ```
      orapki wallet display -wallet <wallet directory>
      ```

- The Wallet Manager UI can also be used to import certificates.

Securing the Listener on the Server

The `listener.ora`, `tnsnames.ora`, and `sqlnet.ora` files are found in the `ORACLE_HOME/network/admin` directory. If the `sqlnet.ora` file does not exist, you need to create it.

To secure the listener on the server:

1. Add TCPS protocol to the `listener.ora` file.

2. Add TCPS protocol to the `tnsnames.ora` file.

3. Add the Oracle Wallet location to the `sqlnet.ora` and `listener.ora` files.

4. Add disabling of client authentication to the `sqlnet.ora` and `listener.ora` files.

5. Add encryption-only cipher suites to the `sqlnet.ora` file.

6. Bounce the listener once the file is updated.

Examples of Network Configuration Files

Examples of the following network configuration files are shown in this section:

- listener.ora

- sqlnet.ora

- tnsnames.ora

listener.ora

```
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME = PLSExtProc)
      (ORACLE_HOME = /u01/oracle/11g)
      (PROGRAM = extproc)
    )
  )

LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 10.143.44.108)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCPS)(HOST = 10.143.44.108)(PORT = 2484))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROCO))
    )
  )

WALLET_LOCATION=(SOURCE=(METHOD=FILE)
  (METHOD_DATA=(DIRECTORY=/u01/oracle/admin/SECURDB11G)))

SSL_CLIENT_AUTHENTICATION=FALSE
```

> **Caution:** To generate a trace log, add the following entries to the `listener.ora` file:
>
> ```
> TRACE_LEVEL_LISTENER = ADMIN
> TRACE_DIRECTORY_LISTENER = /u01/oracle/11g/network/trace
> TRACE_FILE_LISTENER = listener.trc
> ```

sqlnet.ora

```
SSL_CLIENT_AUTHENTICATION=FALSE

SSL_CIPHER_SUITES=(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_WITH_RC4_128_
MD5, SSL_DH_anon_WITH_DES_CBC_SHA)

WALLET_LOCATION=(SOURCE=(METHOD=FILE)
  (METHOD_DATA=(DIRECTORY=/u01/oracle/admin/SECURDB11G)))
```

tnsnames.ora

```
SECURDB11G =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 10.143.44.108)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCPS)(HOST = 10.143.44.108)(PORT = 2484))
    )
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = SECURDB11G)
    )
  )
```

Securing Client Access

> **Caution:** Ensure you are using `ojdbc.jar` version 10.2.x or later. Version 10.1.x or earlier will not connect over TCPS.

To secure client access:

1. Export the self-signed certificate from the server Oracle Wallet and import it into a local trust store.

2. Use the following URL format for the JDBC connection:

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=tcps) (HOST=10.143.44.108)
(PORT=2484) ) (CONNECT_DATA= (SERVICE_NAME=SECURDB11G)))
```

3. The database connection call requires the following properties to be set, either as system properties or JDBC connection properties:

Property	Value
oracle.net.ssl_cipher_suites	(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_WITH_RC4_128_MD5, SSL_DH_anon_WITH_DES_CBC_SHA)
javax.net.ssl.trustStore	Path and file name of trust store
	For example:
	`/DevTools/Testing/Secure11g/truststore/truststore`
javax.net.ssl.trustStoreType	JKS
javax.net.ssl.trustStorePassword	Password for trust store

Specific Instructions for Central Office

Complete the following steps.

Configure the Application Server Machine

As a client, the application server machine needs to have the trusted certificate added to a local trust store. Follow the previous instructions for exporting the known certificate and importing it to a local trust store.

This is not required as the Release 13.3 Oracle Retail Stores applications use Diffie-Hellman anonymous authentication. With Diffie-Hellman anonymous authentication, neither the server nor the client will be authenticated.

Secure the Data Source

To edit the data source definition in `data-sources.xml`:

1. Navigate to domain->services->jdbc->datasources->configuration->connection pool.

2. Update the URL to use the expanded Oracle format:

```
***(ex. jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=tcps)
(HOST=10.143.44.108) (PORT=2484) ) (CONNECT_DATA= (SERVICE_NAME=SECURDB11G)))
```

3. Add the SSL JDBC properties. The following example shows part of the `data-sources.xml` file.

```
Update the properties :
User=MyUserName
DatabaseName=jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=10.14
3.44.108)(PORT=2484))(CONNECT_DATA=(SERVICE_NAME=SECURDB11G)))
oracle.net.ssl_cipher_suites=(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_
WITH_RC4_128_MD5, SSL_DH_anon_WITH_DES_CBC_SHA)
```

H

Appendix: Installation Order

This section provides a guideline for the order in which the Oracle Retail applications should be installed. If a retailer has chosen to use only some of the applications, the order is still valid, less the applications not being installed.

> **Note:** The installation order is not meant to imply integration between products.

Enterprise Installation Order

1. Oracle Retail Merchandising System (RMS), Oracle Retail Trade Management (RTM), Oracle Retail Sales Audit (ReSA), Optional: Oracle Retail Fiscal Management (ORFM)

    > **Note:** ORFM is an optional application for RMS if you are implementing Brazil localization.

2. Oracle Retail Service Layer (RSL)

3. Oracle Retail Extract, Transform, Load (RETL)

4. Oracle Retail Active Retail Intelligence (ARI)

5. Oracle Retail Warehouse Management System (RWMS)

6. Oracle Retail Allocation

7. Oracle Retail Invoice Matching (ReIM)

8. Oracle Retail Price Management (RPM)

    > **Note:** During installation of RPM, you are asked for the RIBforRPM provider URL. Since RIB is installed after RPM, make a note of the URL you enter. If you need to change the RIBforRPM provider URL after you install RIB, you can do so by editing the remote_service_locator_info_ribserver.xml file.

9. Oracle Retail Central Office (ORCO)

10. Oracle Retail Returns Management (ORRM)

11. Oracle Retail Back Office (ORBO) or Back Office with Labels and Tags (ORLAT)

12. Oracle Retail Store Inventory Management (SIM)

> **Note:** During installation of SIM, you are asked for the RIB provider URL. Since RIB is installed after SIM, make a note of the URL you enter. If you need to change the RIB provider URL after you install RIB, you can do so by editing the remote_service_locator_info_ribserver.xml file.

13. Oracle Retail Predictive Application Server (RPAS)

14. Oracle Retail Demand Forecasting (RDF)

15. Oracle Retail Category Management (CM)

16. Oracle Retail Replenishment Optimization (RO)

17. Oracle Retail Analytic Parameter Calculator Replenishment Optimization (APC RO)

18. Oracle Retail Regular Price Optimzation (RPO)

19. Oracle Retail Merchandise Financial Planning (MFP)

20. Oracle Retail Size Profile Optimization (SPO)

21. Oracle Retail Assortment Planning (AP)

22. Oracle Retail Item Planning (IP)

23. Oracle Retail Item Planning Configured for COE (IP COE)

24. Oracle Retail Advanced Inventory Planning (AIP)

25. Oracle Retail Integration Bus (RIB)

26. Oracle Retail Point-of-Service (ORPOS)

27. Oracle Retail Markdown Optimization (MDO)

28. Oracle Retail Clearance Optimization Engine (COE)

29. Oracle Retail Analytic Parameter Calculator for Markdown Optimization (APC-MDO)

30. Oracle Retail Analytic Parameter Calculator for Regular Price Optimization (APC-RPO)

31. Oracle Retail Promotion Intelligence and Promotion Planning and Optimization (PI-PPO)

32. Oracle Retail Workspace (ORW)