Oracle® Retail Sales Audit

Installation Guide
Release 14.1
E59138-01

December 2014

ORACLE

Oracle® Retail Sales Audit Installation Guide, Release 14.1

Primary Author: Mourya Pantham

Contributors: Nathan Young

Value-Added Reseller (VAR) Language

Oracle Retail VAR Applications

The following restrictions and provisions only apply to the programs referred to in this section and licensed to you. You acknowledge that the programs may contain third party software (VAR applications) licensed to Oracle. Depending upon your product and its version number, the VAR applications may include:

(i) the **MicroStrategy** Components developed and licensed by MicroStrategy Services Corporation (MicroStrategy) of McLean, Virginia to Oracle and imbedded in the MicroStrategy for Oracle Retail Data Warehouse and MicroStrategy for Oracle Retail Planning & Optimization applications.

(ii) the **Wavelink** component developed and licensed by Wavelink Corporation (Wavelink) of Kirkland, Washington, to Oracle and imbedded in Oracle Retail Mobile Store Inventory Management.

(iii) the software component known as **Access Via™** licensed by Access Via of Seattle, Washington, and imbedded in Oracle Retail Signs and Oracle Retail Labels and Tags.

(iv) the software component known as **Adobe Flex™** licensed by Adobe Systems Incorporated of San Jose, California, and imbedded in Oracle Retail Promotion Planning & Optimization application.

You acknowledge and confirm that Oracle grants you use of only the object code of the VAR Applications. Oracle will not deliver source code to the VAR Applications to you. Notwithstanding any other term or condition of the agreement and this ordering document, you shall not cause or permit alteration of any VAR Applications. For purposes of this section, "alteration" refers to all alterations, translations, upgrades, enhancements, customizations or modifications of all or any portion of the VAR Applications including all reconfigurations, reassembly or reverse assembly, re-engineering or reverse engineering and recompilations or reverse compilations of the VAR Applications or any derivatives of the VAR Applications. You acknowledge that it shall be a breach of the agreement to utilize the relationship, and/or confidential information of the VAR Applications for purposes of competitive discovery.

The VAR Applications contain trade secrets of Oracle and Oracle's licensors and Customer shall not attempt, cause, or permit the alteration, decompilation, reverse engineering, disassembly or other reduction of the VAR Applications to a human perceivable form. Oracle reserves the right to replace, with functional equivalent software, any of the VAR Applications in future releases of the applicable program.

Contents

Send Us Your Comments ..... **ix**

Preface ..... **xi**

Audience xi
Related Documents xi
Customer Support xi
Review Patch Documentation xi
Improved Process for Oracle Retail Documentation Corrections xii
Oracle Retail Documentation on the Oracle Technology Network xii
Conventions xii

1 Preinstallation Tasks **1**

Check Supported Database Server Requirements 1
Check Supported Application Server Requirements 2
Verify Single Sign-On 4
Check Supported Client PC and Web Browser Requirements 4
Configure Mozilla Firefox 24 4
Supported Oracle Retail Products 5
UNIX User Account Privileges to Install the Software 5

2 RAC and Clustering **7**

3 Database Installation Tasks **9**

ReSA Schema 9

4 Application Installation Tasks **11**

Expand the ReSA Application Distribution 11
Install RCU Database Schemas 12
Install and configure ADF 11.1.1.7 18
Create a New Domain with Managed Server and Configure it with ADF 23
Start the Node Manager 31
Start the Managed Server 33
Set up OPSS Schema Datasource in WebLogic domain 34
Set up MDS Schema Datasource in WebLogic domain 40
Re-Associate Policy Store to Database 47
Configure OID Authenticator in WebLogic Domain 53
Load LDIF Files in LDAP 62
Retail Application Security Roles Manager 66
Clustered Installations – Preinstallation Steps 67
Run the ReSA Application Installer 67
Resolving Errors Encountered During Application Installation 68
Test the ReSA Application 68
Online Help 69
REST Web Service Disable/Re-enable 69

Disable REST Web Services war 69
Re-enable REST Web Services war 69
Single Sign-On 70
5 Operational Insights Installation Tasks (Optional) 71
Install Oracle BI 71
Installing Operational Insights 14.1 71
Configure the Repository (rpd) 71
Set up the Database Connection 72
Configure Catalog 74
Configure Operational Insights Roles 75
Manage Users and Security 76
Language Selection with SSO 76
Other Notes 77
Operational Insights Configuration 77
Post-installation Tasks 78
Enable IFrames 78
Configuring ReSA URL for In-Context launches of ReSA from Operational Insights Dashboards and Reports 78
Remove Background shadow from Operational Insights Reports (Optional) 79
Configuring Translation Strings for Supported Languages 79
Cache Disabling 80
6 Patching Procedures 81
Oracle Retail Patching Process 81
Supported Products and Technologies 81
Patch Concepts 82
Patching Utility Overview 83
Changes with 14.1 83
Patching Considerations 84
Patch Types 84
Incremental Patch Structure 84
Version Tracking 84
Apply all Patches with Installer or ORPatch 85
Environment Configuration 85
Retained Installation Files 85
Reloading Content 85
Java Hotfixes and Cumulative Patches 86
Backups 86
Disk Space 86
Patching Operations 87
Running ORPatch 87
Merging Patches 97
Compiling Application Components 98

Deploying Application Components 100
Maintenance Considerations 101
Database Password Changes 101
WebLogic Password Changes 102
Infrastructure Directory Changes 102
DBManifest Table 103
RETAIL_HOME relationship to Database and Application Server 103
Jar Signing Configuration Maintenance 103
Customization 104
Patching Considerations with Customized Files and Objects 104
Registering Customized Files 105
Custom Compiled Java Code 107
Extending Oracle Retail Patch Assistant with Custom Hooks 109
Troubleshooting Patching 113
ORPatch Log Files 113
Restarting ORPatch 113
Manual DBManifest Updates 113
Manual Restart State File Updates 115
DISPLAY Settings When Compiling Forms 115
JAVA_HOME Setting 115
Patching Prior to First Install 115
Providing Metadata to Oracle Support 116

A Appendix: Oracle Retail Sales Audit Application Installer Screens 119

B Appendix: URL Reference 141

JDBC URL for a Database 141

C Appendix: Common Installation Errors 143

Warning: Could not create system preferences directory 143
ConcurrentModificationException in Installer GUI 143
Warning: Could not find X Input Context 143
GUI screens fail to open when running Installer 144

D Appendix: Setting Up Password Stores with wallets/credential stores 145

About Database Password Stores and Oracle Wallet 145
Setting Up Password Stores for Database User Accounts 146
Setting up Wallets for Database User Accounts 147
For RMS, RWMS, RPM Batch using sqlplus or sqlldr, RETL, RMS, RWMS, and ARI 147
Setting up RETL Wallets 149
For Java Applications (SIM, ReIM, RPM, RIB, AIP, Alloc, ReSA, RETL) 150
How does the Wallet Relate to the Application? 153
How does the Wallet Relate to Java Batch Program use? 153
Database Credential Store Administration 153
Managing Credentials with WSLT/OPSS Scripts 157

listCred 158
updateCred 159
createCred 159
deleteCred 159
modifyBootStrapCredential 160
addBootStrapCredential 161
Quick Guide for Retail Password Stores (db wallet, java wallet, DB credential stores) 163

E Appendix: Single Sign-On for WebLogic 173

What Do I Need for Single Sign-On? 173
Can Oracle Access Manager Work with Other SSO Implementations? 173
Oracle Single Sign-on Terms and Definitions 174
What Single Sign-On is not 175
How Oracle Single Sign-On Works 175
Installation Overview 177
User Management 177

F Appendix: Installation Order 179

Enterprise Installation Order 179

Send Us Your Comments

Oracle Retail Sales Audit Installation Guide, Release 14.1

Oracle welcomes customers' comments and suggestions on the quality and usefulness of this document.

Your feedback is important, and helps us to best meet your needs as a user of our products. For example:

- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
- Did you find any errors in the information?
- Does the structure of the information help you with your tasks?
- 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 new Applications Release Online Documentation CD available on My Oracle Support and www.oracle.com. 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 www.oracle.com.

Preface

Oracle Retail Installation Guides contain the requirements and procedures that are necessary for the retailer to install Oracle Retail products.

Audience

This Installation Guide is written for the following audiences:

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

Related Documents

For more information, see the following documents in the Oracle Retail Sales Audit Release 14.1 documentation set:

- *Oracle Retail Merchandising System Release Notes*
- *Oracle Retail Sales Audit Operations Guide*
- *Oracle Retail Sales Audit User Guide*
- *Oracle Retail Sales Audit Operational Insights Reports User Guide*
- *Oracle Retail Merchandising Implementation Guide*
- *Oracle Retail Merchandising Security Guide*
- *Oracle Retail POS Suite 14.1/Merchandising Operations Management 14.1 Implementation Guide*
- *Oracle Retail Merchandising Batch Schedule*
- Oracle Retail Merchandising System documentation
- Oracle Retail Trade Management documentation

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, 14.1) or a later patch release (for example, 14.1.1). If you are installing the base release or additional patch releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch releases can contain critical information related to the base release, as well as information about code changes since the base release.

Improved Process for Oracle Retail Documentation Corrections

To more quickly address critical corrections to Oracle Retail documentation content, Oracle Retail documentation may be republished whenever a critical correction is needed. For critical corrections, the republication of an Oracle Retail document may at times **not** be attached to a numbered software release; instead, the Oracle Retail document will simply be replaced on the Oracle Technology Network Web site, or, in the case of Data Models, to the applicable My Oracle Support Documentation container where they reside.

This process will prevent delays in making critical corrections available to customers. For the customer, it means that before you begin installation, you must verify that you have the most recent version of the Oracle Retail documentation set. Oracle Retail documentation is available on the Oracle Technology Network at the following URL:

`http://www.oracle.com/technetwork/documentation/oracle-retail-100266.html`

An updated version of the applicable Oracle Retail document is indicated by Oracle 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 a document with part number E123456-**01**.

If a more recent version of a document is available, that version supersedes all previous versions.

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/technetwork/documentation/oracle-retail-100266.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

Navigate: This is a navigate statement. It tells you how to get to the start of the procedure and ends with a screen shot of the starting point and the statement “the Window Name window opens.”

```
This is a code sample
    It is used to display examples of code
```

1

Preinstallation Tasks

This chapter explains the tasks required prior to installation.

Check Supported Database Server Requirements

General requirements for a database server running Oracle Retail Sales Audit (ReSA) include the following:

Supported on	Versions Supported
Database Server OS	OS certified with Oracle Database 12cR1 Enterprise Edition. Options are: ▪ Oracle Linux 6 for x86-64 (Actual hardware or Oracle virtual machine) ▪ Red Hat Enterprise Linux 6 for x86-64 (Actual hardware or Oracle virtual machine) ▪ AIX 7.1 (Actual hardware or LPARs) ▪ Solaris 11 SPARC (Actual hardware or logical domains) ▪ HP-UX 11.31 Integrity (Actual hardware, HPVM, or vPars)
Database Server 12cR1	Oracle Database Enterprise Edition 12cR1 (12.1.0.1.4) with the following specifications: **Components:** ▪ Oracle Partitioning ▪ Examples CD **Patches:** ▪ 18522516: 12.1.0.1.4 Database Patch Set Update. ▪ 18705901: 12.1.0.1.4 Database Patch Set Update for Grid Infrastructure. **Oneoffs:** ▪ 18169693: ORA-28595: Extproc agent: Invalid DDL Path. ▪ 17815049: ORA-600 [KPONMARKCONN1] WHEN STARTING INSTANCE ▪ Patch 19623450: MISSING JAVA CLASSES AFTER UPGRADE TO JDK 7 ▪ 18404105: GETTING ORA-22345 WHILE TRYING TO RECOMPILE THE TYPE USING EXECUTE IMMEDIATE STM. **Other components:** ▪ Perl interpreter 5.0 or later ▪ X-Windows interface ▪ JDK 1.7

Note: By default, JDK is at 1.6. Please follow the instructions on *Oracle Database Java Developer's Guide 12c Release 1* to change JDK to 1.7, then apply patch 19623450. The document is available here:

http://docs.oracle.com/database/121/JJDEV/chone.htm#JJDEV01000

Check Supported Application Server Requirements

General requirements for an application server capable of running the Oracle Retail Sales Audit (ReSA) application include the following.

Supported on:	Versions Supported:
Application Server OS	OS certified with Oracle Fusion Middleware 11g Release 1 (11.1.1.7). Options are: ▪ Oracle Linux 6 for x86-64 (Actual hardware or Oracle virtual machine) ▪ Red Hat Enterprise Linux 6 for x86-64 (Actual hardware or Oracle virtual machine) ▪ AIX 7.1 (Actual hardware or LPARs) ▪ Solaris 11 SPARC (Actual hardware or logical domains) ▪ HP-UX 11.31 Integrity (Actual hardware, HPVM, or vPars)

Supported on:	Versions Supported:
Application Server	Oracle Fusion Middleware 11g Release 1 (11.1.1.7) **Components:** ▪ Oracle WebLogic Server 11g Release 1 (10.3.6) ▪ Repository Creation Utility (RCU 11.1.1.7) ▪ Oracle ADF 11g Release 1 (11.1.1.7) ▪ With patch 18277370 to Support ADF Application on I.E 11 ▪ Oracle Identity Management 11g Release 7 (11.1.1.7) ▪ **Note:** Oracle Internet Directory (OID) is the supported LDAP directory for Oracle Retail products. For alternate LDAP directories, refer to Oracle WebLogic documentation set. ▪ **Note:** You also need ODSM to load the users into LDAP and manage them ▪ **Java:** ▪ JDK 1.7+ 64 bit **IMPORTANT**: If there is an existing WebLogic installation on the server, you must upgrade it to WebLogic 10.3.6. All middleware components associated with WebLogic server should be upgraded to 11.1.1.7. **Optional (required for SSO**) ▪ Oracle WebTier 11g (11.1.1.7) Oracle Access Manager 11g Release 2 (11.1.2.2) **Note:** A separate WebLogic 10.3.6 installation is required for Oracle Access Manager 11g. ▪ Oracle Access Manager Agent (WebGate) 11g Release 2 (11.1.2.2) **Optional (required for Operational Insights**) ▪ Oracle Business Intelligence Enterprise Edition (OBI EE) 11.1.1.7.0 with Patches 16569379 & 18507268 **Note:** It is mandatory to configure SSO in production environment with the above mentioned tech stack if you are planning to use Operational Insights. SSO must be configured for both the ReSA Application and OBIEE

Verify Single Sign-On

If ReSA will not be deployed in a Single Sign-On environment, skip this section.

If Single Sign-On is to be used, verify that Oracle Access Management 11gR2 version 11.1.2.2 has been installed along with the components listed in the above Application Server requirements section. Verify the HTTP Server is registered with the Oracle Access Manager (OAM) 11gR2 as a partner application.

> **Note:** The Single Sign-On (SSO) implementation for Oracle Retail Sales Audit (ReSA) Operational Insights dashboards and reports is mandatory in production environments because it has contextual BI reports and in context launches into ReSA screens apart from dashboard reports. Because accessing the Operational Insights reports from the ReSA UI in the absence of SSO poses a security risk, the use of integrated Operational Insights reports in RESA UI without SSO is not supported in this release. In the absence of SSO, the ReSA Operational Insights dashboard can be accessed in a standalone Oracle Business Intelligence Enterprise Edition (OBIEE) environment. The use of the Operational Insights contextual reports in a standalone OBIEE environment is not supported due to dependencies on ReSA input parameters.

Check Supported Client PC and Web Browser Requirements

Requirement	Version
Operating system	Windows 7 or 8
Display resolution	1280x1024 or higher
Processor	2.6GHz or higher
Memory	1GByte or higher
Networking	intranet with at least 10Mbps data rate
Oracle (Sun) Java Runtime Environment	1.7+
Browser	Microsoft Internet Explorer 11 Mozilla Firefox 24.0

Configure Mozilla Firefox 24

If you are using Firefox 24, you need to configure the browser to display the list of values pop ups correctly.

1. Open your Firefox browser and type in your address bar as follows:
   `about:config`
2. A warning dialog is displayed. Accept the warning.
   A list of configuration values is displayed.
3. Locate the browser.link.open_newwindow property, right-click on it, and select Modify.
4. Change the value to 2.
5. Close and re-start the browser.

Supported Oracle Retail Products

Requirement	Version
Oracle Retail Active Retail Intelligence (ARI)	14.1
Oracle Retail Merchandising System (RMS)	14.1
Oracle Retail Invoice Matching (ReIM)	14.1
Oracle Retail Store Inventory Management (SIM)	14.1
Oracle Retail POS Suite with Mobile Point-of-Service	14.1

UNIX User Account Privileges to Install the Software

A UNIX user account is needed to install the software. The UNIX user that is used to install the software should have write access to the WebLogic server installation files.

For example, oretail

> **Note:** Installation steps will fail when trying to modify files under the WebLogic installation, unless the user has write access.

2

RAC and Clustering

Oracle Retail Sales Audit has been validated to run in two configurations on Linux:

- Standalone WLS and Database installations
- Real Application Cluster Database and WebLogic Server Clustering

The Oracle Retail products have been validated against a 12.1.0.1 RAC database. When using a RAC database, all JDBC connections should be configured to use THIN connections rather than OCI connections. It is suggested that if you do use OCI connections, the Oracle Retail products database be configured in the tnsnames.ora file used by the WebLogic Server installations.

Clustering for WebLogic Server 10.3.6 is managed as an Active-Active cluster accessed through a Load Balancer. Validation has been completed utilizing a RAC 12.1.0.1 Oracle Internet Directory database with the WebLogic 10.3.6 cluster. It is suggested that a Web Tier 11.1.1.6 installation be configured to reflect all application server installations if SSO will be utilized.

References for Configuration:

- Oracle® Fusion Middleware High Availability Guide 11g Release 1 (11.1.1) Part Number E10106-09
- Oracle Real Application Clusters Administration and Deployment Guide 12c Release 1 (12.1) E48838-08

3

Database Installation Tasks

ReSA Schema

The ReSA database tables are installed with the RMS database schema. RMS 14.1 database install is a prerequisite for ReSA 14.1 installation.

4

Application Installation Tasks

Before proceeding, you must install Oracle WebLogic Server 11g Release 1 (10.3.6) with the patches listed in the Chapter 1 of this document and Oracle ADF 11g Release 1 (11.1.1.7).

If Oracle Forms 11g has been installed in the same WebLogic being used for this application, a domain called ClassicDomain is installed. You may choose the same Oracle Middleware Home and apply the OPatch listed in Chapter 1 to the ADF home of the forms installation

These are the other prerequisites before installing the ReSA application:

- Install required RCU database schemas for OPSS and MDS
- Install ADF
- Install Weblogic domain with ADF and em. Create a managed server in the same domain and extend ADF libraries to the managed server.
- Set up OPSS schema Datasource in WebLogic domain
- Set up Loading policies into Database
- Set up MDS schema Datasource in Weblogic domain
- Register the MDS repository.
- Configuration of OID Authenticator in WebLogic domain
- Load LDIF files in LDAP to create Users and Roles

It is assumed Oracle database has already been configured and loaded with the appropriate RMS and ReSA schemas for your installation.

MDS schema, OPSS schema and other required schemas for ADF must be created using RCU 11.1.1.7 utility. Steps to create the schemas are explained in the below section.

Installing a separate domain as part of ADF configuration is recommended.

The Oracle Retail Sales Audit application is deployed to a managed server which is created inside the new domain (example: Appdomain). This managed server must be created with ADF libraries explained in the below section "Create a New Domain with managed server and configure it with ADF".

Expand the ReSA Application Distribution

To expand the ReSA application distribution, complete the following steps.

1. Log into the UNIX server as the user who owns the WebLogic installation. Create a new staging directory for the ReSA application distribution (resa14application.zip).

   Example: /u00/webadmin/media/resa

   This location is referred to as INSTALL_DIR for the remainder of this chapter.

2. Copy resa14application.zip to INSTALL_DIR and extract its contents.

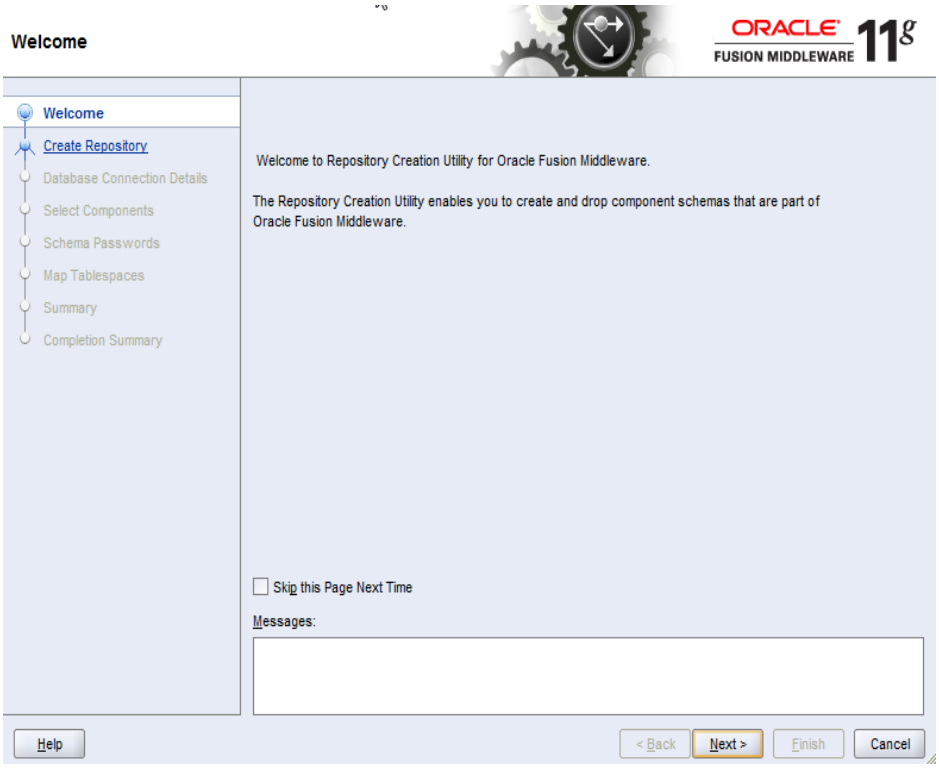
   Example: unzip resa14application.zip

Install RCU Database Schemas

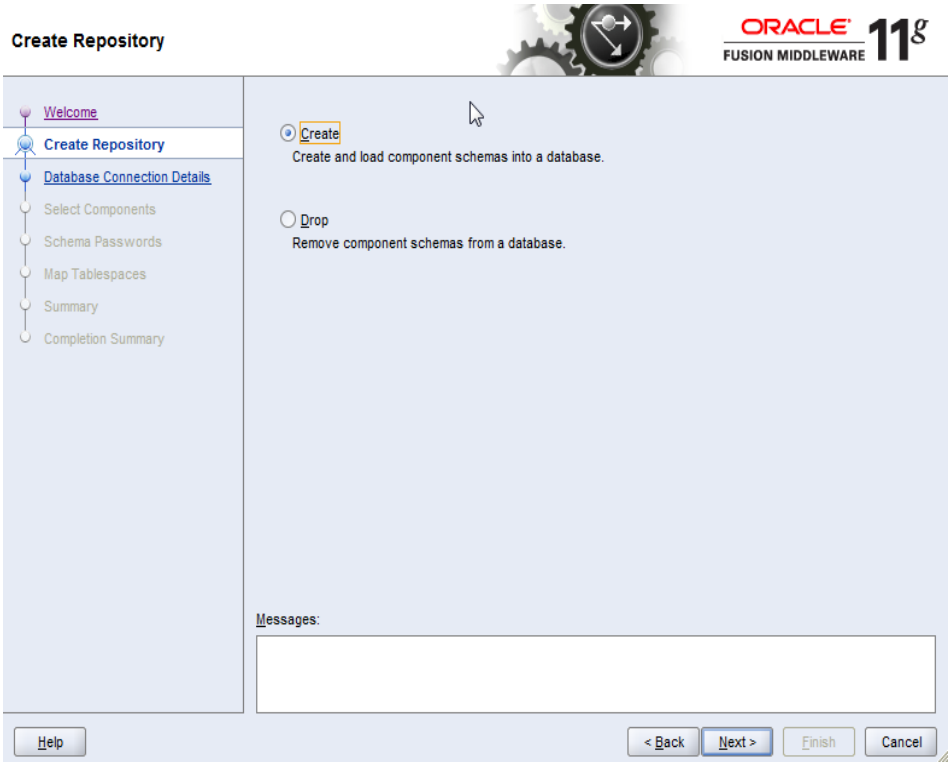
The RCU database schemas are required to install the ReSA application and for the ADF installation and configuration of a domain.

The following steps will show you the creation of the database schemas required:

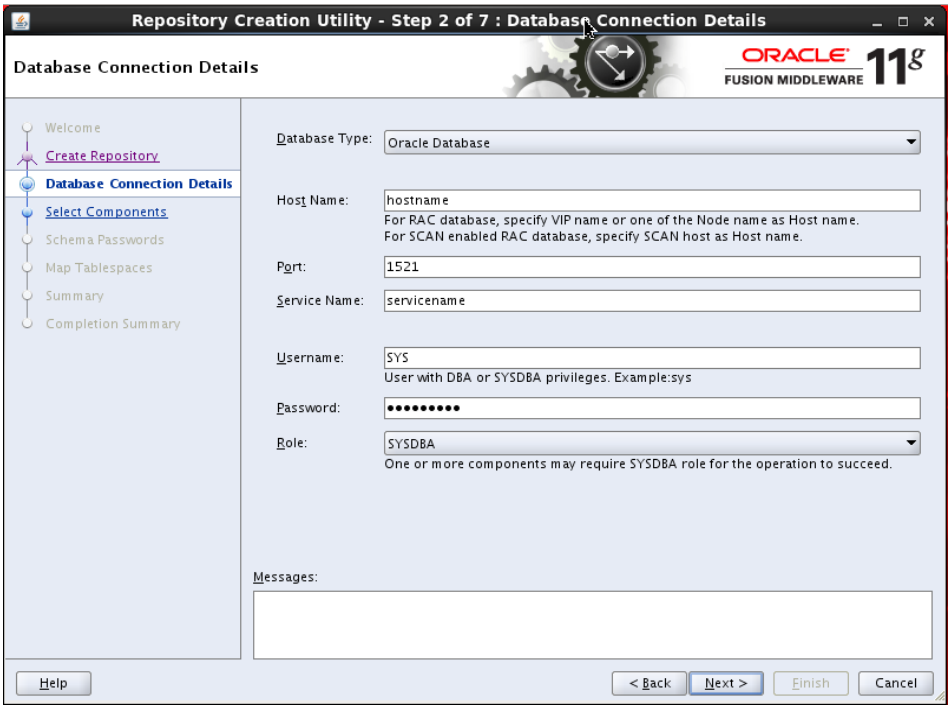
1. Download the RCU 11.1.1.7 zip file and extract it to a new folder named RCU 11.1.1.7. This folder (RCU 11.1.1.7) is used as RCU_HOME for the remainder of this guide. You may use a Windows version of RCU to create the schemas.
2. Go to <RCU_HOME>\BIN and double click rcu.bat.



3. Click **Next**.



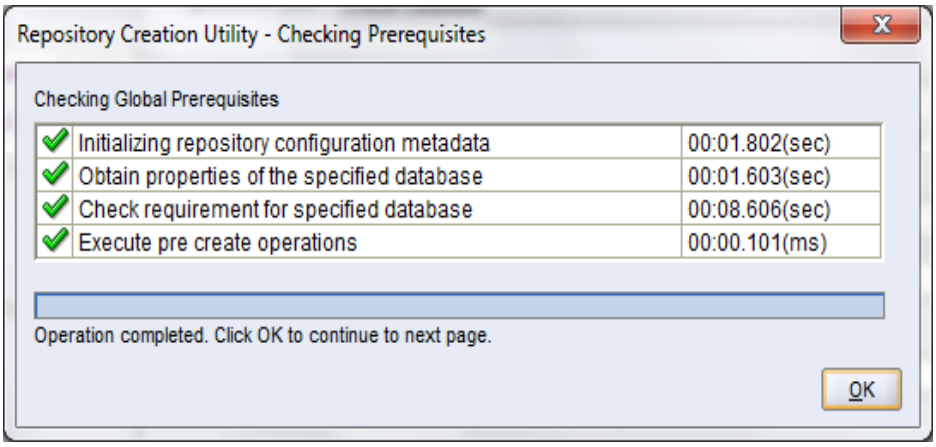
4. Select Create and click **Next**.



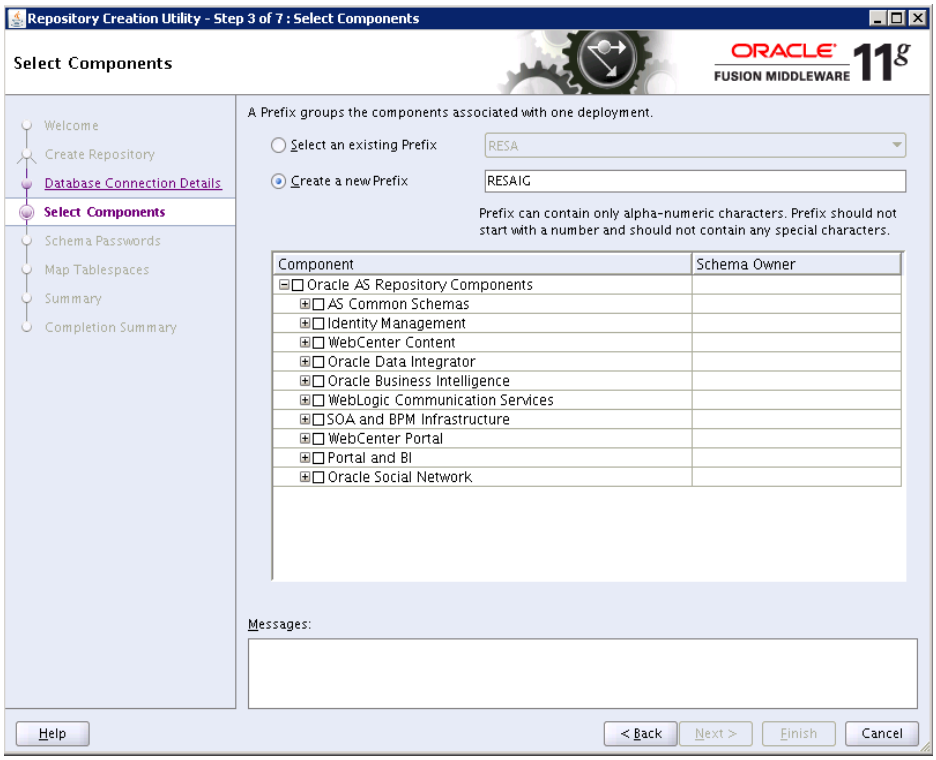
5. Enter all the fields as explained below and click **Next**:
   a. Host Name: Database server host name which Application will use.(example: DBHostname)
   b. Port: Database port (example: 1521)

c. Service Name Database name (example: DBName)
d. Username: SYS
e. Password: <SYS password>

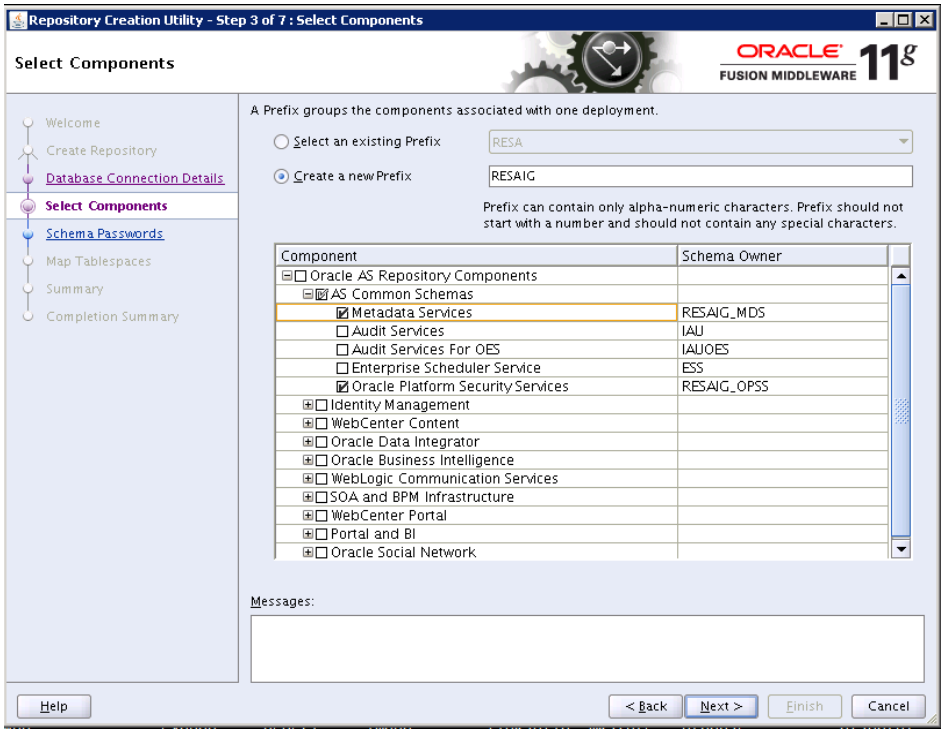
6. Prerequisite requirements are verified and the following screen is displayed.



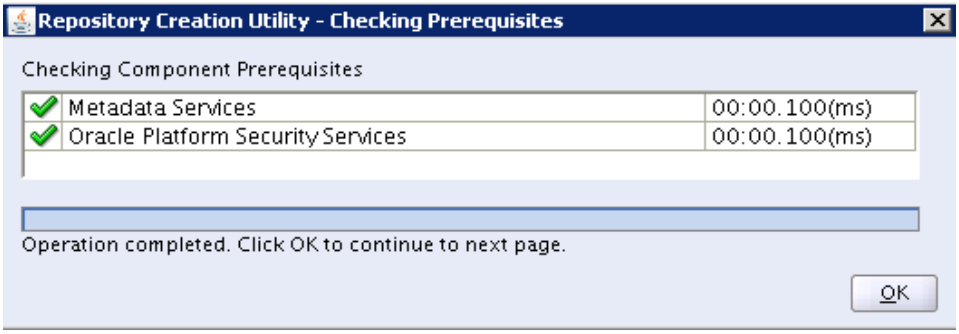
7. Click **OK**. The following screen is displayed.



8. Expand "AS Common Schemas" and select Metadata Services and Oracle Platform Security Services checkboxes as shown below:



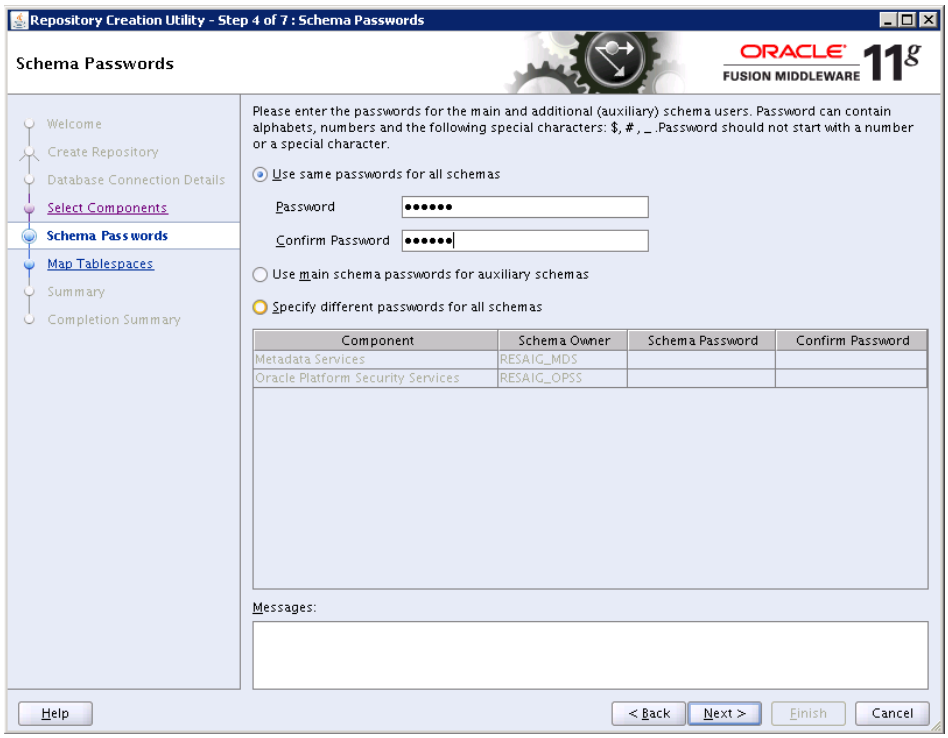
9. Click **Next**.



10. Click **OK**.

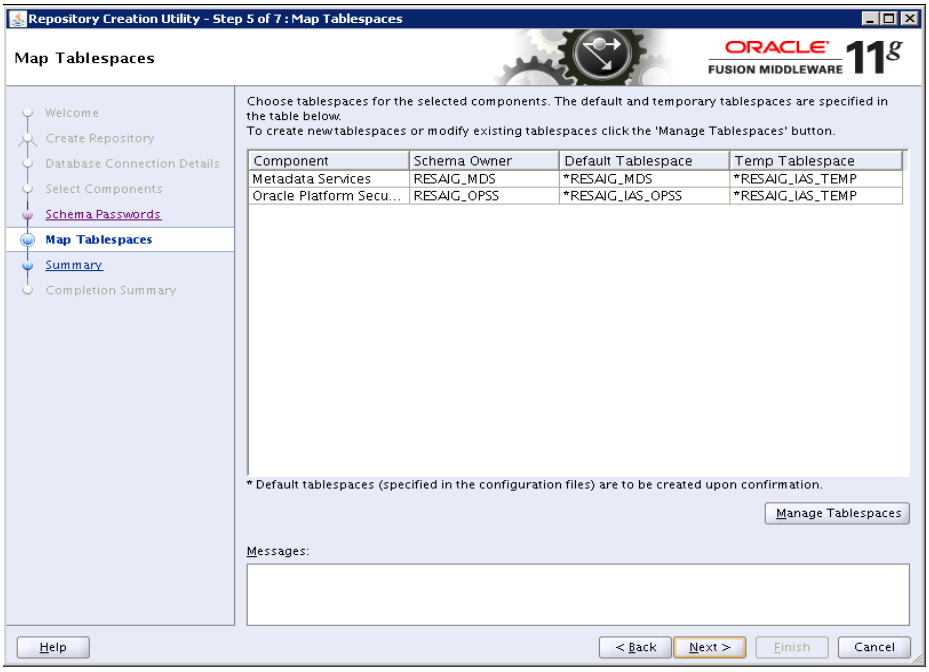
11. Enter and confirm your password

> **Note:** Make a note of the password you give here as it will be used later.

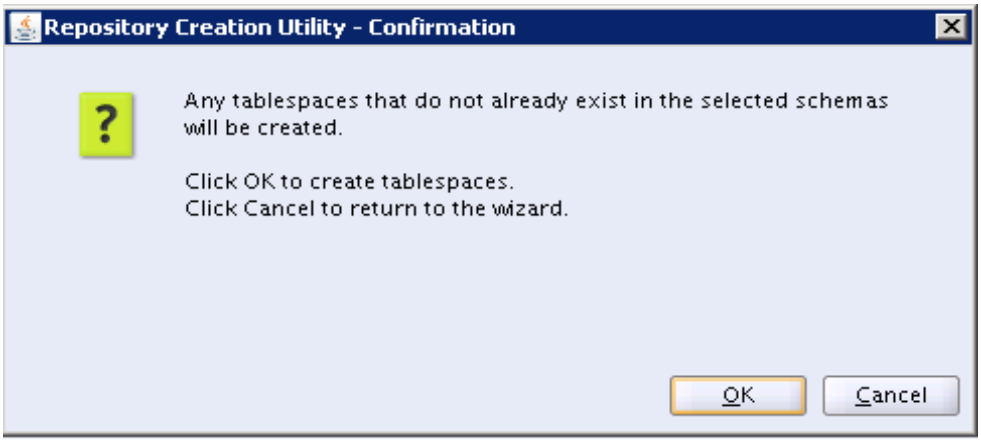


12. Click **Next**.

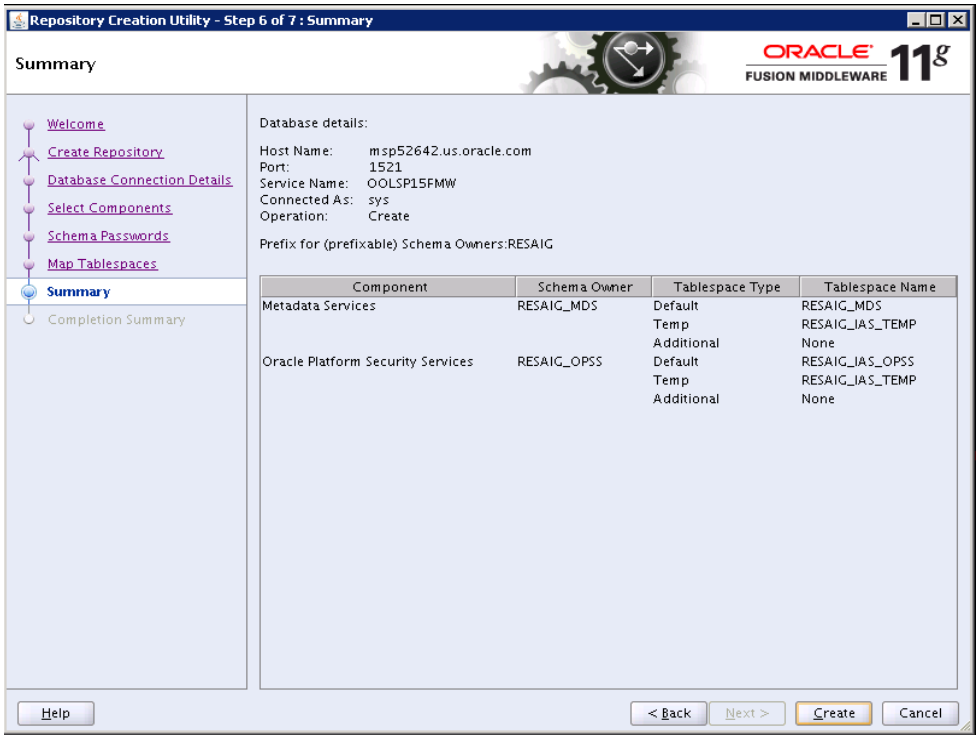
13. Click **Next**.



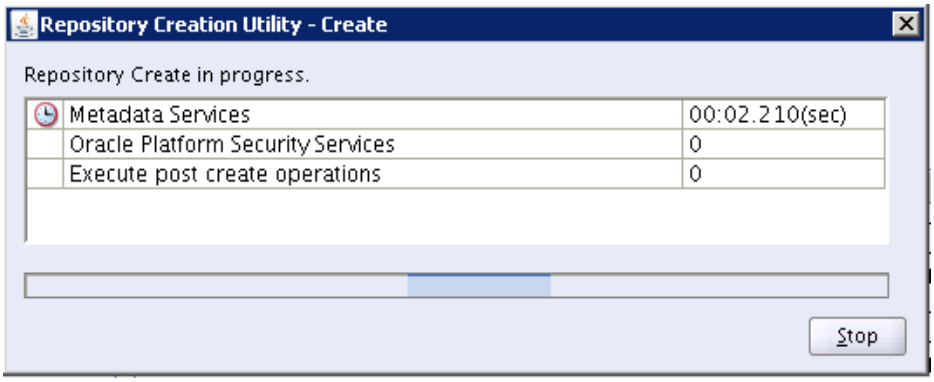
14. Click **Next**.



15. Click **OK**.



16. Click **Create**. This will create the selected database schemas.



17. The following Completion Summary screen is displayed on a successful schema creation.

The above procedure can be used to create database schemas for OID (Oracle Internet Directory) using the OID database information.

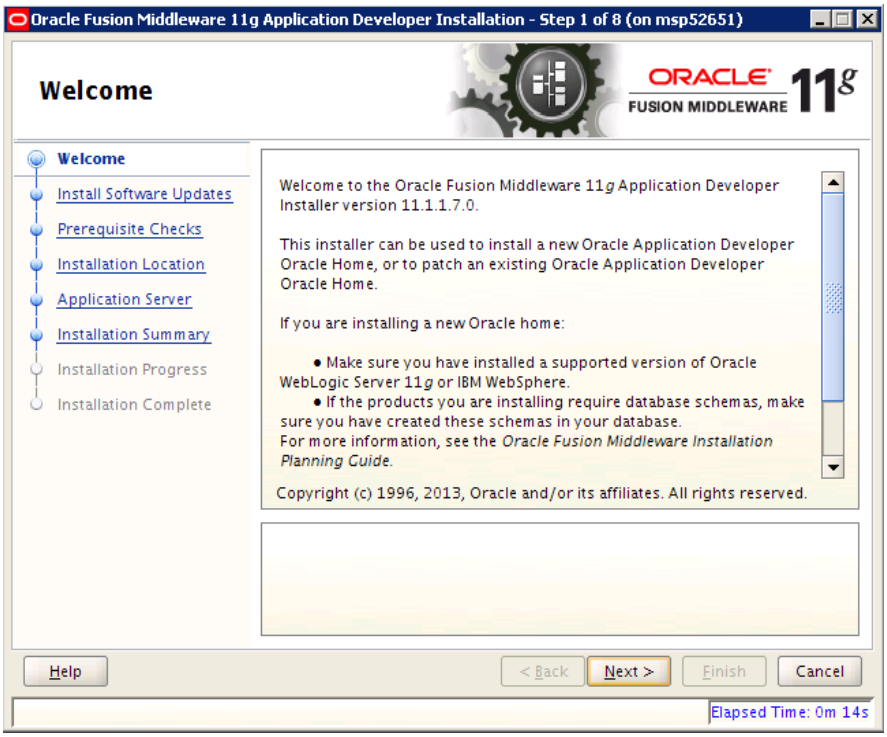
Install and configure ADF 11.1.1.7

Follow the steps below to install ADF.

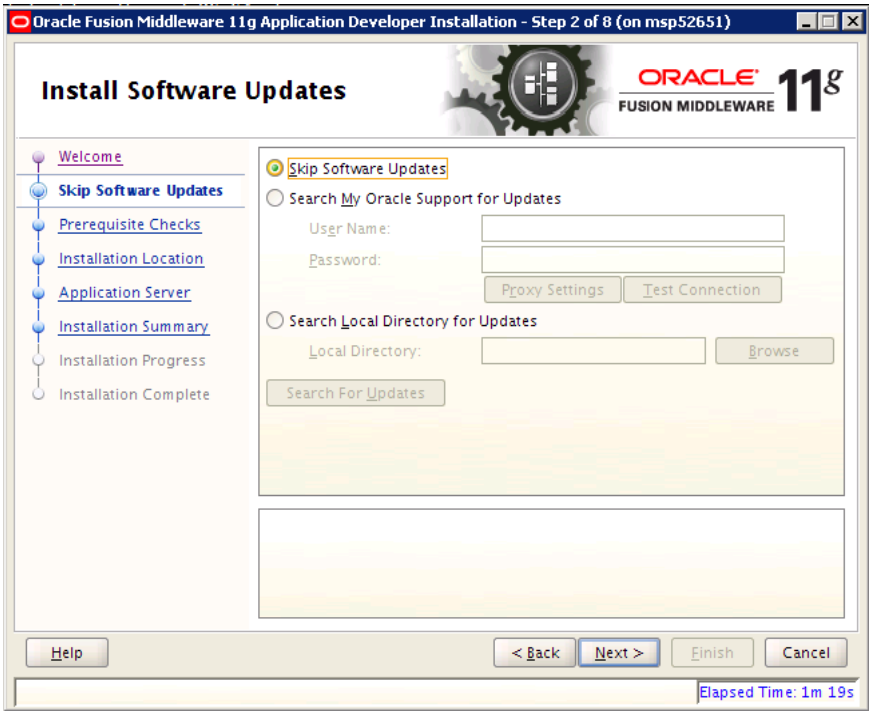
1. Download the ADF installation zip and extract it to a stage location.
2. Set the environment variables below:

```
export JAVA_HOME=<location of JDK>
export PATH=$JAVA_HOME/bin:$PATH
```

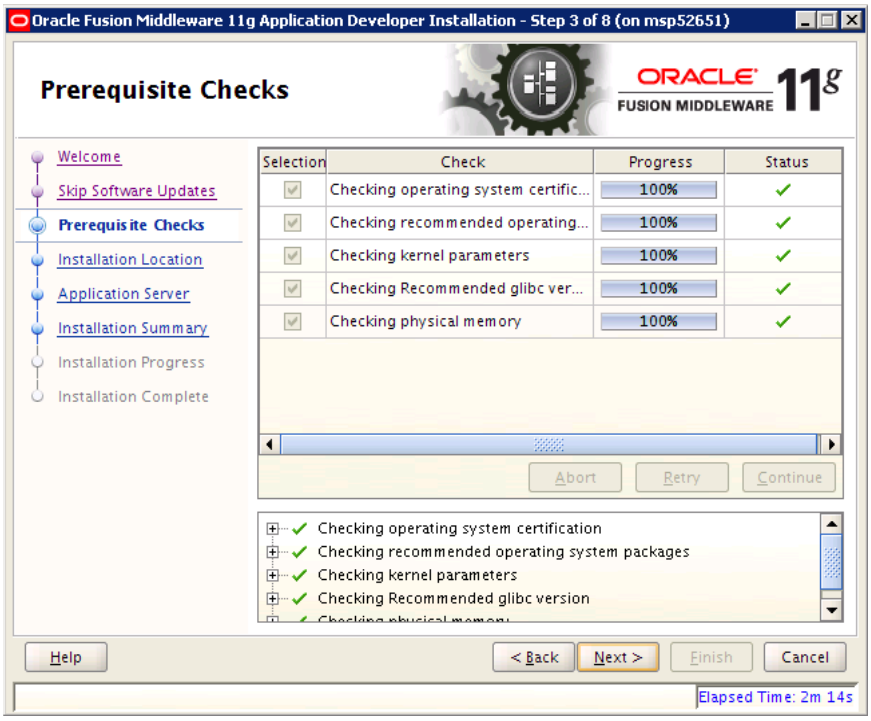
3. Execute the installer command as below:
   `./runInstaller -jreLoc <JAVA_HOME>`
4. The Welcome screen is displayed. Click **Next**.



5. Select Skip Software Updates and click **Next**.



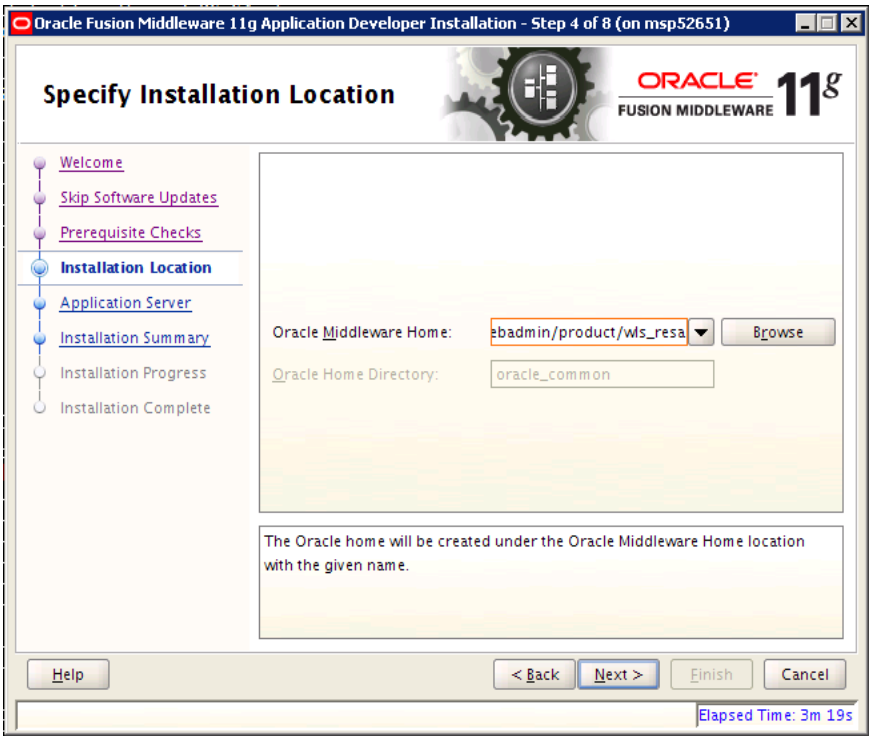
6. Click **Next**.



7. Enter the details as below:

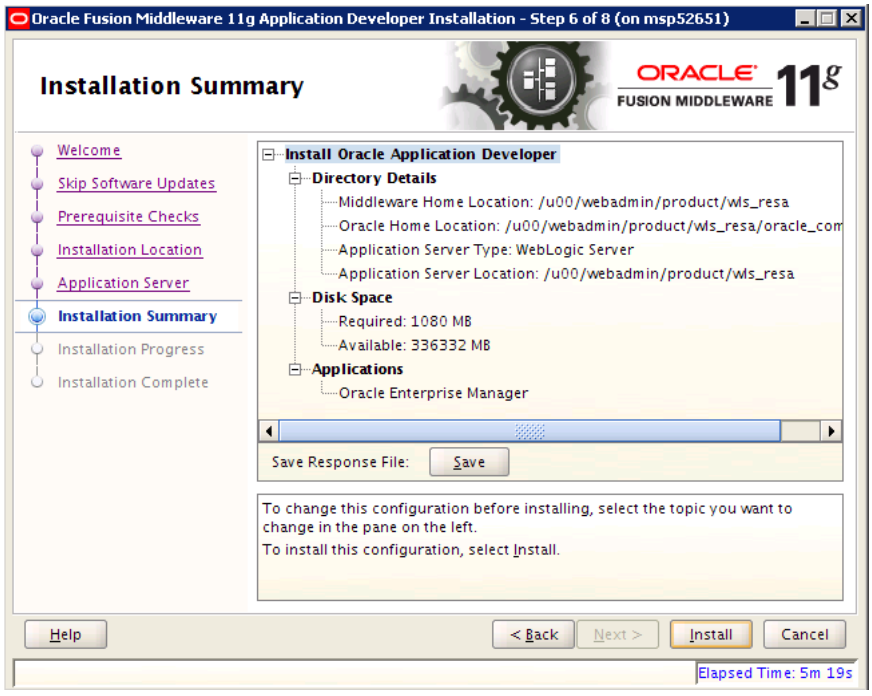
   Oracle Middleware Home = <This should be the Middleware Home location where Weblogic has been installed>. For example: /u00/webadmin/product/wls_resa

   Click **Next**.

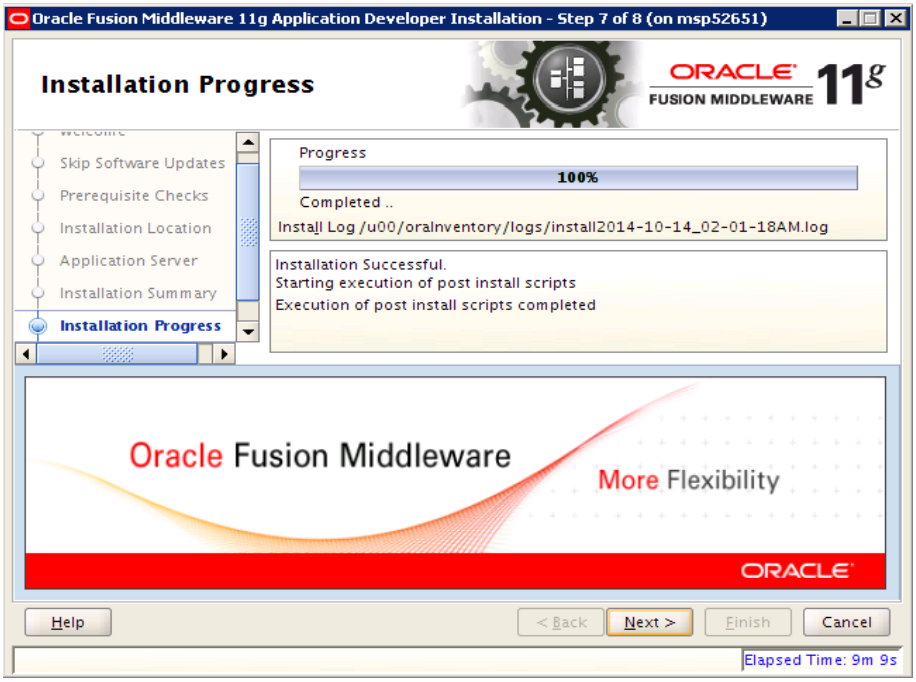


8. Select **WebLogic Server** and click **Next**.

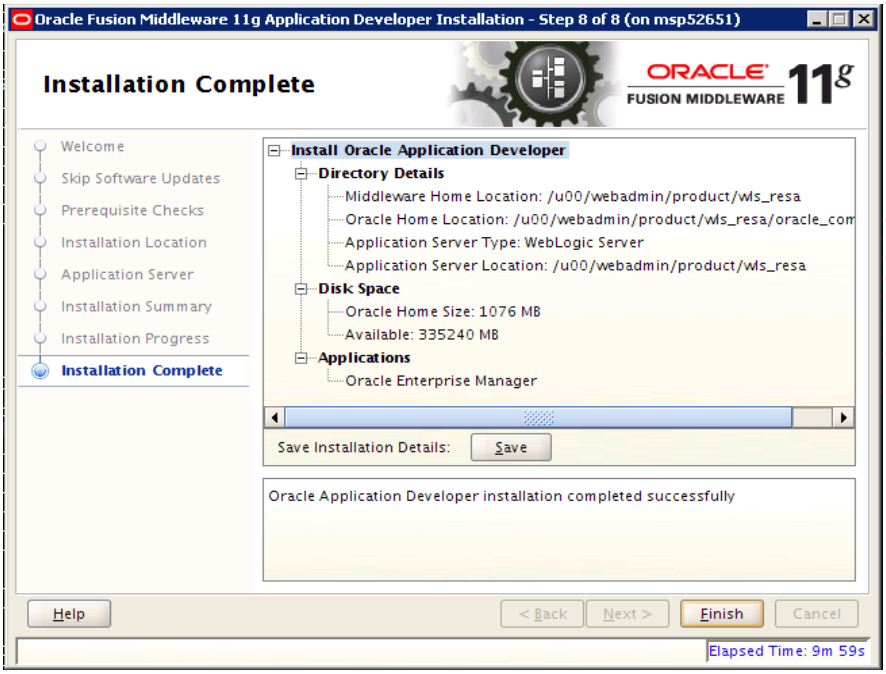
9. Click **Install**.



10. Click **Next**.



11. Click **Save** to save your installation details and click **Finish**.



Create a New Domain with Managed Server and Configure it with ADF

To configure a new domain with a managed server and configure it with ADF libraries, follow the below steps:

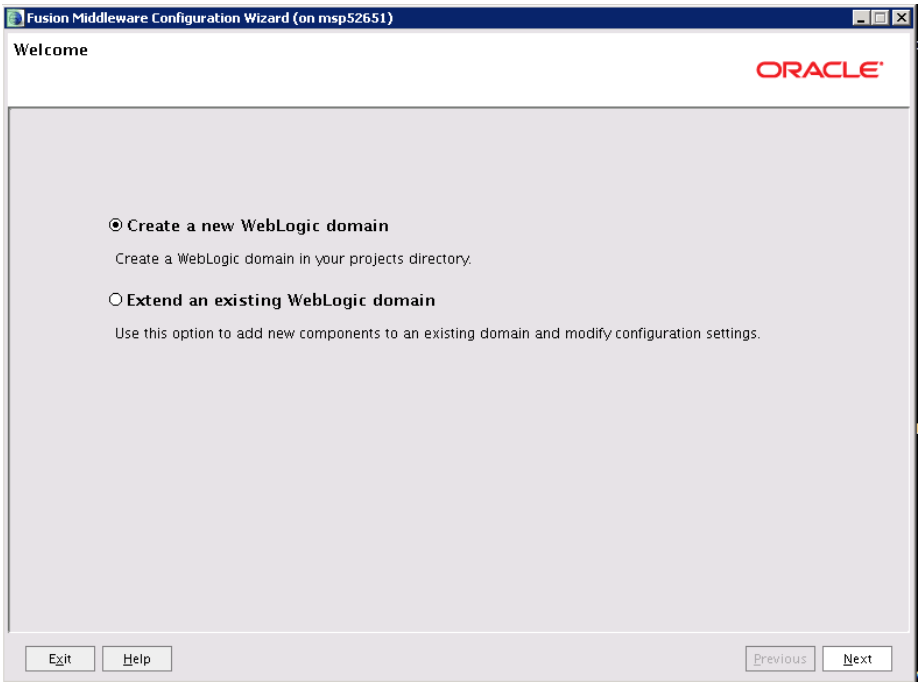
1. Set the environment variables:

```
export JAVA_HOME=<JDK_HOME>
export PATH=$JAVA_HOME/bin:$PATH
export ORACLE_HOME=<WLS_HOME>/oracle_common
(Example:/u00/webadmin/product/fmw/WLS_resa/oracle_common)
cd $ORACLE_HOME/common/bin
```

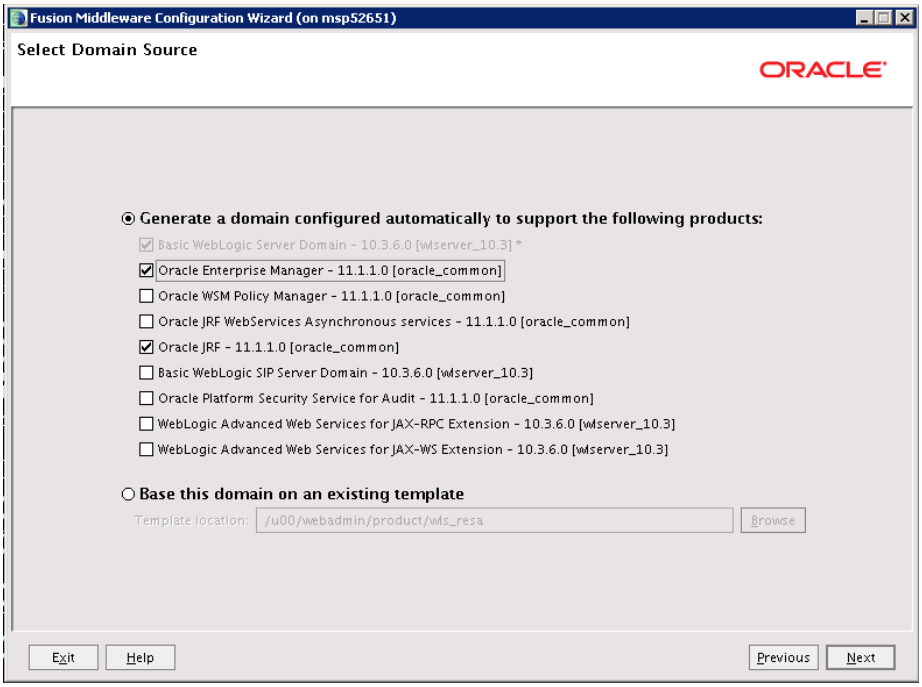
2. Run the following command:

```
./config.sh
```

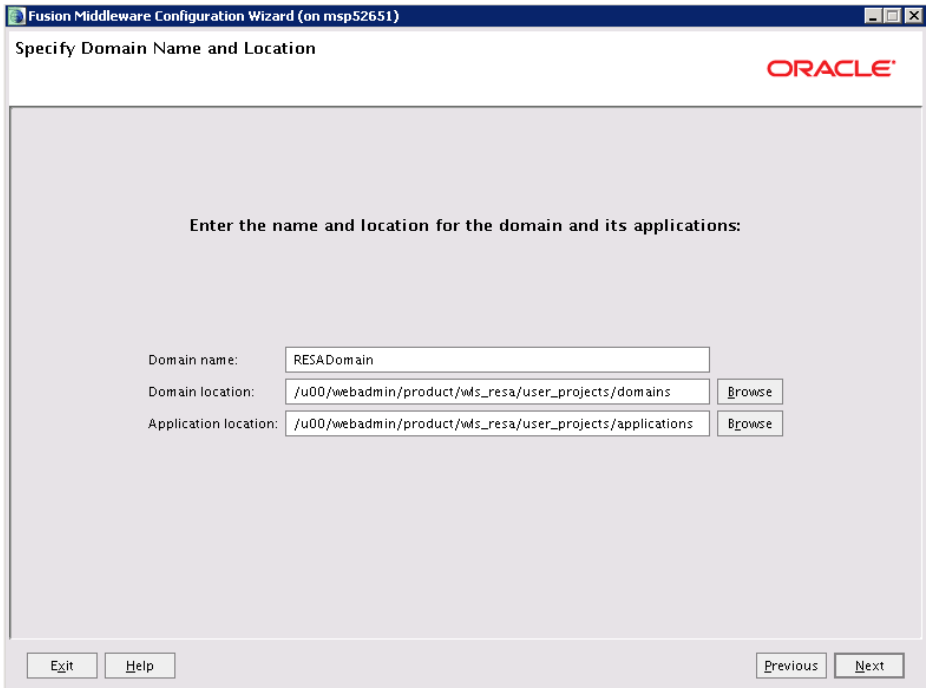
3. The Welcome screen is displayed.
4. Select Create a new WebLogic domain and click **Next**.



5. Select the components shown in the screenshot below and click **Next**.



6. Domain name: <RESADomain> (you may provide the name of the domain here). Click **Next**

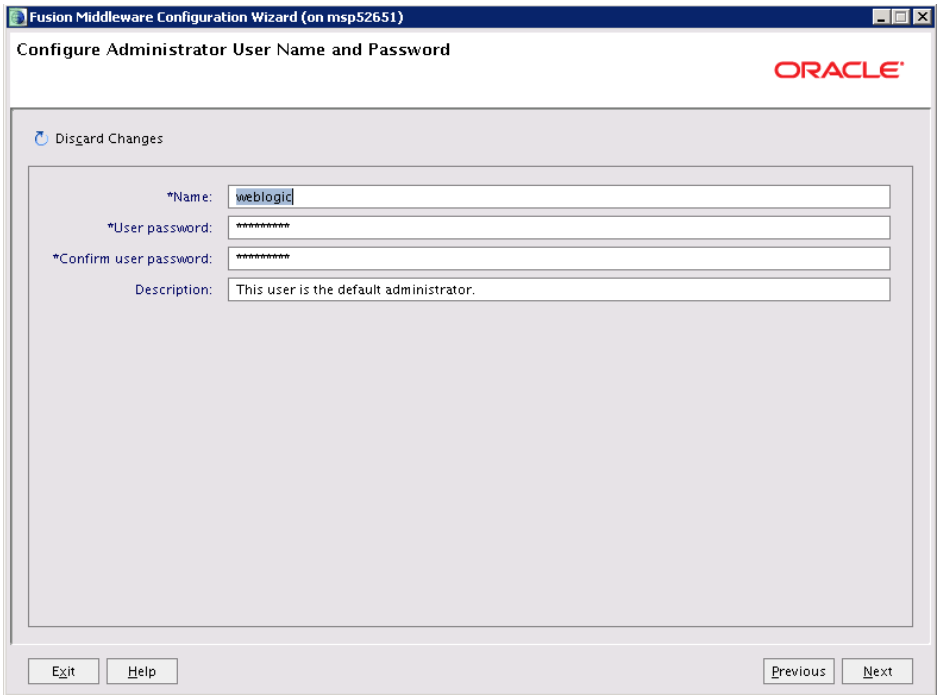


7. Enter 'User password' value and 'Confirm user password' value (same as user password).

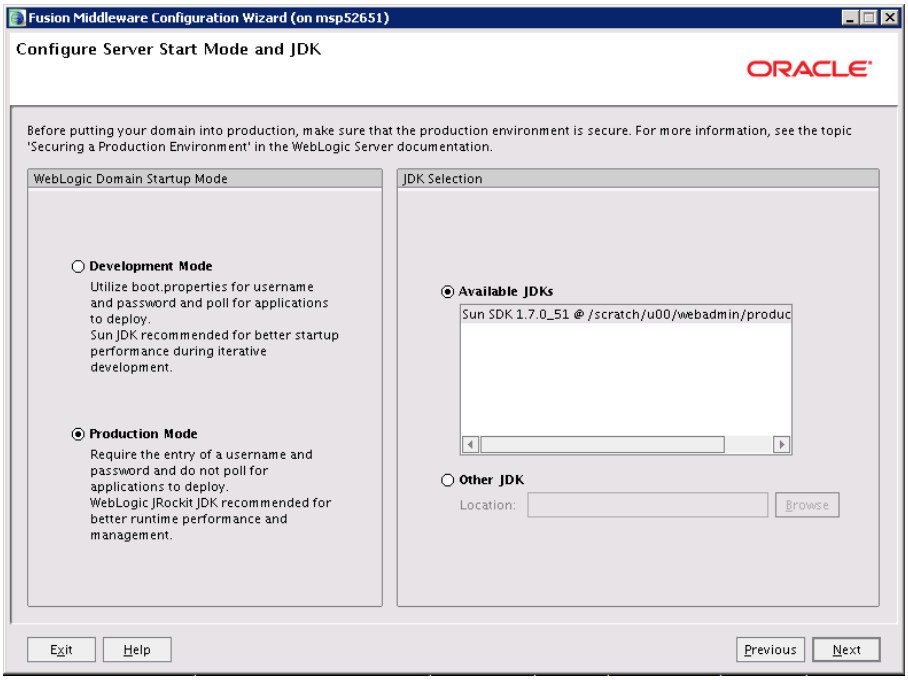
   User password=<password>

   Confirm user password=<password>

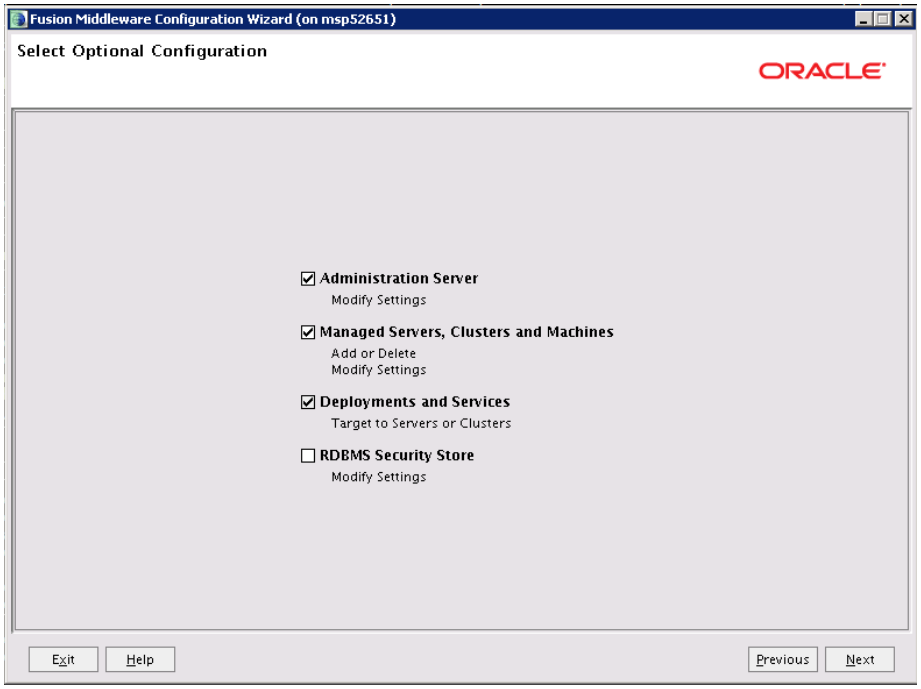
   Click **Next**



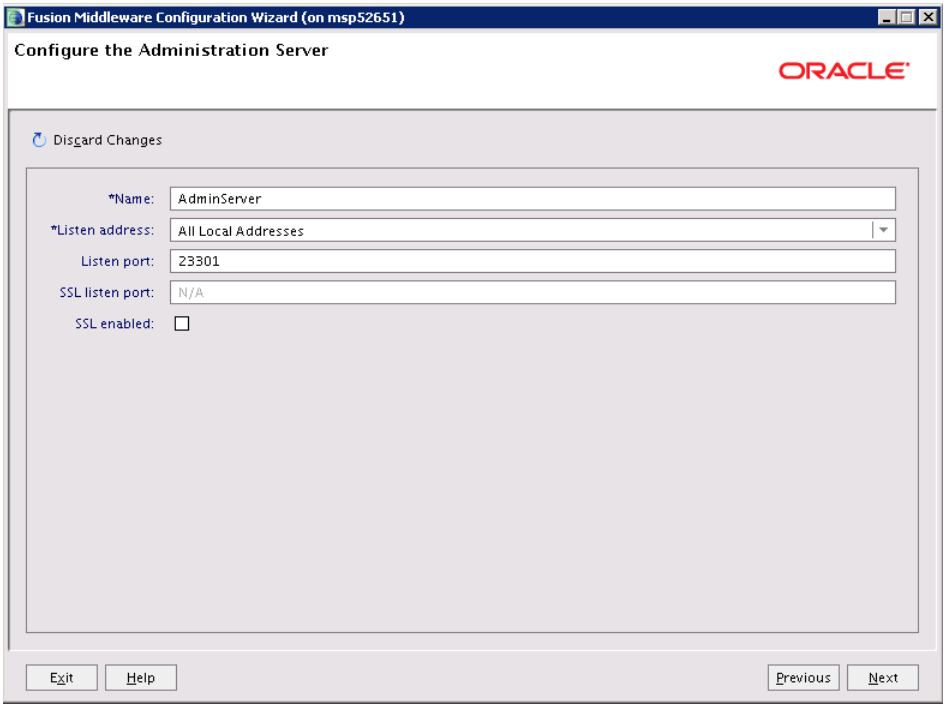
8. Select Production Mode. Click **Next**.



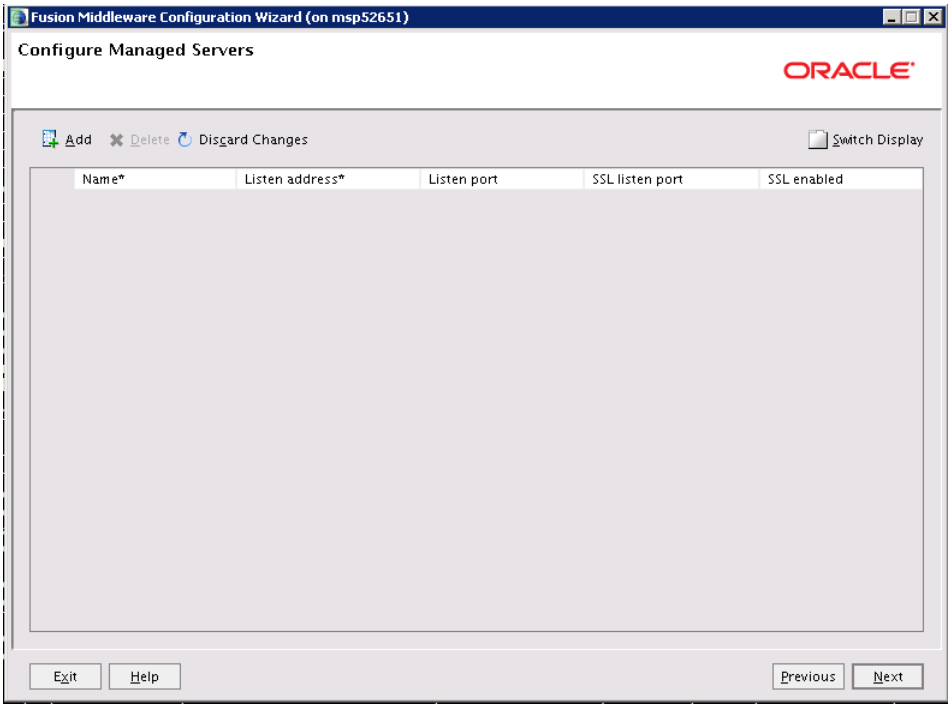
9. Select Administration Server, Managed Server, Clusters and Machines and Deployments and Services and then click **Next**.



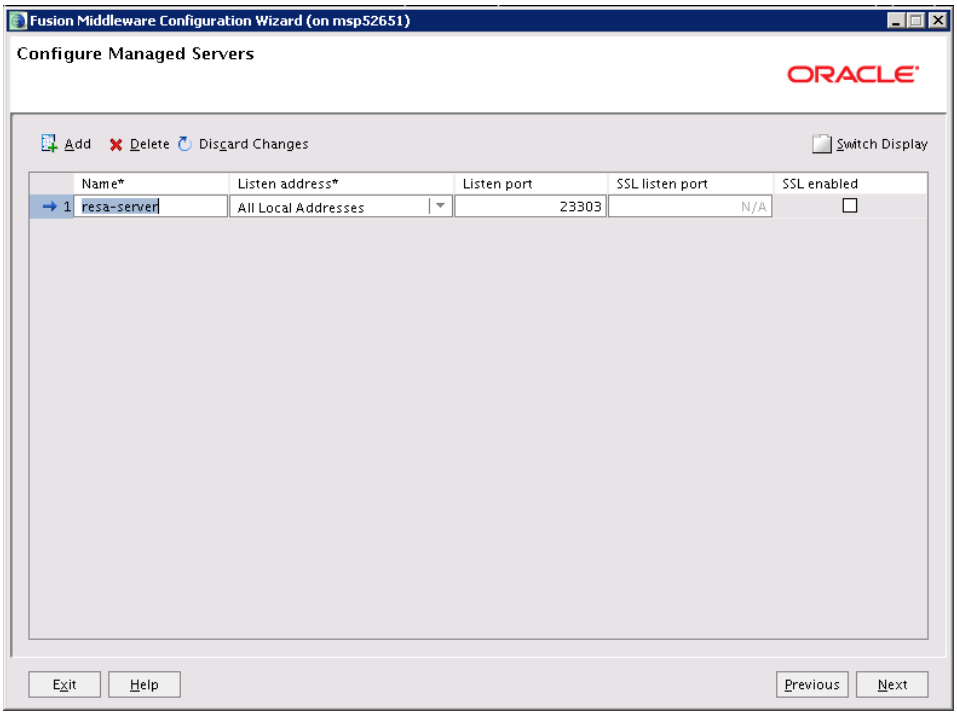
10. Enter the Listen port and click **Next**.
    - Listen port: 23301 (This port must be an open port on the server)



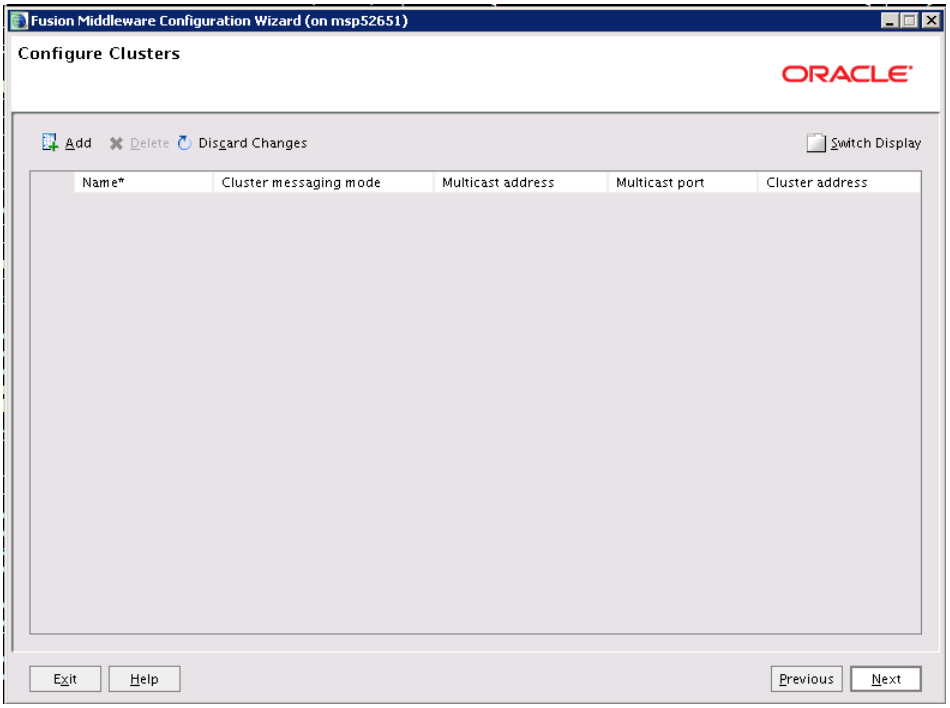
11. Click the Add button for creating a managed server.



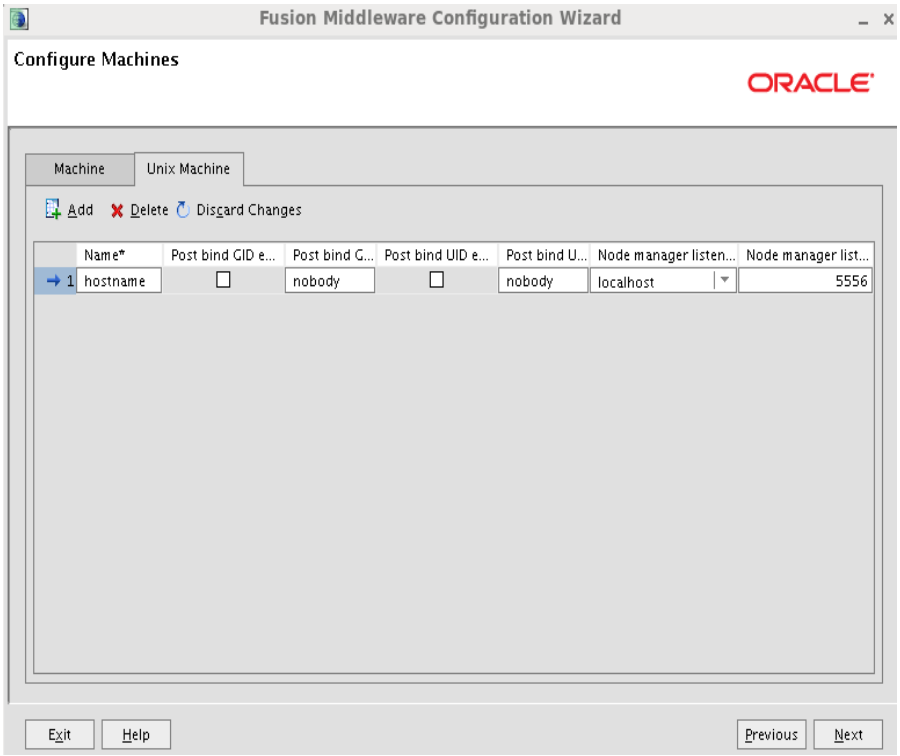
12. Enter in the name of the managed server – listen address and listen port. Again be sure to select a port that is not already in use.



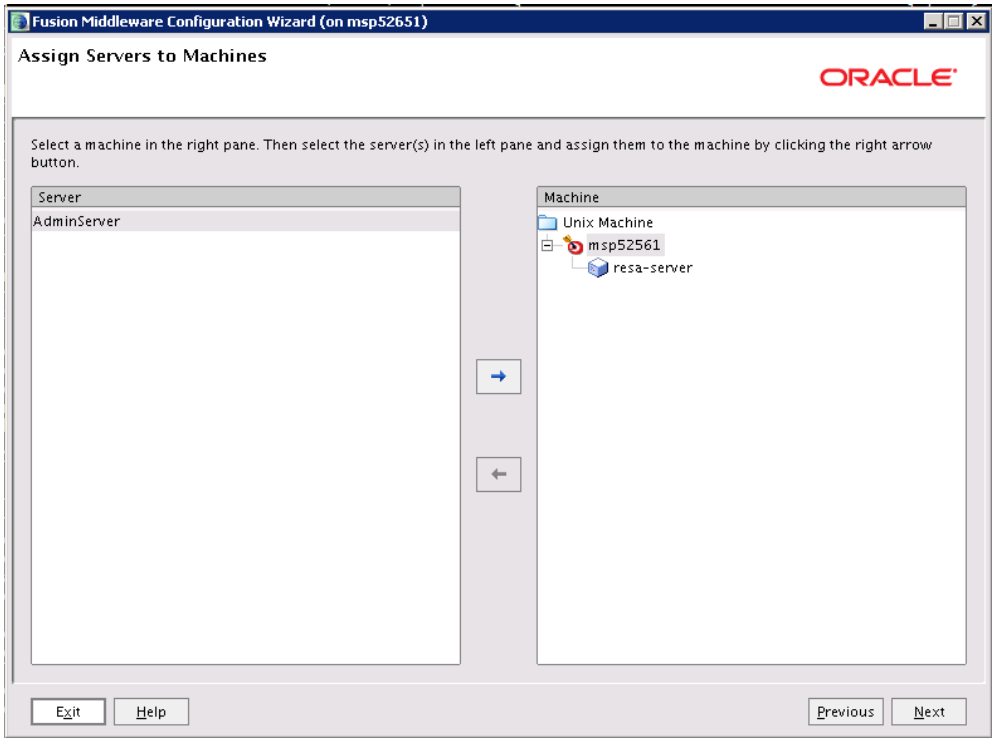
13. Click **Next**.



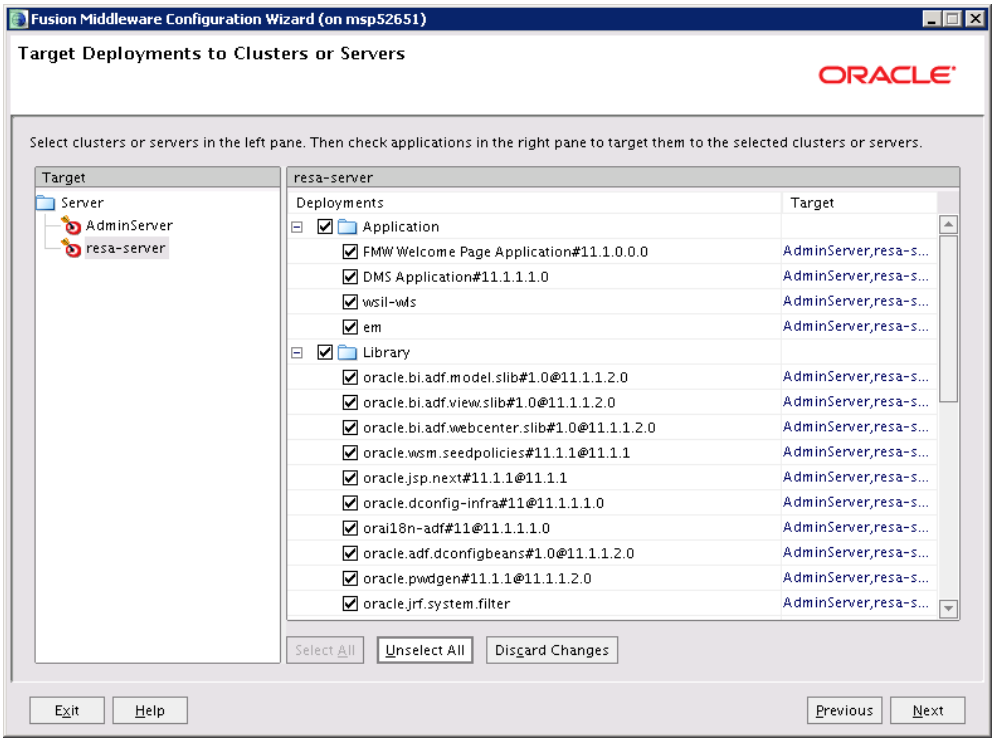
14. Add the machine information as a UNIX machine. Make sure that the port specified for the Node Manager Listen port is not already in use and click **Next**.



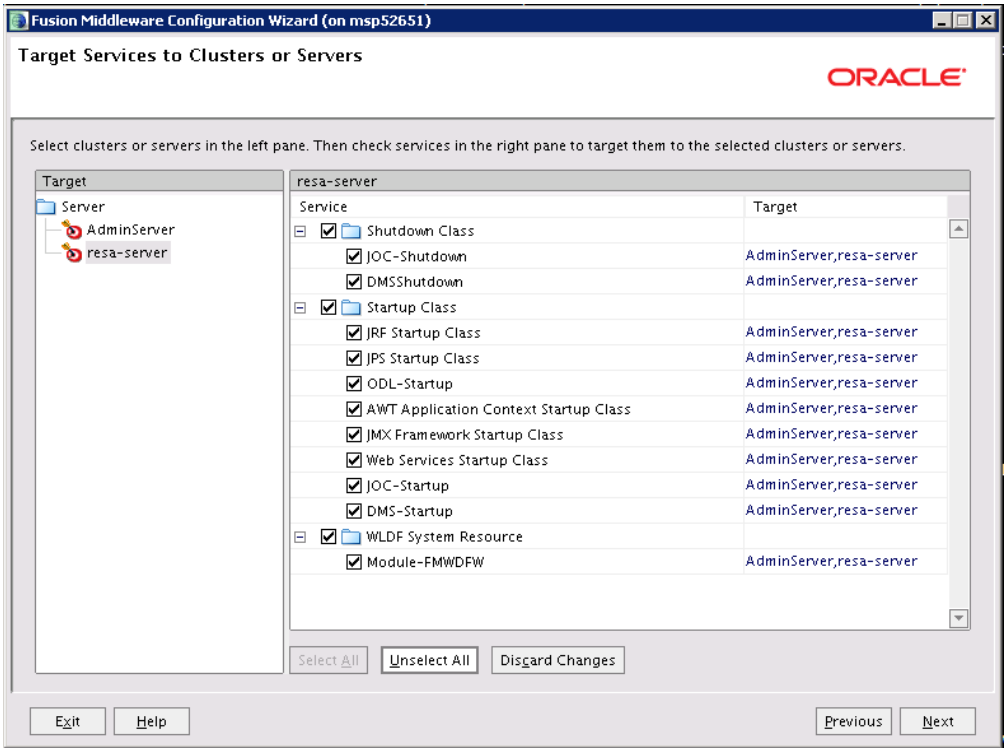
15. Assign the servers to the UNIX machine and click **Next**.



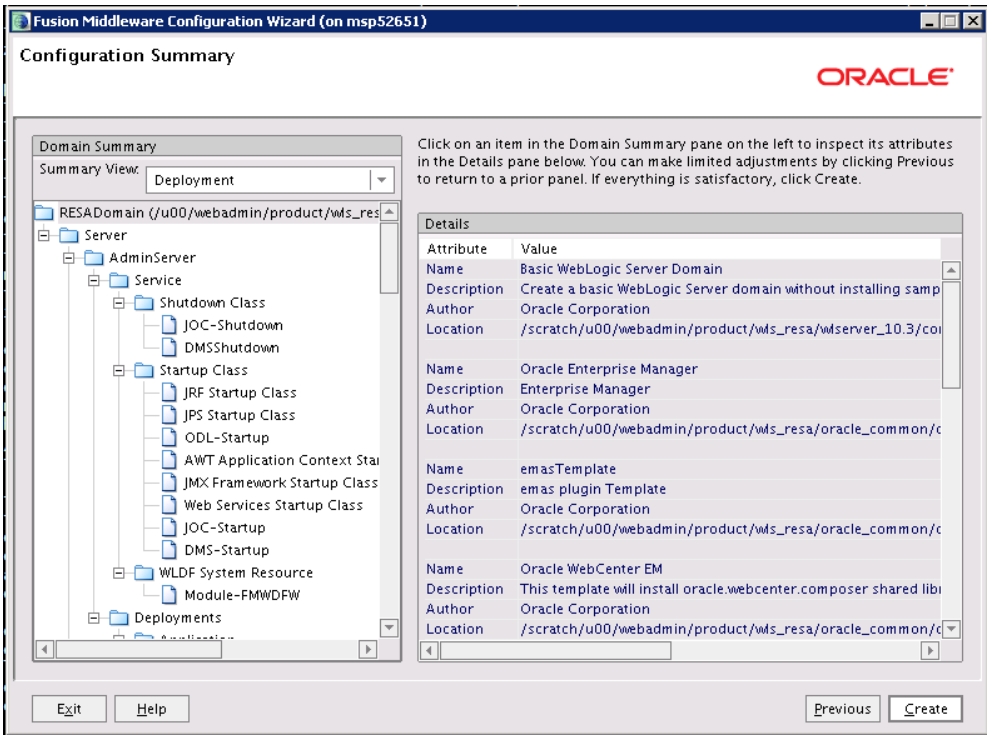
16. Add the ADF libraries and applications to the resa-server and click **Next**.



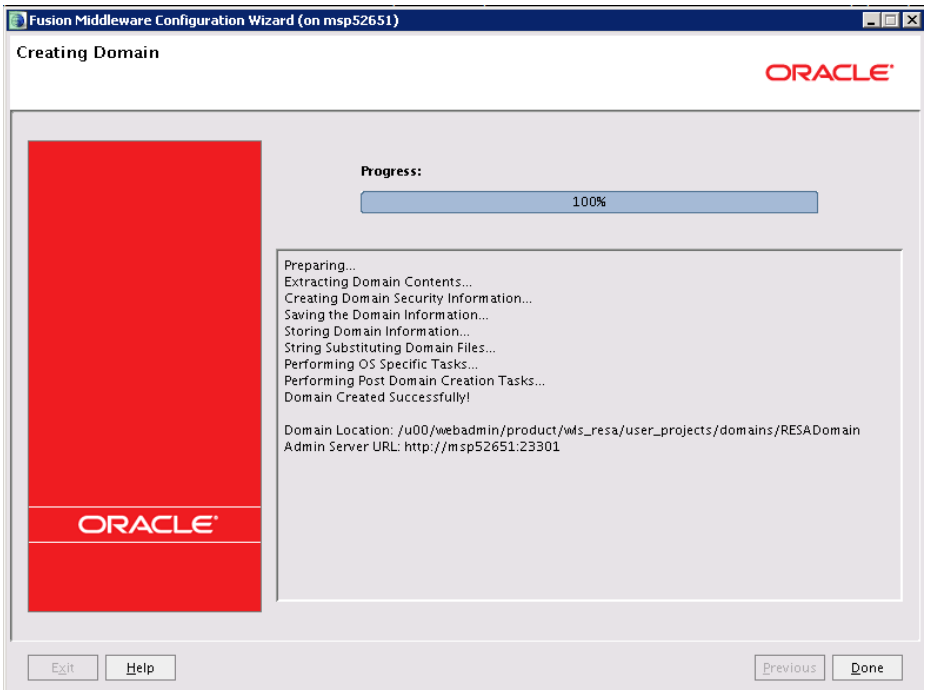
17. Add the ADF Startup Classes to the resa-server and click **Next**.



18. From the Configuration Summary screen, click **Create**.



19. When the domain is successfully created, the following screen is displayed. Click **Done.**



Start the Node Manager

1. Start up the nodemanager. Edit the nodemanager.properties file at the following location with the below values:

   $WLS_HOME/wlserver_10.3/common/nodemanager/nodemanager.properties

   - StartScriptEnabled=true
   - StartScriptName=startWebLogic.sh.

2. After making changes to the nodemanager.properties file, NodeManager must be restarted.

   > **Note:** The nodemanager.properties file is created after NodeManager is started for the first time. It is not available before that point.

3. Start WebLogic Server from the <DOMAIN_HOME>/bin

   Example:
   /u00/webadmin/product/wls_resa/user_projects/domains/RESADomain/bin/startWebLogic.sh

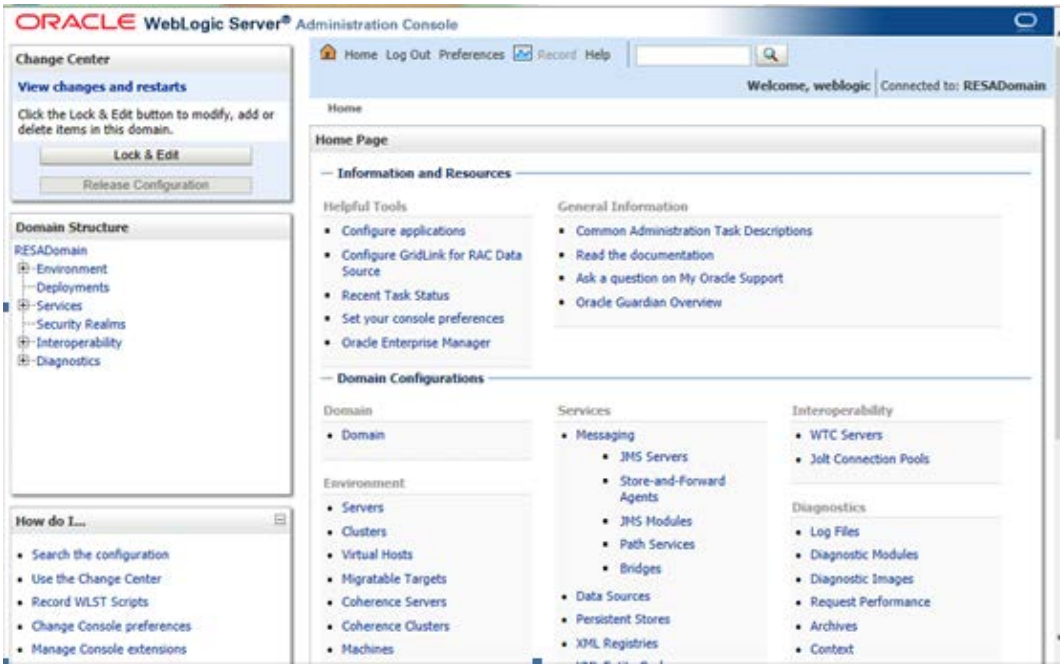
4. Create boot.properties file under <DOMAIN_HOME>/servers/<AdminServer>/security

   The file 'boot.properties' should have the following:

   ```
   ---------------------------------
   username=weblogic
   password=<password>
   ---------------------------------
   ```

   In the above, the password value is the password of WebLogic domain which is given at the time of domain creation.

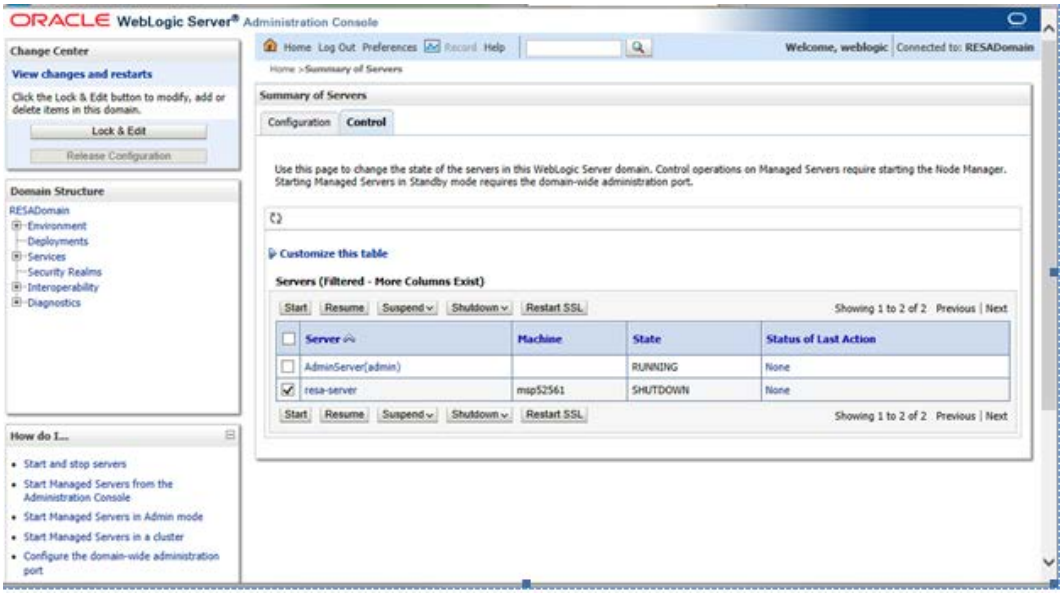
5. Save the boot.properties file and restart the WebLogic server.
6. Login to the Admin console of the Domain
   Example: http://<HostName>:<Adminport>/console



Start the Managed Server

To start the managed servers, complete the following steps.

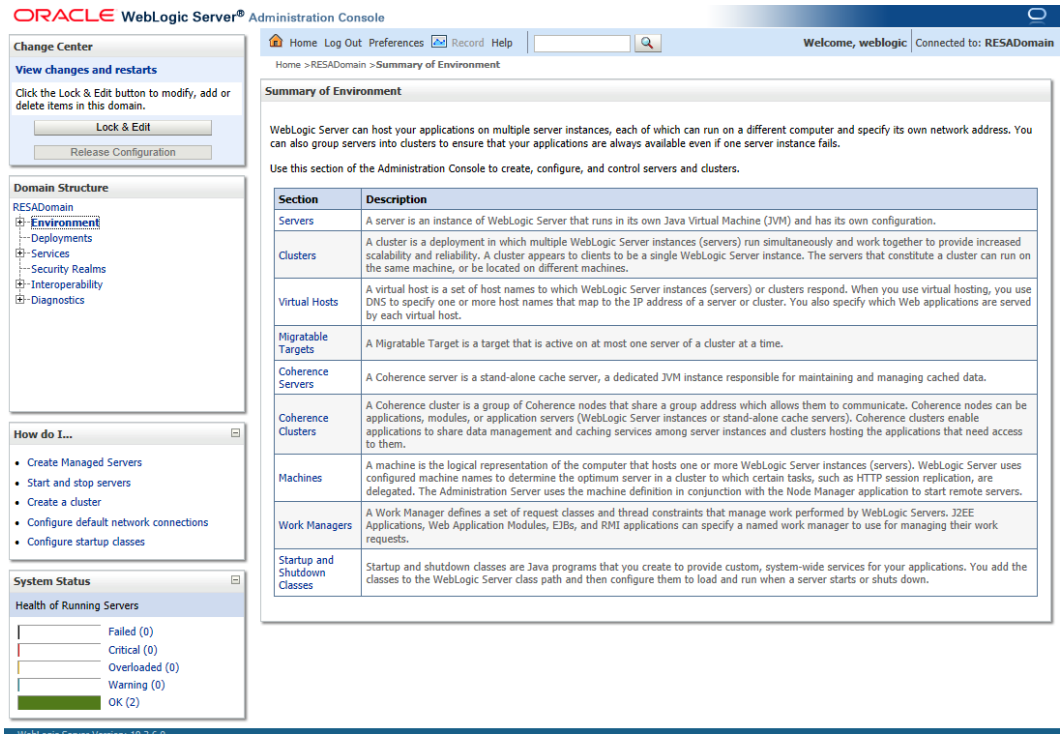
1. After the Node Manager is started, the managed servers can be started via the admin console.
2. Navigate to Environments > Servers. Click the Control tab and Select <app-server>.



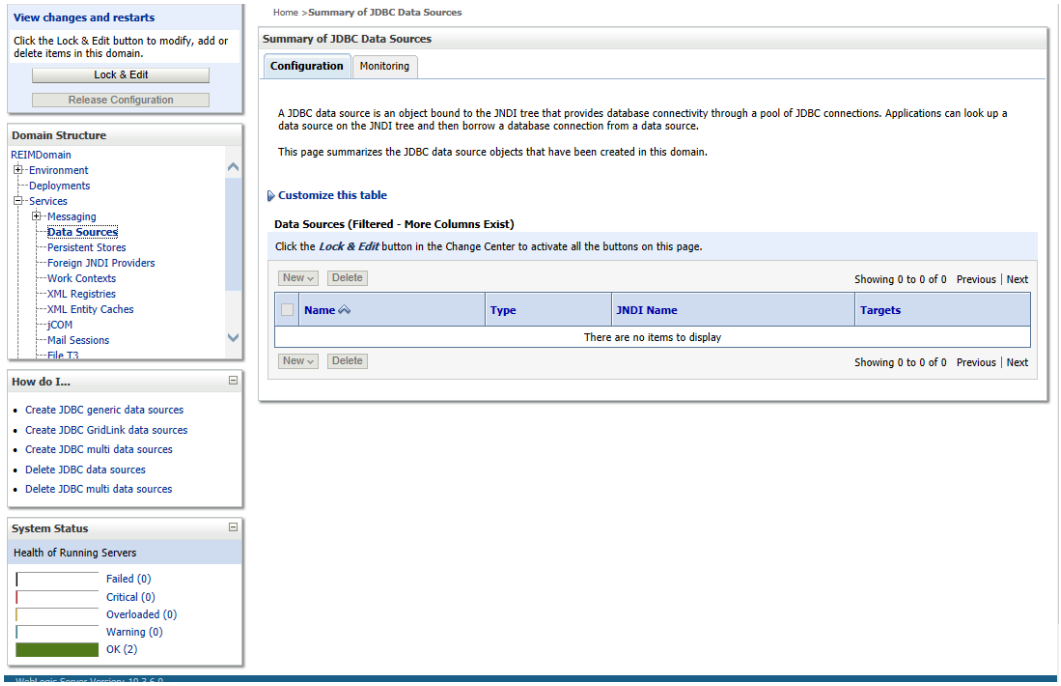
Set up OPSS Schema Datasource in WebLogic domain

Follow the below steps to set up the datasource with OPSS schema in WebLogic domain.

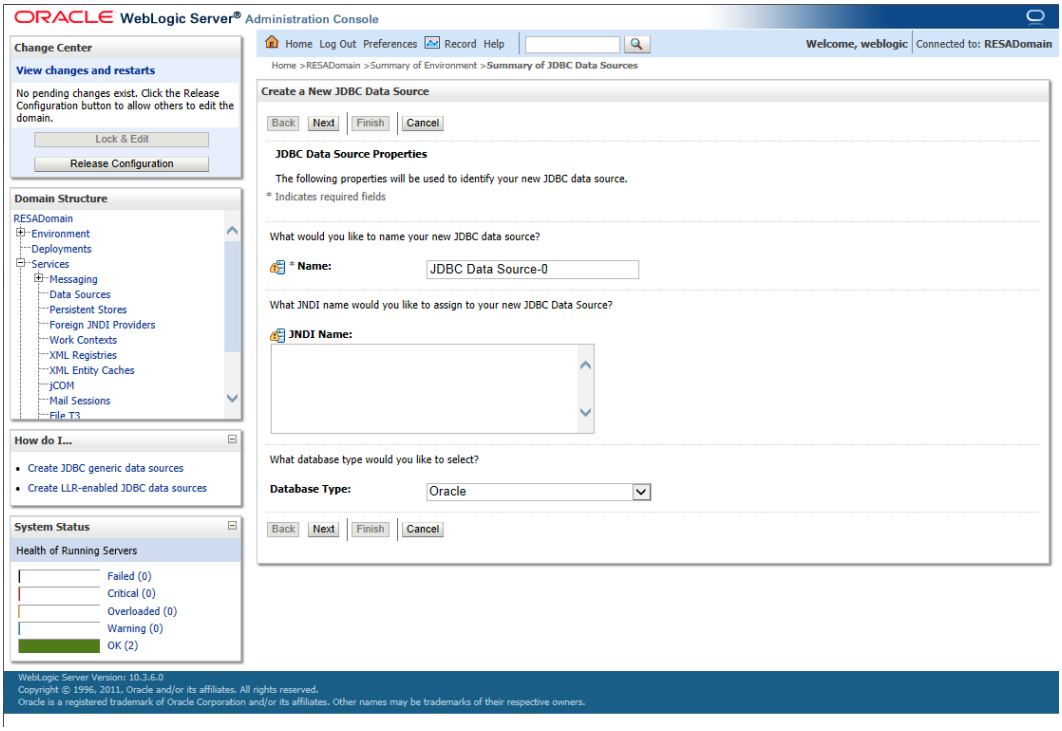
1. Login to the Admin console.



2. In Domain Structure, go to Services-> Data Sources and click **Lock & Edit**.

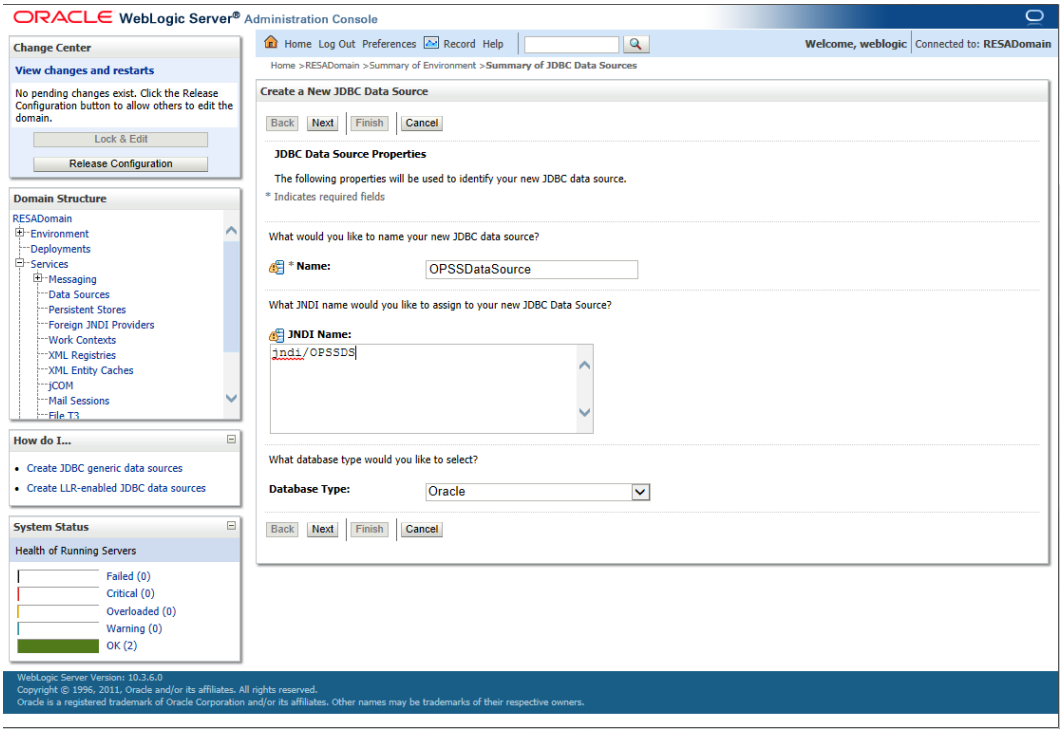


3. Click New -> Generic Data Source.

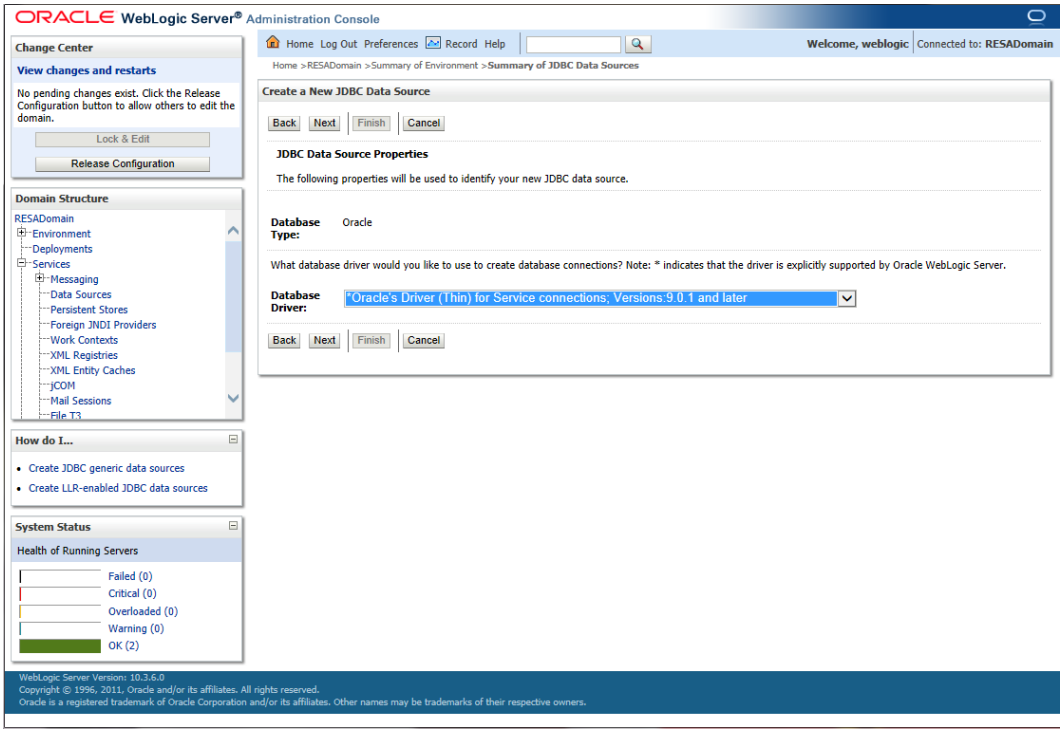


4. Enter the details:
   - Name: <OPSS DataSource>
   - JNDI Name: jndi/OPSSDS
   - Database Type: Oracle

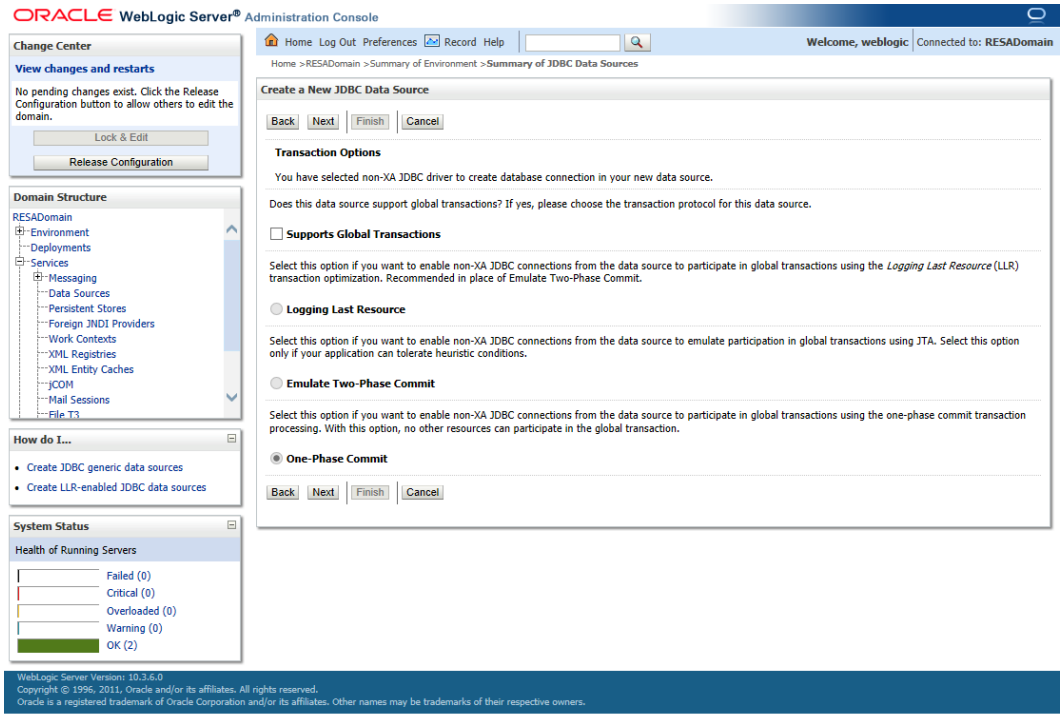
5. Click **Next**.



6. Select Oracle's Driver (Thin) for Service connections; Versions: 9.0.1 and later. Click **Next**.



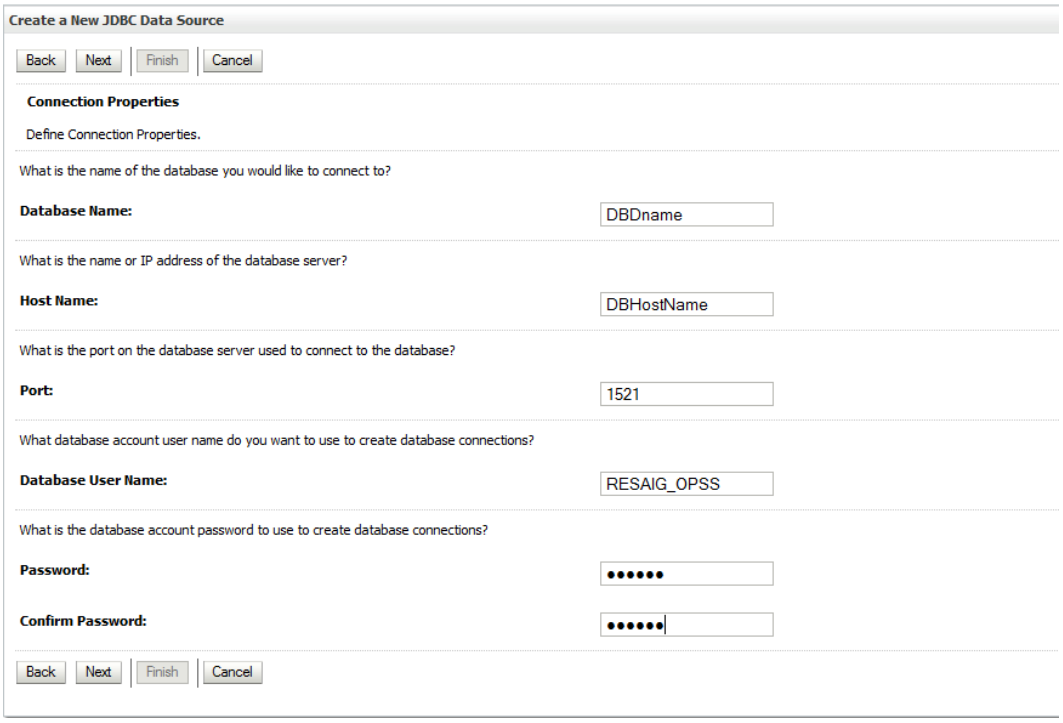
7. Uncheck Supports Global Transactions. Click **Next**.



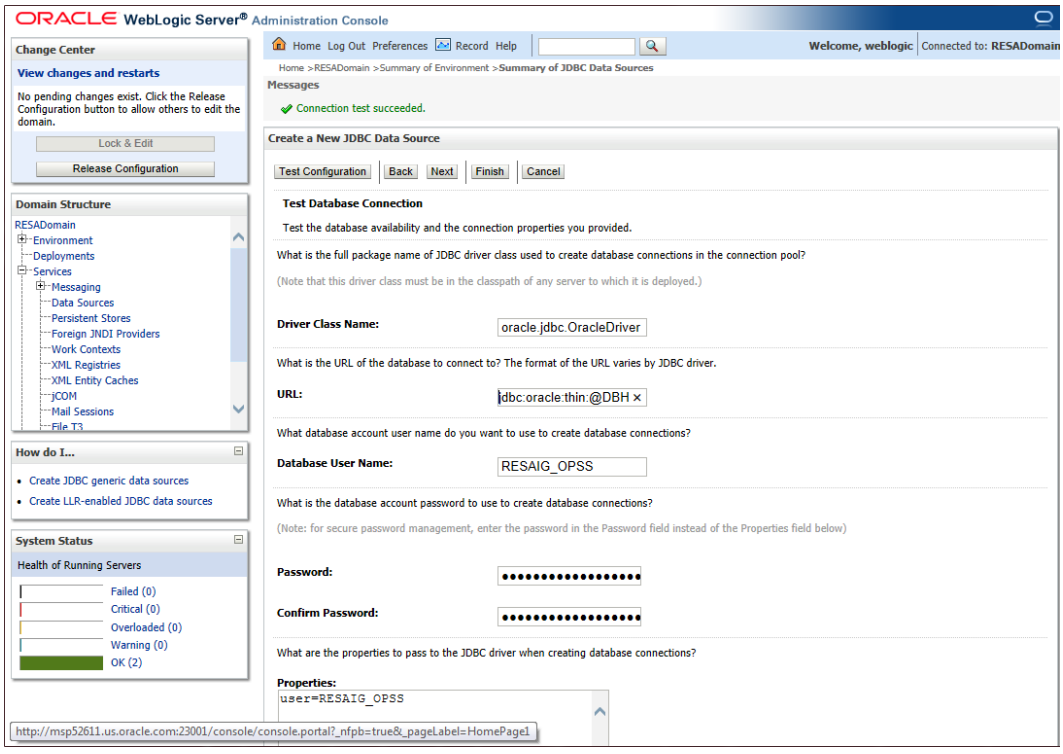
8. Enter the details:
   - Database Name: <database name>
   - Host Name: <database server name>
   - Port: <database port>
   - Database User Name: <RESAIG_OPSS> (This is the OPSS schema which has been created using RCU earlier in this document.)
   - Password: <password> (Password given at the time of OPSS schema creation)

   And click **Next.**

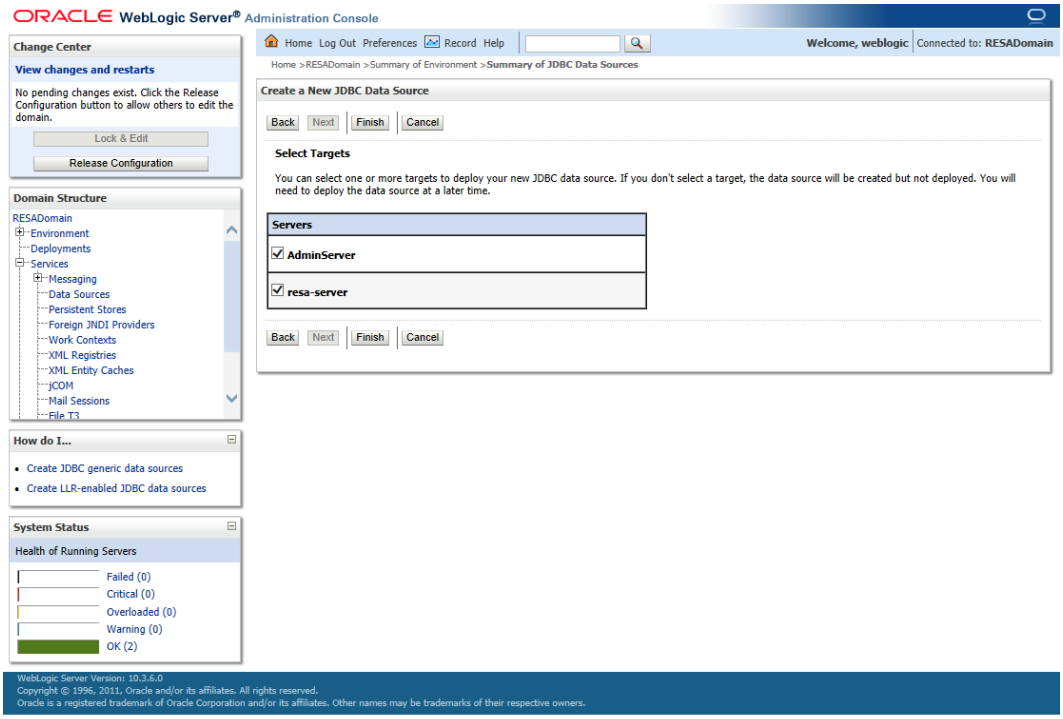
9. Click **Next**.



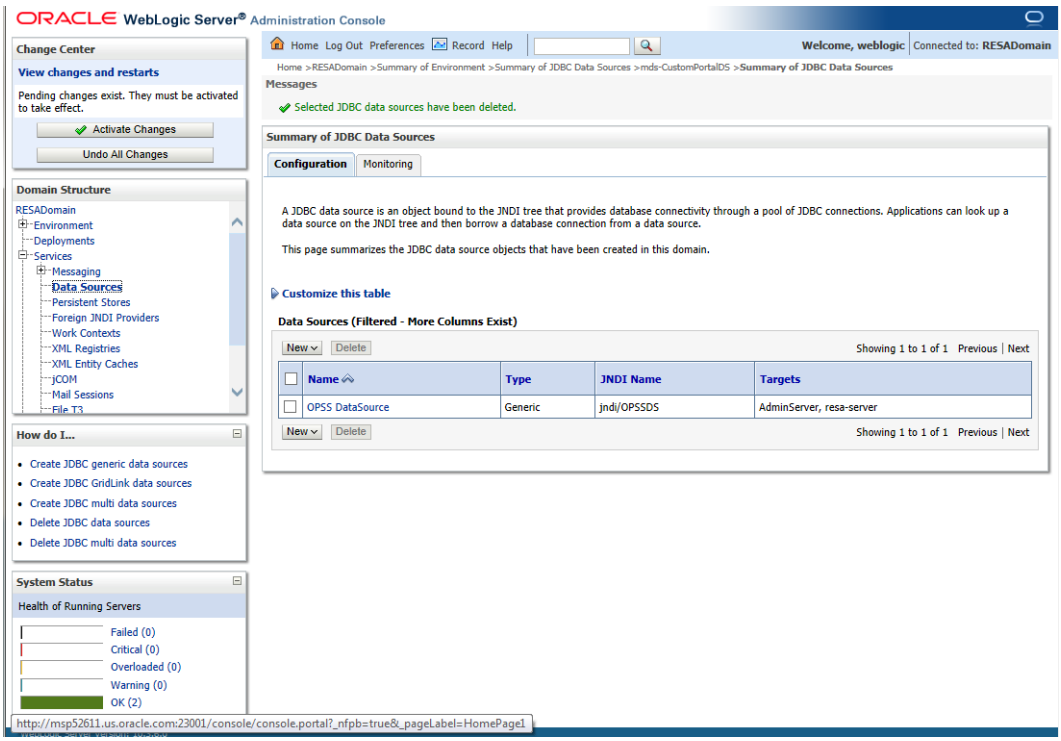
10. Click **Test Configuration**. The message "Connection test succeeded" will appear upon a successful connection.



11. Select Targets Admin Server and <resa-server>. Click **Finish**.



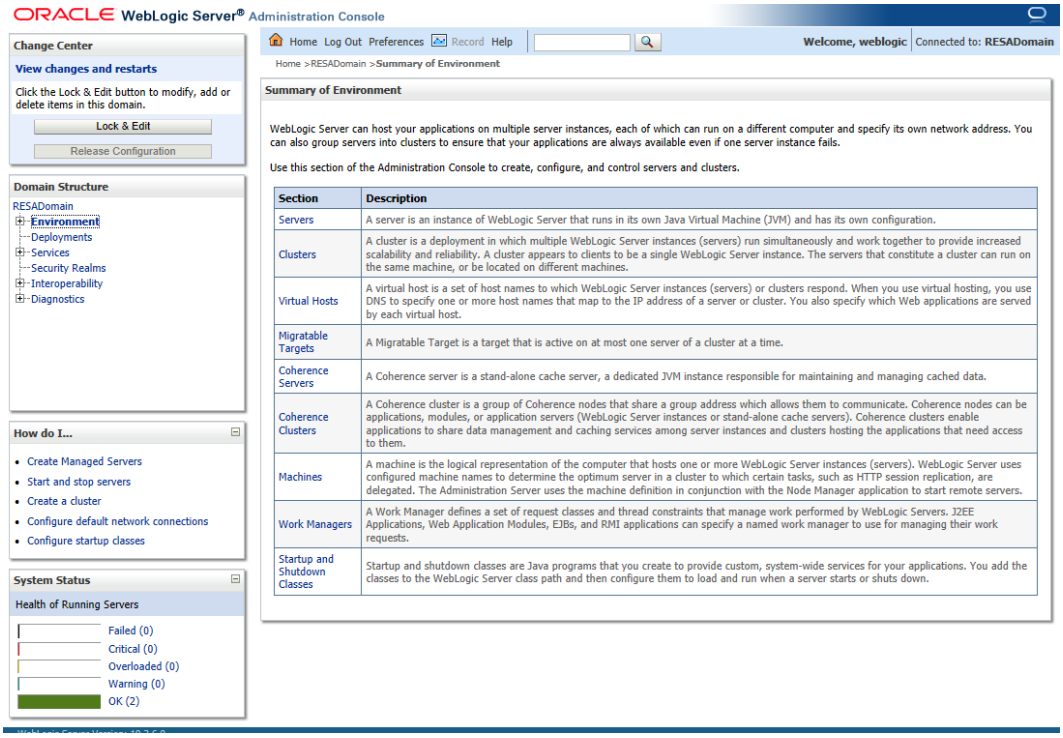
12. Click **Activate Changes**. The OPSS DataSource is created as below.



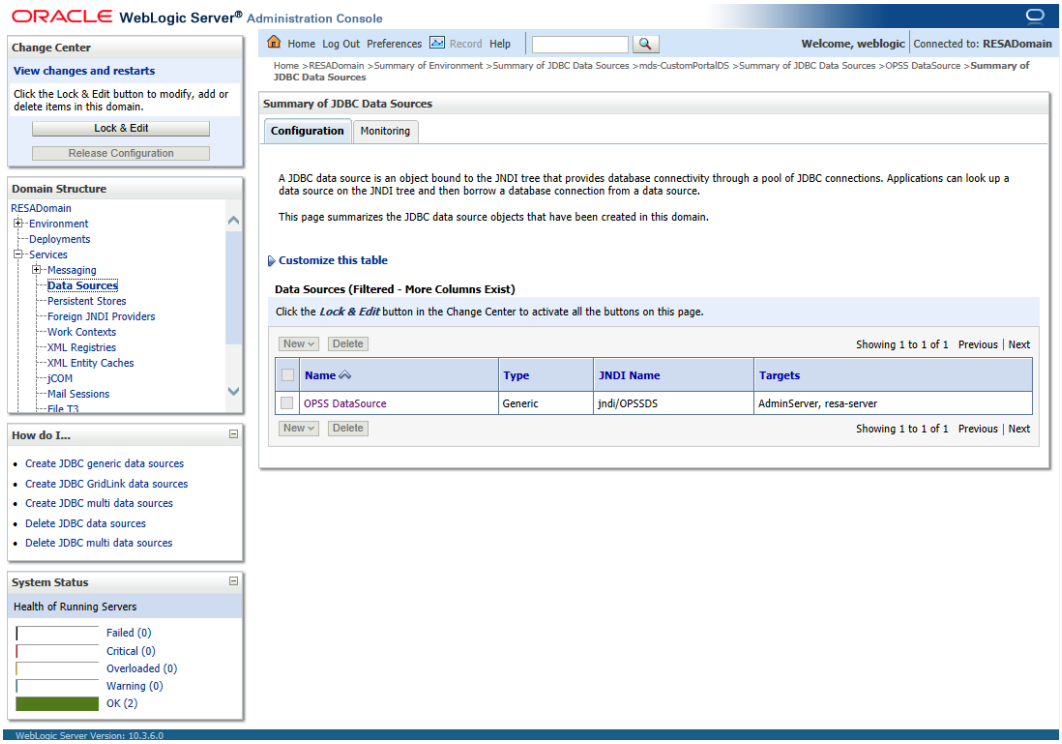
Set up MDS Schema Datasource in WebLogic domain

Follow the below steps to set up the datasource with MDS schema in WebLogic domain.

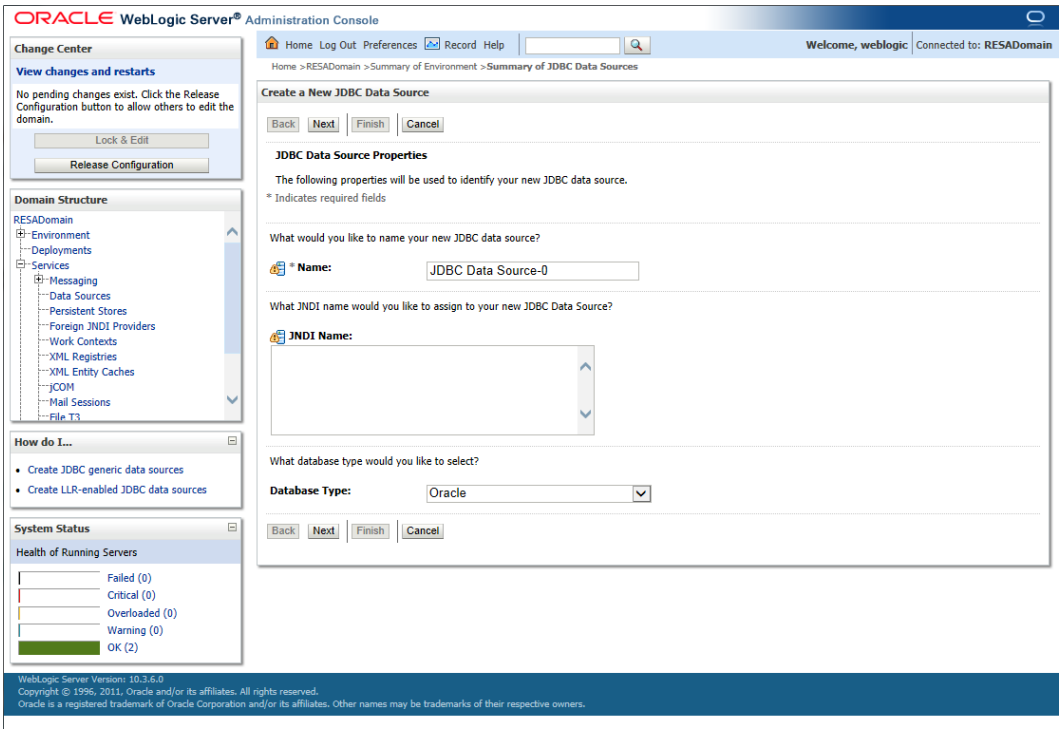
1. Login to the Administration console.



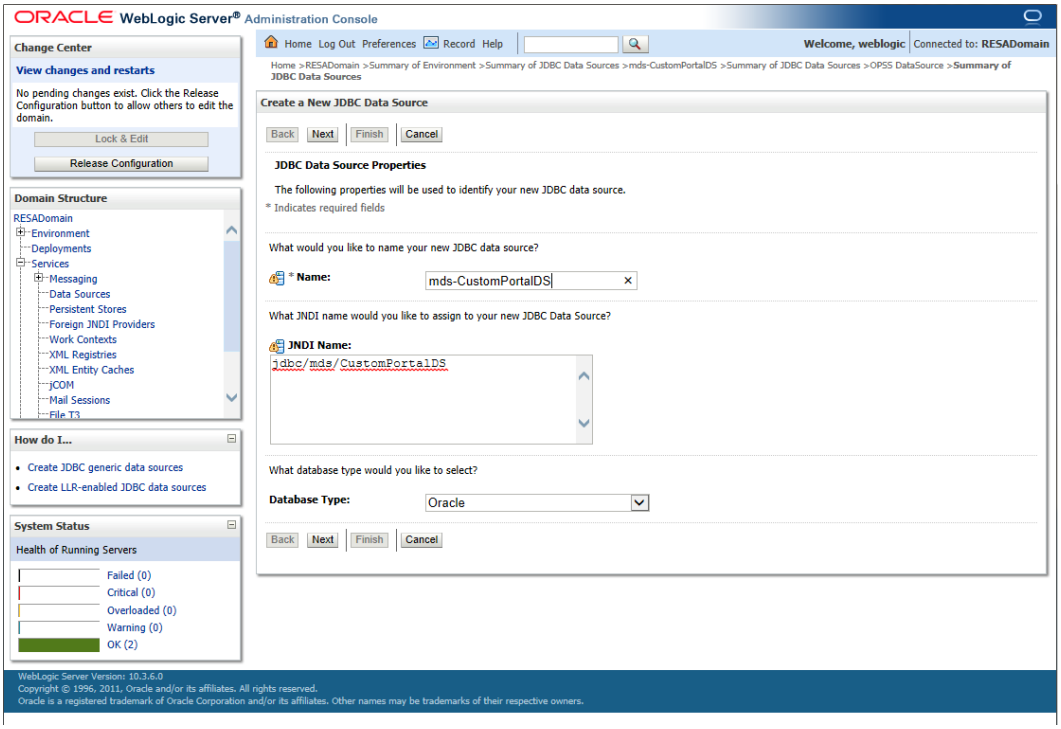
2. In Domain Structure, go to Services-> Data Sources and click **Lock & Edit**.



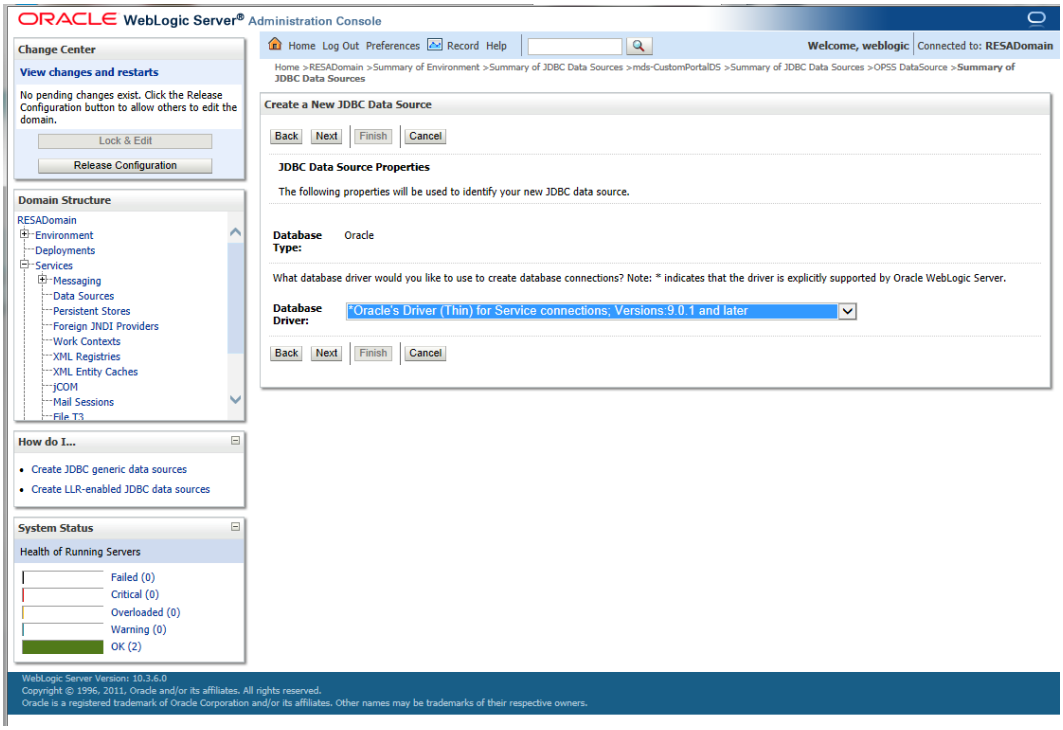
3. Click New -> Generic Data Source.



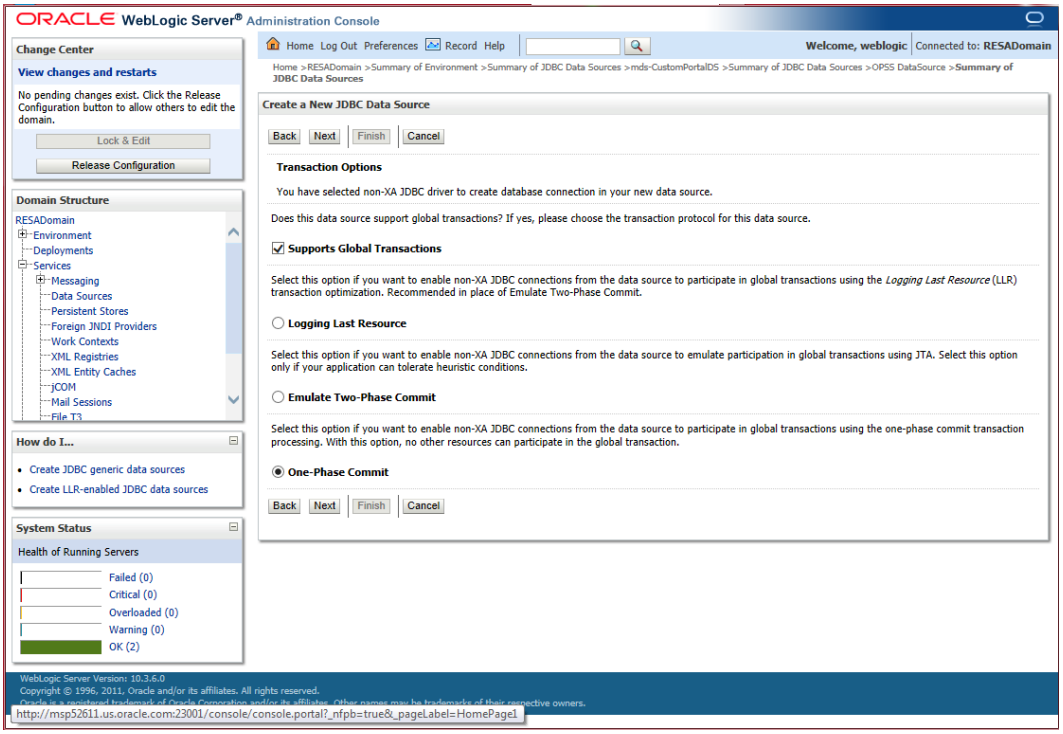
4. Enter the details:
   - Name: <MDS DataSource>
   - JNDI Name: jdbc/mds/CustomPortalDS
   - Database Type: Oracle
5. Click **Next**.



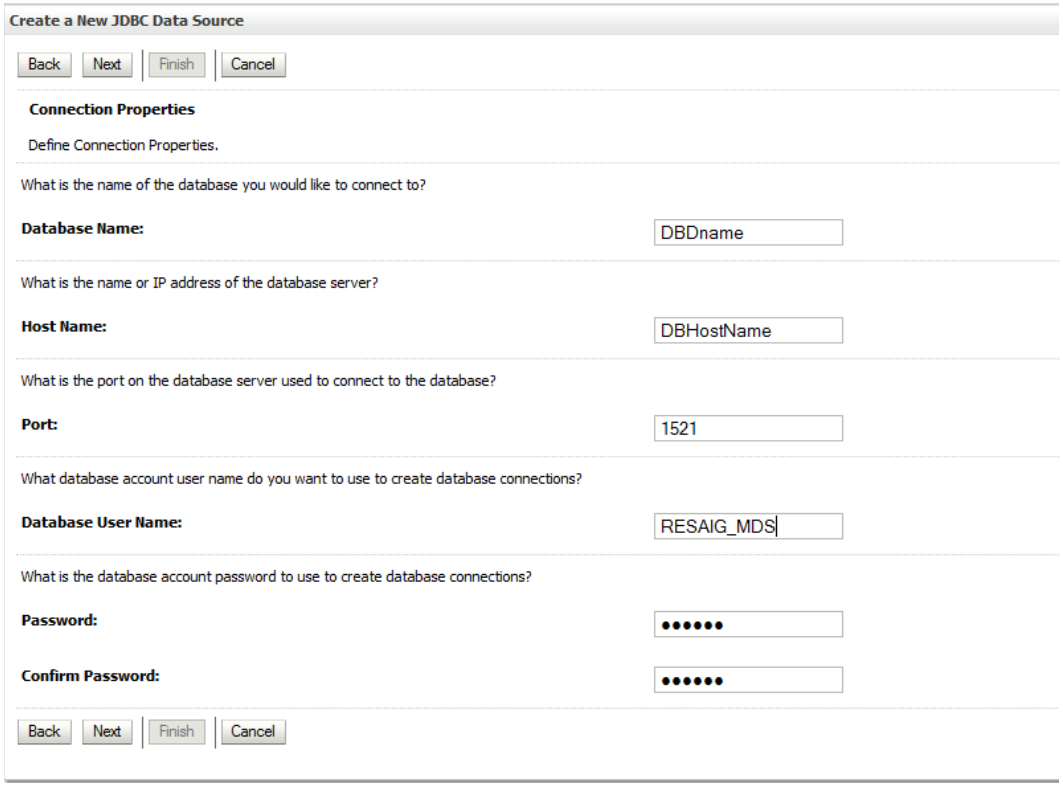
6. Select Oracle's Driver (Thin) for Service connections; Versions: 9.0.1 and later. Click **Next**.



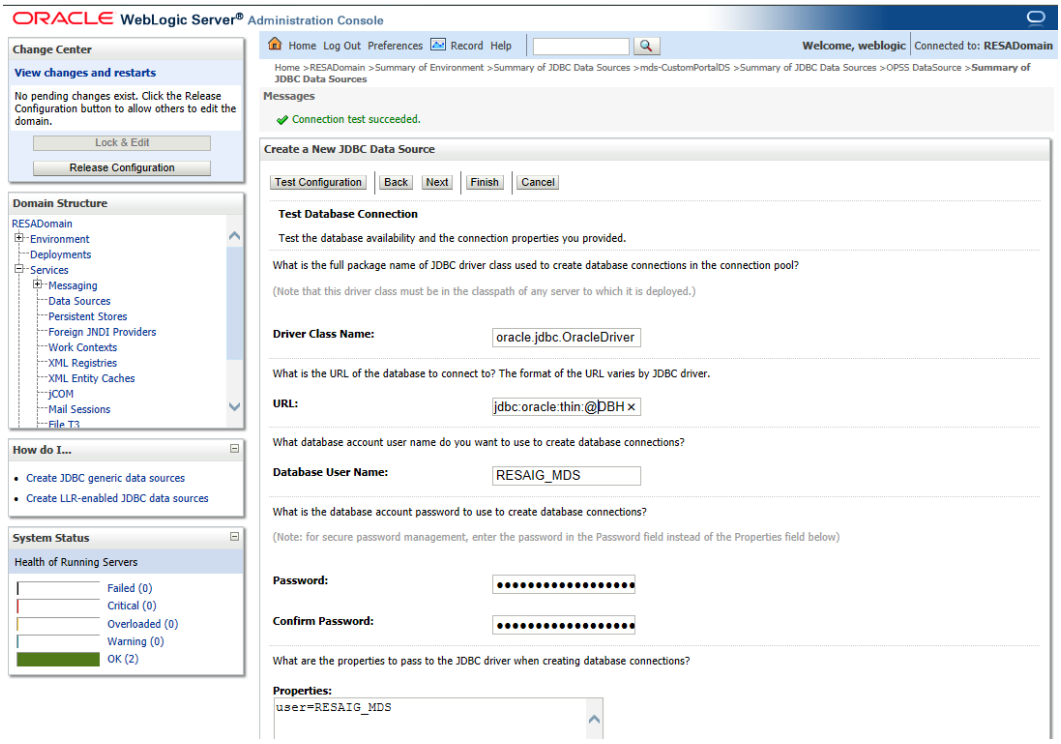
7. Click **Next**.



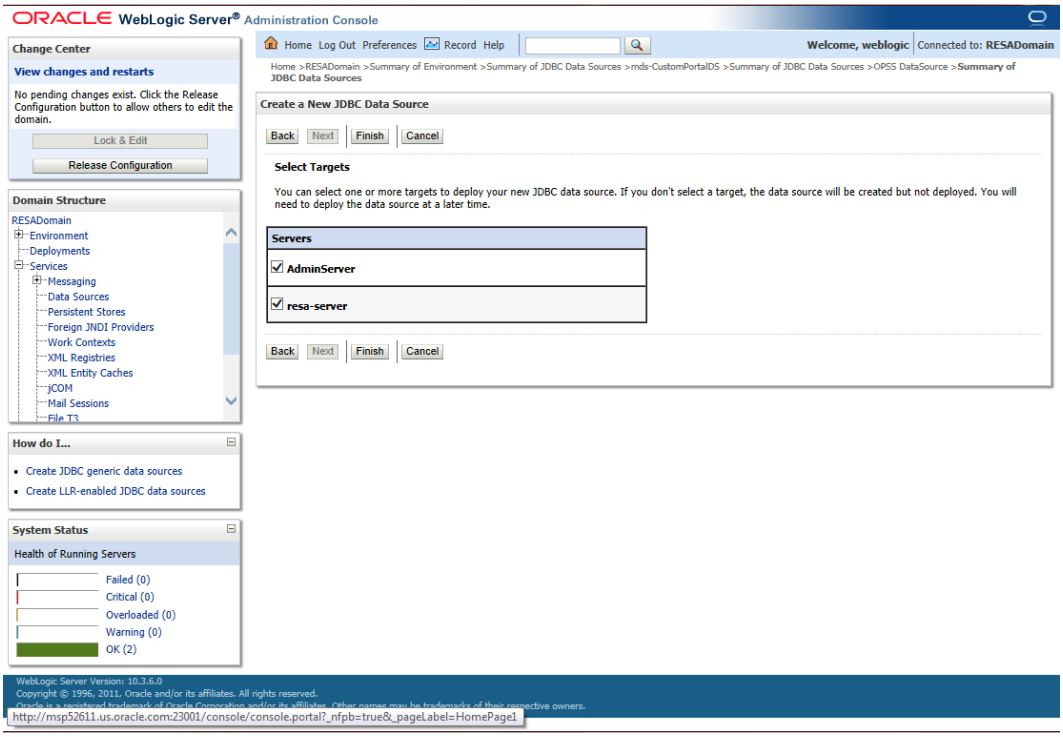
8. Enter the details:
   - Database Name: <database name>
   - Host Name: <database server name>
   - Port: <database port>
   - Database User Name: <RESAIG_MDS> (This is the MDS schema which has been created using RCU earlier in this document.)
   - Password: <password> (Password given at the time of MDS schema creation)
9. Click **Next**.



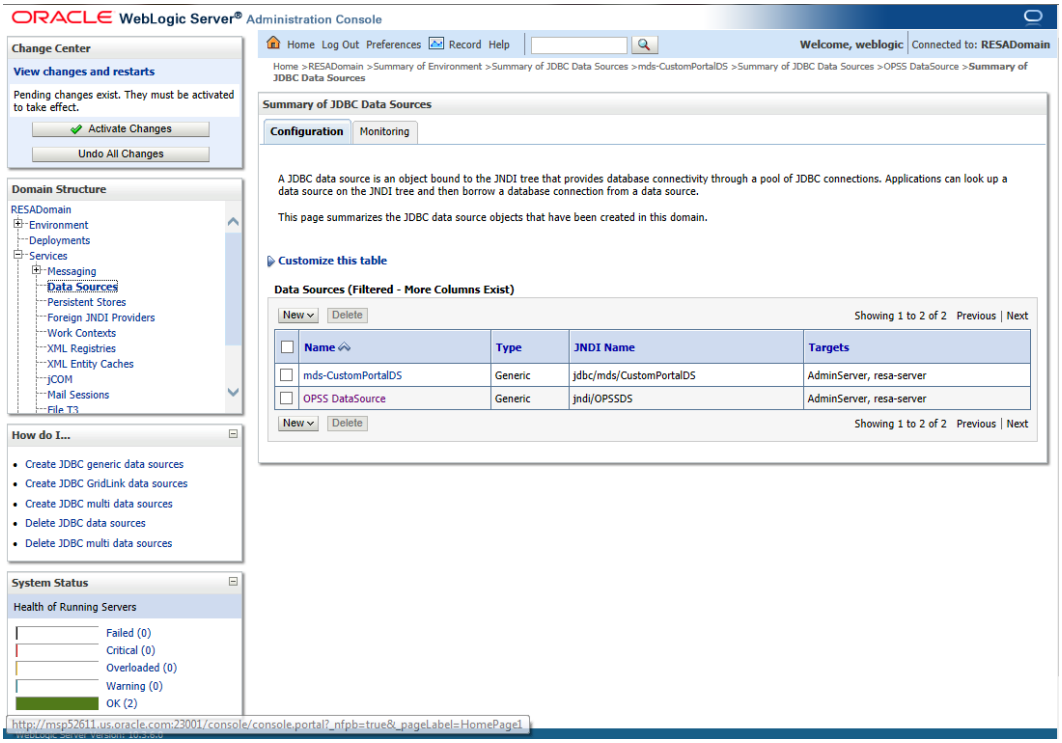
10. Click **Test Configuration**. The message "Connection test succeeded" will appear upon a successful connection.



11. Select Targets Admin Server and <resa-server>. Click **Finish**. We must point this to Admin Server as that is how the MDS Repository creation will happen.



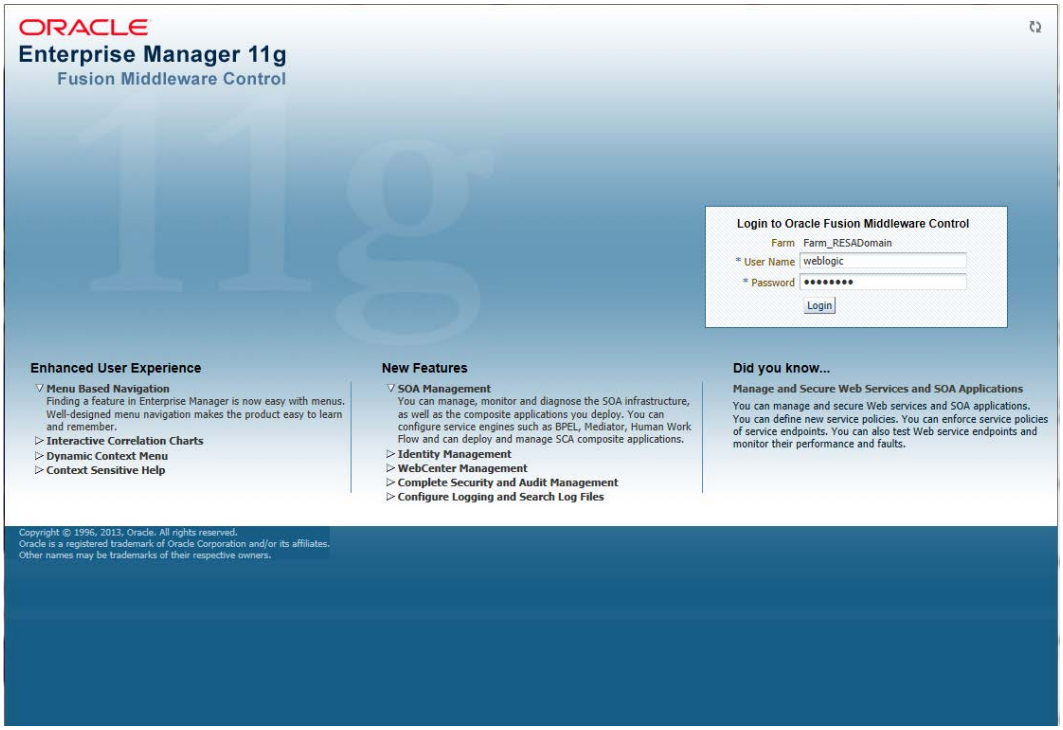
12. Click **Activate Changes**. The mds Custom Portal DataSource is created as below.



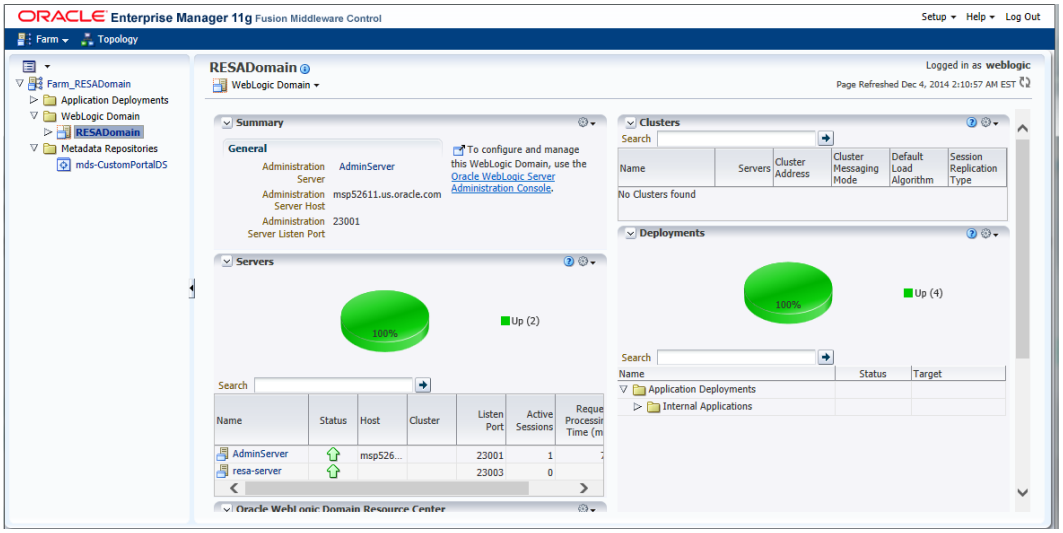
Re-Associate Policy Store to Database

Follow the steps below to re-associate a policy store to the database:

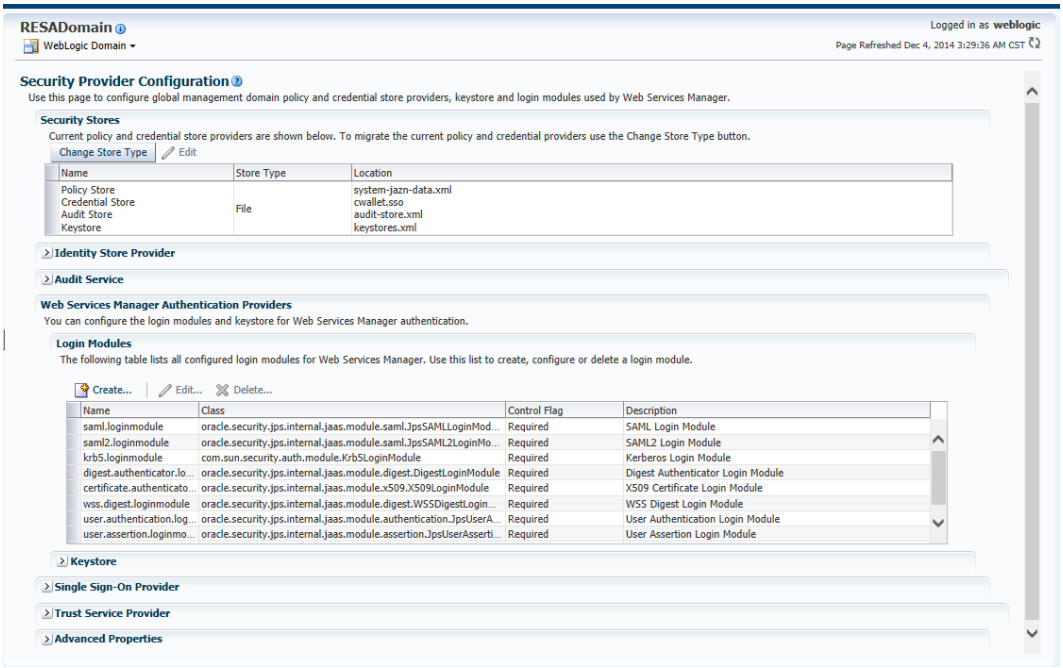
1. Login to the WebLogic EM console.



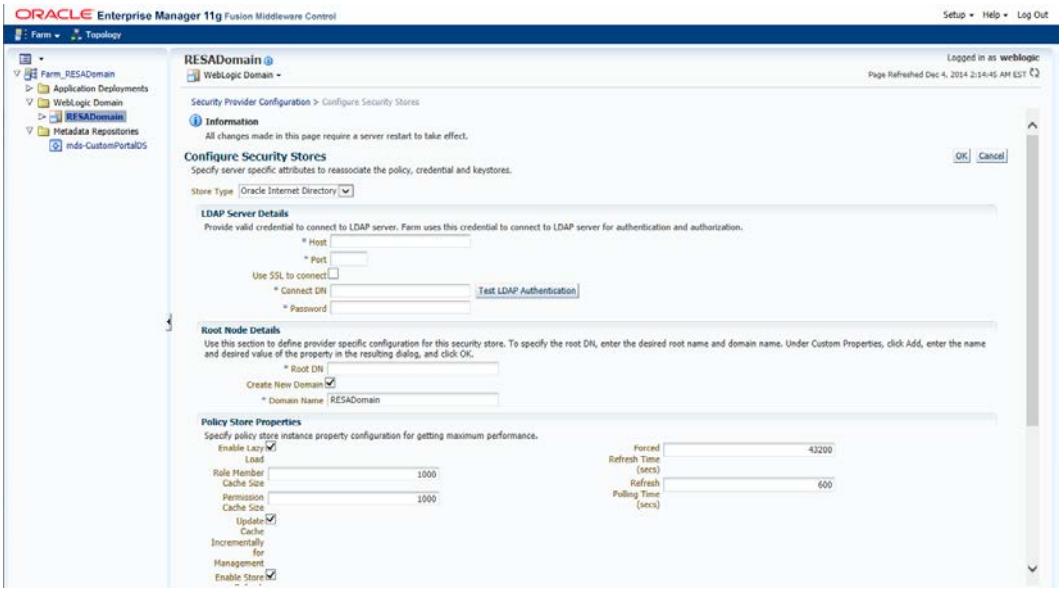
2. Go to WebLogic Domain and click RESADomain.



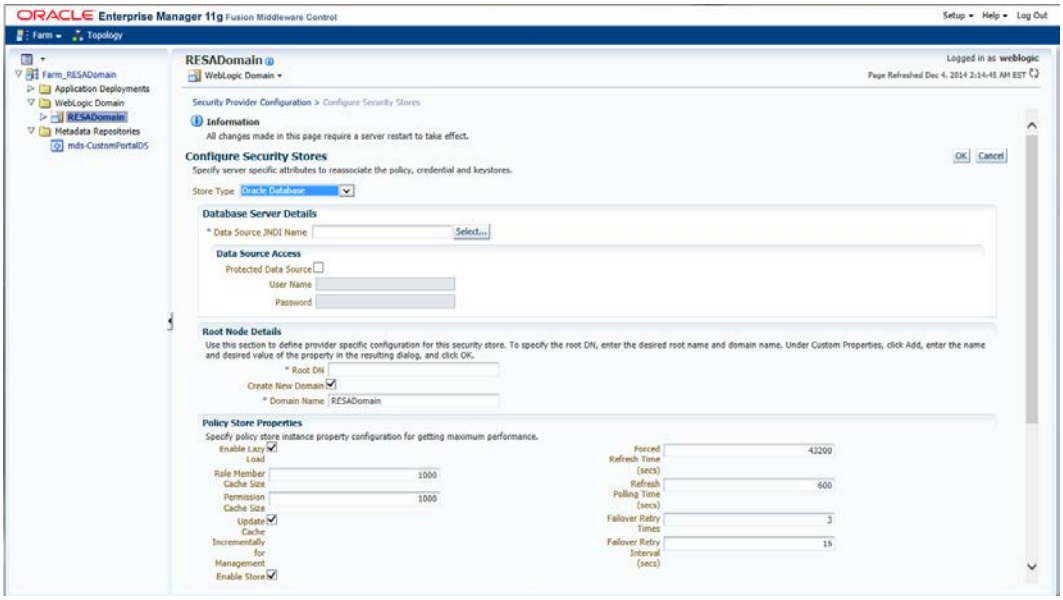
3. Select the dropdown WebLogic Domain->Security->Security Provider Configuration.



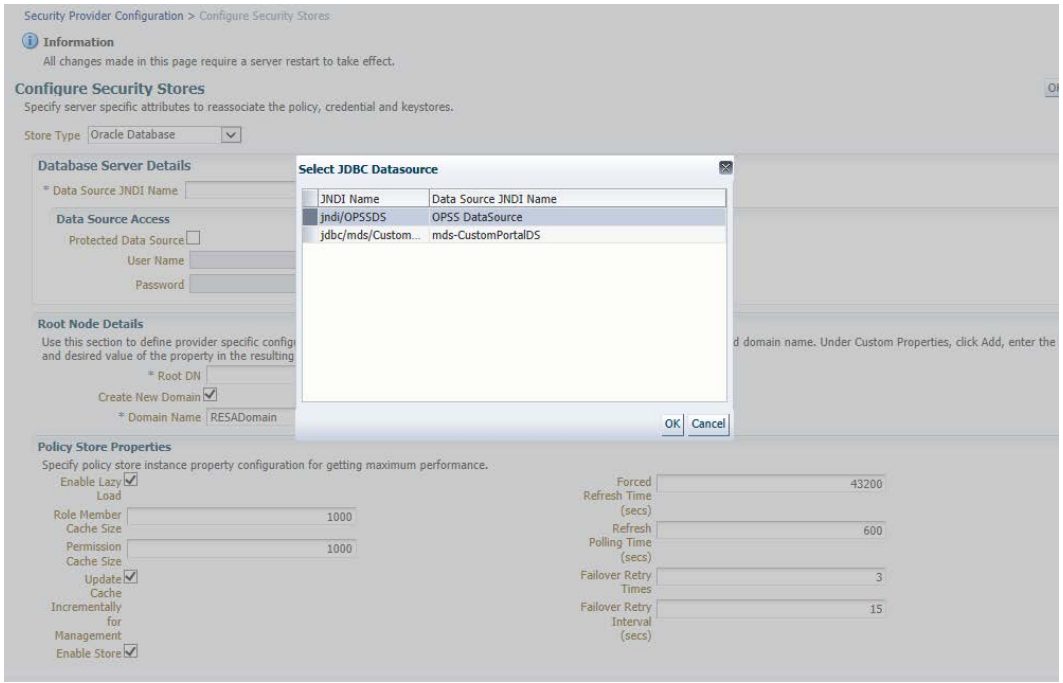
4. Click **Change Store Type**.



5. Select Oracle Database in the Store Type drop down.

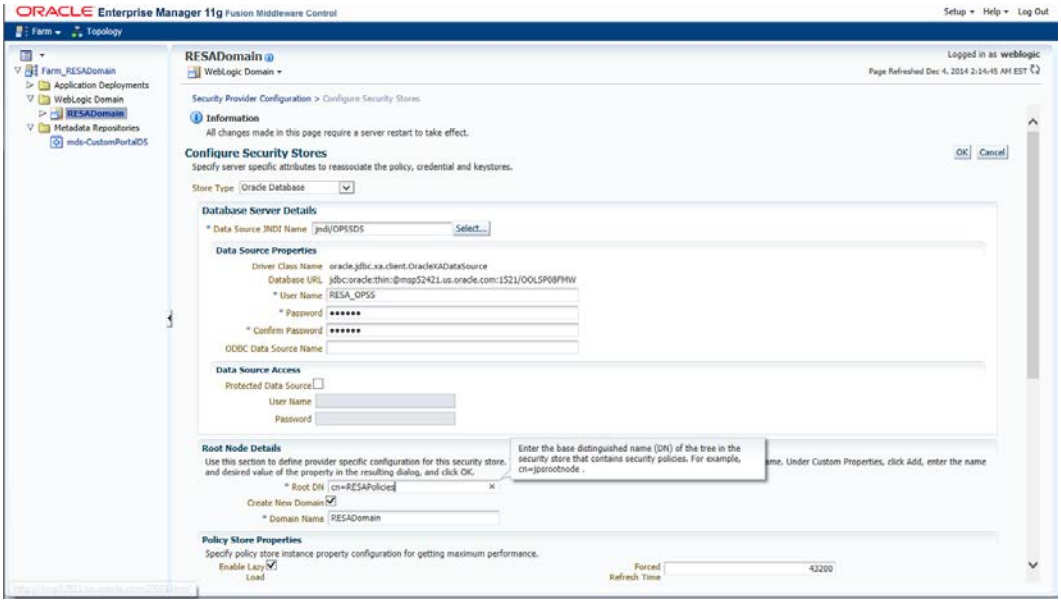


6. Click **Select** and select jndi/OPSSDS JNDI name. Click **OK**.

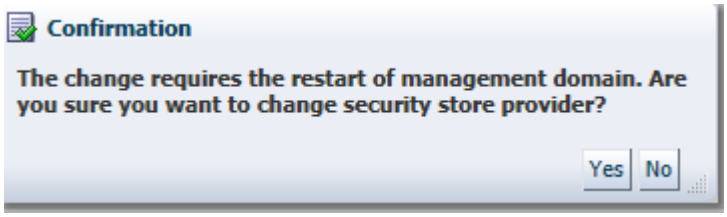


7. Enter the values:
   - Root DN= <cn=RESAPolicies>
   - Select 'Create New Domain'
   - Domain Name=<RESADomain> (This must be the domain name which has been created earlier in this document)
   - User Name : <RESAIG_OPSS> Schema user name of the OPSS schema

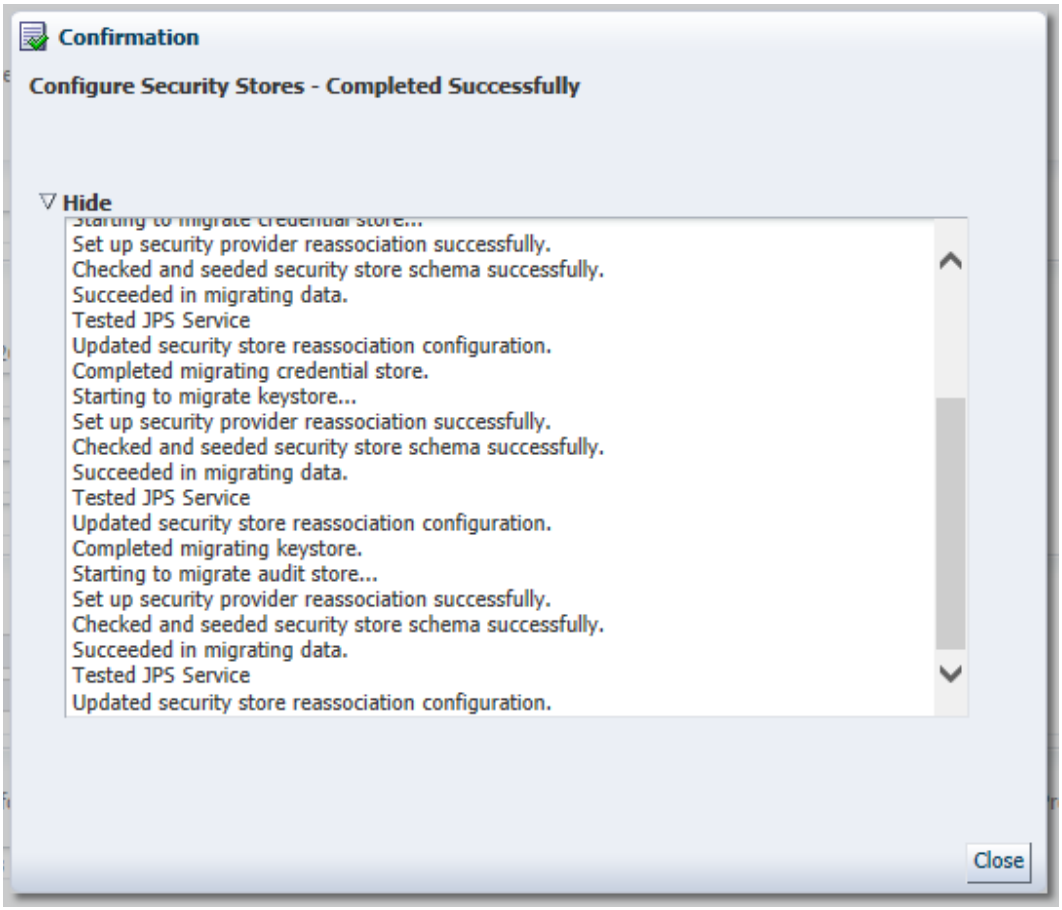
8. Click **OK**.



9. Click **Yes**.



10. The message Configure Security Stores – Completed Successfully appears. Click **Close**.



11. Restart the WebLogic domain.

Rename and Update jps-config.xml file

1. Go to $WLS_HOME/user_projects/domains/APPDomain/config/fmwconfig.
2. Copy the file jps-config.xml and rename it with jps-config-<env>.xml
3. In the same file, add the following entry:

```
<serviceInstance location="./merged-jazn-data.xml"
provider="policystore.xml.provider" name="policystorelocal.xml">
            <description>File based policy store Instance"</description>
        </serviceInstance>
```

The above entry can be added above this:

```
</serviceInstances>
    <jpsContexts default="default">
 <jpsContext name="default">
            <serviceInstanceRef ref="credstore.db"/>
```

Example:

```
<propertySetRef ref="props.db.1"/>
        </serviceInstance>
<serviceInstance location="./merged-jazn-data.xml"
provider="policystore.xml.provider" name="policystorelocal.xml">
```

```
            <description>"File based policy store Instance"</description>
        </serviceInstance>
    </serviceInstances>
    <jpsContexts default="default">
        <jpsContext name="default">
            <serviceInstanceRef ref="credstore.db"/>
```

4. In the same file, add the following entry:

```
<jpsContext name="source">
                    <serviceInstanceRef ref="policystorelocal.xml"/>
</jpsContext>
```

Example:

```
<serviceInstanceRef ref="attribute"/>
        </jpsContext>
        <jpsContext name="source">
                    <serviceInstanceRef ref="policystorelocal.xml"/>
        </jpsContext>
        <jpsContext name="bootstrap_credstore_context">
            <serviceInstanceRef ref="bootstrap.credstore"/>
        </jpsContext>
```

The modified jps-config-<env>.xml and the cwallet.sso file will be used for deploying policies.

Wallet file is available at$WLS_HOME/user_projects/domains/<RESADomain>/config/fmwconfig/bootstrap/cwallet.sso

Note: Only use the wallet in the above bootstrap folder location. Make sure to check the line break in the path mentioned for the wallet file.

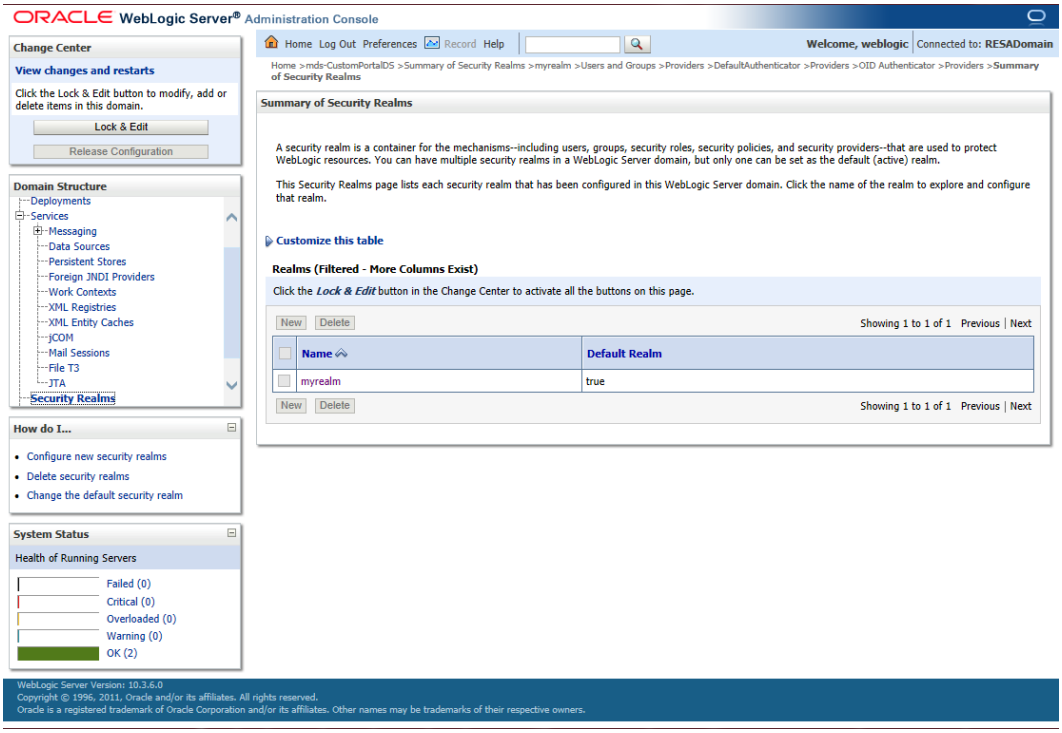
5. Copy the jps-config-<env>.xml file to the <INSTALL_DIR>/resa/application/resa14/policysetup/jps-config.
6. Rename the file jps-config-<env>.xml at <INSTALL_DIR>/resa/application/resa14/policysetup/jps-config to jps-config.xml after copying the file jps-config-<env>.xml in step 6.
7. Copy cwallet.sso from $WLS_HOME/user_projects/domains/<RESADomain>/config/fmwconfig/bootstrap to the location <INSTALL_DIR>/resa/application/resa14/policysetup/wallet.

Configure OID Authenticator in WebLogic Domain

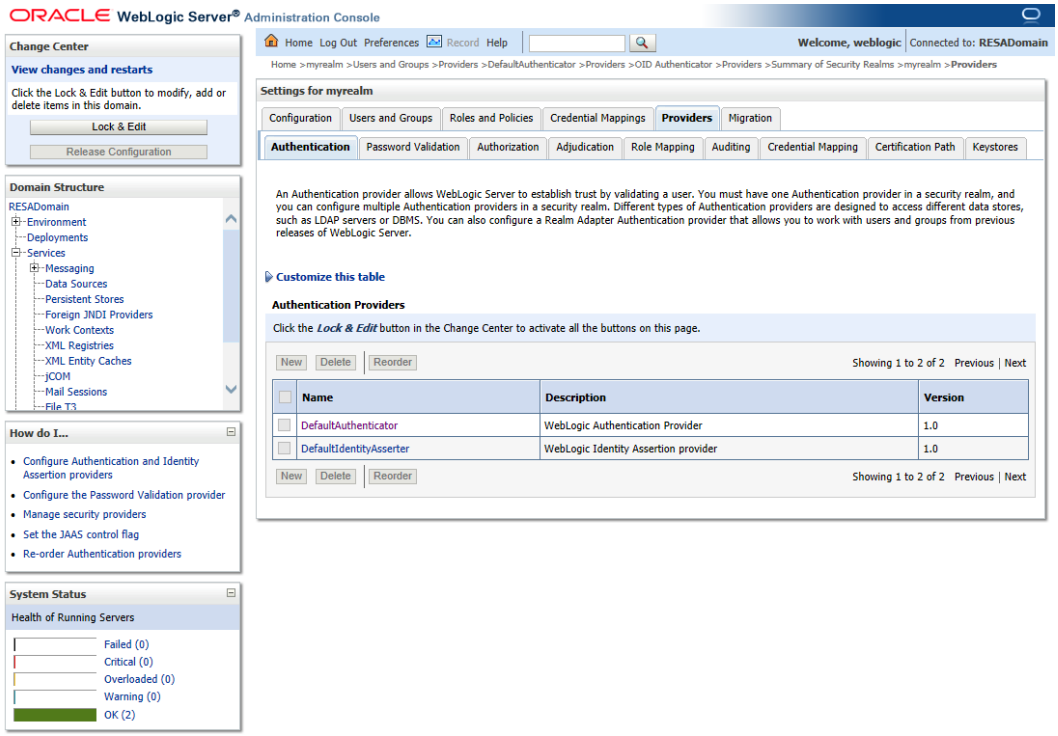
The OID (Oracle Internet Directory 11.1.1.7) must be set up in order to perform the configuration of OID Authenticator in WebLogic Domain.

Follow the steps below to configure WebLogic domain with OID Authenticator:

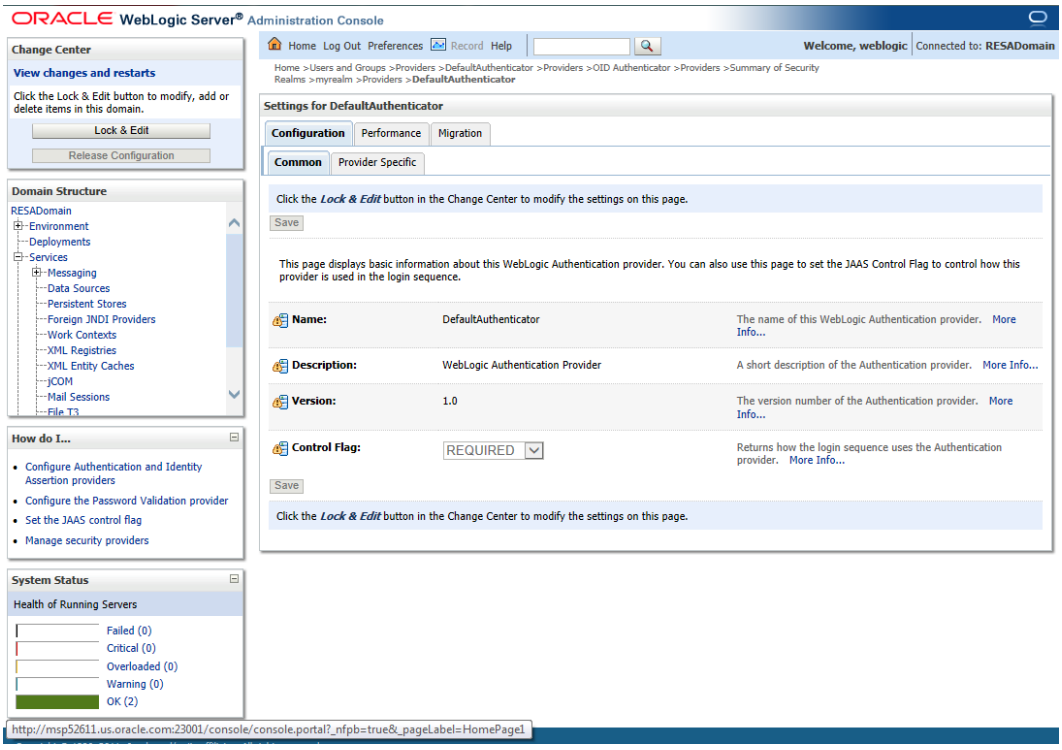
1. Login to Admin console of the domain (Example: RESADomain).
2. Go to SecurityRealm.



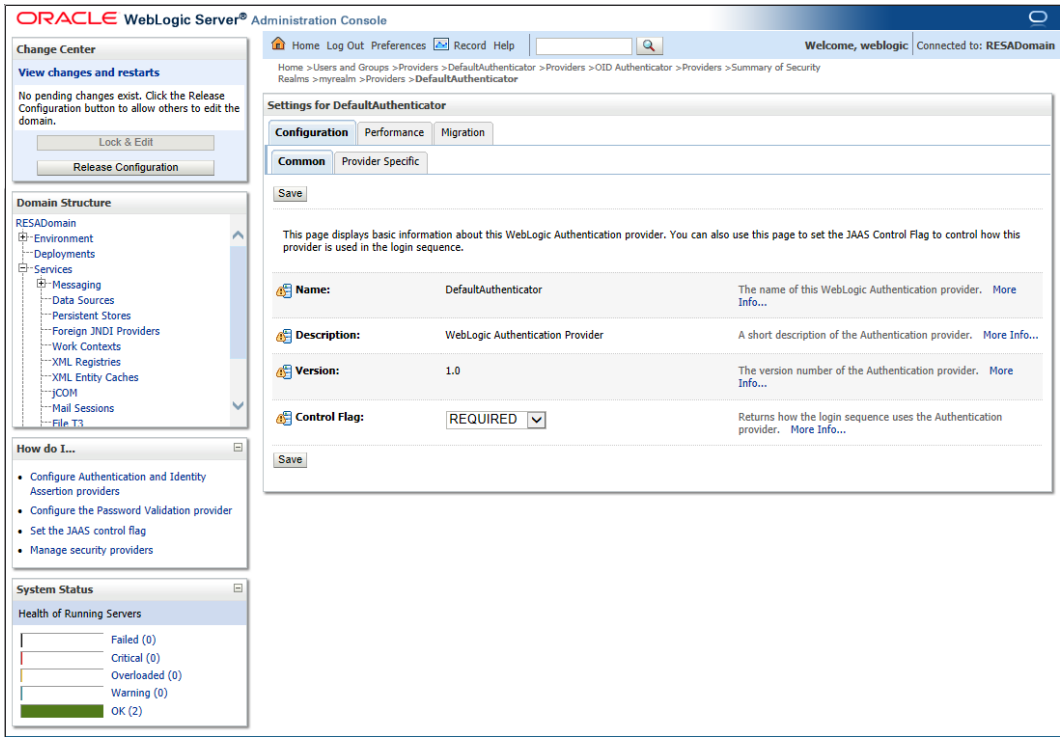
3. Click the MyRealm -> Providers tab.



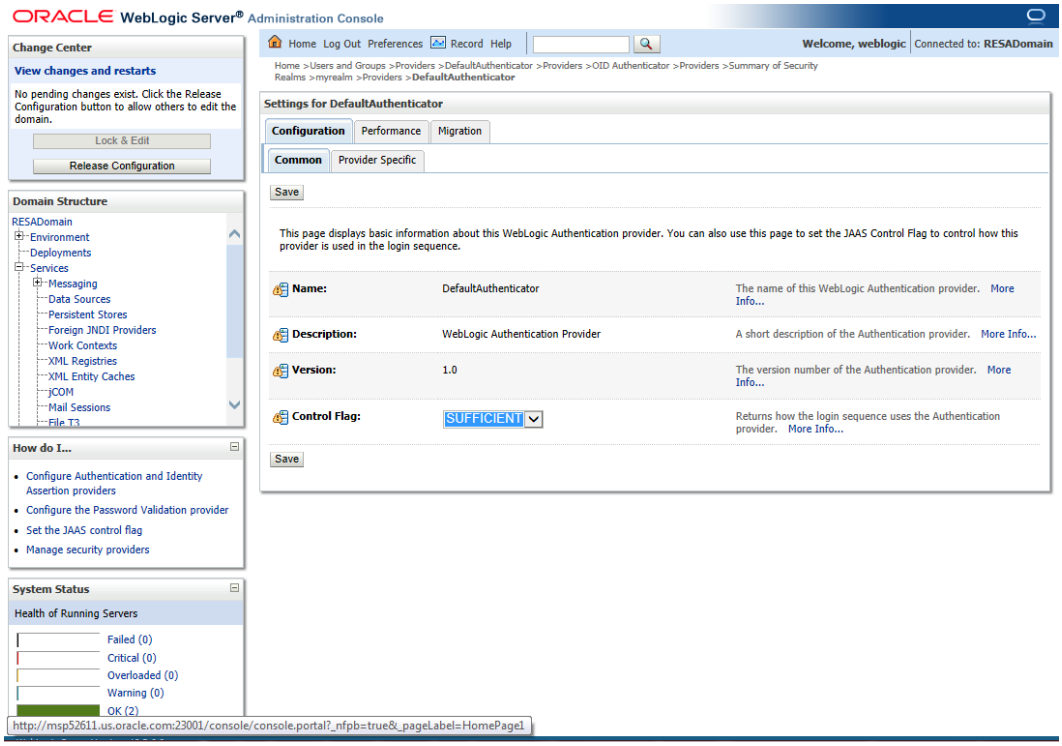
4. Click **DefaultAuthenticator**.



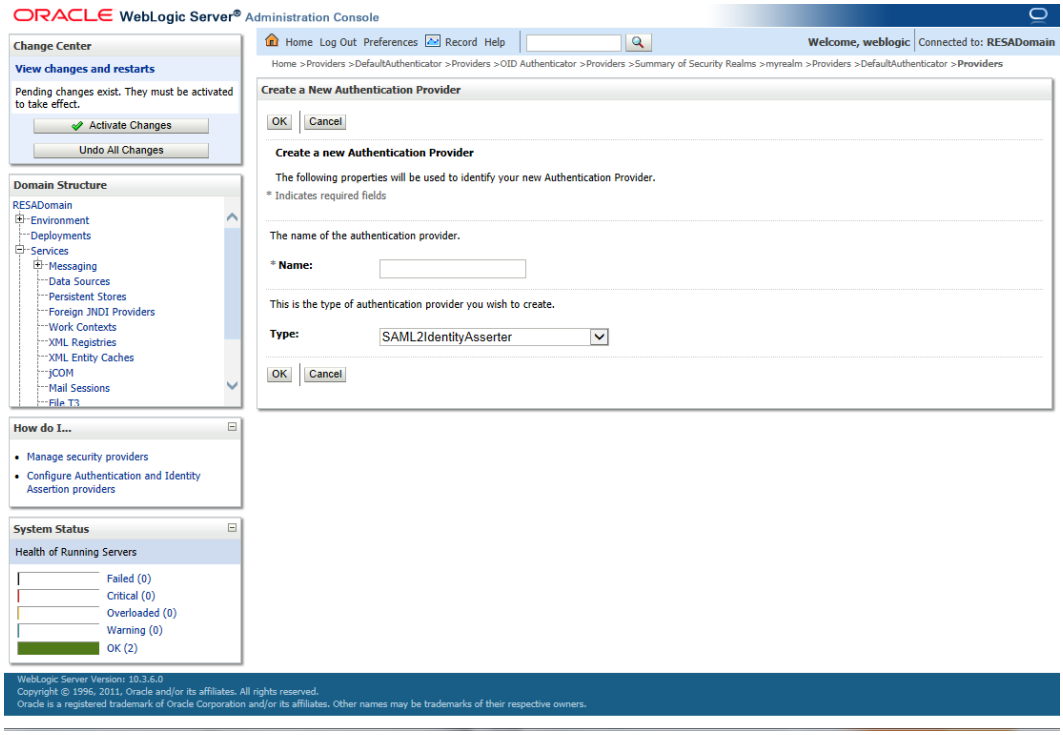
5. Click **Lock & Edit**.



6. Select Control Flag=SUFFICIENT. Click **Save** and **Activate** changes.

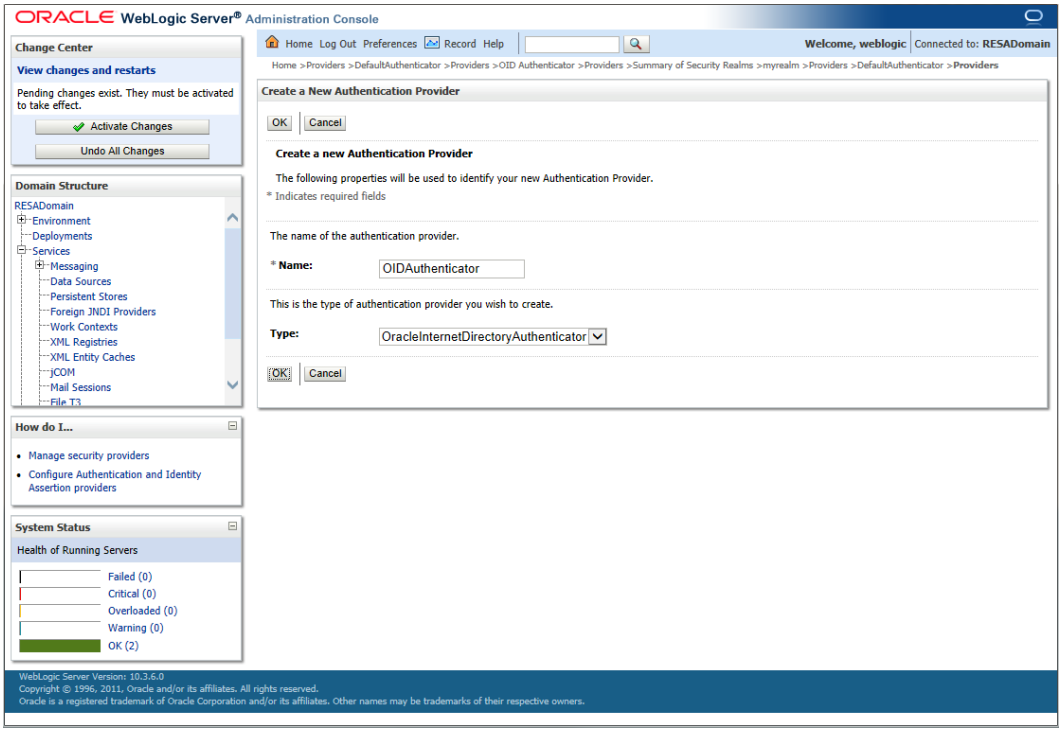


7. Go to Security Realms->MyRealm->Providers tab. Click **New**.

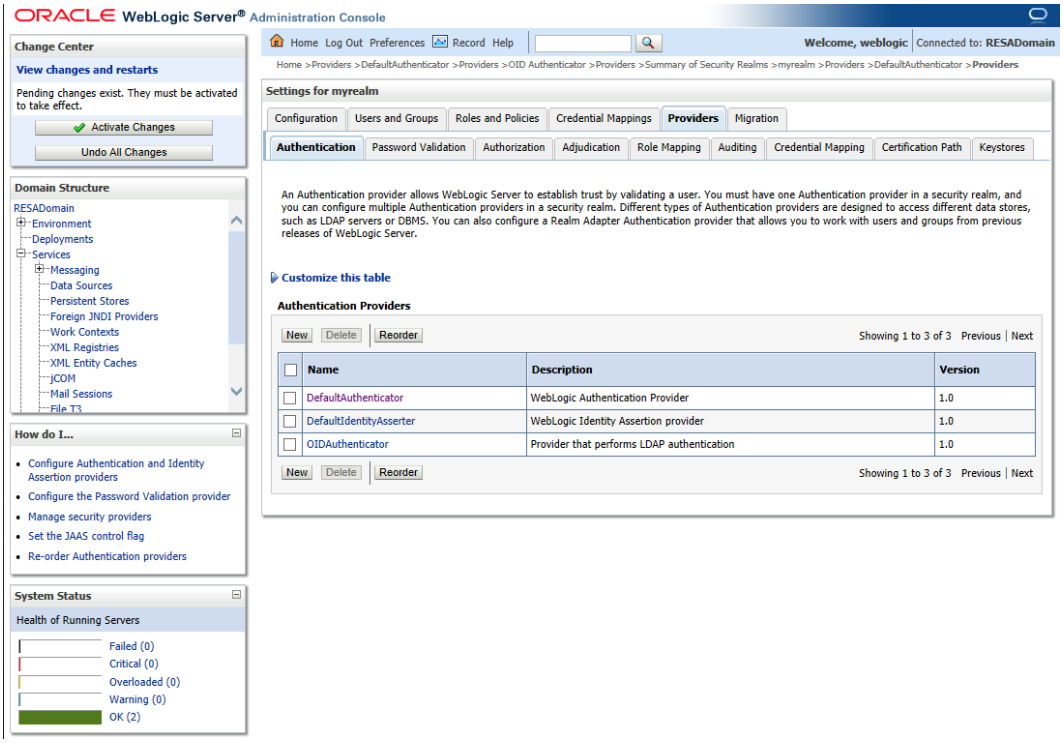


8. Enter the values:
   - Name: <OIDAuthenticator> (Provide a name for OID Authenticator. Example:OIDAuthenticator)
   - Type: OracleInternetDirectoryAuthenticator

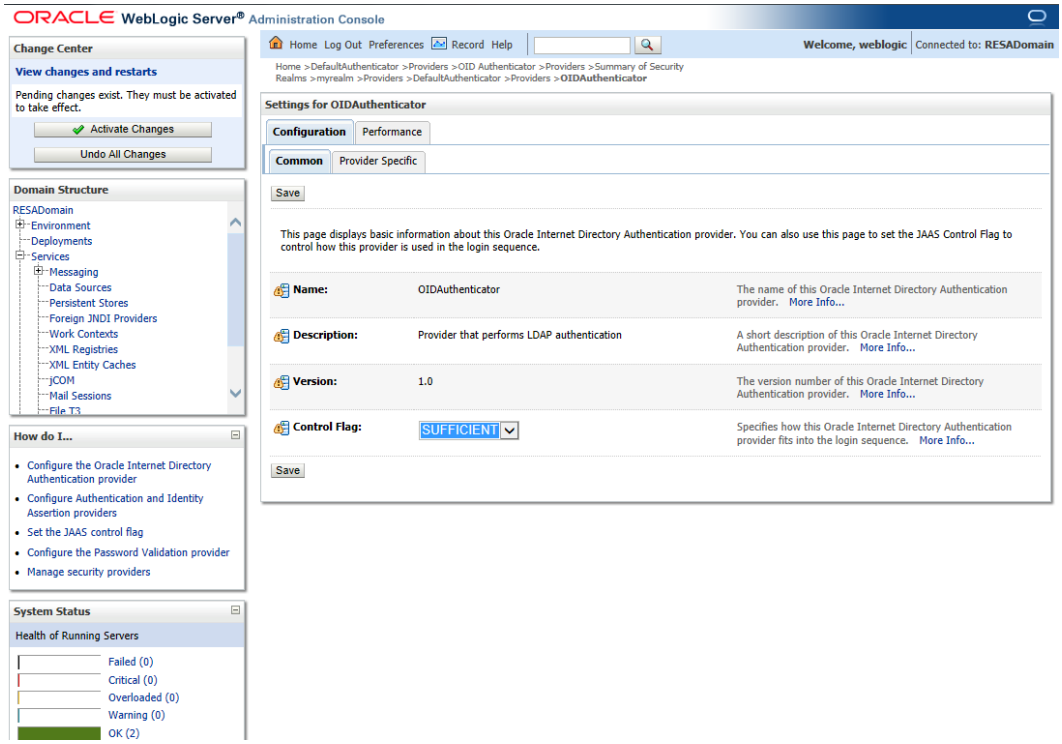
9. Click **OK**.



10. Click **OIDAuthenticator**.



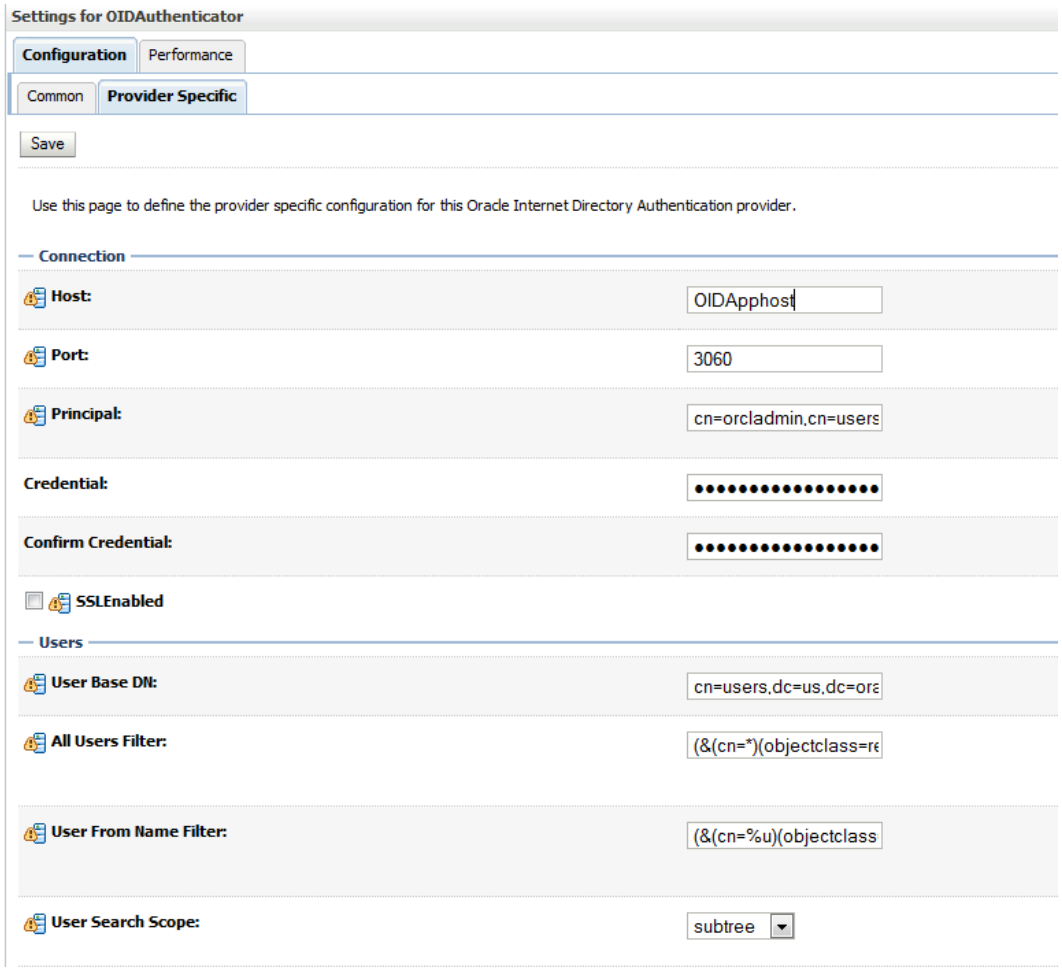
11. Select Type: SUFFICIENT. Click **Save**.



12. Click Provider Specific tab.

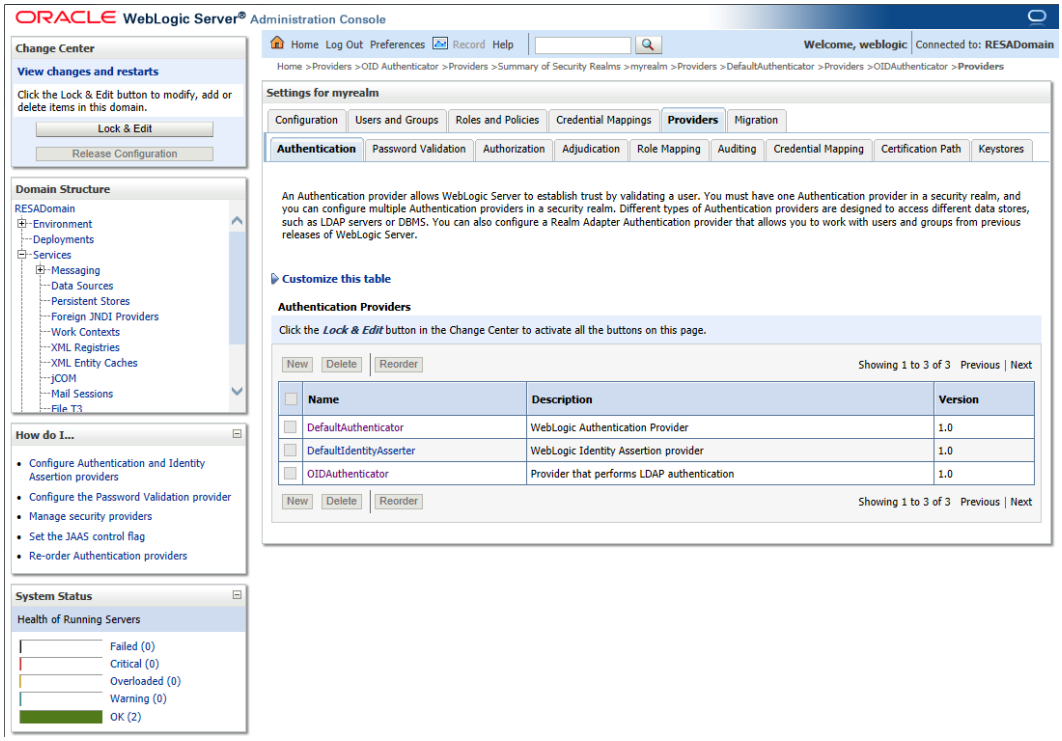
    Enter the values:

    - Host: <OID Server name> (Example: msp12068.us.oracle.com)
    - Port: <OID port> (Example: 3060 or 389)
    - Principal: <cn=orcladmin> (provide the OID admin user)
    - Credential: <password> (provide the password of cn=orcladmin)
    - User Base DN: (Example: cn=Users,dc=us,dc=oracle,dc=com)
    - Group Base DN: (Example: cn=Groups,dc=us,dc=oracle,dc=com)
    - Select 'Ignore Duplicate Membership'
    - Results Time Limit: 30000

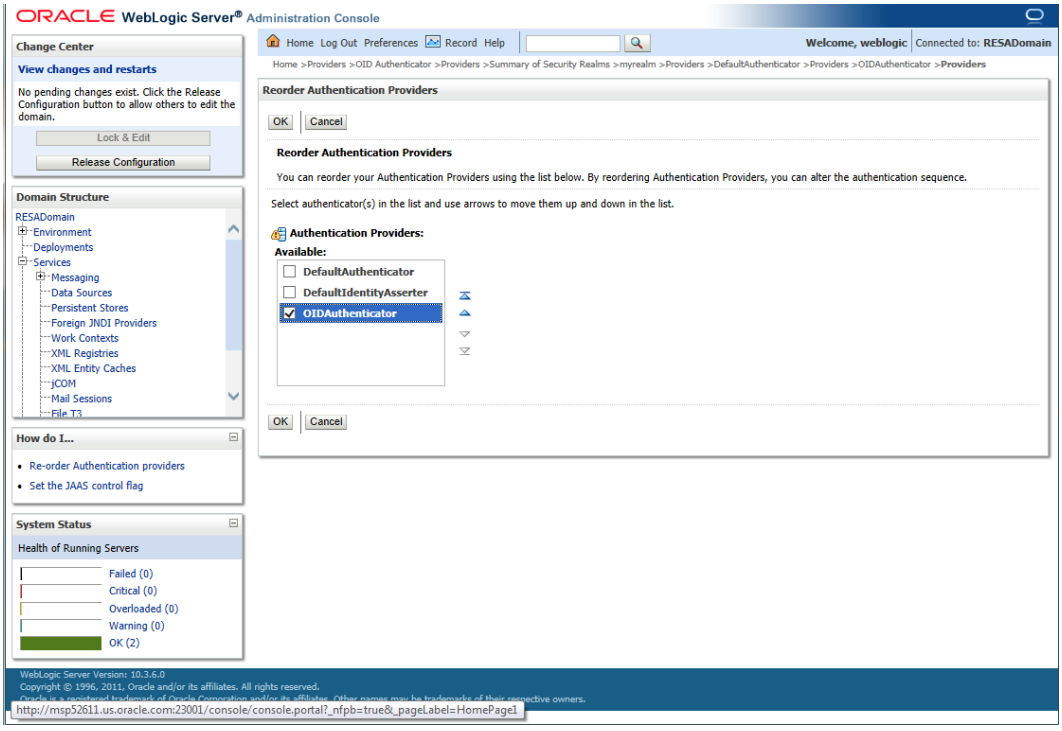


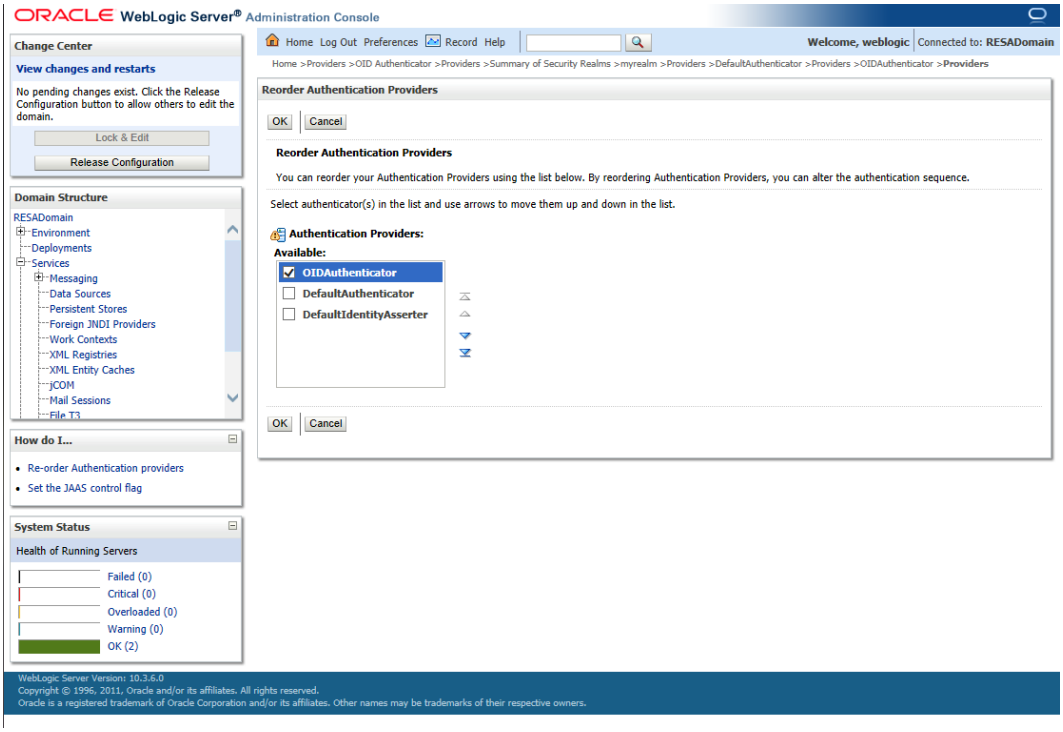
13. Save the values and activate changes.

14. Go to Security Realms->myrealm->Providers.

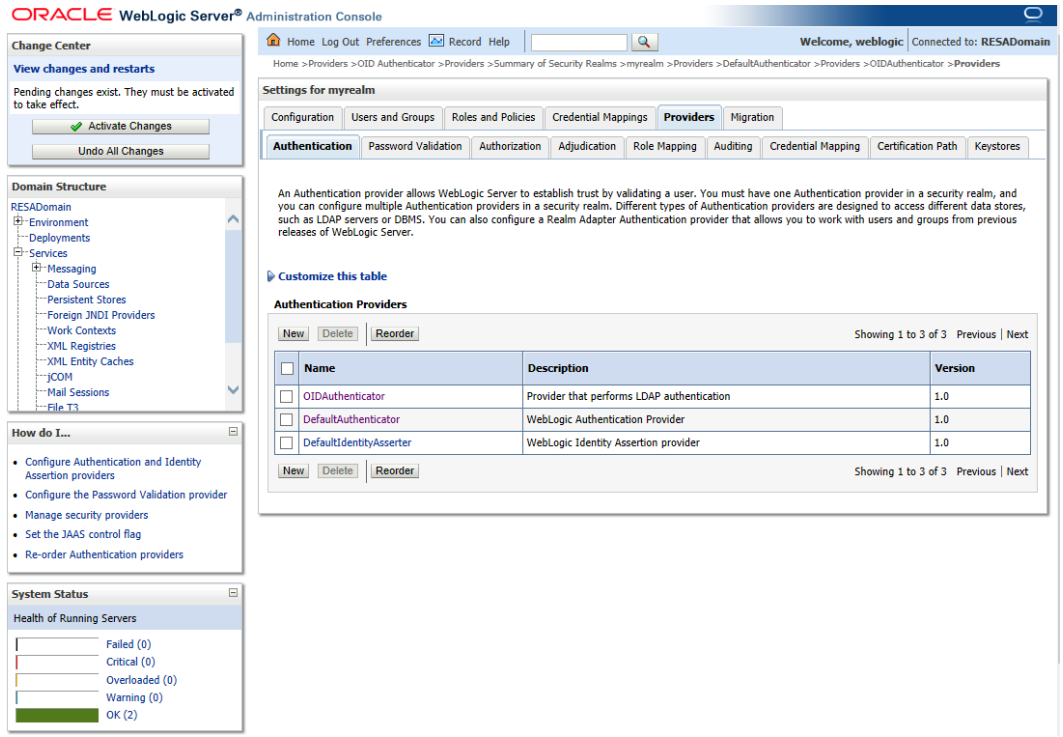


15. Click **Lock and Edit** and then click **Reorder**. Select **OIDAuthenticator** and move it to the top of the list. Click **OK**.





16. Click **Activate Changes**.



17. Restart the WebLogic Domain and Managed server.
18. Login to WebLogic domain->Security Realms->MyRealm->Users and Groups and verify that the users in OID appear in this screen (Users and Groups). This confirms the OID authentication from WebLogic is successful.

Load LDIF Files in LDAP

The OID (Oracle Internet Directory 11.1.1.7) must be set up in order to perform the configuration of OID Authenticator in WebLogic Domain.

There are four LDIF files provided in the application zip:

- RESA-oid-create-groups.ldif
- RESA-oid-create-users.ldif
- RESA-oid-delete-groups.ldif
- RESA-oid-delete-users.ldif

> **Note:** You may use the existing users and existing groups if the enterprise users and groups are already available in the LDAP. The users provided in the LDIF files above may not be required to use the application. For more information, refer to the Retail Role Hierarchy section in the Implementing Functional Security of the *Oracle Retail Sales Audit 14.1 Operation Guide*.

The steps given below can be used to import the Groups and Users into the LDAP using the LDIF files 'RESA-oid-create-groups.ldif' and 'RESA-oid-create-users.ldif'.

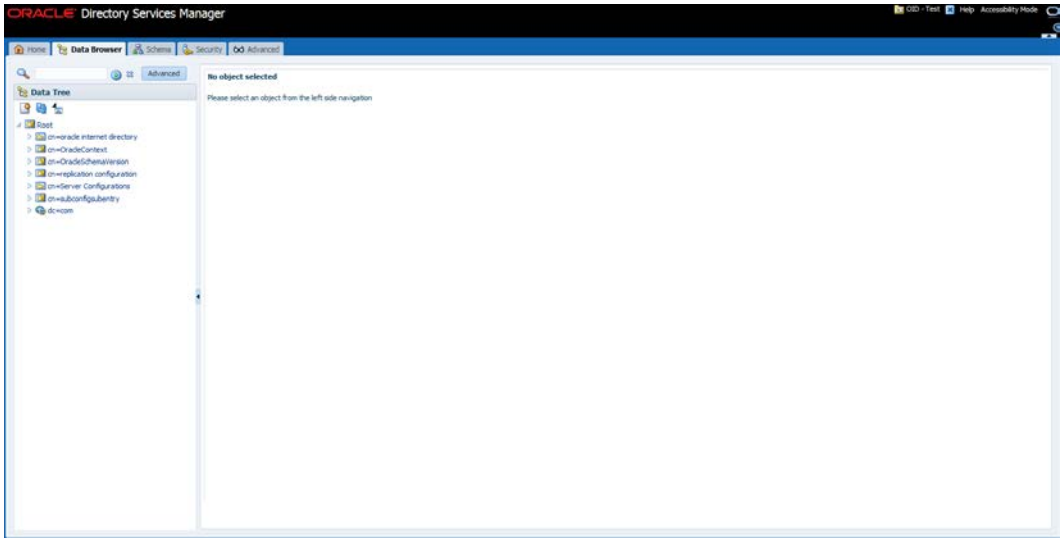
> **Note:** If you are using the above LDIF files to set up the users and groups, you must update the 'RESA-oid-create-user.ldif' LDIF file with your password for the 'userpassword' attribute for all the users mentioned in the RESA-oid-create-user.ldif LDIF file. The changes must be done before importing the users LDIF file 'RESA-oid-create-users.ldif' into the LDAP. Once the users are imported into the LDAP, remove the 'userpassword' attribute value from the LDIF file. Refer to the *Oracle Internet Directory Administration Guide* for OID password policies for setting up passwords.

> **Note:** LDIF files can also be imported in other ways, but the steps below are using ODSM console.

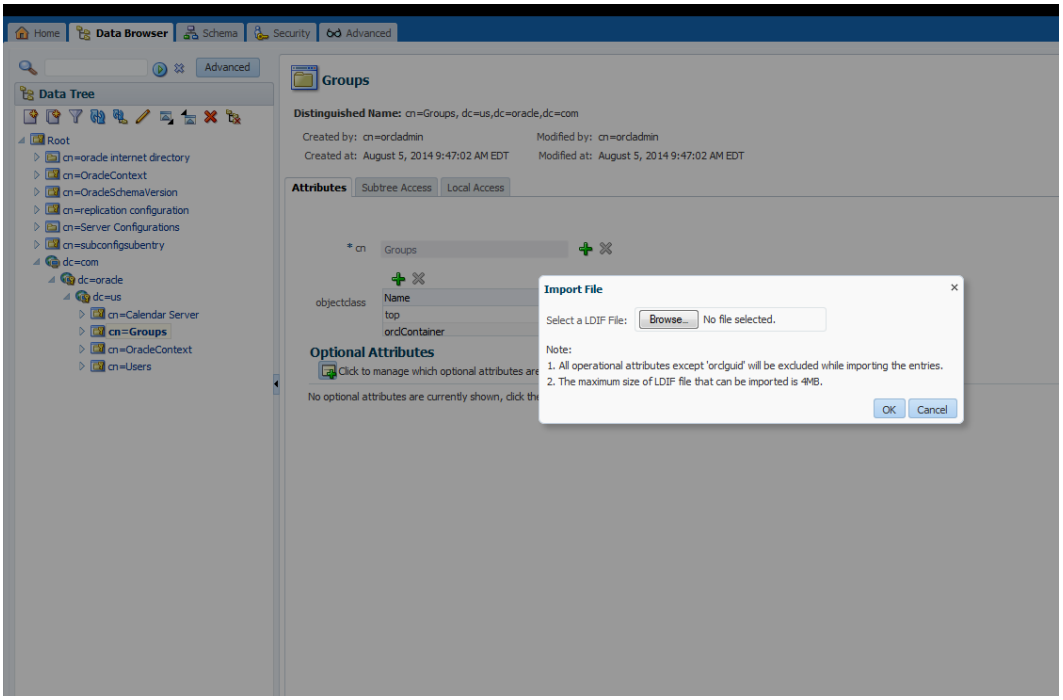
The delete LDIF 'RESA-oid-delete-groups.ldif' can be used as needed if you need to delete the groups created from the groups creation LDIF 'RESA-oid-create-groups.ldif'.

The delete LDIF 'RESA-oid-delete-users.ldif' can be used if you need to delete the users created from the users LDIF file 'RESA-oid-create-users.ldif'.

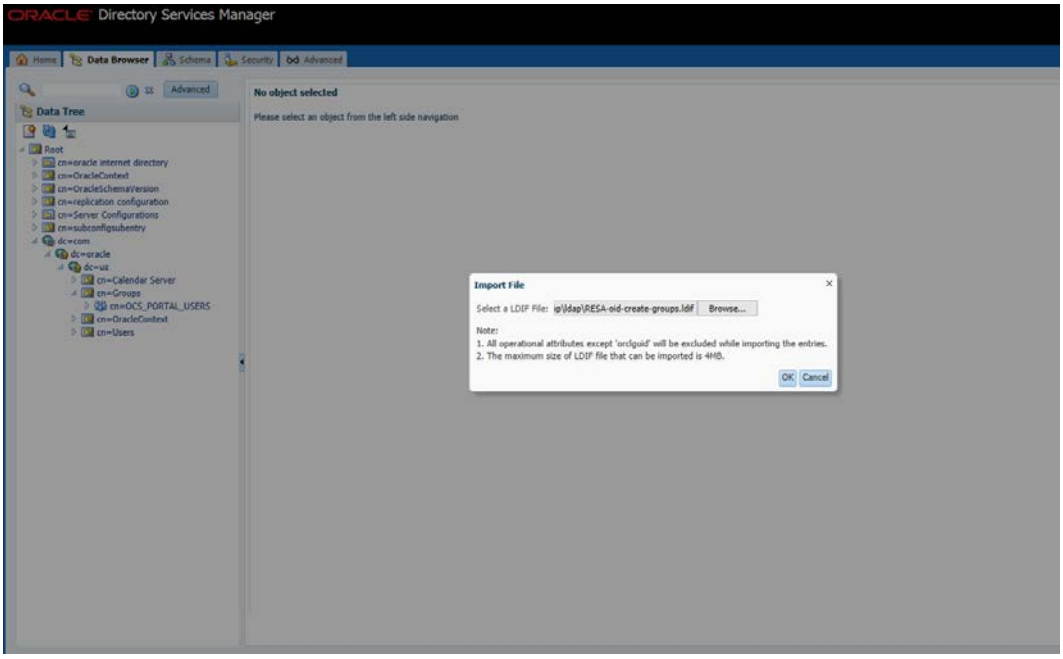
1. Login into ODSM



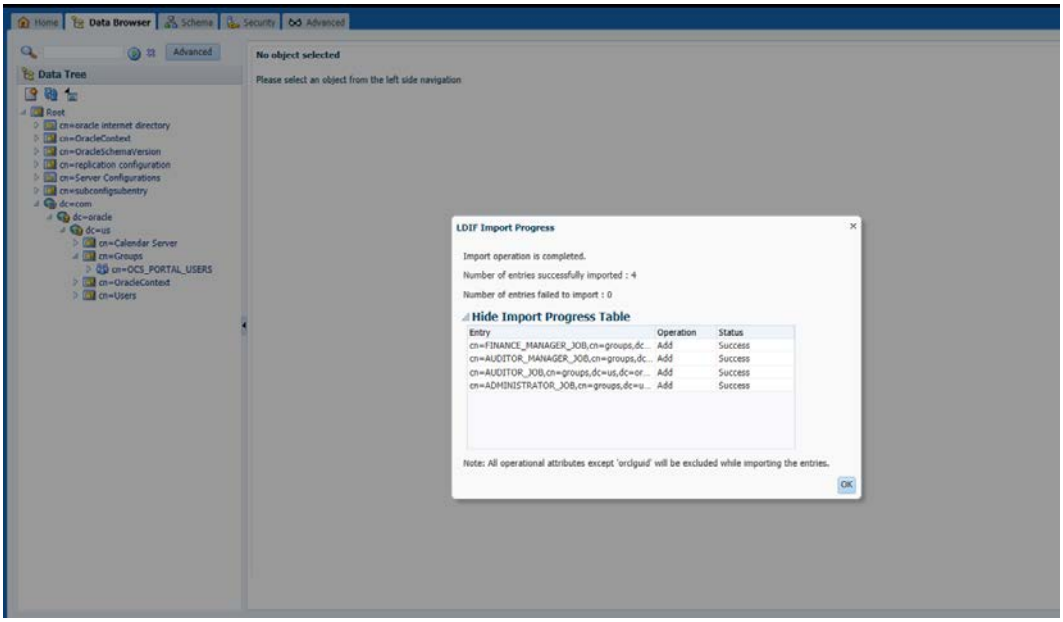
2. Right click cn=Groups and select Import LDIF. Below pop up appears.



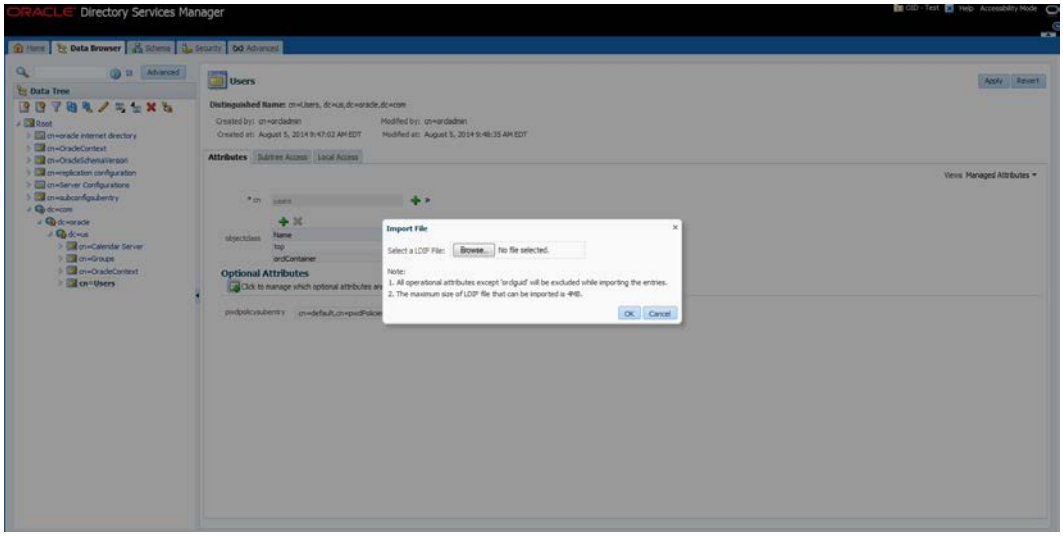
3. Click **Browse.** Select the LDIF file 'RESA-oid-create-groups.ldif' which has been downloaded from the media. Click **OK**.



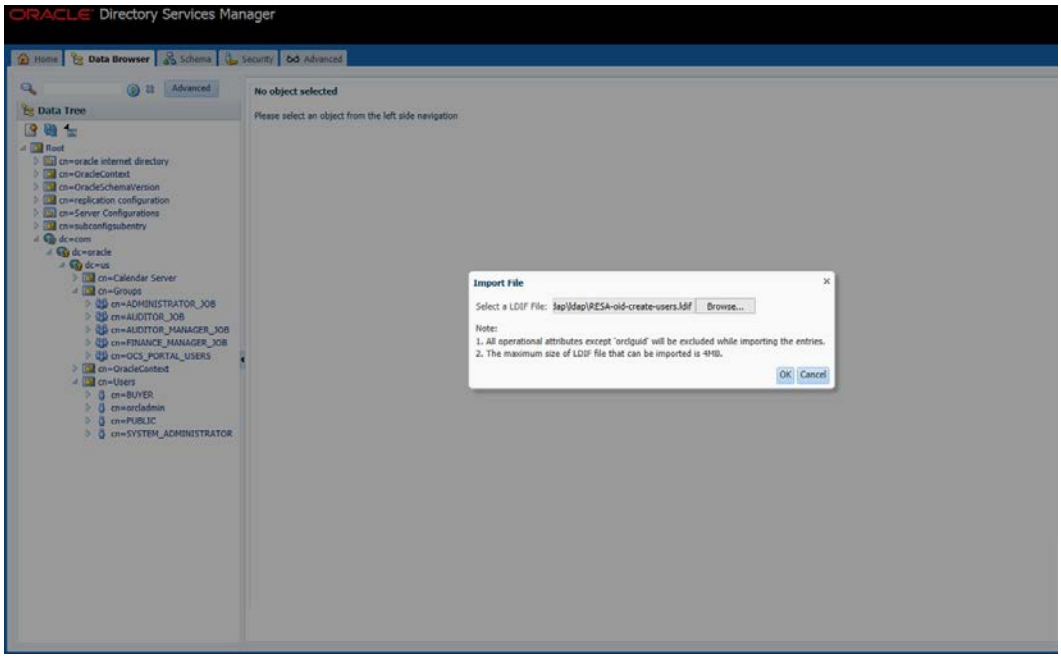
4. You should see the entries successfully imported as shown in the screenshot. The following Groups will be imported in the LDAP.



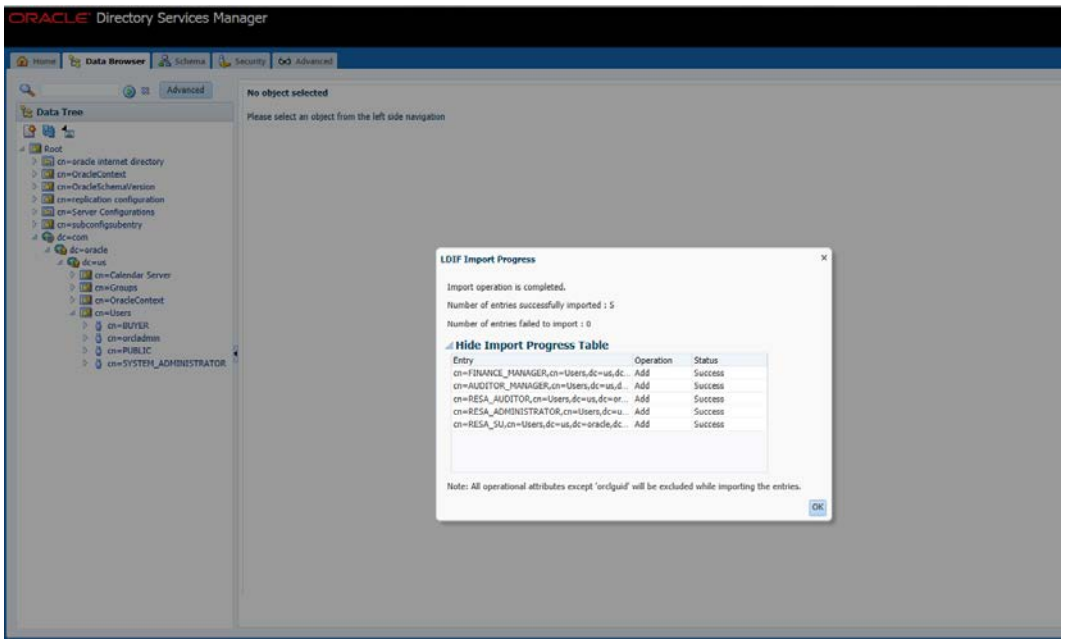
5. Verify the Groups are available at cn=Groups,dc=us,dc=oracle,dc=com.
6. Go to cn=Users,dc=us,dc=oracle,dc=com. Right Click cn=Users and select Import LDIF.



7. Click **Browse** and select the LDIF file RESA-oid-create-users.ldif to import the Users in LDAP.

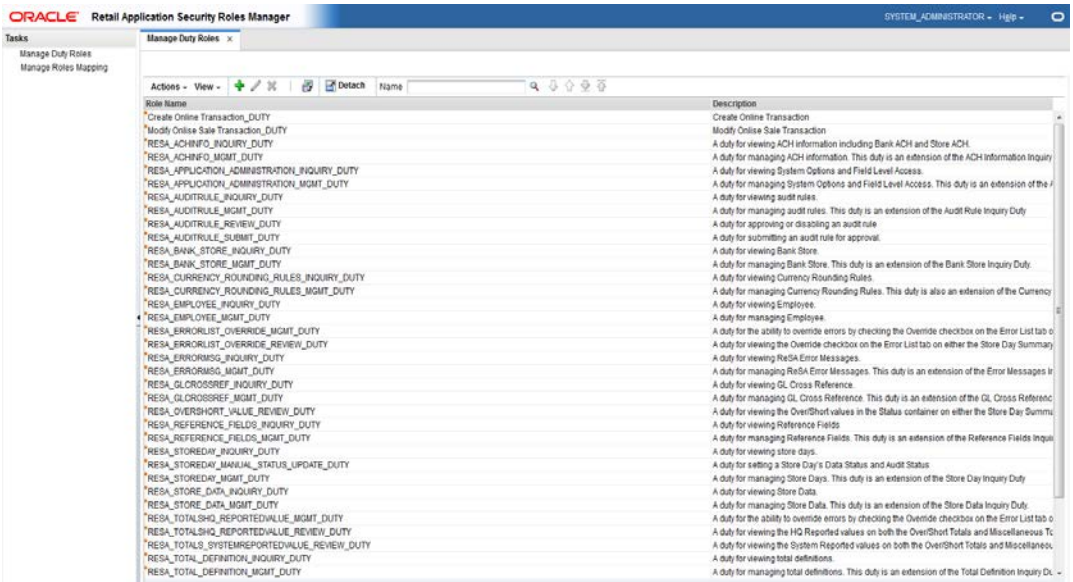


8. You should see the entries successfully imported as shown in the screenshot. The following Users will be imported in the LDAP.



Retail Application Security Roles Manager

Retail Application Security Roles Manager (RASRM) is a tool to facilitate the customization of default RGBU role mappings to suit your business role model. This new application can be deployed along with the ReSA application to manage the application policies of ReSA. A new installer screen is added, so you can opt for this application and this gets deployed to the managed server of the ReSA application. Once deployment is done, you should be able to access this application from the main page of ReSA. You can modify the application roles and their mappings to enterprise roles from RASRM (application shown below).



Only the user with System Administrator privilege can access RASRM from the ReSA application.

As part of the Retail Sales Audit Application install, RASRM gets installed with one default role SYSTEM_ADMINISTRATOR_JOB role. The same job role will also exist in ReSA's jazn-data.xml file. The below options can be used for the set up.

Option 1:

Create the SYSTEM_ADMINISTRATOR_JOB role in your LDAP and assign that role to a user who intends to execute the role mapping process.

Option 2:

Create a Job role in your LDAP and map the intended job role in the LDAP to the SYSTEM_ADMINISTRATOR_JOB role using enterprise manager.

Since the user is part of the SYSTEM_ADMINISTRATOR_JOB role, the user first access the ReSA application app and then launch RASRM for role mapping from the user menu of the ReSA application.

Note: The SYSTEM_ADMINISTRATOR_JOB role must have been already created if using the sample LDIF files which are provided as part of the Retail Sales Audit Application zip file.

Clustered Installations – Preinstallation Steps

Skip this section if you are not clustering the application server.

1. Make sure that you are able to start and stop the managed servers that are part of the ReSA Cluster from the WebLogic Admin Console.

There are no additional steps before running the installer for Retail Sales Audit.

Run the ReSA Application Installer

Once you have a managed server that is configured and started, you can run the ReSA application installer. This installer configures and deploys the ReSA application.

Note: See Appendix: Oracle Retail Sales Audit Application Installer Screens for details about every screen and field in the application installer.

Note: It is recommended that the installer be run as the same UNIX account which owns the application server ORACLE_HOME files.

1. Change directories to INSTALL_DIR/resa/application.
2. Set the ORACLE_HOME, JAVA_HOME, and WEBLOGIC_DOMAIN_HOME environment variables. ORACLE_HOME should point to your WebLogic installation. . JAVA_HOME should point to the Java JDK 1.7+. This is typically the same JDK which is being used by the WebLogic domain where Application is getting installed. WEBLOGIC_DOMAIN_HOME should point to the full path of the domain into which ReSA will be installed.

3. If a secured datasource is going to be configured you also need to set "ANT_OPTS" so the installer can access the key and trust store that is used for the datasource security:

```
export ANT_OPTS="-Djavax.net.ssl.keyStore=<PATH TO KEY STORE> -
Djavax.net.ssl.keyStoreType=jks -Djavax.net.ssl.keyStorePassword=<KEYSTORE
PASSWORD> -Djavax.net.ssl.trustStore=<PATH TO TRUST STORE> -
Djavax.net.ssl.trustStoreType=jks -
Djavax.net.ssl.trustStorePassword=<TRUSTSTORE PASSWORD>"
```

   An example of this would be:

```
export ANT_OPTS="-
Djavax.net.ssl.keyStore/u00/webadmin/product/identity.keystore -
Djavax.net.ssl.keyStoreType=jks -Djavax.net.ssl.keyStorePassword=retail123 -
Djavax.net.ssl.trustStore/u00/webadmin/product/identity.truststore -
Djavax.net.ssl.trustStoreType=jks -
Djavax.net.ssl.trustStorePassword=retail123"
```

4. 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.
5. Run the install.sh script. This launches the installer. After installation is completed, a detailed installation log file is created (resa14install.<timestamp>.log). See Appendix: Oracle Retail Sales Audit Application Installer Screens for illustrations of installer screens and details about what information needs to be entered on each screen.

Resolving Errors Encountered During Application Installation

If the application installer encounters any errors, it halts execution immediately. You can run the installer in silent mode so that you do not have to re-enter the settings for your environment. See Appendix: Installer Silent Mode in this document for instructions on silent mode.

See Appendix: Common Installation Errors in this document for a list of common installation errors.

Because the application installation is a full reinstall every time, any previous partial installations are overwritten by the successful installation.

Test the ReSA Application

After the application installer completes you should have a working ReSA application installation. To launch the application, open a web browser and go to http://host:httpport/ResaPortal

Examples:

http://myhost:23303/ ResaPortal

- You should use a user/password that you built in the previous section of this install guide "Load LDIF files in LDAP".

  The default, preloaded user supplied in the LDIF scripts for testing this installed application is RESA_SU; the password is <the password which you have given in the LDIF file RESA-oid-create-users.ldif as part of loading LDIF files into the LDAP>.

Online Help

The application installer automatically installs Online Help to the proper location. It is accessible from the help links within the application.

REST Web Service Disable/Re-enable

If you want to disable or enable RST web services for Merchandising Mobile, perform the following procedures.

Disable REST Web Services war

1. Login to the WebLogic Administration console with username/password.
2. Click the Deployments in the domain structure panel which will list all the applications deployed under that domain.
3. In Summary of Deployments click resa14 application.
4. Click the Target tab and click **Lock & Edit**.
5. Check the ResaReSTServices under Target Assignments and click **Change Targets**.
6. Uncheck the server and click **Yes**.
7. Click **Activate Changes** for the changes to become effective.

Re-enable REST Web Services war

1. Login to the WebLogic Administration console with username/password.
2. Click the Deployments in the domain structure panel which will list all the applications deployed under that domain.
3. In Summary of Deployments click resa14 application.
4. Click the Target tab and click **Lock & Edit**.
5. Check the ResaReSTServices under Target Assignments and click Change Targets.
6. Check the server and click **Yes**.
7. Click **Activate Changes** for the changes to become effective.

Single Sign-On

Skip this section if ReSA is not used within an Oracle Single Sign-On environment.

> **Note:** This section assumes the Oracle WebLogic Server has already been registered with the Oracle Access Manager (OAM) via the oamreg tool. See the Oracle Single Sign-On (OAM using webgate) documentation for details.

If you are using ReSA in an Oracle Single Sign-On environment, then the ReSA root context must be protected. Modify the following files.

- mod_wl_ohs.conf located in <WEBLOGIC_HOME>/Oracle_WT1/instances/instance1/config/OHS/ohs1

LoadModule weblogic_module "${ORACLE_HOME}/ohs/modules/mod_wl_ohs.so"

<IfModule weblogic_module>

</IfModule>

```
<Location /console>
        WebLogicHost <weblogichostname>
        WebLogicPort <AdminServerPort>
        SetHandler weblogic-handler
</Location>

<Location / ResaPortal-Portal-context-root />
        WebLogicHost <weblogichostname>
        WebLogicPort <resaserverport>
        SetHandler weblogic-handler
</Location>

<Location /adfAuthentication>
        WebLogicHost <weblogichostname>
        WebLogicPort <resaserverport>
        SetHandler weblogic-handler
</Location>
```

> **Note:** In the above, modify 'ResaPortal-Portal-context-root' with the context root name used for installing the ReSA Application.

5

Operational Insights Installation Tasks (Optional)

This section provides the details on how to configure Oracle Retail Sales Audit (ReSA) Operational Insights dashboards and reports installation. This is an optional section as you can choose not to use Oracle Retail Sales Audit (ReSA) Operational Insights. Single Sign On configuration for ReSA and OBIEE is mandatory for configuring Operational Insights in production environment.

Install Oracle BI

For step-by-step instructions on how to install and configure Oracle BI EE, see the "Installing Oracle Business Intelligence" chapter of the *Oracle BI EE Installation Guide*.

Installing Operational Insights 14.1

Configure the Repository (rpd)

Complete the following steps to configure the repository:

1. Stop Oracle BI services by executing opmnctl.bat or opmnctl stopall from <BI_INSTALL_DIRECTORY>\instances\instance1\bin.
2. Update the configuration file located at <BI_INSTALL_DIRECTORY>\instances\instance1\config\OracleBIServerComponent\coreapplication_obis1\NQSConfig.INI. Add a new line under the [REPOSITORY] section. For example:

   ```
   [REPOSITORY]
   Star = Operational_Insight.rpd, DEFAULT;
   ```

3. Other default repositories should be commented out in the NQSConfig.INI. For example:

   ```
   [REPOSITORY]
   Star = Operational_Insights.rpd, DEFAULT;
   #Star = SampleAppLite.rpd, DEFAULT;
   ```

4. Change the following setting from FMW_UPDATE_ROLE_AND_USER_REF_GUIDS =

   ```
   NO;
   to
   FMW_UPDATE_ROLE_AND_USER_REF_GUIDS= YES;
   ```

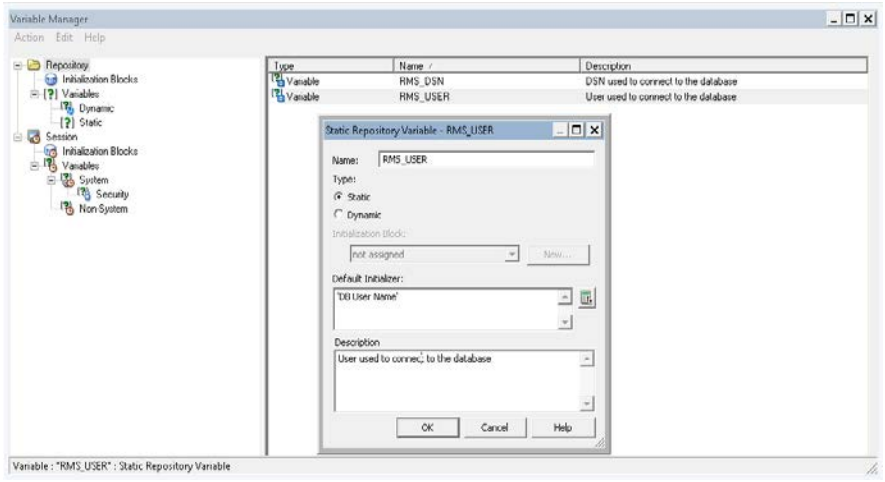
5. Save and close NQSConfig.INI.
6. Make sure that the tnsnames.ora file exists under <BI_INSTALL_DIRECTORY>\Oracle_BI1\network\admin and the file has an entry of the database used by Operational Insights.
7. Proceed to set up the database connection.

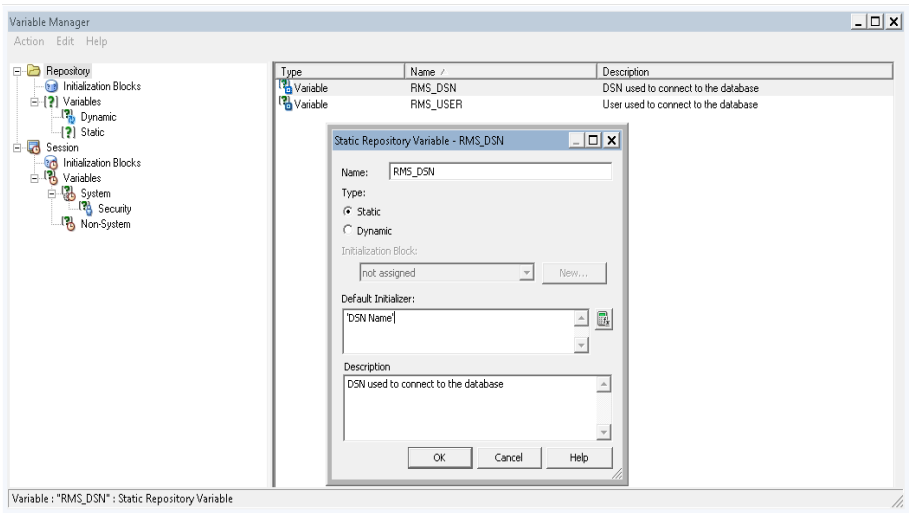
Set up the Database Connection

Refer to the "Configuring Repositories" chapter of the *Oracle BI EE System Administrator's Guide* for additional details.

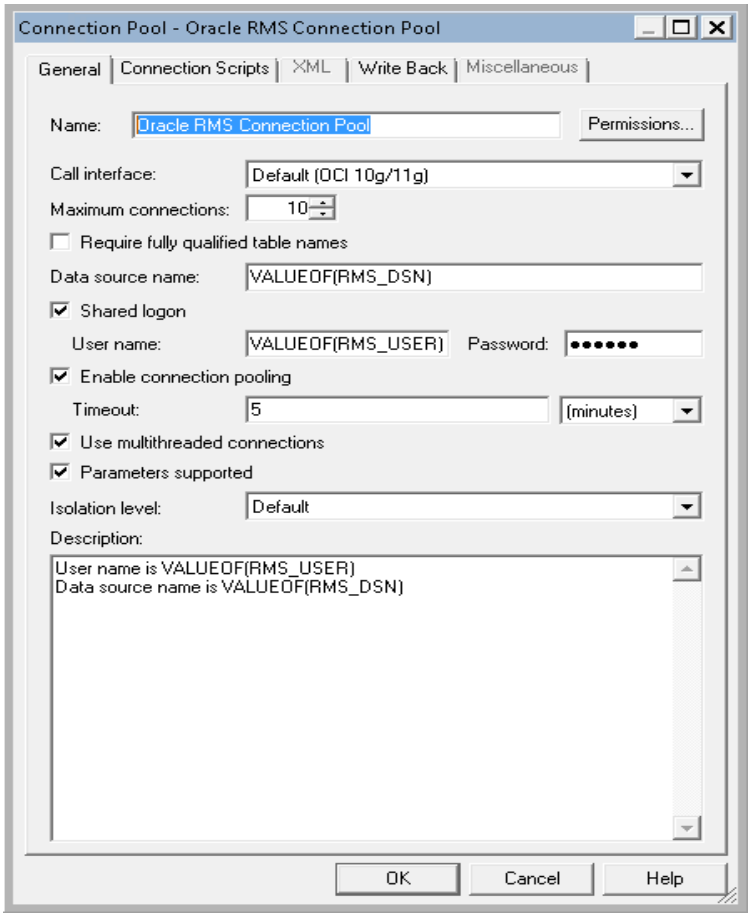
> **Note:** The screen illustrations in the following steps are only examples. The screens that appear depend on the set up of your system.

1. The Rpd.zip is located under <INSTALL DIR>\ application/resa14/OperationalInsights\Rpd and unzip the Rpd.zip to obtain Operational_Insight.rpd along with Rpd_post_install.txt file and proceed with DB Connection setup.
2. This change requires moving the rpd to a Microsoft Windows system which has Oracle BI EE installed. Rpd is located at <BI_INSTALL_DIRECTORY>\instances\instance1\bifoundation\OracleBIServerComponent\coreapplication_obis1\repository.
3. Once the Operational_Insights.rpd is moved to a Microsoft Windows system, open it using the Oracle BI Server Administration tool.
4. When prompted for the password, refer to the RPD_post_install.txt
5. At this time the password of the rpd can be changed if desired. For more details on changing the password refer to the chapter, "Managing Oracle BI Repository Files" of the *Oracle BI EE Metadata Repository Builder's Guide*.
6. When the rpd is opened, from the menu, go to Manage > Variables.
7. Under Repository Static variables, edit RMS_USER with main RMS schema username(for example, RMS01) and RMS_DSN with Data Source Name of the RMS Database by double clicking on RMS_USER and RMS_DSN options.





8. In the Physical Layer, open the Connection Pool (Oracle RMS Connection Pool) under "Oracle RMS OLTP" and update the password for the RMS User. The following is a sample of the Oracle RMS Connection Pool screen.



9. Save the Operational_Insight.rpd file.
10. Make sure tnsnames.ora file exists under <BI_INSTALL_DIRECTORY>\Oracle_BI1\network\admin and the file has an entry of the database which is used by Operational Insights.

11. Test the database connection by right-clicking on any of the tables in the Physical Layer, and select Update Row Count. The number of rows will be shown when that table is highlighted if the database connection is successful.
12. FTP the rpd back to <BI_INSTALL_DIRECTORY>\instances\instance1\bifoundation\OracleBIServerComponent\coreapplication_obis1\repository. Make sure it is copied in binary mode.
13. Proceed to the next section for to configure the catalog.

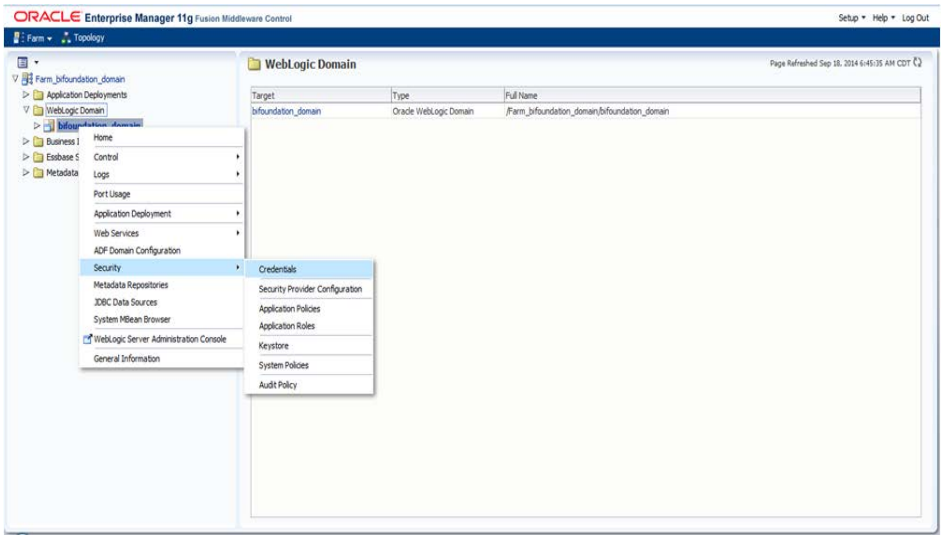
Configure Catalog

Perform the following procedure to configure the catalog:

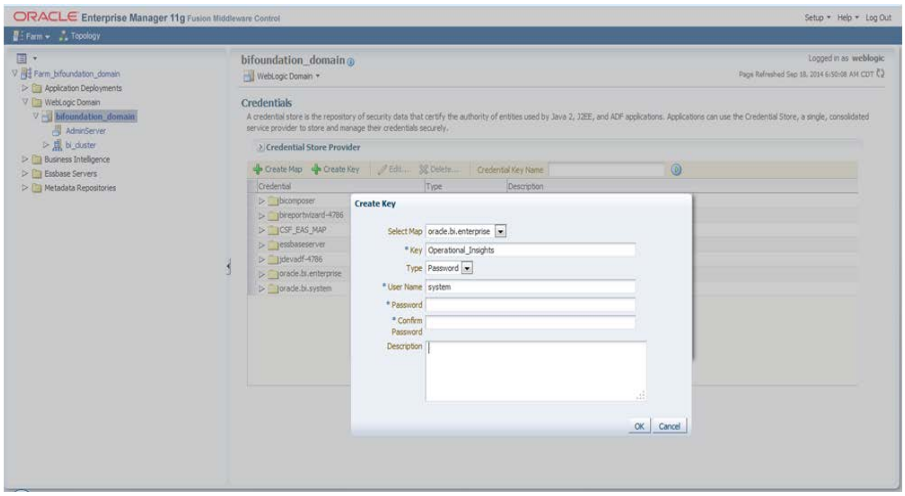
1. The Catalog.zip is located under <INSTALL DIR>\ application\resa14\OperationalInsights\Catalog and unzip the Catalog.zip to obtain the catalog folder "Operational_Insight".
2. Copy the catalog folder to the below directory<BI_INSTALL_DIRECTORY>\instances\instance1\config\OracleBIPresentationServicesComponent\coreapplication_obips1\catalog\
3. Update the instanceconfig.xml file to point to Operational_Insight catalog. Instanceconfig.xml is found at <BI_INSTALL_DIRECTORY>\instances\instance1\config\OracleBIPresentationServicesComponent\coreapplication_obips1. Change the catalog path within the file to point to Operational_Insight. For example:

   ```
   <CatalogPath><BI_INSTALL_DIRECTORY>\instances\instance1\bifoundation\OracleBIPresentationServicesComponent\coreapplication_obips1\catalog\</CatalogPath>
   ```

4. Save and close the instanceconfig.xml.
5. Log in to WebLogic Enterprise Manager (EM) via web browser with the URL as http://<hostname>:7001/em. Note that the 7001 port number can be different for every installation. Log in with the username and password created during Oracle BI EE installation.
6. Go to WebLogic Domain > right click bifoundation_domain > Security > Credentials as shown in the following screen.



7. Click **Create Key**.



8. For Key, enter repository- Operational_Insight. For User Name, enter system. Enter the password of the rpd.
9. Click **OK** and log out.
10. Start Oracle BI services by executing opmnctl.bat or opmnctl startall from <BI_INSTALL_DIRECTORY>\instances\instance1\bin.
11. Test Operational Insights Installation by opening the browser with the URL as http://<hostname>:9704/analytics with the username and password created during Oracle BI EE installation.

    Another alternative for configuring the rpd and catalog through WebLogic, refer to the "Configuring Repositories" chapter in the System Administrator's Guide for Oracle Business Intelligence Enterprise Edition"

Configure Operational Insights Roles

Perform the following procedure to configure ReSA pre-packaged security roles in Operational Insights:

1. Stop all services.
2. Make a backup of <BI_INSTALL_DIRECTORY>\user_projects\domains\bifoundation_domain\config\fmwconfig\system-jazn-data.xml.
3. Copy the pre-packaged Operational Insights system-jazn-data.xml file from <INSTALL DIR>\application\resa14\OperationalInsights\XML

   Into

   <BI_INSTALL_DIRECTORY>\user_projects\domains\bifoundation_domain\config\fmwconfig\.
4. Start all services.

   For more information regards Operational Insights application roles and associated user groups please refer to the *Oracle Retail Merchandising Security Guide Chapter 13 Operational Insights Security Overview.*

   If you already have custom roles defined and wanted to update the existing jazn settings with the Operational Insights specific roles, then you copy the Operational Insights application roles manually into the jazn file.

   For example:

Existing Jazn File:

```
    <app-role>
        <name>UserDefinedRole</name>
        <display-name>Custom User Defined Role</display-name>
        <class>oracle.security.jps.service.policystore.ApplicationRole</class>
        <members>
            <member>
                <class>weblogic.security.principal.WLSGroupImpl</class>
            <name>UserGroups</name>
            </member>
        </members>
        </app-role>
    </app-roles>
```

Now from the packaged system-jazn-data.xml file, copy the Operational Insights application roles into your existing jazn file. The text in italics below is one of the application roles packaged with Oracle Operational Insights.

```
<app-role>
    <name>UserDefinedRole</name>
    <display-name>Custom User Defined Role</display-name>
    <class>oracle.security.jps.service.policystore.ApplicationRole</class>
    <members>
        <member>
        <class>weblogic.security.principal.WLSGroupImpl</class>
        <name>UserGroups</name>
        </member>
    </members>
</app-role>

<app-role>
    <name>Auditor Manager</name>
    <display-name>BI Auditor Manager</display-name>
    <guid>57B470702E7211E48F37AF2A78D27375</guid>
    <class>oracle.security.jps.service.policystore.ApplicationRole</class>
    <members>
        <member>
        <class>weblogic.security.principal.WLSGroupImpl</class>
        <name>AUDITOR_MANAGER_JOB</name>
        </member>
        <member>
        <class>oracle.security.jps.service.policystore.ApplicationRole</class>
        <name>BIConsumer</name>
        <guid>C3CC60E3FB7A11E3BFA201D53921A1EC</guid>
        </member>
    </members>
</app-role>
```

Manage Users and Security

For information regarding creating users, user groups, security roles, permissions and privileges refer to the *Oracle BI EE Security Guide*.

Language Selection with SSO

See the "Enabling SSO Authentication" chapter in the *Oracle BI EE Security Guide* for more information about configuration changes.

Operational Insights dashboards and reports displays the same language as ReSA by accepting the Lang parameter from the ReSA system.

Other Notes

When making any changes to the repository, do it in the offline mode and before saving the changes perform a global consistency check. The global consistency check should not show any errors. Out of the box Operational Insight repository will have some warnings when a Global Consistency Check is done. These warnings do not affect Operational Insight functionality in any way and these are been thoroughly verified.

Operational Insights Configuration

Operating System

RPD_post_install.txt which contain password to protect Operational Insights OBIEE code should be owned by Operational Insight unix user and installed with 600 permission. Password in Oracle BI EE should be changed after installation is done.

- Oracle BI EE Server

  Operational Insights Oracle BI EE metadata files (rpd, catalog, and translation) should be owned by Operational Insights system administrator and installed with 750 permissions.

Infrastructure/Middleware

Oracle BI EE

- Jdbc connection

  Oracle database access through Oracle BI EE can be secured by using a Jdbc connection. The Jdbc connection setup is provided in rpd file. User needs to provide database login credential in the rpd file. The database login credential is stored securely through Oracle BI EE.

Operational Insights Security Role

Operational Insights provides role based security in the current release. The access permission of Operational Insights logical tables for each security role has been defined in Operational Insights rpd file. Within these roles, the user has the privilege to access every subject area of Operational Insights. It is designed for client's testing, developing, or similar non-business activities. Due to the extent of access associated with this role, it should be used cautiously. See the *Oracle Retail Merchandising Security Guide* for additional information on the Operational Insights security role.

Application Server

- Ensure Restrictive Access Control

  Operational Insights provides security roles to ensure restrictive access at object level. WebLogic application server is used to create and maintain these application roles. The definition of roles and the mapping of roles and user groups are stored in system-jazn-data.xml file.

Post-installation Tasks

Enable IFrames

The contextual reports launch from the ADF screen is iFrame based, leveraging ADF contextual event infrastructure. To enable IFrame in OBIEE perform the following procedure:

1. Add the following tags in instanceconfig.xml located at <BI_INSTALL_DIRECTORY>\instances\instance1\config\OracleBIPresentationServicesComponent\coreapplication_obips1

   Within security key of <ServerInstance> </ServerInstance> tag and restart the OBI Presentation Service. Take a backup of the instanceconfig.xml file before adding the below mention code:

   ```
   <Security>
            <InIFrameRenderingMode>allow</InIFrameRenderingMode>
        </Security>
   ```

2. Add the IFrame bursting configurations to the OBI Presentation Server by adding the below mentioned code to the ***web.xml*** located at

   <BI_INSTALL_DIRECTORY>\oracleBI1\bifoundation\web\app\WEB-INF\.

   Restart all OBIEE 11G services to reflect these changes in application.

   ```
   <context-param>
       <param-name>oracle.adf.view.rich.security.FRAME_BUSTING</param-name>
   <param-value>never</param-value>
   </context-param>
   ```

Configuring ReSA URL for In-Context launches of ReSA from Operational Insights Dashboards and Reports

1. Add the below configuration in ActionFrameworkConfig.xml filelocated at <BI_INSTALL_DIRECTORY>\user_projects\domains\bifoundation_domain\config\fmwconfig\biinstances\coreapplication

   ```
   <aliases>
       <location-alias>
       <alias>resahost</alias>
       <actual>http://ReSA Server Name:Port</actual>
       </location-alias>
   </aliases>
   ```

   Note: There would already be a <aliases \> and that should be replaced with the above 6 lines of code.

Remove Background shadow from Operational Insights Reports (Optional)

1. Navigate to <BI_INSTALL_DIRECTORY>\Oracle_BI1\bifoundation\web\msgdb\s_FusionFX\viewui\chart (11.1.1.7.0 and above) and make the below mentioned changes to "dvt-graph-skin.xml" file.

   Original:

```
<Graph>
    <SliceLabel>
        <!-- decimalDigitUsed is false here so that non-percentage pie slices
do not pick up this value
            The DVTChartProcessor sets decimalDigitUsed to true if this is a
percentage pie slice -->
        <ViewFormat decimalDigit="2" decimalDigitUsed="false"/>
    </SliceLabel>
    <Title>
        <!-- attributes supported - fontColor="#0", bold="true", italic="true",
underline="true" -->
        <GraphFont fontColor="#0" bold="true"/>
    </Title>
</Graph>
```

   Modified:

```
<Graph visualEffects="NONE">
<SliceLabel>
<!-- decimalDigitUsed is false here so that non-percentage pie slices do not
pick up this value The DVTChartProcessor sets decimalDigitUsed to true if this
is a percentage pie slice -->
                <ViewFormat decimalDigit="2" decimalDigitUsed="false"/>
            </SliceLabel>
            <Title>
                <!-- attributes supported - fontColor="#0", bold="true",
italic="true", underline="true" -->
                <GraphFont fontColor="#0" bold="true"/>
            </Title>
        </Graph> -
```

Configuring Translation Strings for Supported Languages

1. Run the W_LOCALIZED_STRING_G.sql on the main RMS schema, (say RMS01) to create W_LOCALIZED_STRING_G table which holds the translation strings for names and descriptions of all the metrics and attributes of the Operational Insights rpd for the supported languages. The script can be found under <INSTALL_DIR>/application/resa14/OperationalInsights/DB/Common/DDL.2.Unzip and run the insert scripts present in <INSTALL_DIR>/application/resa14/OperationalInsights/Translations/rpdStringInserts.zip. on the main RMS schema

   Note: If these Insert scripts are going to be run in Unix Environment, before running these scripts run the below command to set NLS_LANG

   setenv NLS_LANG AMERICAN_AMERICA.UTF8

   or

   export NLS_LANG=AMERICAN_AMERICA.UTF8

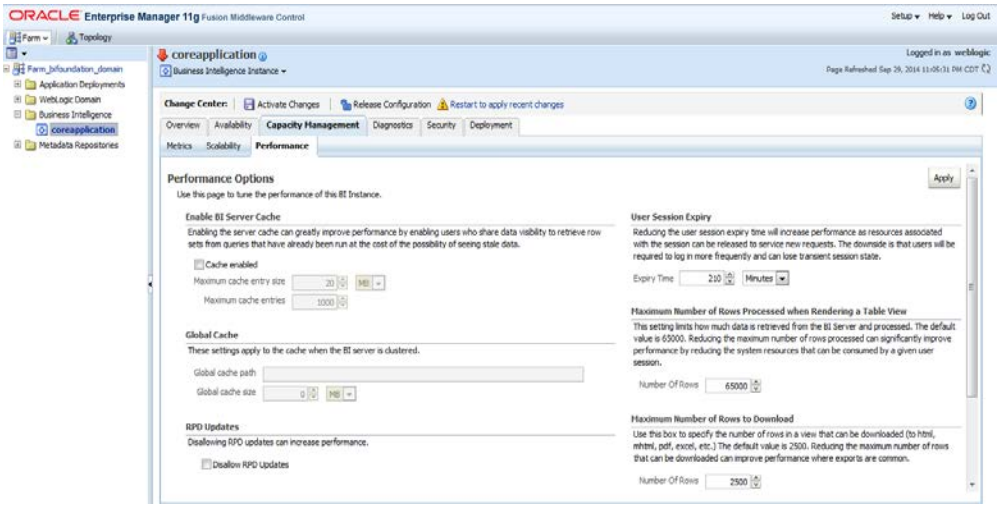
2. For all catalog translation strings, Unzip and copy the content of <INSTALL_DIR>/application/resa14/OperationalInsights/Translations/translations.zip to <OBIEE_HOME>/instances\instance1\bifoundation\OracleBIPresentationServicesComponent\coreapplication_obips1\msgdb

   For more details on Operational Insights translations refer to topic Operational Insights Dashboard and ReSA in the *Oracle Retail Merchandising Implementation Guide*.

Cache Disabling

Cache needs to be disabled on OBIEE to ensure any saved changes on the ReSA screen are reflected immediately in the Operational Insights reports embedded in the ReSA ADF UI. To disable cache in OBIEE follow below steps

1. Log in to WebLogic Enterprise Manager (EM) via web browser with the URL as http://<hostname>:7001/em. Note that the 7001 port number can be different for every installation. Log in with the username and password created during Oracle BI EE installation.
2. Go to Business Intelligence > coreapplication > Capacity Management > Performance as shown in the following screen.



3. Uncheck the "Cache enabled" click on Apply and then click on Activate Changes, once the changed configuration activated, Restart the Presentation services so changes will reflect.
4. Navigate to below path <BI_INSTALL_DIRECTORY>\instances\instance1\config\OracleBIPresentationServicesComponent\coreapplication_obips1
5. Take a backup of the "instanceconfig.xml" file and add the below mention code in between <ServerInstance> </ServerInstance> tag

```
<Cache>
<Query>
<MaxEntries>100</MaxEntries>
<MaxExpireMinutes>1</MaxExpireMinutes>
<MinExpireMinutes>1</MinExpireMinutes>
<MinUserExpireMinutes>1</MinUserExpireMinutes>
</Query>
</Cache>
```

   Once the above code is added in the instanceconfig.xml file, restart the Presentation Service.

6

Patching Procedures

Oracle Retail Patching Process

The patching process for many Oracle Retail products has been substantially revised from prior releases. Automated tools are available to reduce the amount of manual steps when applying patches. To support and complement this automation, more information about the environment is now tracked and retained between patches. This information is used to allow subsequent patches to identify and skip changes which have already been made to the environment. For example, the patching process uses a database manifest table to skip database change scripts which have already been executed.

The enhanced product patching process incorporates the following:

- Utilities to automate the application of Oracle Retail patches to environments.
- Unified patches so that a single patch can be applied against Database, Forms, Java applications, Batch, etc. installations.
- Database and Environment manifests track versions of files at a module level.
- Centralized configuration distinguishes installation types (Database, Forms, Java, Batch, etc.).
- Patch inventory tracks the patches applied to an environment.

These enhancements make installing and updating Oracle Retail product installations easier and reduce opportunities for mistakes. Some of these changes add additional considerations to patching and maintaining Oracle Retail product environments. Additional details on these considerations are found in later sections.

Supported Products and Technologies

With version 14.1, several additional products and technologies are supported by the enhanced patching process. The utilities, processes and procedures described here are supported with the following products and listed technologies:

Product	Supported Technology
Oracle Retail Merchandising System (RMS)	▪ Database scripts ▪ Batch scripts ▪ RETL scripts ▪ Data Conversion Scripts ▪ Forms ▪ BI Publisher Reports
Oracle Retail Warehouse Management System (RWMS)	▪ Database scripts ▪ Batch scripts ▪ Forms ▪ BI Publisher Reports

Product	Supported Technology
Oracle Retail Price Management (RPM)	▪ Database scripts (included with RMS) ▪ Java Application ▪ Batch scripts
Oracle Retail Invoice Matching (ReIM)	▪ Database scripts (included with RMS) ▪ Java Application ▪ Batch scripts
Oracle Retail Allocation	▪ Database scripts (included with RMS) ▪ Java Application ▪ Batch scripts
Oracle Retail Sales Audit (ReSA)	▪ Database scripts (included with RMS) ▪ Java Application
Oracle Retail Analytics (RA)	▪ Database scripts
Oracle Retail Advanced Science Engine (ORASE)	▪ Database scripts ▪ Batch scripts
Oracle Retail Application Security Role Manager (RASRM)	▪ Java Application

Patch Concepts

During the lifecycle of an Oracle Retail environment, patches are applied to maintain your system. This maintenance may be necessary to resolve a specific issue, add new functionality, update to the latest patch level, add support for new technologies, or other reasons.

A patch refers to a collection of files to apply to an environment. Patches could be cumulative, such as the 14.1.0 or 14.1.1 release, or incremental, such as a hot fix for just a few modules. Patches may contain updates for some or all components of a product installation including database, application code, forms, and batch. In a distributed architecture the same patch may need to be applied to multiple systems in order to patch all of the components. For example, if a patch contains both database and application changes, the patch would need to be applied to both the database server and the application server.

The top-level directory for the installation of an Oracle Retail product is referred to as the RETAIL_HOME. Underneath RETAIL_HOME are all of the files related to that product installation, as well as configuration and metadata necessary for the Oracle Retail Patch Assistant to maintain those files. In some cases the runtime application files also exist under RETAIL_HOME. For example, the compiled RMS forms, compiled RMS batch files, or Java Application batch scripts.

Patching Utility Overview

Patches are applied and tracked using utilities that are specifically designed for this purpose. The primary utility is described briefly below and additional information is available in later sections.

Oracle Retail Patch Assistant (ORPatch)

ORPatch is the utility used to apply patches to an Oracle Retail product installation. It is used in the background by the installer when creating a new installation or applying a cumulative patch. It is used directly to apply an incremental patch to an environment.

Oracle Retail Merge Patch (ORMerge)

ORMerge is a utility to allow multiple patches to be combined into a single patch. Applying patches individually may require some steps to be repeated. Merging multiple patches together allows these steps to be run only once. For example, applying several incremental patches to database packages will recompile invalid objects with each patch. Merging the patches into a single patch before applying them will allow invalid objects to be recompiled only once.

Oracle Retail Compile Patch (ORCompile)

ORCompile is a utility to compile components of Oracle Retail products outside of a patch. It allows RMS Forms, RMS Batch, and RWMS Forms to be fully recompiled even if no patch has been applied. It also contains functionality to recompile invalid database objects in product schemas.

Oracle Retail Deploy Patch (ORDeploy)

ORDeploy is a utility to deploy components of Oracle Retail Java products outside of a patch. It allows RPM, ReIM, Allocation and ReSA java applications to be redeployed to WebLogic even if a patch has not been applied. It contains functionality to optionally include or not include Java customizations when redeploying.

Changes with 14.1

Many products and technologies are supported by the enhanced patching process for the first time in 14.1. In those cases all of the content in this chapter is new with 14.1.

MMHOME changed to RETAIL_HOME

For RMS and RWMS, which were previously supported in 14.0, there is a change when using ORPatch and related tools. Previously the MMHOME environment variable was used to refer to the RMS and RWMS installation area. Starting with 14.1, RETAIL_HOME is now used to refer to the installation area. So where previously it was necessary to set MMHOME before executing ORPatch, you must now set RETAIL_HOME.

> **Note:** RMS Batch continues to use MMHOME to refer to the area where batch is installed, and requires it to be set when executing batches. The change to using RETAIL_HOME relates only to ORPatch and related utilities.

Java batch script location

For Java products with batch scripts, starting with 14.1 the location of batch scripts has been changed to $RETAIL_HOME/<app>-batch. Previously batch scripts were stored

within the WebLogic domain in the retail directory. Credential store files continue to be stored within the WebLogic domain.

Patching Considerations

Patch Types

Oracle Retail produces two types of patches for their products: cumulative and incremental.

Cumulative Patches

A cumulative patch includes all of the files necessary to patch an environment to a specific level or build a new environment at that level. Examples of cumulative patches would be 14.1.1, 14.1.2, and so on. Cumulative patches come with a standard Oracle Retail installer and so can be applied to an environment with the installer rather than with ORPatch or other utilities.

Incremental Patches

An incremental patch includes only selected files necessary to address a specific issue or add a feature. Examples of incremental patches would be a hot fix for a specific defect. Incremental patches do not include an installer and must be applied with ORPatch.

Incremental Patch Structure

An Oracle Retail incremental patch generally contains several files and one or more subdirectories. The subdirectories contain the contents of the patch, while the individual files contain information about the patch and metadata necessary for patching utilities to correctly apply the patch. The most important files in the top-level directory are the README.txt, the manifest files.

README File

The README.txt file contains information about the incremental patch and how to apply it. This may include manual steps that are necessary before, after or while applying the patch. It will also contain instructions on applying the patch with ORPatch.

Manifest Files

Each patch contains manifest files which contain metadata about the contents of a patch and are used by ORPatch to determine the actions necessary to apply a patch. Patches should generally be run against all installations a product in an environment, and ORPatch will only apply the changes from the patch that are relevant to that installation.

Note: Cumulative patches use a different patch structure because they include a full installer which will run ORPatch automatically.

Version Tracking

The patching infrastructure for 14.1 tracks version information for all files involved with a product installation. The RETAIL_HOME now contains files which track the revision of all files within the RETAIL_HOME including batch, forms, database, Java archives and other files. In addition, records of database scripts that have been applied to the product database objects are kept within each database schema.

Apply all Patches with Installer or ORPatch

In order to ensure that environment metadata is accurate all patches must be applied to the Oracle Retail product installation using patching utilities. For cumulative patches this is done automatically by the installer. For incremental patches ORPatch must be used directly. This is especially important if database changes are being applied, in order to ensure that the database-related metadata is kept up-to-date.

Environment Configuration

A configuration file in $RETAIL_HOME/orpatch/config/env_info.cfg is used to define the details of a specific Oracle Retail environment. This file defines:

- The location of critical infrastructure components such as the ORACLE_HOME on a database or middleware server.
- The location of Oracle Wallets to support connecting to the database users.
- The type of file processing which is relevant to a particular host. For example, if this is a host where database work should be done, or a host where batch compilation should be done, a host where Java applications should be deployed, etc. This allows a single database, forms and batch patch to be run against all types of hosts, applying only the relevant pieces on each server.
- Other configuration necessary to determine proper behavior in an environment.

Retained Installation Files

The RETAIL_HOME location of an Oracle Retail product installation contains all of the files associated with that installation. This can include database scripts, Java files, Forms, Batch, RETL and Data Conversion files as with previous versions and also includes all database scripts. This allows objects to be reloaded during patching, including any necessary dependencies.

Reloading Content

In order to ensure that database contents and generated files exactly match patched versions, when applying cumulative patches some content is regenerated even if it does not appear to have changed.

On a cumulative patch this includes:

- All re-runnable database content will be reloaded
  - Packages and Procedures
  - Database Types (excluding RIB objects)
  - Control scripts
  - Triggers
  - WebService jars and packages
  - Form Elements
- All RMS and RWMS forms files will be recompiled
- All RMS batch files will be recompiled

When applying incremental patches, only changed files will be reloaded. However this does not apply to RMS batch, which is fully recompiled with any change.

Java Hotfixes and Cumulative Patches

When applying cumulative patches to Java applications components with ORPatch, all hotfixes related to base product ear files included with the patch will be rolled back. This increases the likelihood of a successful deployment because hotfixes may not be compatible with updated product ear files, or may already be included with the ear. Before applying a cumulative patch to Java applications, check the patch documentation to determine which hotfixes are not included in the ear. Then work with Oracle Support to obtain compatible versions of the fixes for the updated ear version. In some cases this may be the same hotfix, in which case it can be re-applied to the environment. In other cases a new hotfix may be required.

Backups

Before applying a patch to an environment, it is extremely important to take a full backup of both the RETAIL_HOME file system and the Oracle Retail database. Although ORPatch makes backups of files modified during patching, any database changes cannot be reversed. If a patch fails which contains database changes, and cannot be completed, the environment must be restored from backup.

Disk Space

When patches are applied to an environment, the old version of files which are updated or deleted are backed up to $RETAIL_HOME/backups/backup-<timestamp>. When applying large patches, ensure there is sufficient disk space on the system where you unzip the patch or the patching process may fail. Up to twice as much disk space as the unzipped patch may be required during patching.

In addition to backups of source files, the existing compiled RMS or RWMS Forms and RMS Batch files are saved before recompilation. These backups may be created during patches:

- Batch 'lib' directory in $RETAIL_HOME/oracle/lib/bin-<timestamp>
- Batch 'proc' directory in $RETAIL_HOME/oracle/proc/bin-<timestamp>
- Forms 'toolset' directory in $RETAIL_HOME/base/toolset/bin-<timestamp>
- Forms 'forms' directory in $RETAIL_HOME/base/forms/bin-<timestamp>

Periodically both types of backup files can be removed to preserve disk space.

Patching Operations

Running ORPatch

ORPatch is used to apply patches to an Oracle Retail product installation. When applying a patch which includes an installer, ORPatch does not need to be executed manually as the installer will run it automatically as part of the installation process. When applying a patch that does not include an installer, ORPatch is run directly.

ORPatch performs the tasks necessary to apply the patch:

- Inspects the patch metadata to determine the patch contents and patch type.
- Reads the environment configuration file to determine which product components exist in this installation.
- Assembles a list of patch actions which will be run on this host to process the patch.
- Executes pre-checks to validate that all patch actions have the necessary configuration to proceed.
- Compares version numbers of files from the patch against the files in the environment.
- Backs up files which will be updated.
- Copies updated files into the installation.
- Loads updated files into database schemas, if applicable.
- Recompiles RMS batch, if applicable.
- Recompiles RMS forms, if applicable.
- Constructs updated Java archives and deploys them to WebLogic, if applicable
- Updates Java batch files and libraries, if applicable
- Records the patch in the patch inventory.

If a patch does not contain updated files for the database or system, no action may be taken. If a previously failed ORPatch session is discovered, it will be restarted.

Preparing for Patching

Before applying a patch to your system, it is important to properly prepare the environment.

Single Patching Session

It is extremely important that only a single ORPatch session is active against a product installation at a time. If multiple patches need to be applied, you can optionally merge them into a single patch and apply one patch to the environment. Never apply multiple patches at the same time.

Shutdown Applications

If a patch updates database objects, it is important that all applications are shutdown to ensure no database objects are locked or in use. This is especially important when applying changes to Oracle Retail Integration Bus (RIB) objects as types in use will not be correctly replaced, leading to "ORA-21700: object does not exist or marked for delete" errors when restarting the RIB.

Backup Environment

Before applying a patch to an environment, it is important to take a full backup of both the RETAIL_HOME file system and the retail database. Although ORPatch makes

backups of files modified during patching, any database changes cannot be reversed. If a patch which contains database changes fails and cannot be completed, the environment must be restored from backup.

Log Files

When applying a patch, ORPatch will create a number of log files which contain important information about the actions taken during a patch and may contain more information in the event of problems. Log files are created in the $RETAIL_HOME/orpatch/logs directory. Logs should always be reviewed after a patch is applied.

After a patch session the log directory will contain at a minimum an ORPatch log file and may also contain other logs depending on the actions taken. The following table describes logs that may exist.

Log File	Used For
orpatch-<date>-<time>.log	Primary ORPatch log file
detail_logs/dbsql_<component>/invalids/*	Details on the errors causing a database object to be invalid
detail_logs/analyze/details	Detail logs of files that will be created/updated/removed when a patch is applied
detail_logs/compare/details	Detail logs of the differences between two sets of environment metadata
orpatch_forms_<pid>_child_<num>.log	Temporary logs from a child process spawned to compile forms in parallel. After the child process completes, the contents are append to the primary orpatch log file
detail_logs/forms/rms_frm_toolset/*	Detail logs of the compilation of each RMS Toolset file
detail_logs/forms/rms_frm_forms/*	Detail logs of the compilation of each RMS Forms file
detail_logs/rmsbatch/lib/*	Detail logs of the compilation of RMS Batch libraries
detail_logs/rmsbatch/proc/*	Detail logs of the compilation of RMS Batch programs
detail_logs/dbsql_rms/rms_db_ws_consumer_jars/*	Detail logs of the loadjava command to install RMS WebService Consumer objects
detail_logs/dbsql_rms/rms_db_ws_consumer_libs/*	Detail logs of the loadjava command to install RMS WebService Consumer libraries
detail_logs/forms/rwms_frm_forms/*	Detail logs of the compilation of each RWMS Forms file
detail_logs/dbsql_rwms/rwms_db_sp _jars/*	Detail logs of the loadjava command to install RWMS SP jars

Log File	Used For
detail_logs/javaapp_<product>/deploy/*	Detail logs of the deploy of a Java product

Unzip Patch Files

Before executing ORPatch, the patch files must be unzipped into a directory. This directory will be passed to ORPatch as the "-s <source directory>" argument on the command-line when applying or analyzing a patch.

Location of ORPatch

The ORPatch script will be located in $RETAIL_HOME/orpatch/bin.

Command Line Arguments

ORPatch behavior is controlled by several command-line arguments. These arguments may be actions or options. Command and option names can be specified in upper or lower case, and will be converted to upper-case automatically. Arguments to options, for example the source directory patch, will not be modified.

ORPatch command-line actions:

Action	Description
apply	Tells ORPatch to apply a patch, requires the –s option Example: orpatch apply -s $RETAIL_HOME/stage/patch123456
analyze	Tells ORPatch to analyze a patch, requires the –s option Example: orpatch analyze -s $RETAIL_HOME/stage/patch123456
lsinventory	Tells ORPatch to list the inventory of patches that have been applied to this installation
exportmetadata	Tells ORPatch to extract all metadata information from the environment and create a $RETAIL_HOME/support directory to contain it. Requires the –expname option.
diffmetadata	Tells ORPatch to compare all metadata from the current environment with metadata exported from some other environment. Requires the –expname and –srcname options.
revert	Tells ORPatch to revert the files related to a patch, requires the –s option Example: orpatch revert –s $RETAIL_HOME/backups/backup-09302013-153010

Note: An action is required and only one action can be specified at a time.

ORPatch command-line arguments:

Argument	Valid For Actions	Description
-s <source dir>	apply analyze	Specifies where to find the top-level directory of the patch to apply or analyze. The source directory should contain the manifest.csv and patch_info.cfg files.

Argument	Valid For Actions	Description
-new	apply	Forces ORPatch to not attempt to restart a failed ORPatch session
-expname	exportmetadata diffmetadata lsinventory	Defines the top-level name to be used for the export or comparison of environment metadata. When used with lsinventory, it allows an exported inventory to be printed.
-srcname	diffmetadata	Defines the 'name' to use when referring to the current environment during metadata comparisons.
-dbmodules	diffmetadata	When comparing metadata at a module-level, compare the dbmanifest information rather than the environment manifest. This method of comparing metadata is less accurate as it does not include non-database files.
-jarmodules	analyze diffmetadata	When used with analyze, requests a full comparison of the metadata of Java archives included in the patch versus the metadata of the Java archives in the environment. This behavior is automatically enabled when Java customizations are detected in the environment. Analyzing the contents of Java archives allows for detailed investigation of the potential impacts of installing a new Java ear to an environment with customizations. When used with diffmetadata, causes metadata to be compared using jarmanifest information rather than the environment manifest. This provides more detailed information on the exact differences of the content of Java archives, but does not include non-Java files.
-selfonly	apply analyze	Only apply or analyze changes in a patch that relate to orpatch itself. This is useful for applying updates to orpatch without applying the entire patch to an environment.
-s <backup dir>	revert	Specifies the backup from a patch that should be reverted to the environment. This restores only the files modified during the patch, the database must be restored separately or the environment will be out-of-sync and likely unusable.

Analyzing the Impact of a Patch

In some cases, it may be desirable to see a list of the files that will be updated by a patch, particularly if files in the environment have been customized. ORPatch has an 'analyze' mode that will evaluate all files in the patch against the environment and report on the files that will be updated based on the patch.

To run ORPatch in analyze mode, include 'analyze' on the command line. It performs the following actions:

- Identifies files in the environment which the patch would remove.
- Compares version numbers of files in the patch to version numbers of files in the environment.

- Prints a summary of the number of files which would be created, updated or removed.
- Prints an additional list of any files that would be updated which are registered as being customized.
- Prints an additional list of any files which are in the environment and newer than the files included in the patch. These files are considered possible conflicts as the modules in the patch may not be compatible with the newer versions already installed. If you choose to apply the patch the newer versions of modules in the environment will NOT be overwritten.
- If a Java custom file tree is detected, prints a detailed analysis of the modules within Java ear files that differ from the current ear file on the system.
- Saves details of the files that will be impacted in $RETAIL_HOME/orpatch/logs/detail_logs/analyze/details.

This list of files can then be used to assess the impact of a patch on your environment.

To analyze a patch, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Set the JAVA_HOME environment variable if the patch contains Java application files.
   ```
   export JAVA_HOME=/u00/oretail/java_jdk
   ```

   Note: If the JAVA_HOME environment variable is not specified, the value from RETAIL_HOME/orpatch/config/env_info.cfg will be used.
5. Create a staging directory to contain the patch, if it does not already exist.
   ```
   mkdir –p $RETAIL_HOME/stage
   ```
6. Download the patch to the staging directory and unzip it.
7. Execute orpatch to analyze the patch.
   ```
   orpatch analyze -s $RETAIL_HOME/stage/patch123456
   ```
8. Repeat the patch analysis on all servers with installations for this product environment.
9. Evaluate the list(s) of impacted files.

For more information on registering and analyzing customizations, please see the Customization section later in this document.

Applying a Patch

Once the system is prepared for patching, ORPatch can be executed to apply the patch to the environment. The patch may need to be applied to multiple systems if it updates components that are installed on distributed servers.

To apply a patch, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```

3. Set the PATH environment variable to include the orpatch/bin directory
   `export PATH=$RETAIL_HOME/orpatch/bin:$PATH`
4. Set the DISPLAY environment variable if the patch contains Forms.
   `export DISPLAY=localhost:10.0`

   Note: If the DISPLAY environment variable is not specified, the value from RETAIL_HOME/orpatch/config/env_info.cfg will be used.
5. Set the JAVA_HOME environment variable if the patch contains Java application files.
   `export JAVA_HOME=/u00/oretail/java_jdk`

   Note: If the JAVA_HOME environment variable is not specified, the value from RETAIL_HOME/orpatch/config/env_info.cfg will be used.
6. Create a staging directory to contain the patch, if it does not already exist.
   `mkdir –p $RETAIL_HOME/stage`
7. Download the patch to the staging directory and unzip it.
8. Review the README.txt included with the patch. If manual steps are specified in the patch, execute those steps at the appropriate time.
9. Shutdown applications.
10. Execute ORPatch to apply the patch.
    `orpatch apply -s $RETAIL_HOME/stage/patch123456`
11. After ORPatch completes, review the log files in $RETAIL_HOME/orpatch/logs.
12. Repeat the patch application on all servers with installations for this product environment.
13. Restart applications.

Restarting ORPatch

If ORPatch is interrupted while applying a patch, or exits with an error, it saves a record of completed work in a restart state file in $RETAIL_HOME/orpatch/logs. Investigate and resolve the problem that caused the failure, then restart ORPatch.

By default when ORPatch is started again, it will restart the patch process close to where it left off. If the patch process should **not** be restarted, add '-new' to the command-line of ORPatch.

Please note that starting a new patch session without completing the prior patch may have serious impacts that result in a patch not being applied correctly. For example, if a patch contains database updates and batch file changes and ORPatch is aborted during the load of database objects, abandoning the patch session will leave batch without the latest changes compiled in the installation.

Listing the Patch Inventory

After a patch is successfully applied by ORPatch the patch inventory in $RETAIL_HOME/orpatch/inventory is updated with a record that the patch was applied. This inventory contains a record of the patches applied, the dates they were applied, the patch type and products impacted.

To list the patch inventory, perform the following steps:

1. Log in as the UNIX user that owns the product installation.

2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute orpatch to list the inventory.
   ```
   orpatch lsinventory
   ```

Exporting Environment Metadata

ORPatch functionality is driven based on additional metadata that is stored in the environment to define what version of files are applied to the environment, and which database scripts have been applied to database schemas. This environment metadata is used to analyze the impact of patches to environments and controls what actions are taken during a patch. The metadata is stored in several locations depending on the type of information it tracks and in some cases it may be desirable to extract the metadata for analysis outside of ORPatch. For example, Oracle Support could ask for the metadata to be uploaded to assist them in triaging an application problem.

ORPatch provides a capability to export all of the metadata in an environment into a single directory and to automatically create a zip file of that content for upload or transfer to another system. The exact metadata collected from the environment depends on the products installed in the RETAIL_HOME.

ORPatch metadata exported:

Installed Product Component	Exported Metadata	Description
Any	orpatch/config/env_info.cfg orpatch/config/custom_hooks.cfg ORPatch inventory files	ORPatch configuration and settings
Any	All env_manifest.csv and deleted_env_manifest.csv files	Environment manifest files detailing product files installed, versions, customized flags and which patch provided the file
Database Schemas	DBMANIFEST table contents	Database manifest information detailing which database scripts were run, what version and when they were executed
Java Applications	All files from javaapp_<product>/config except jar files	Environment-specific product configuration files generated during installation
Java Applications	Combined export of all META-INF/env_manifest.csv files from all product ear files	Jar manifest information detailing files, versions, customized flags and which patch provided the file
Java Applications	orpatch/config/javaapp_<product>/ant.deploy.properties	Environment properties file created during product installation and used during application deployment
Java Applications	<weblogic_home>/server/lib/weblogic.policy	WebLogic server java security manager policy file

Installed Product Component	Exported Metadata	Description
RMS Batch	orpatch/config/rmsbatch_profile	Batch compilation shell profile
RMS Forms	orpatch/config/rmsforms_profile	Forms compilation shell profile
RWMS Forms	orpatch/cofngi/rwsmforms_profile	Forms compilation shell profile

Exports of environment metadata are always done to the $RETAIL_HOME/support directory. When exporting metadata, you must specify the –expname argument and define the name that should be given to the export. The name is used for the directory within $RETAIL_HOME/support and for the name of the zip file.

To extract an environment's metadata, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute orpatch to export the metadata.
   ```
   orpatch exportmetadata –expname test_env
   ```

This example would export all metadata from the environment to the $RETAIL_HOME/support/test_env directory. A zip file of the metadata would be created in $RETAIL_HOME/support/test_env.zip.

> **Note:** The $RETAIL_HOME/support/<name> directory should be empty or not exist prior to running exportmetadata in order to ensure accurate results.

Comparing Environment Metadata

Once metadata has been exported from an environment, it can be used to compare the environment manifest metadata of two environments. ORPatch provides a capability to compare metadata of the current environment with the exported metadata of another environment. Note that even though there are many types of metadata exported by ORPatch, only environment manifest metadata is evaluated during comparisons. Metadata comparison happens in four phases: product comparison, patch comparison, ORPatch action comparison, and module-level comparison.

Product comparison compares the products installed in one environment with the products installed in another environment. Patch comparison compares the patches applied in one environment with the patches applied in another environment, for common products. This provides the most summarized view of how environments differ. Patches which only apply to products on one environment are not included in the comparison.

Since each patch may impact many files, the comparison then moves on to more detailed analysis. The third phase of comparison is to compare the enabled ORPatch actions between environments. These actions roughly correspond to the installed 'components' of a product. For example, one environment may have database and forms components installed while another has only forms. Action comparison identifies components that are different between environments. The final phase of comparison is at the module level for actions that are common between environments. Modules which exist only on

one environment, or exist on both environments with different revisions, or which are flagged as customized are reported during the comparison.

Differences between environment metadata are reported in a summarized fashion during the ORPatch execution. Details of the comparison results are saved in $RETAIL_HOME/orpatch/logs/detail_logs/compare/details. One CSV file is created for each phase of comparison: product_details.csv, patch_details.csv, action_details.csv and module_details.csv.

In order to be compared by ORPatch, exported metadata must be placed in the $RETAIL_HOME/support directory. The metadata should exist in the same structure that it was originally exported in. For example, if the metadata was exported to $RETAIL_HOME/support/test_env on another system, it should be placed in $RETAIL_HOME/support/test_env on this system.

When reporting differences between two environments, ORPatch uses names to refer to the environments. These names are defined as part of the diffmetadata command. The –expname parameter, which defines the directory containing the metadata, is also used as the name when referring to the exported metadata. The –srcname parameter defines the name to use when referring to the current environment. As an example, if you had exported the 'test' environment's metadata and copied it to the 'dev' environment's $RETAIL_HOME/support/test_env directory, you could run "orpatch diffmetadata -expname test_env -srcname dev_env". The detail and summary output would then refer to things that exist on dev but not test, revisions in the test environment versus revisions in the dev environment, etc.

ORPatch will automatically export the environment's current metadata to $RETAIL_HOME/support/compare prior to starting the metadata comparison.

To compare two environment's metadata, perform the following steps:

1. Export the metadata from another environment using orpatch exportmetadata.
2. Transfer the metadata zip from the other system to $RETAIL_HOME/support.
3. Log in as the UNIX user that owns the product installation.
4. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/dev
   ```
5. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
6. Unzip the metadata zip file.
   ```
   unzip test_env.zip
   ```
7. Execute orpatch to compare the metadata
   ```
   orpatch diffmetadata –expname test_env –srcname dev_env
   ```

This example would compare the current environment against the metadata extracted in $RETAIL_HOME/support/test_env directory.

> **Note:** The $RETAIL_HOME/support/compare directory will be automatically removed before environment metadata is exported at the start of the comparison.

Reverting a Patch

In general it is best to either completely apply a patch, or restore the entire environment from the backup taken before starting the patch. It is important to test patches in test or staging environments before applying to production. In the event of problems, Oracle Retail recommends restoring the environment from backup if a patch is not successful.

> **Note:** Reverting patches in an integrated environment can be extremely complex and there is no fully automated way to revert all changes made by a patch. Restoring the environment from a backup is the recommended method to remove patches.

It is, however, possible to revert small patches using the backups taken by ORPatch during a patch. This will restore only the files modified, and it is still necessary to restore the database if any changes were made to it.

> **Note:** Reverting a patch reverts only the files modified by the patch, and does not modify the database, or recompile forms or batch files after the change.

When multiple patches have been applied to an environment, reverting any patches other than the most recently applied patch is strongly discouraged as this will lead to incompatible or inconsistent versions of modules applied to the environment. If multiple patches are going to be applied sequentially it is recommended to first merge the patches into a single patch that can be applied or reverted in a single operation.

To revert a patch, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Identify the backup directory in $RETAIL_HOME/backups that contains the backup from the patch you want to restore.
   - The backup directory will contain a patch_info.cfg file which contains the name of the patch the backup is from.
   - It is possible to have two directories for the same patch, if ORPatch was updated during the patch. It is not possible to revert the updates to ORPatch. Select the backup directory that does not contain orpatch files.
   - If it is not clear which backup directory to use, restore the environment from backup
5. Execute orpatch to revert the environment using the contents of the backup directory
   ```
   orpatch revert –s $RETAIL_HOME/backups/backup-11232013-152059
   ```
6. Restore the database from backup if the patch made database changes
7. Use the orcompile script to recompile forms if the patch included RMS or RWMS forms files
   ```
   orcompile –a RMS –t FORMS
   orcompile –a RWMS –t FORMS
   ```
8. Use the orcompile script to recompile batch if the patch included RMS batch files
   ```
   orcompile –a RMS –t BATCH
   ```
9. Use the ordeploy script to redeploy the appropriate Java applications if the patch included Java files
   ```
   ordeploy –a RPM –t JAVA
   ordeploy –a REIM –t JAVA
   ordeploy –a ALLOC –t JAVA
   ordeploy –a RESA –t JAVA
   ```

Merging Patches

When patches are applied individually some ORPatch tasks such as compiling forms and batch files or deploying Java archives are performed separately for each patch. This can be time-consuming. An alternative is to use the ORMerge utility to combine several patches into a single patch, reducing application downtime by eliminating tasks that would otherwise be performed multiple times. Patches merged with ORMerge are applied with ORPatch after the merge patch is created.

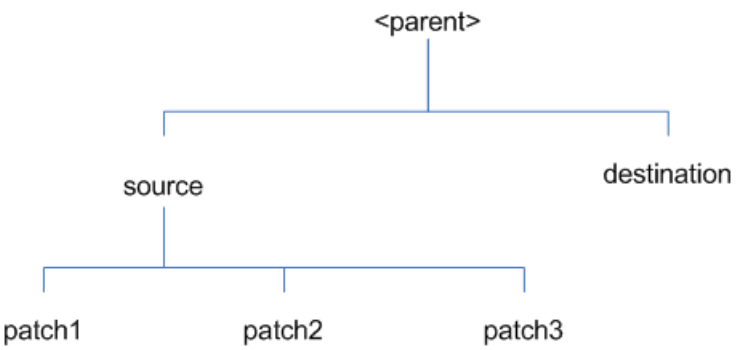
Source and Destination Directories

ORMerge uses source and destination areas in order to merge patch files. The source area is a single directory that contains the extracted patches to merge. The destination area is the location where the merged patch will be created. If a file exists in one or more source patches, only the highest revision will be copied to the merged patch.

The source and destination directories should exist under the same parent directory. That is, both the source and destination directories should be subdirectories of a single top-level directory.

The source directory must have all patches to be merged as immediate child directories. For example if three patches need to be merged the directory structure would look like this:

Source and Destination Directory Example



In the example above, the manifest.csv and patch_info.cfg files for each patch to be merged must exist in source/patch1, source/patch2, and source/patch3.

ORMerge Command-line Arguments

Argument	Required	Description
-s	Yes	Path to source directory containing patches to merge
-d	Yes	Path to destination directory that will contain merged patch
-name	No	The name to give the merged patch. If not specified, a name will be generated. When the merged patch is applied to a system, this name will appear in the Oracle Retail patch inventory.
-inplace	No	Used only when applying a patch to installation files prior to the first installation. See "Patching prior to the first install" in the Troubleshooting section later, for more information.

Running the ORMerge Utility

To merge patches, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Create a staging directory to contain the patches.
   ```
   mkdir –p $RETAIL_HOME/stage/merge/src
   ```
5. Download the patches to the staging directory and unzip them so that each patch is in a separate subdirectory.
6. Review the README.txt included with each patch to identify additional manual steps that may be required. If manual steps are specified in any patch, execute them at the appropriate time when applying the merged patch.
7. Create a destination directory to contain the merged patches.
   ```
   mkdir -p $RETAIL_HOME/stage/merge/dest
   ```
8. Execute ORMerge to merge the patches.
   ```
   ormerge -s $RETAIL_HOME/stage/merge/src –d $RETAIL_HOME/stage/merge/dest –name merged_patch
   ```

The merged patch can now be applied as a single patch to the product installation using ORPatch.

Compiling Application Components

In some cases it may be desirable to recompile RMS Forms, RWMS Forms or RMS Batch outside of a product patch. The ORCompile utility is designed to make this easy and remove the need to manually execute 'make' or 'frmcmp' commands which can be error-prone. ORCompile leverages ORPatch functions to ensure that it compiles forms and batch exactly the same way as ORPatch. In addition ORCompile offers an option to compile invalid database objects using ORPatch logic.

ORCompile takes two required command line arguments each of which take an option. Arguments and options can be specified in upper or lower case.

ORCompile Command Line Arguments

Argument	Description
-a <app>	The application to compile.
-t <type>	The type of application objects to compile

ORCompile Argument Options

Application	Type	Description
RMS	BATCH	Compile RMS Batch programs
RMS	FORMS	Compile RMS Forms
RWMS	FORMS	Compile RWMS Forms

Application	Type	Description
RMS	DB	Compile invalid database objects in the primary RMS schema
RMS	DB-ASYNC	Compile invalid database objects in the RMS_ASYNC_USER schema
ALLOC	DB-ALC	Compile invalid database objects in the Allocations user schema
ALLOC	DB-RMS	Compile invalid database objects in the RMS schema
REIM	DB	Compile invalid database objects in the RMS schema
RME	DB	Compile invalid database objects in the RME schema
ASO	DB	Compile invalid database objects in the ASO schema
RA	DB-DM	Compile invalid database objects in the RA DM schema
RA	DB-RABATCH	Compile invalid database objects in the RA batch schema
RA	DB-RMSBATCH	Compile invalid database objects in the RA RMS batch schema
RA	DB-FEDM	Compile invalid database objects in the RA front-end schema

Note: Compiling RMS type DB, ReIM type DB, and Allocation type DB-RMS, are all identical as they attempt to compile all invalid objects residing in the RMS schema.

Running the ORCompile utility

To compile files, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute orcompile to compile the desired type of files.
   ```
   orcompile –a <app> -t <type>
   ```

ORCompile Examples

Compile RMS Batch.

```
orcompile -a RMS -t BATCH
```

Compile RWMS Forms.

```
orcompile -a RWMS -t FORMS
```

Compile invalid objects in the RA DM schema.

```
orcompile -a RA -t DB-DM
```

Compile invalid objects in the RMS owning schema.

```
orcompile -a RMS -t DB
```

Deploying Application Components

In some cases it may be desirable to redeploy Java applications outside of a product patch. For example, when troubleshooting a problem, or verifying the operation of the application with different WebLogic settings. Another situation might include wanting to deploy the application using the same settings, but without customizations to isolate behavior that could be related to customized functionality.

The ordeploy utility is designed to make this easy and remove the need to re-execute the entire product installer when no configuration needs to change. ORDeploy leverages Oracle Retail Patch Assistant functions to ensure that it deploys applications exactly the same way as ORPatch. In addition ORDeploy offers an option to include or not include custom Java files, to ease troubleshooting.

ORDeploy takes two required command line arguments each of which take an option. Arguments and options can be specified in upper or lower case.

ORDeploy Command Line Arguments

Argument	Description
-a <app>	The application to deploy.
-t <type>	The type of application objects to deploy

ORDeploy Argument Options

Application	Type	Description
ALLOC	JAVA	Deploy the Allocations Java application and Java batch files, including any custom Java files.
ALLOC	JAVANOCUSTOM	Deploy the Allocations Java application and Java batch files, **NOT** including any custom Java files.
REIM	JAVA	Deploy the REIM Java application and Java batch files, including any custom Java files.
REIM	JAVANOCUSTOM	Deploy the REIM Java application and Java batch files, **NOT** including any custom Java files.
RESA	JAVA	Deploy the RESA Java application, including any custom Java files.
RESA	JAVANOCUSTOM	Deploy the RESA Java application, **NOT** including any custom Java files.
RPM	JAVA	Deploy the RPM Java application and Java batch files, including any custom Java files.
RPM	JAVANOCUSTOM	Deploy the RPM Java application and Java batch files, **NOT** including any custom Java files.

Running the ORDeploy utility

To deploy Java applications, perform the following steps:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.

```
export RETAIL_HOME=/u00/oretail/14.1/tst
```

3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute ORDeploy to deploy the desired Java application.
   ```
   ordeploy –a <app> -t <type>
   ```

ORDeploy Examples

Deploy RPM.

```
ordeploy -a RPM -t JAVA
```

Deploy ReIM without including Java customizations.

```
ordeploy -a REIM -t JAVANOCUSTOM
```

Maintenance Considerations

The additional information stored within the RETAIL_HOME and within database schemas adds some considerations when performing maintenance on your environment.

Database Password Changes

Oracle wallets are used to protect the password credentials for connecting to database schemas. This includes all database schemas used during an install. If the password for any of these users is changed the wallet's entry must be updated.

The wallet location is configurable but by default is in the following locations:

Location	Installation Type
$RETAIL_HOME/orpatch/rms_wallet	RMS Database RMS Batch
$RETAIL_HOME/orpatch/rms_wallet_app	RMS Forms
$RETAIL_HOME/orpatch/rwms_wallet	RWMS Database
$RETAIL_HOME/orpatch/rwms_wallet_app	RWMS Forms
$RETAIL_HOME/orpatch/oraso_wallet	ASO Database
$RETAIL_HOME/orpatch/orme_wallet	RME Database
$RETAIL_HOME/orpatch/ra_wallet	RA Database

The wallet alias for each schema will be <username>_<dbname>. Standard mkstore commands can be used to update the password.

For example:

```
mkstore -wrl $RETAIL_HOME/orpatch/rms_wallet –modifyCredential rms_rmsdb rms01
rmspassword
```

This command will update the password for the RMS01 user to 'rmspassword' in the alias 'rms_rmsdb'.

The Oracle wallets are required to be present when executing ORPatch. Removing them will prevent you from being able to run ORPatch successfully. In addition the Oracle wallet location is referenced in the RMS batch.profile, and in the default RMS and RWMS Forms URL configuration, so removing them will require reconfiguration of batch and forms. If batch and forms were reconfigured after installation to use other wallet files, it is possible to backup and remove the wallets, then restore them when running ORPatch.

WebLogic Password Changes

Java wallets are used to protect the password credentials used when deploying Java products. This includes the WebLogic administrator credentials, LDAP connection credentials, batch user credentials and any other credentials used during an install. If the password for any of these users is changed the wallet's entry must be updated, or the Java product installation can be run again.

The wallet location is in the following locations:

Location	Installation Type
$RETAIL_HOME/orpatch/config/javapp_rpm	RPM Java
$RETAIL_HOME/orpatch/config/javapp_reim	ReIM Java
$RETAIL_HOME/orpatch/config/javapp_alloc	Allocation Java
$RETAIL_HOME/orpatch/config/javapp_resa	RESA Java
$RETAIL_HOME/orpatch/config/javaapp_rasrm	RASRM Java

The wallet aliases will be stored in the retail_installer partition. The names of the aliases will vary depending on what was entered during initial product installation.

The dump_credentials.sh script can be used to list the aliases in the wallet.

For example:

```
cd $RETAIL_HOME/orpatch/deploy/retail-public-security-api/bin
./dump_credentials.sh $RETAIL_HOME/orpatch/config/javapp_alloc

Apapplication level key partition name:retail_installer
User Name Alias:dsallocAlias User Name:rms01app
User Name Alias:BATCH-ALIAS User Name:SYSTEM_ADMINISTRATOR
User Name Alias:wlsAlias User Name:weblogic
```

The easiest way to update the credential information is to re-run the Java product installer. If you need to manually update the password for a credential, the save_credential.sh script can be used.

For example:

```
cd $RETAIL_HOME/orpatch/deploy/retail-public-security-api/bin
./save_credential.sh –l $RETAIL_HOME/orpatch/config/javapp_alloc –p
retail_installer –a wlsAlias –u weblogic
```

This command will prompt for the new password twice and update the aslias wlsAlias, username weblogic with the new password.

Infrastructure Directory Changes

The RETAIL_HOME/orpatch/config/env_info.cfg file contains the path to the database ORACLE_HOME on database or RMS Batch installations, to the WebLogic Forms and Reports ORACLE_HOME and ORACLE_INSTANCE on RMS or RWMS Forms installations, and to the WEBLOGIC_DOMAIN_HOME, WL_HOME and MW_HOME on Java product installations. If these paths change, the related configuration variables in the env_info.cfg file must be updated.

DBManifest Table

The table dbmanifest within Oracle Retail database schemas is used to track the database scripts which have been applied to the schema. It is critical not to drop or truncate this table. Without it, ORPatch will attempt to re-run scripts against the database which have already been applied which can destroy a working environment. Similarly, if copying a schema from one database to another database, ensure that the dbmanifest table is preserved during the copy.

RETAIL_HOME relationship to Database and Application Server

The RETAIL_HOME associated with an Oracle Retail product installation is critical due to the additional metadata and historical information contained within it. If a database or application installation is moved or copied, the RETAIL_HOME related to it should be copied or moved at the same time.

Jar Signing Configuration Maintenance

The RPM product installation includes an option to configure a code signing certificate so that jar files modified during installation or patching are automatically re-signed. This configuration is optional, but recommended. If it is configured, the code signing keystore is copied during installation to $RETAIL_HOME/orpatch/config/jarsign/orpkeystore.jks. The keystore password and private key password are stored in a Java wallet in the $RETAIL_HOME/orpatch/config/jarsign directory. The credentials are stored in a wallet partition called orpatch:

Alias	Username	Description
storepass	discard	Password for the keystore
keypass	discard	Password for the private key

The keystore file and passwords can be updated using the product installer. This is the recommended way to update the signing configuration.

If only the credentials need to be updated, the sign_jar.sh script can be used.

5. Log in as the UNIX user that owns the product installation.
6. Set the RETAIL_HOME environment variable to the top-level directory of your installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
7. Change directories to the location of sign_jar.sh
   ```
   cd $RETAIL_HOME/orpatch/deploy/bin
   ```
8. Execute sign_jar.sh
   ```
   sign_jar.sh changepwd
   ```
9. When prompted, enter the new keystore password
10. When prompted, enter the new private key password

Customization

Patching Considerations with Customized Files and Objects

In general, the additional capabilities provided by the ORPatch should make it easier to evaluate the potential impacts of patches to your customizations of Oracle Retail products. However, the additional metadata maintained by the Oracle Retail patching utilities does add some considerations when making customizations.

General Guidelines

It is always preferred to customize applications by extension rather than by direct modification. For example, adding new database objects and forms rather than modifying existing Oracle Retail objects and forms. You can also leverage built-in extension points such as User Defined Attributes, the Custom Flexible Attribute Solution, or seeded customization points in ADF Applications.

It is strongly discouraged to directly modify Oracle Retail database objects, especially tables, as your changes may be lost during patching or may conflict with future updates. When adding or modifying database objects, Oracle Retail recommends that all objects be added with scripts to ensure that they can be rebuilt if necessary after a patch.

Custom Database Objects

When you create new database objects, Oracle Retail recommends placing them in an Oracle database schema specifically for your customizations. You must use synonyms and grants to allow the Oracle Retail product schema owner and other users to access your objects, and use synonyms and grants to allow your customizations to access Oracle Retail objects. A separate schema will ensure that your customizations are segregated from base Oracle Retail code.

ORPatch expects that there will be no invalid objects in the database schemas it manages after a patch is applied. For this reason adding extra objects to the product schema could result in failures to apply patches as changes to base objects may cause custom objects to go invalid until they are updated. In this situation, manually update the custom objects so that they compile, and restart the patch.

Custom Forms

When creating new custom forms, Oracle Retail recommends placing them in a separate directory specifically for your customizations. This directory should be added to the FORMS_PATH of your RMS or RWMS Forms URL configuration to allow the forms to be found by the Forms Server. This will ensure that your customizations are segregated from base Oracle Retail code. If you choose to place customizations in the Forms bin directory, then your custom forms will need to be recopied each time Forms are fully recompiled.

ADF Application Customization

Oracle Retail ADF-based applications such as Allocation and ReSA can be customized using a process called 'seeded customization'. The customization process involves using JDeveloper in Customizer mode to create changes to product configurations, and then building a MAR archive containing the changes. The generated MAR is deployed to the MDS repository used by the application and applied to the application at runtime. These types of customizations are handled outside of ORPatch and are not reported during patch analysis or tracked by the custom file registration utility. More information can be found in the respective product customization guides.

Custom Compiled Java Code

When customizing Oracle Retail Java-based products such as RPM and ReIM via product source code, ORPatch supports automatically adding compiled customizations into the application ear file prior to deployment. This allows customizations to be applied to the application without directly modifying the base product ear, enabling customizations and defect hotfixes to co-exist when they do not change the same file or a dependent file. See the later "Custom Compiled Java Code" section for additional information and considerations.

Analyze Patches when Customizations are Present

Whenever you have customized a product by directly modifying Oracle Retail files or database objects, it is important to ensure you analyze each the files that will be updated by a patch before applying the patch. This will allow you to identify any customized files which may be overwritten by the patch and either merge your customization with the new version of the file, or re-apply the customization after applying the patch.

Manifest Updates

If you choose to customize Oracle Retail files directly, it is extremely important **not** to update the revision number contained in the env_manifest.csv. This could cause future updates to the file to be skipped, invalidating later patch applications as only a partial patch would be applied. The customized revision number for modified files will need to be tracked separately.

Registering Customized Files

The ORPatch contains utilities and functionality to allow tracking of files that have been customized through direct modification. This process is referred to as 'registering' a customized file. Registration only works for files which are shipped by Oracle Retail. It is not possible to register new files created in the environment as part of extensions or customizations.

When patches are analyzed with ORPatch, special reporting is provided if any registered files would be updated or deleted by the patch. Customized files impacted by the patch are listed at the end of the analysis report from ORPatch. The detail files generated during the analyze will contain a column called 'customized' which will have a Y for any files which were registered as customized. This allows easier identification of customizations which will be overwritten by a patch.

All files delivered by Oracle Retail are considered 'base' and so when they are applied to an environment any registrations of those files as customized will revert back to un-customized. **Each time a patch overwrites customized files, you must re-register the files as customized once you have applied customizations.**

To register customized files, use the $RETAIL_HOME/orpatch/bin/orcustomreg script.

The orcustomerg script operates in one of two modes: registration and list.

- Registration mode registers or unregisters one or more files as customized.
- List mode lists all files in the environment that are registered as customized.

Command Line Arguments for Registration Mode

Argument	Description
-f <file>	Adds <file> to the list of files that will be registered. Can be specified more than once.

Argument	Description
-bulk <file>	Specifies a file to read, containing one filename per line. All filenames listed inside <file> will be registered.
-register	Files specified with -f or -bulk will be registered as 'customized'
-unregister	Files specified with -f or -bulk will be registered as 'base'

Notes:

- At least one of -f or -bulk is required.
- If neither -register nor -unregister is specified, the default is '-register'.
- File names specified with -f must either be fully-qualified or be relative to RETAIL_HOME. The same is true for filenames specified within a -bulk file.

Command Line arguments for list mode

Argument	Description
-list	List all files in the environment registered as customized

Running the orcustomreg Script

Perform the following procedure to run the orcustomreg script:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute orcustomreg script to register the desired file(s).
   ```
   orcustomreg –register –f <file>
   ```

Examples of using the orcustomreg Script

Register $RETAIL_HOME/dbsql_rms/Cross_Pillar/control_scripts/source/oga.sql as customized.

```
orcustomreg -f dbsql_rms/Cross_Pillar/control_scripts/source/oga.sql
```

Unregister customizations for $RETAIL_HOME/dbsql_rwms/Triggers/Source/TR_WAVE.trg

```
orcustomreg –unregister –f $RETAIL_HOME/dbsql_rwms/Triggers/Source/TR_WAVE.trg
```

Bulk register several files as customized.

```
echo "$RETAIL_HOME/oracle/proc/src/mrt.pc" > custom.txt
echo "$RETAIL_HOME/oracle/proc/src/saldly.pc" >> custom.txt
echo "$RETAIL_HOME/oracle/proc/src/ccprg.pc" >> custom.txt
orcustomreg –bulk custom.txt
```

List all files registered as customized.

```
orcustomreg –list
```

Custom Compiled Java Code

When customizing Oracle Retail Java-based products such as RPM and ReIM via product source code, ORPatch supports automatically adding compiled customizations into the application ear file prior to deployment. This allows customizations to be applied to the application without directly modifying the base product ear, enabling customizations and defect hotfixes to co-exist when they do not change the same file or a dependent file

This functionality is enabled by creating a directory called $RETAIL_HOME/javaapp_<app>/custom, where <app> is the application the customizations apply to. Files stored within this directory will be combined with the base product ear files before the application is deployed to WebLogic. ORPatch will attempt to consider customizations stored within the 'custom' directory during patch analysis by triggering more detailed ear file change analysis to assist with identifying which customizations might be impacted by changes in the patches.

> **Note:** It is not possible, nor necessary, to register compiled Java customizations with the orcustomreg tool.

As with other customization techniques for other technologies, Oracle Retail recommends making Java customizations in new files as much as possible, versus overwriting base product or configuration files. In the past it was necessary to build complete replacement product ear files, but this method of customization is no longer required nor recommended. Replacement ear and jar files will not contain the META-INF/env_manifest.csv files which are required in order to be able to apply incremental patches. Instead, compile the specific Java classes being customized and place them along with any custom configuration files in $RETAIL_HOME/javaapp_<app>/custom.

Building Deployable ear files

When constructing the product ear file to deploy to WebLogic, ORPatch applies changes to the ear file in a specific order, with files from later steps overwriting files in earlier steps. The resulting ear is stored in $RETAIL_HOME/javaapp_<app>/deploy, and then deployed to WebLogic.

Sequence for ORPatch Java Product ear file updates

Order	File Type	Location
1	Base product ear	$RETAIL_HOME/javaapp_<app>/base
2	Updated configuration files	$RETAIL_HOME/javaapp_<app>/config
3	Oracle Retail-supplied hotfixes	$RETAIL_HOME/javaapp_<app>/internal
4	Compiled customizations	$RETAIL_HOME/javaapp_<app>/custom

Merging Custom Files

When merging files from the custom directory with the product ear, ORPatch uses the directory path of the files within custom to calculate where the file should be stored within the ear. This allows arbitrary nesting of files, even when placing files within jars stored in jars, stored within the ear. The following examples below use RPM, but apply to adding compiled customizations to any Java-based product.

Custom directory location and product ear location Examples

File path within javaapp_<app>/custom/	Final Ear File Location
rpm14.ear/company/ui/MyCustom.class	In rpm14.ear: /company/ui/MyCustom.class
rpm14.ear/rpm14.jar/company/bc/MyCustom2.class	In rpm14.ear: In rpm14.jar: /company/bc/MyCustom2.class
rpm14.ear/lib/ourcustomlibs.jar	In rpm14.ear /lib/ourcustomlibs.jar
rpm14.ear/WebLaunchServlet.war/lib/ rpm14.jar/company/bc/MyCustom2.class	In rpm14.ear: In WebLaunchServlet.war: In lib/rpm14.jar: /company/bc/MyCustom2.class

Analyzing patches when customizations are present

When analyzing a patch which contains a base product ear and the custom directory contains files, ORPatch will automatically trigger a more detailed analysis of the changes coming in a patch. This includes calculating what files inside the product ear have been added, removed or updated and which files appear to be customized based on the contents of the 'custom' directory. The detailed results of the ear file comparison during patch analysis will be saved in javaapp_<app>_archive_compare_details.csv. Any custom files which appeared to be impacted by the patch are saved in javapp_<app>_archive_custom_impacts.csv. Both files will be in the $RETAIL_HOME/orpatch/logs/detail_logs/analyze/details directory.

> **Note:** This detailed analysis is not available when analyzing individual hotfixes, so special care must be taken when applying hotfixes to a customized product installation, to ensure there are no conflicts between customizations and hotfix changes.

Customizations and cumulative patches

By default, when applying a cumulative patch, ORPatch will not include customizations in the deployed product ear, even if they are present in the appropriate directory. This allows verification that the application is functioning properly using base code, before applying customizations. After verifying the initial deployment, use ORDeploy with the "-t JAVA" option to construct and deploy the product ear including customizations.

If customizations need to be removed outside of a patch, use ORDeploy with the "-t JAVANOCUSTOM" option to create and deploy an ear containing only Oracle Retail code. To force ORPatch to include customizations in the deployed ear even when applying a cumulative patch, set JAVAAPP_<app>_INCLUDE_CUSTOM=Y in the $RETAIL_HOME/orpatch/config/env_info.cfg file.

Changing configuration files

It is possible to directly change product configuration files in $RETAIL_HOME/javaapp_<app>/config. These updates can be deployed to the environment using the ORDeploy utility. However, the 'config' directory is completely

recreated each time the product installer is used. This means that modifications will be lost and must be manually reapplied after each installer run. It is recommended to make configuration changes via the installer where possible, and retain the ant.install.properties file for use in later installer sessions.

Extending Oracle Retail Patch Assistant with Custom Hooks

The default ORPatch actions and processing logic is sufficient to install and patch the base Oracle Retail product code. However there may be situations where custom processing is desired during patching activities such as executing a shell script prior to the start of patching, or running a SQL script at the end of the patch.

ORPatch supports extensions in the form of custom hooks. These hooks allow external scripts to be run at specific points during ORPatch processing.

ORPatch Processing

Action

ORPatch supports a variety of 'actions' which define the steps necessary to apply updates to a particular area of the Oracle Retail application. Each action is generally specific to updates to a single technology or logical component of the environment. For example, one action might handle making updates to the RMS database schema, while a separate action is responsible for compiling RWMS forms, and a different action deploys the RPM Java application. These actions are enabled and disabled within the environment configuration file, allowing ORPatch to determine what types of changes to apply to each product installation.

ORPatch Actions

Order	Action Name	Description
1	DBSQL_RMS	Loads RMS and RPM database objects into the primary RMS schema
2	DBSQL_RMSASYNC	Loads database objects into the RMS_ASYNC_USER schema
3	DBSQL_REIM	Loads ReIM database objects into the RMS schema
4	DBSQL_RAF	Loads Retail Application Framework database objects into the RMS schema
5	DBSQL_ALCRMS	Loads Allocation database objects into the RMS schema
6	DBSQL_ALLOC	Loads Allocation database objects into the Allocation user schema
7	DBSQL_RMSDEMO	Used to create demo data in the RMS schema if demo data was selected during initial installation
8	DBSQL_RMSDAS	Loads database objects into the RMS Data Access Schema
9	RMSBATCH	Compiles RMS Batch
10	ORAFORMS_RMS	Compiles RMS Forms, copies RMS reports to $RETAIL_HOME
11	RMSRETLSCRIPTS	Copies Oracle Retail Extract and Load scripts for RMS
12	RMSDCSCRIPTS	Copies Oracle Retail Merchandising System data conversion scripts
13	DBSQL_RWMS	Loads database objects into the primary RWMS schema

Order	Action Name	Description
14	DBSQL_RWMSADF	Loads database objects into the RWMS ADF user schema
15	DBSQL_RWMSUSER	Loads database objects into the RWMS user schema
16	ORAFORMS_RWMS	Compiles RWMS Forms, copies RWMS batch scripts and reports to $RETAIL_HOME
17	JAVAAPP_RPM	Deploys the RPM Java application and batch scripts
18	JAVAAPP_REIM	Deploys the REIM Java application and batch scripts
19	JAVAAPP_ALLOC	Deploys the Allocation Java application and batch scripts
20	JAVAAPP_RESA	Deploys the ReSA Java application
21	JAVAAPP_RASRM	Deploys the RASRM Java application
22	DBSQL_RARMSBATCH	Loads database objects into the RMS Batch schema for RA
23	DBSQL_RADM	Loads database objects into the RA Data Mart schema
24	DBSQL_RAFEDM	Loads database objects into the RA Front-end schema
25	DBSQL_RABATCH	Loads database objects into the RA Batch schema
26	DBSQL_RASECORE	Loads core database objects into the ORASE schema
27	DBSQL_RASEASO	Loads ASO database objects into the ORASE schema
28	DBSQL_RASECDT	Loads CDT database objects into the ORASE schema
29	DBSQL_RASECIS	Loads CIS database objects into the ORASE schema
30	DBSQL_RASEDT	Loads DT database objects into the ORASE schema
31	DBSQL_RASEMBA	Loads MBA database objects into the ORASE schema
32	RASECOREBATCH	Copies ORASE core batch scripts and libraries
33	RASEASOBATCH	Copies ORASE ASO batch scripts and libraries
34	RASECDTBATCH	Copies ORASE CDT batch scripts and libraries
35	RASECISBATCH	Copies ORASE CIS batch scripts and libraries
36	RASEDTBATCH	Copies ORASE DT batch scripts and libraries
37	RASEMBABATCH	Copies ORASE MBA batch scripts and libraries

Phase

ORPatch processes patches in phases. Each action relevant to a patch and host is provided an opportunity to process the patch for each phase. The standard phases which allow hooks are:

Restart Phase Number	Phase Name	Description
N/A	PRECHECK	Actions verify that their configuration appears complete and correct. This phase and the associated hooks will be run every time orpatch is executed, even if processing will be restarted in a later phase.

Restart Phase Number	Phase Name	Description
10	PREACTION	Actions do processing prior to when files are copied to the environment. Files are deleted during this phase.
20	COPYPATCH	Actions copy files included in a patch into the destination environment and the environment manifest is updated.
30	PATCHACTION	Actions take the more detailed steps necessary to apply the new files to the environment. For database actions in particular, this is the phase when new and updated sql files are loaded into the database.
40	POSTACTION	Actions do processing after files have been copied and PatchActions are completed. The Forms actions, for example, use this phase to compile the forms files as this must happen after database packages are loaded.
50	CLEANUP	Actions do any additional processing. Currently no actions implement activities in this phase.

Configuring Custom Hooks

Custom hooks are configured in a configuration file RETAIL_HOME/orpatch/config/custom_hooks.cfg. The configuration file is a simple text file where blank lines and lines starting with # are ignored and all other lines should define a custom hook.

To define a custom hook, a line is added to the file in the form:

```
<hook name>=<fully qualified script>
```

The hook name must be in upper case and is in the form:

```
<action name>_<phase name>_<sequence>
```

The action name is any action name understood by ORPatch. The phase name is one of the five phase names from the table above. The sequence is either 'START' or 'END'. Hooks defined with a sequence of 'START' are run before the action's phase is invoked. Hooks defined with a sequence of 'END' are run after the action's phase is invoked.

Multiple scripts can be associated with a single hook by separating the script names with a comma. If a hook name appears in the configuration file multiple times only the last entry will be used.

The script defined as a custom hook must be an executable shell script that does not take any arguments or inputs. The only environment variable that is guaranteed to be passed to the custom hook is RETAIL_HOME. The script must return 0 on success and non-zero on failure.

If an action is a DBSQL action (i.e. has a name like DBSQL_), the custom hook can optionally be a .sql file. In this case the SQL script will be run against the database schema that the DBSQL action normally executes against. The SQL script must not generate any ORA- or SP2- errors on success. In order to be treated as a database script, the extension of the file defined as the custom hook must be .sql in lower-case. Any other extension will be treated as if it is a shell script. If you have database scripts with different extensions, they must be renamed or wrapped in a .sql script.

When using the PRECHECK phase and START sequence, please note that the custom hook will be executed prior to any verification of the configuration. Invalid configuration, such as invalid database username/password or a non-existent ORACLE_HOME, may cause the custom hook to fail depending on the actions it tries to

take. However in these cases, the normal orpatch PRECHECK activities would likely have failed as well. All that is lost is the additional context that orpatch would have provided about what was incorrect about the configuration.

Restarting with Custom Hooks

If a custom hook fails, for example a shell script hook returns non-zero or a sql script generates an ORA- error in its output, the custom hook will be treated as failing. A failing custom hook causes ORPatch to immediately stop the patching session.

When ORPatch is restarted it always restarts with the same phase and action, including any START sequence custom hooks. If the START sequence custom hook fails, the action's phase is never executed. With an END sequence custom hook, the action's phase is re-executed when ORPatch is restarted and then the custom hook is re-executed. When an action's phase is costly, for example the DBSQL_RMS action which does a lot of work, this can mean a lot of duplicate processing.

For this reason it is preferred to use START sequence custom hooks whenever possible. If necessary, use a START sequence hook on a later phase or a later action, rather than an END sequence custom hook.

Patch-level Custom Hooks

In addition to action-specific hooks, there are two patch-level hook points available. These hooks allow scripts to be run before any patching activities start and after all patching activities are completed. The hooks are defined in the same configuration file, with a special hook name.

To run a script before patching, define:

```
ORPATCH_PATCH_START=<fully qualified script>
```

To run a script after patching, define:

```
ORPATCH_PATCH_END=<fully qualified script>
```

These hooks only support executing shell scripts, database scripts must be wrapped in a shell script. It is also important to note that these hooks are run on every execution of ORPatch to apply a patch, even when restarting a patch application. If the START sequence patch-level hook returns a failure, patching is aborted. If the END sequence patch-level hook returns a failure, it is logged but ignored as all patching activities have already completed.

Please note that the ORPATCH_PATCH_START hook is executed prior to any verification of the configuration. Invalid configuration may cause the custom hook to fail depending on the actions it tries to take. However in these cases, the normal ORPatchactivities would likely fail as well.

Example Custom Hook Definitions

A shell script that is executed prior to the Pre-Action phase of RMS Batch:

```
RMSBATCH_PREACTION_START=/u00/oretail/prepare_custom_header.sh
```

A shell script that is executed after RETL script files are copied into the RETAIL_HOME:

```
RETLSCRIPTS_COPYPATCH_END=/u00/oretail/copy_custom_files.sh
```

A SQL script that is executed against the RWMS owning schema at the start of the Clean-up Phase:

```
DBSQL_RWMS_CLEANUP_START=/dba/sql/recompile_synonyms.sql
```

Troubleshooting Patching

There is not a general method for determining the cause of a patching failure. It is important to ensure that patches are thoroughly tested in a test or staging system several times prior to attempting to apply the patch to a production system, particularly if the patch is a large cumulative patch. After the test application is successful, apply the patch to the production system.

ORPatch Log Files

ORPatch records extensive information about the activities during a patch to the log files in RETAIL_HOME/orpatch/logs. This includes a summary of the actions that are planned for a patch, information about all files that were updated by the patch, and detailed information about subsequent processing of those files. The ORPatch log files also contain timestamps to assist in correlating log entries with other logs.

Even more detailed logs are available in RETAIL_HOME/orpatch/logs/detail_logs for some activities such as forms compilation, invalid database object errors, and output from custom hooks. If the standard ORPatch log information is not sufficient, it might be helpful to check the detailed log if it exists.

Restarting ORPatch

The restart mechanism in ORPatch is designed to be safe in nearly any situation. In some cases to ensure this, a portion of work may be redone. If the failure was caused by an intermittent issue that has been resolved, restarting ORPatch may be sufficient to allow the patch to proceed.

Manual DBManifest Updates

A possible cause for database change script failures is that a database change was already made manually to the database. In this event, you may need to update the dbmanifest table to record that a specific script does not need to be run. Before doing this, it is extremely important to ensure that all statements contained in the script have been completed.

Use the $RETAIL_HOME/orpatch/bin/ordbmreg script to register database scripts in the dbmanifest table.

Command Line Arguments for ordbmreg

Argument	Description
-f <file>	Adds <file> to the list of files that will be registered. Can be specified more than once.
-bulk <file>	Specifies a file to read, containing one filename per line. All filenames listed inside <file> will be registered.
-register	Files specified with -f or -bulk will be registered in the dbmanifest table
-unregister	Files specified with -f or -bulk will be removed from the dbmanifest table

Notes:

- At least one of -f or -bulk is required.
- If neither -register nor -unregister is specified, the default is '-register'.
- File names specified with -f must either be fully-qualified or be relative to RETAIL_HOME. The same is true for filenames specified within a -bulk file.
- Registering a file in the dbmanifest table will cause it to be completely skipped. Before doing so, ensure that all commands contained in it have been completed.
- Removing a file from the dbmanifest table will cause it to be run again. This will fail if the commands in the script cannot be re-run. For example if they create a table that already exists.

Running the ordbmreg Script

Perform the following procedure to run the ordbmreg script:

1. Log in as the UNIX user that owns the product installation.
2. Set the RETAIL_HOME environment variable to the top-level directory of your product installation.
   ```
   export RETAIL_HOME=/u00/oretail/14.1/tst
   ```
3. Set the PATH environment variable to include the orpatch/bin directory
   ```
   export PATH=$RETAIL_HOME/orpatch/bin:$PATH
   ```
4. Execute ordbmreg script to register the desired file(s).
   ```
   ordbmreg –register –f <file>
   ```

Examples of using the ordbmreg Script

Register $RETAIL_HOME/dbsql_rms/Cross_Pillar/db_change_scripts/source/000593_system_options.sql with the dbmanifest table.

```
ordbmreg -f
dbsql_rms/Cross_Pillar/db_change_scripts/source/000593_system_options.sql
```

Remove the dbmanifest row for $RETAIL_HOME/dbsql_radm/ra_db/radm/database_change_scripts/000035_s12733240_w_party_per_d.sql.

```
ordbmreg –unregister –f
$RETAIL_HOME/dbsql_radm/ra_db/radm/database_change_scripts/000035_s12733240_w_part
y_per_d.sql
```

Bulk register several files in the dbmanifest table.

```
echo "$RETAIL_HOME/dbsql_rwms/DBCs/Source/000294_container.sql" > dbcs.txt
echo "$RETAIL_HOME/dbsql_rwms/DBCs/Source/000457_drop_object.sql" >> dbcs.txt
ordbmreg –bulk dbcs.txt
```

Restarting after registration

Once the row has been added to the dbmanifest table, restart ORPatch and the script will be skipped. If the file is not skipped there are several possibilities:

- The script registered is not the failing script.
- The file type is not a type that is filtered by the dbmanifest. The only file types that skip files listed in the dbmanifest are:
  - Initial install DDL Files
  - Installation scripts that cannot be rerun
  - Database Change Scripts

Manual Restart State File Updates

Oracle Retail strongly discourages manually updating the ORPatch restart state files. Updating the file improperly could cause necessary steps in the patching process to be skipped or patches to be incorrectly recorded as applied.

DISPLAY Settings When Compiling Forms

When compiling RMS or RWMS forms, it is necessary to have a valid X-Windows Display. ORPatch allows this setting to come from one of two places:

- DISPLAY environment variable set before executing ORPatch

  or

- DISPLAY setting in RETAIL_HOME/orpatch/config/env_info.cfg

The DISPLAY variable in the environment overrides the env_info.cfg, if both are set. The destination X-Windows display must be accessible to the user running ORPatch, and for best compilation performance it should be on the network 'close' to the server where RMS Forms are installed and compiled. Using a local display or VNC display is preferred. Compiling forms across a Wide-Area Network will greatly increase the time required to apply patches to environments.

JAVA_HOME Setting

When working with Java application jar, ear or war files, it is necessary to have a valid JAVA_HOME setting. ORPatch allows this setting to come from one of two places:

- JAVA_HOME environment variable set before executing ORPatch

  or

- JAVA_HOME setting in RETAIL_HOME/orpatch/config/env_info.cfg

The JAVA_HOME variable in the environment overrides the env_info.cfg, if both are set. The specified Java home location must be accessible to the user running ORPatch and be a full Java Development Kit (JDK) installation. The JAVA_HOME must contain the jar utility and if automatic Jar file signing is configured, must also contain the keytool and jarsigner utilities.

Patching Prior to First Install

In some situations, it may be necessary to apply a patch to product installation files before the initial install. For example, if there is a defect with a script that would be run during the install and prevent proper installation. In this rare situation, it may be necessary to apply a patch to the installation files prior to starting installation.

> **Note:** These steps should only be undertaken at the direction of Oracle Support.

Perform the following steps to patch installation files prior to starting an installation. The steps assume an RMS installation, but apply to any product supported by ORPatch:

1. Unzip the installation files to a staging area.

   Note: The following steps assume the files are in /media/oretail14.1

2. Locate the patch_info.cfg within the product media. The directory it resides in will be used for later steps.

   ```
   find /media/oretail14.1/rms/installer –name patch_info.cfg
   ```

   Output Example:

   /media/oretail14.1/rms/installer/mom14/patch_info.cfg

3. Get the PATCH_NAME for the standard product installation. The patch name to use in subsequent steps will be the portion following the "=" sign.

   ```
   grep "PATCH_NAME=" /media/oretail14.1/rms/installer/mom14/patch_info.cfg
   ```

   Output Example:

   PATCH_NAME=**MOM_14_1_0_0**

4. Create a directory that will contain the patch that must be applied, next to the directory with the product installation files.

   Note: The following steps assume this directory is in /media/patch.

5. Unzip the patch into the directory created in step 2.

   Note: This should place the patch contents in /media/patch/<patch num>.

6. Export RETAIL_HOME to point within the installation staging area.

   ```
   export RETAIL_HOME=/media/oretail14.1/rms/installer/mom14/Build
   ```

7. Create a logs directory within the installation staging area

   ```
   mkdir $RETAIL_HOME/orpatch/logs
   ```

8. Ensure the ORMerge shell script is executable.

   ```
   chmod u+x $RETAIL_HOME/orpatch/bin/ormerge
   ```

9. Run ORMerge to apply the patch to the installation media, using a –name argument that is the same as what was found in step 3.

   ```
   $RETAIL_HOME/orpatch/bin/ormerge -s /media/patch -d
   /media/oretail14.1/rms/installer/mom14 –name MOM_14_1_0_0 –inplace
   ```

   Note: The –inplace argument is critical to ensure that the patching replaces files in the mom14 directory.

10. Unset the RETAIL_HOME environment variable.

    ```
    unset RETAIL_HOME
    ```

At this point, the installation files will have been updated with the newer versions of files contained within the patch. Log files for the merge will be in /media/oretail14.1/rms/installer/mom14/Build/orpatch/logs.

Providing Metadata to Oracle Support

In some situations, it may be necessary to provide details of the metadata from an environment to Oracle support in order to assist with investigating a patching or application problem. ORPatch provides built-in functionality through the 'exportmetadata' action to extract and consolidate metadata information for uploading to

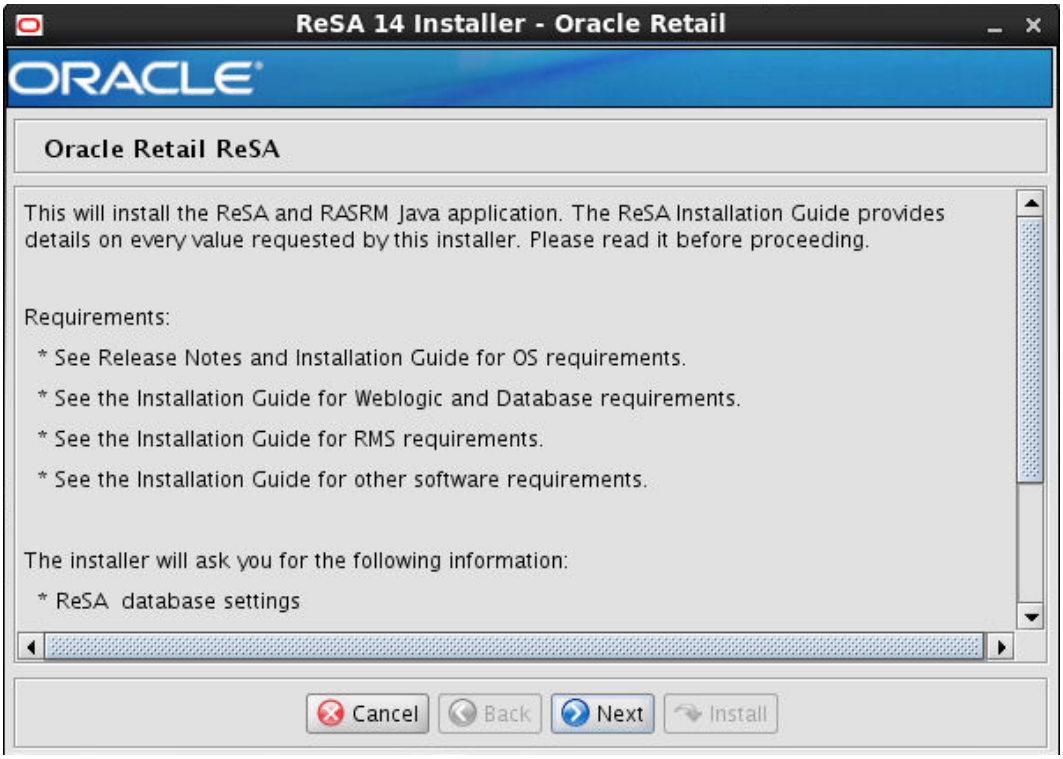
Oracle Support or for external analysis. For more information, see the ORPatch 'Exporting Environment Metadata' section.

A

Appendix: Oracle Retail Sales Audit Application Installer Screens

You need the following details about your environment for the installer to successfully deploy the ReSA application. Depending on the options you select, you may not see some screens or fields.

Screen: Start up



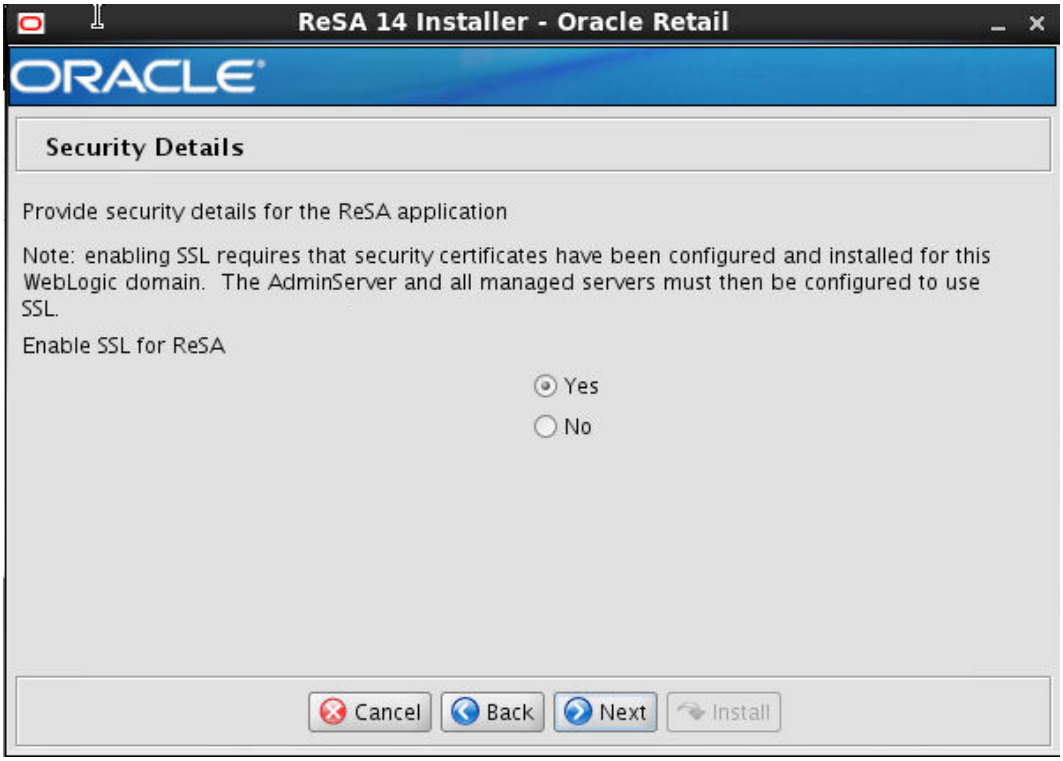
Screen: ReSA Application RETAIL_HOME

Field Title	ReSA Application RETAIL_HOME
Field Description	Retail Home is used to keep Orpatch related files by default. Please keep track of this directory, it should remain in place after installation and will be used to apply future patches.
Examples	/path/to/retail_home

Screen: Host Details

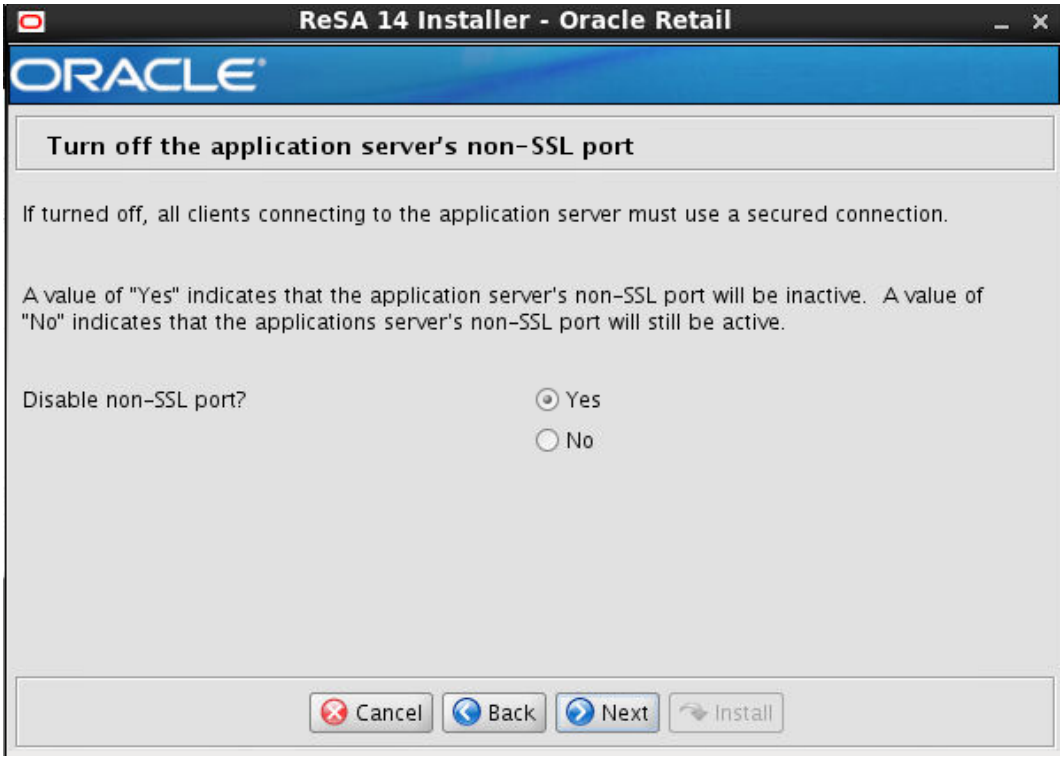
Field Title	Hostname
Field Description	Provide the hostname where the Retail Home will be installed. This shall match your current host.
Examples	Apphostname

Screen: Security Details



Field Title	Enable SSL for WLS AppDomain Admin server
Field Description	Chose "Yes" only if you are using SSL. The following screen will appear only if you chose 'Yes' in this screen.

Screen: Turn off the application server's non-SSL port (shown if 'SSL is enabled')



Field Title	Disable non-SSL port?
Field Description	This screen will only appear if you have selected 'Yes' for SSL in the previous screen. Chose 'Yes' if you want the installer to disable the Non-SSL port.

Screen: Application Server Details

Field Title	Hostname
Field Description	The hostname of the application server.
Example	Myhost

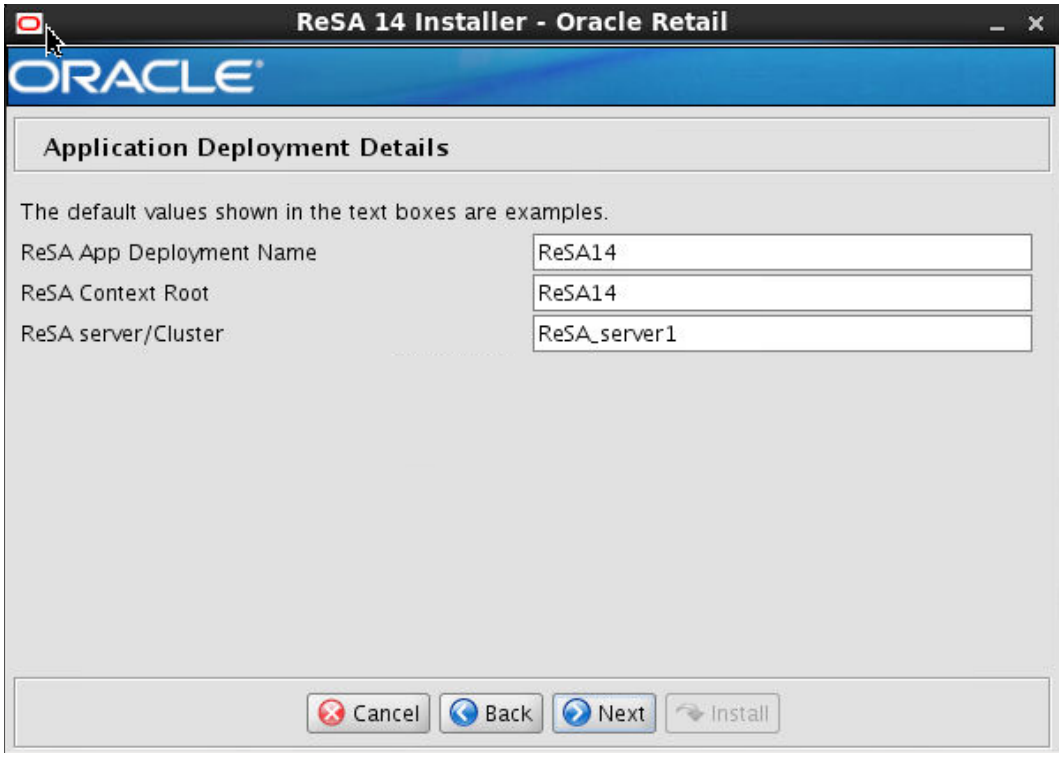
Field Title	WebLogic Admin Port
Field Description	Port number of the weblogic AdminServer.
Example	18001

Field Title	WebLogic Admin User
Field Description	Username of the admin user for the WebLogic instance to which the ReSA application is being deployed.
Example	weblogic

Field Title	WebLogic Admin Password
Field Description	Password for the WebLogic admin user. You chose this password when you created the WebLogic instance or when you started the instance for the first time.

Field Title	WebLogic Admin User Security Alias
Field Description	An alias for the WebLogic admin user.
Example	wlsAlias
Note	This alias must be unique. Do not use the same value for any other alias fields in the installer. If the same alias is used, entries in the wallet can override each other and cause problems with the application.

Screen: Application Deployment Details

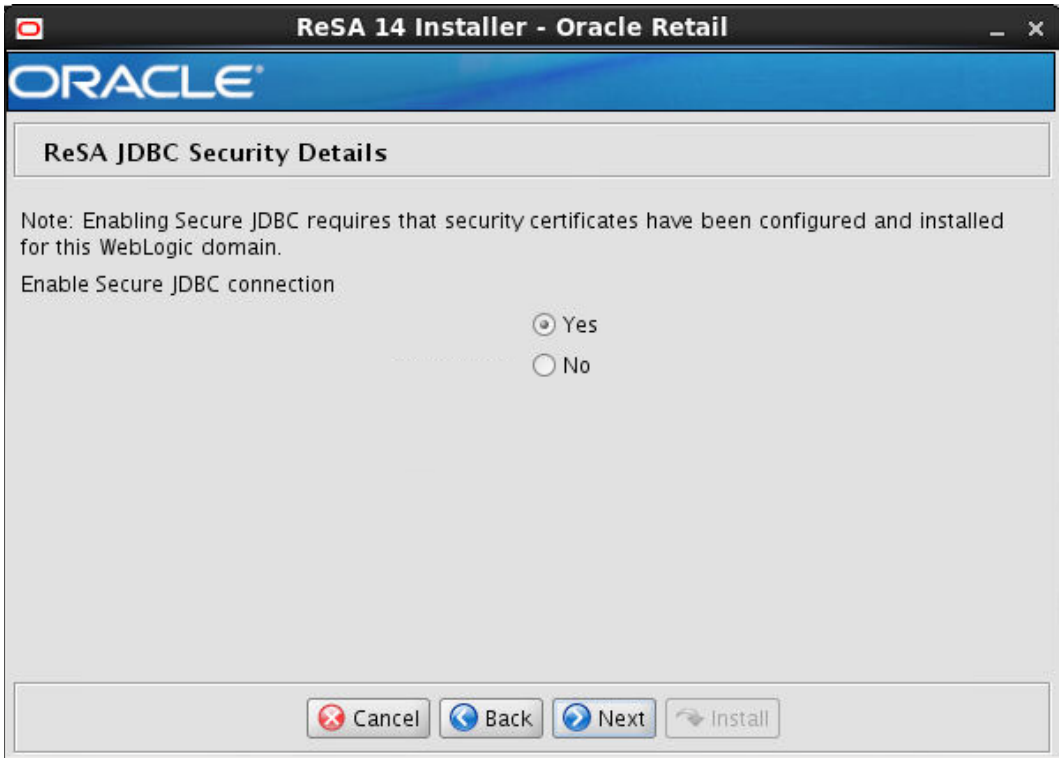


Field Title	ReSA App Deployment Name
Field Description	Name by which this ReSA application is identified in the application server.
Example	ReSA14

Field Title	ReSA Context Root
Field Description	Path under the HTTP URL that is used to access the ReSA application. For example, a context root of ReSA results in the application being accessed at http://host:port/ ResaPortal /
Example	ReSA14

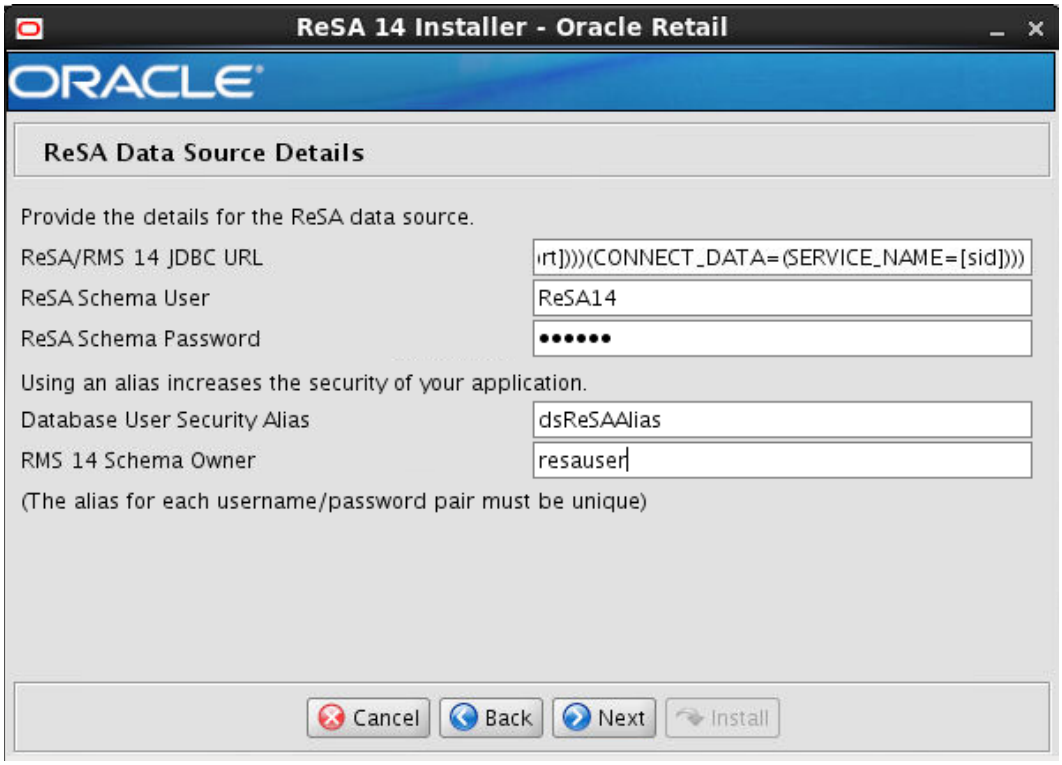
Field Title	ReSA Server/Cluster
Field Description	The name of the ReSA 14 WebLogic managed server or cluster.
Example	resa-server

Screen: ReSA JDBC Security Details



Field Title	Enable Secure JDBC connection
Field Description	Select Yes if the database being used for ReSA App installation is using secure configuration.

Screen: Data Source Details



Field Title	ReSA/RMS 14 JDBC URL
Field Description	URL used by the ReSA application to access the ReSA database schema. See Appendix: URL Reference for expected syntax. When deploying in SSL mode, JDBC URL format should include complete description as shown below.
Example	jdbc:oracle:thin:@myhost:1521/mydatabase OR jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=tcps)(HOST=msp52409.us.oracle.com)(PORT=2484)))(CONNECT_DATA=(SERVICE_NAME=pkols18)))

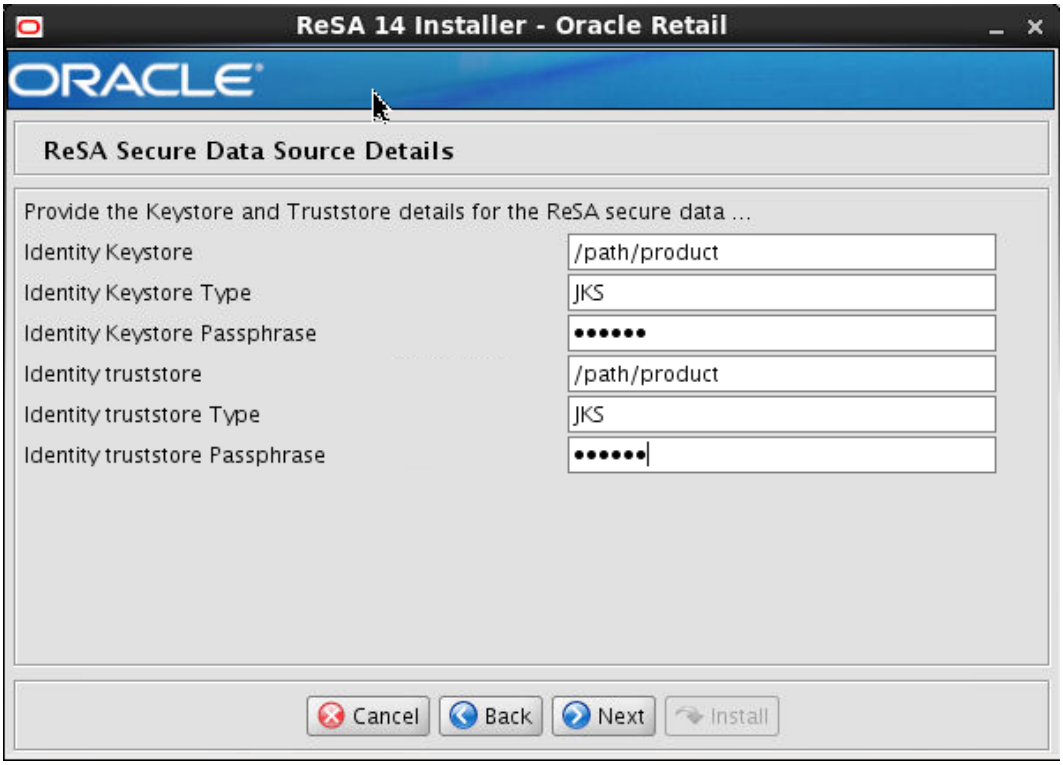
Field Title	ReSA Schema User
Field Description	Database schema user of the ReSA application. This value should match what was given in the ReSA database schema field of the ReSA database installer. This is where the ReSA temporary tables and temporary views reside, with synonyms to other ReSA objects that are in the RMS main schema.
Example	ReSAUSER

Field Title	ReSA Schema Password
Field Description	Password for the ReSA schema user. This should match what was given in the ReSA 13 schema to create field of the ReSA database installer.

Field Title	Database User Security Alias
Field Description	An alias for the Database user.
Example	dsAlias

Field Title	RMS 13 Schema Owner
Field Description	RMS schema user into which the ReSA schema user has synonyms. This should match the RMS schema that was given during execution of the ReSA database schema installer. This is the RMS main schema, where the ReSA non temporary tables and objects are stored.
Example	RMSUSER
Note	This alias must be unique. Do not use the same value for any other alias fields in the installer. If the same alias is used, entries in the wallet can override each other and cause problems with the application.

Screen: Secure Data Source Details (shown if 'Secure JDBC connection enabled')



Field Title	Identity Keystore
Field Description	Path to the identity keystore, i.e.: /u00/webadmin/product/identity.keystore

Field Title	Identity Keystore Type
Field Description	i.e. JKS

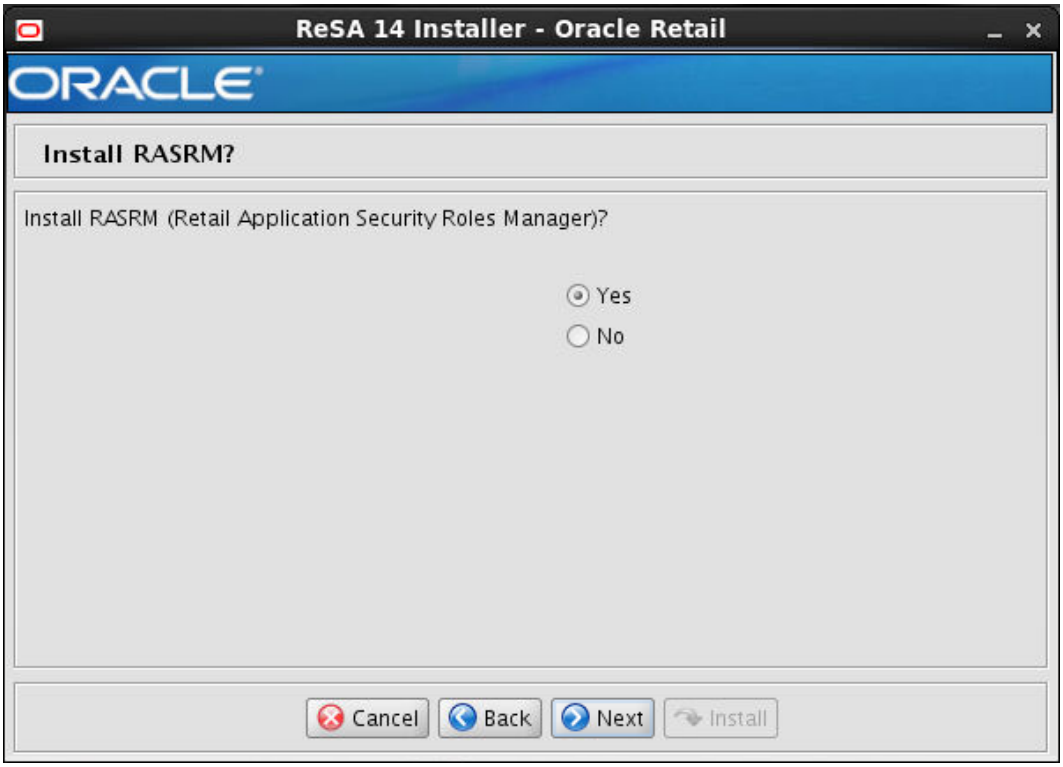
Field Title	Identity Keystore Password
Field Description	Password used to access the identity keystore defined above.

Field Title	Identity Trustore
Field Description	Path to the identity truststore, i.e.: /u00/webadmin/product/identity.truststore

Field Title	Identity Truststore Type
Field Description	i.e. JKS

Field Title	Identity Truststore Password
Field Description	Password used to access the identity truststore defined above.

Screen: Install RASRM?

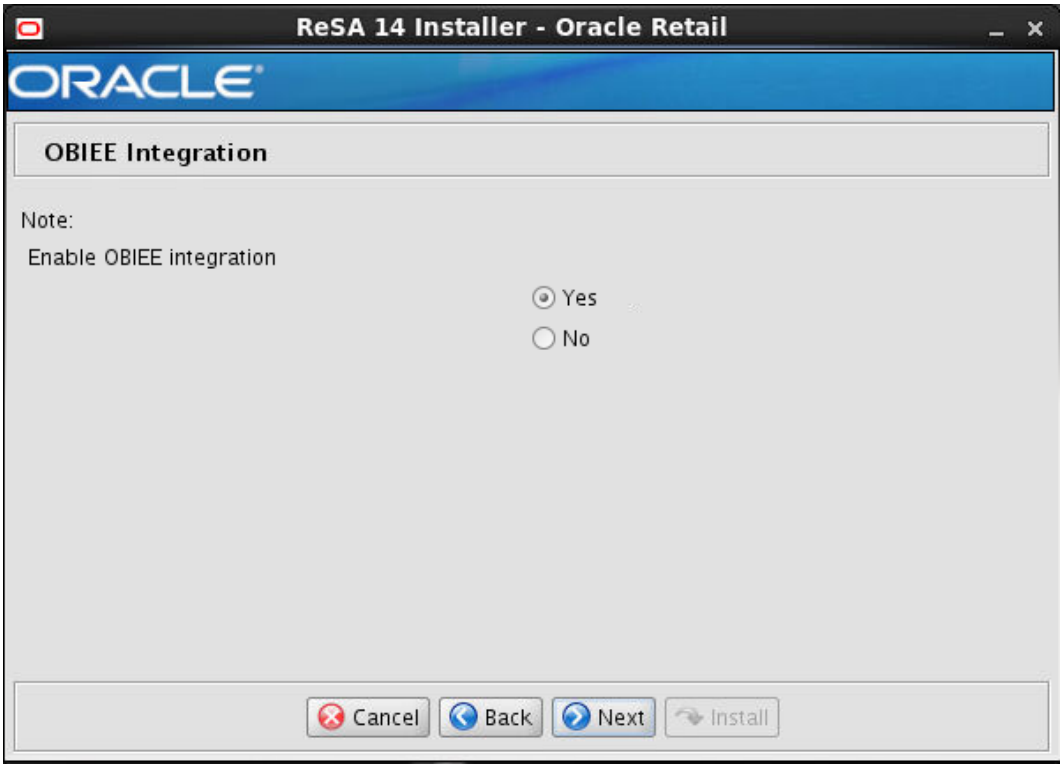


Field Title	Install RASRM
Field Description	Select Yes to install the RASRM application installation on the same managed server as ReSA. This provides you access to RASRM application as explained in the above section. This application can be used to update and manage the enterprise users and roles

Screen: Policy Setup

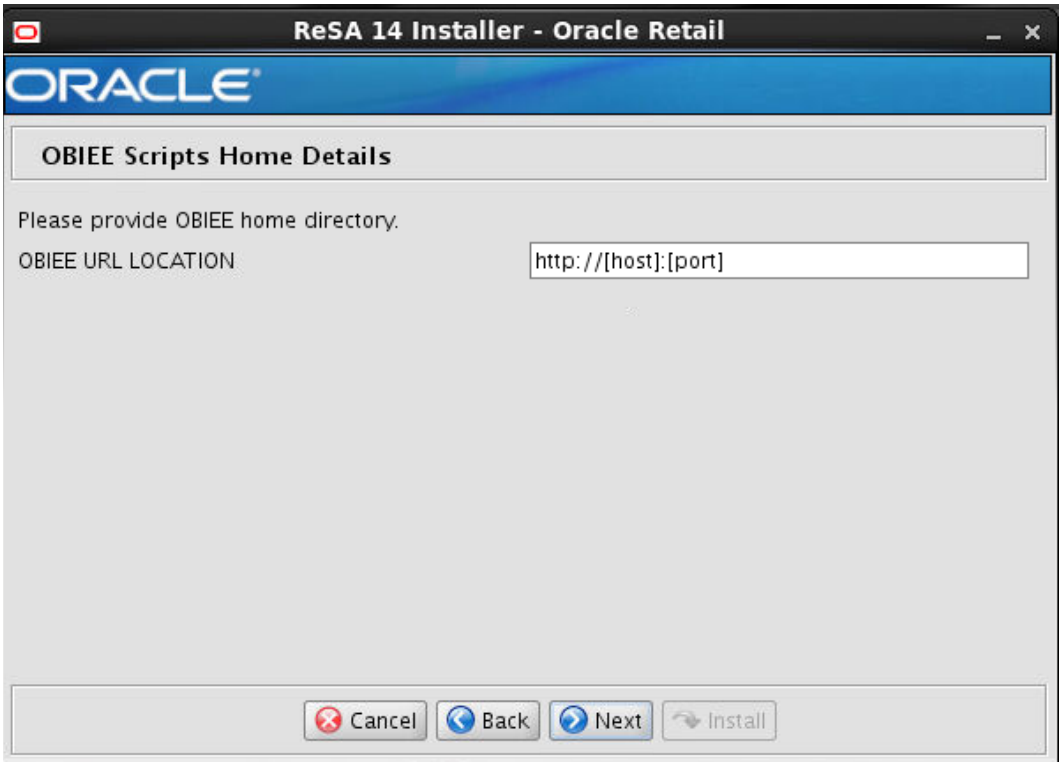
Field Title	Load ReSA Policies?
Field Description	Select Yes to load required ReSA Policies into the database. Select No if you have already loaded the policies.

Screen: OBIEE Integration



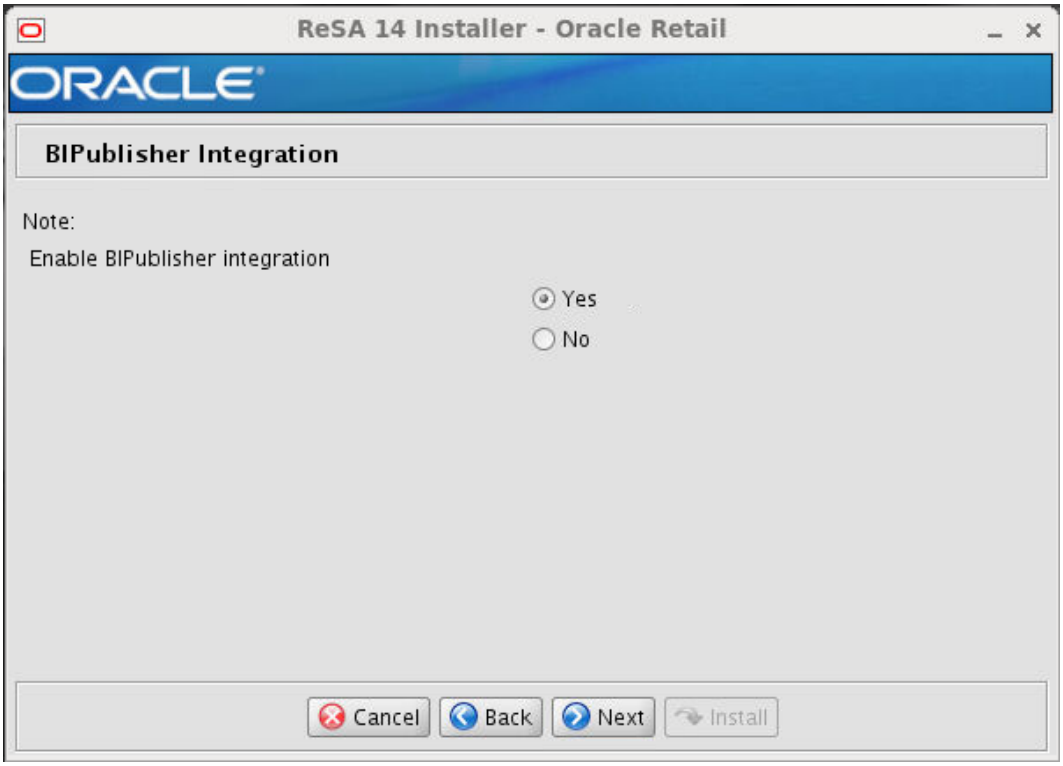
Field Title	Enable OBIEE Integration?
Field Description	Select Yes to integrate ReSA application with Operational Insights Dashboards. Select No if you if you don't want the integration.

Screen: OBIEE Scripts Home Details



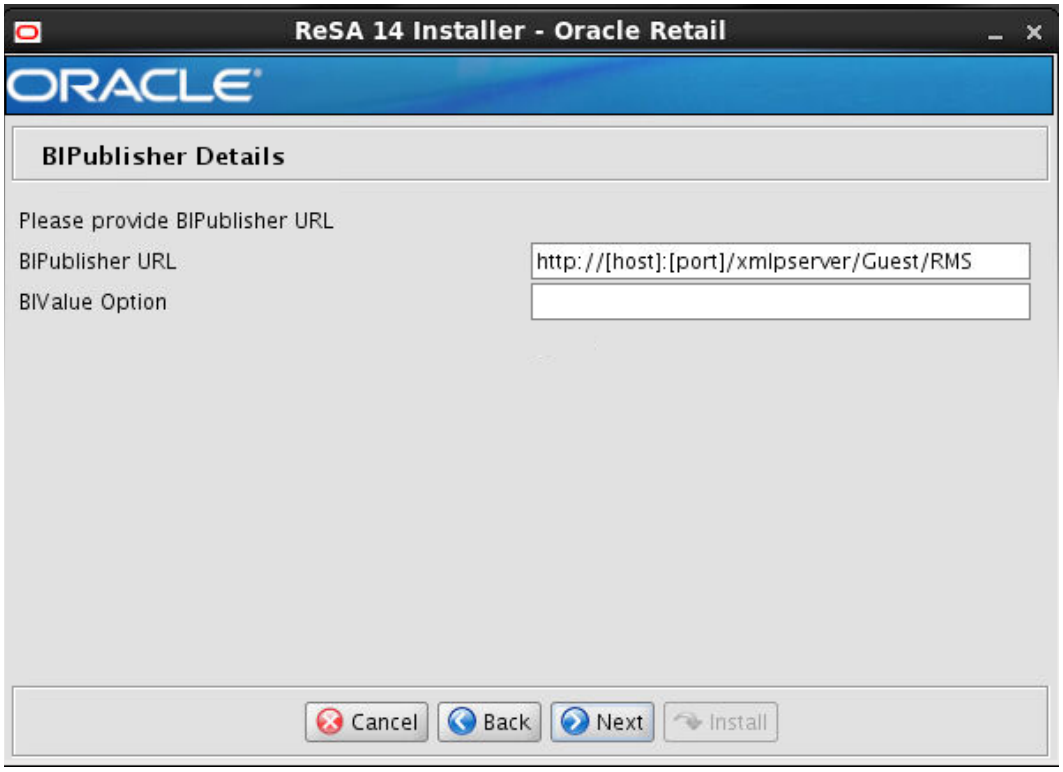
Field Title	OBIEE URL LOCATION
Field Description	Please provide the URL of OBIEE where you have installed / planning to install the Operational Insights Dashboards. You need to give the single sign on port if you have SSO configured for OBIEE

Screen: BIPublisher Integration



Field Title	Enable BIPubliser Integration
Field Description	Select Yes to integrate ReSA application with BIPublisher reports. Select No if you do not want the integration.

Screen: BIPublisher Details

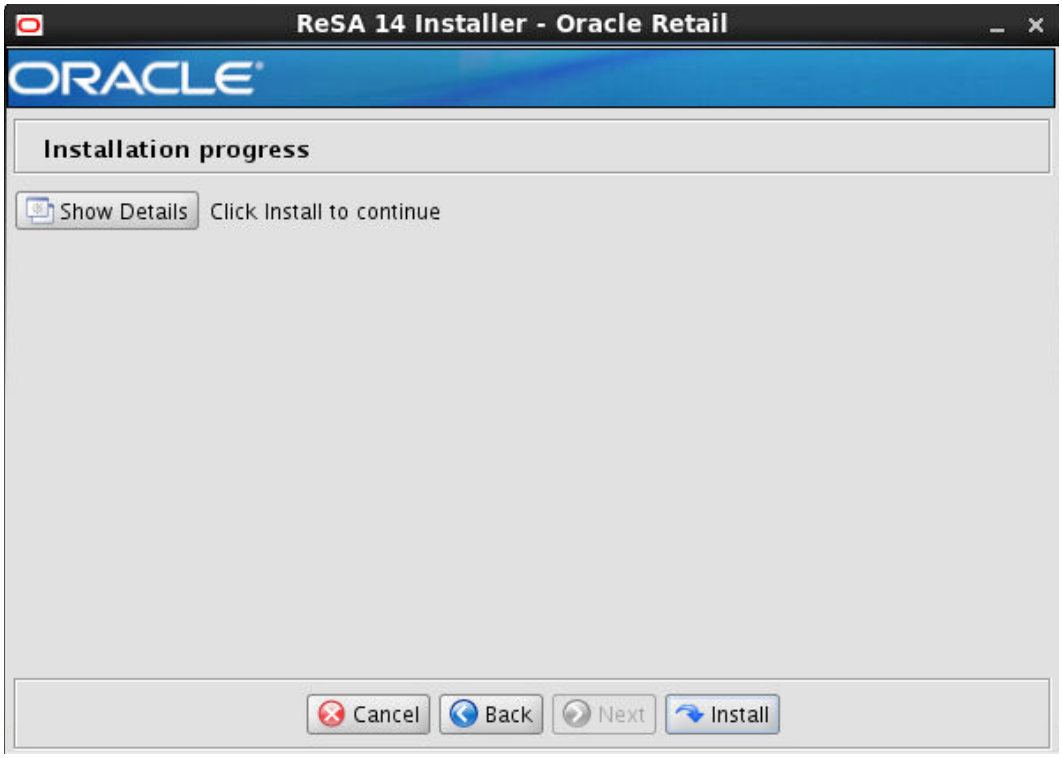


Field Title	BIPublisher URL
Field Description	Update the BI Publisher URL where you have the RMS reports set up.

Field Title	BIValue Option
Field Description	Input "True" to integrate ReSA application with BIPublisher reports. Input "False" if you do not want the integration.

Screen: Installation Summary

Screen: Installation Progress



B

Appendix: URL Reference

The database schema and application installer for the ReSA product asks 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.

Thick Client Syntax: jdbc:oracle:oci:@<sid>

<sid>: system identifier for the database

> **Example:** jdbc:oracle:oci:@mysid

Thin Client Syntax: jdbc:oracle:thin:@<host>:<port>/<sid>

<host>: hostname of the database server

<port>: database listener port

<sid>: system identifier for the database

> **Example:** jdbc:oracle:thin:@myhost:1521/mysid

C

Appendix: Common Installation Errors

This section provides some common errors encountered during installation of ReSA.

Warning: Could not create system preferences directory

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.

ConcurrentModificationException in Installer GUI

Symptom

In GUI mode, the errors tab shows the following error:

```
java.util.ConcurrentModificationException
          at
java.util.AbstractList$Itr.checkForComodification(AbstractList.java:448)
          at java.util.AbstractList$Itr.next(AbstractList.java:419)
… etc
```

Solution

You can ignore this error. It is related to third-party Java Swing code for rendering of the installer GUI and does not affect the retail product installation.

Warning: Could not find X Input Context

Symptom

The following text appears in the console window during execution of the installer in GUI mode:

```
Couldn't find X Input Context
```

Solution

This message is harmless and can be ignored.

GUI screens fail to open when running Installer

Symptom

When running the installer in GUI mode, the screens fail to open and the installer ends, returning to the console without an error message. The ant.install.log file contains this error:

```
Fatal exception: Width (0) and height (0) cannot be <= 0
java.lang.IllegalArgumentException: Width (0) and height (0) cannot be <= 0
```

Solution

This error is encountered when Antinstaller is used in GUI mode with certain X Servers. To work around this issue, copy ant.install.properties.sample to ant.install.properties and rerun the installer.

D

Appendix: Setting Up Password Stores with wallets/credential stores

As part of an application installation, administrators must set up password stores for user accounts using wallets/credential stores. Some password stores must be installed on the application database side. While the installer handles much of this process, the administrators must perform some additional steps.

Password stores for the application and application server user accounts must also be installed; however, the installer takes care of this entire process.

ORACLE Retail Merchandising applications now have 3 different types of password stores. They are database wallets, java wallets, and database credential stores. Background and how to administer them below are explained in this appendix

About Database Password Stores and Oracle Wallet

Oracle databases have allowed other users on the server to see passwords in case database connect strings (username/password@db) were passed to programs. In the past, users could navigate to `ps –ef|grep <username>` to see the password if the password was supplied in the command line when calling a program.

To make passwords more secure, Oracle Retail has implemented the Oracle Software Security Assurance (OSSA) program. Sensitive information such as user credentials now must be encrypted and stored in a secure location. This location is called password stores or wallets. These password stores are secure software containers that store the encrypted user credentials.

Users can retrieve the credentials using aliases that were set up when encrypting and storing the user credentials in the password store. For example, if `username/password@db` is entered in the command line argument and the alias is called `db_username`, the argument to a program is as follows:

```
sqlplus /@db_username
```

This would connect to the database as it did previously, but it would hide the password from any system user.

After this is configured, as in the example above, the application installation and the other relevant scripts are no longer needed to use embedded usernames and passwords. This reduces any security risks that may exist because usernames and passwords are no longer exposed.

When the installation starts, all the necessary user credentials are retrieved from the Oracle Wallet based on the alias name associated with the user credentials.

There are three different types of password stores. One type explain in the next section is for database connect strings used in program arguments (such as `sqlplus /@db_username`). The others are for Java application installation and application use.

Setting Up Password Stores for Database User Accounts

After the database is installed and the default database user accounts are set up, administrators must set up a password store using the Oracle wallet. This involves assigning an alias for the username and associated password for each database user account. The alias is used later during the application installation. This password store must be created on the system where the application server and database client are installed.

This section describes the steps you must take to set up a wallet and the aliases for the database user accounts. For more information on configuring authentication and password stores, see the *Oracle Database Security Guide*.

> **Note:** In this section, <wallet_location> is a placeholder text for illustration purposes. Before running the command, ensure that you specify the path to the location where you want to create and store the wallet.

To set up a password store for the database user accounts, perform the following steps:

1. Create a wallet using the following command:

   ```
   mkstore -wrl <wallet_location> -create
   ```

   After you run the command, a prompt appears. Enter a password for the Oracle Wallet in the prompt.

   > **Note:** The mkstore utility is included in the Oracle Database Client installation.

   The wallet is created with the auto-login feature enabled. This feature enables the database client to access the wallet contents without using the password. For more information, refer to the *Oracle Database Advanced Security Administrator's Guide.*

2. Create the database connection credentials in the wallet using the following command:

   ```
   mkstore -wrl <wallet_location> -createCredential <alias-name> <database-user-name>
   ```

   After you run the command, a prompt appears. Enter the password associated with the database user account in the prompt.

3. Repeat Step 2 for all the database user accounts.

4. Update the sqlnet.ora file to include the following statements:

   ```
   WALLET_LOCATION = (SOURCE = (METHOD = FILE) (METHOD_DATA = (DIRECTORY = <wallet_location>)))
   SQLNET.WALLET_OVERRIDE = TRUE
   SSL_CLIENT_AUTHENTICATION = FALSE
   ```

5. Update the tnsnames.ora file to include the following entry for each alias name to be set up.

   ```
   <alias-name> =
       (DESCRIPTION =
        (ADDRESS_LIST =
              (ADDRESS = (PROTOCOL = TCP) (HOST = <host>) (PORT = <port>))
           )
           (CONNECT_DATA =
               (SERVICE_NAME = <service>)
            )
        )
   ```

In the previous example, <alias-name>, <host>, <port>, and <service> are placeholder text for illustration purposes. Ensure that you replace these with the relevant values.

Setting up Wallets for Database User Accounts

The following examples show how to set up wallets for database user accounts for the following applications:

- For RMS, RWMS, RPM Batch using sqlplus or sqlldr, RETL, RMS, RWMS, and ARI

For RMS, RWMS, RPM Batch using sqlplus or sqlldr, RETL, RMS, RWMS, and ARI

To set up wallets for database user accounts, do the following.

1. Create a new directory called wallet under your folder structure.

```
cd /projects/rms14/dev/
mkdir .wallet
```

> **Note:** The default permissions of the wallet allow only the owner to use it, ensuring the connection information is protected. If you want other users to be able to use the connection, you must adjust permissions appropriately to ensure only authorized users have access to the wallet.

2. Create a sqlnet.ora in the wallet directory with the following content.

```
WALLET_LOCATION =   (SOURCE =     (METHOD = FILE)     (METHOD_DATA =
(DIRECTORY =  /projects/rms14/dev/.wallet)) )
SQLNET.WALLET_OVERRIDE=TRUE
SSL_CLIENT_AUTHENTICATION=FALSE
```

> **Note**: WALLET_LOCATION must be on line 1 in the file.

3. Setup a tnsnames.ora in the wallet directory. This tnsnames.ora includes the standard tnsnames.ora file. Then, add two custom tns_alias entries that are only for use with the wallet. For example, `sqlplus /@dvols29_rms01user`.

```
ifile = /u00/oracle/product/11.2.0.1/network/admin/tnsnames.ora

Examples for a NON pluggable db:
dvols29_rms01user =
  (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = tcp)
  (host = xxxxxx.us.oracle.com) (Port = 1521)))
    (CONNECT_DATA = (SID = <sid_name> (GLOBAL_NAME = <sid_name>)))

dvols29_rms01user.world =
  (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = tcp)
  (host = xxxxxx.us.oracle.com) (Port = 1521)))
    (CONNECT_DATA = (SID = <sid_name>) (GLOBAL_NAME = <sid_name>)))

Examples for a pluggable db:
dvols29_rms01user =
  (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = tcp)
  (host = xxxxxx.us.oracle.com) (Port = 1521)))
    (CONNECT_DATA = (SERVICE_NAME = <pluggable db name>)))

dvols29_rms01user.world =
  (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = tcp)
  (host = xxxxxx.us.oracle.com) (Port = 1521)))
    (CONNECT_DATA = (SERVICE_NAME = <pluggable db name>)))
```

Note: It is important to not just copy the tnsnames.ora file because it can quickly become out of date. The ifile clause (shown above) is key.

4. Create the wallet files. These are empty initially.
   a. Ensure you are in the intended location.
      ```
      $ pwd
      /projects/rms14/dev/.wallet
      ```
   b. Create the wallet files.
      ```
      $ mkstore -wrl . –create
      ```
   c. Enter the wallet password you want to use. It is recommended that you use the same password as the UNIX user you are creating the wallet on.
   d. Enter the password again.

      Two wallet files are created from the above command:
      - ewallet.p12
      - cwallet.sso
5. Create the wallet entry that associates the user name and password to the custom tns alias that was setup in the wallet's tnsnames.ora file.
   ```
   mkstore –wrl . –createCredential <tns_alias> <username> <password>
   ```

Example: `mkstore –wrl . –createCredential dvols29_rms01user rms01user passwd`

6. Test the connectivity. The ORACLE_HOME used with the wallet must be the same version or higher than what the wallet was created with.
   ```
   $ export TNS_ADMIN=/projects/rms14/dev/.wallet /* This is very import to use wallet to point at the alternate tnsnames.ora created in this example */

   $ sqlplus /@dvols29_rms01user

   SQL*Plus: Release 12

   Connected to:
   Oracle Database 12g

   SQL> show user
   USER is “rms01user”
   ```

   Running batch programs or shell scripts would be similar:

   ```
   Ex: dtesys /@dvols29_rms01user
   script.sh /@dvols29_rms01user

   Set the UP unix variable to help with some compiles :

   export UP=/@dvols29_rms01user
   for use in RMS batch compiles, and RMS, RWMS, and ARI forms compiles.
   ```

As shown in the example above, users can ensure that passwords remain invisible.

Additional Database Wallet Commands

The following is a list of additional database wallet commands.

- Delete a credential on wallet

```
mkstore –wrl . –deleteCredential dvols29_rms01user
```

- Change the password for a credential on wallet

```
mkstore –wrl . –modifyCredential dvols29_rms01user rms01user passwd
```

- List the wallet credential entries

```
mkstore –wrl . –list
```

This command returns values such as the following.

```
oracle.security.client.connect_string1
oracle.security.client.user1
oracle.security.client.password1
```

- View the details of a wallet entry

```
mkstore –wrl . –viewEntry oracle.security.client.connect_string1
```

Returns the value of the entry:

```
dvols29_rms01user
mkstore –wrl . –viewEntry oracle.security.client.user1
```

Returns the value of the entry:

```
rms01user
```

```
mkstore –wrl . –viewEntry oracle.security.client.password1
```

Returns the value of the entry:

```
Passwd
```

Setting up RETL Wallets

RETL creates a wallet under $RFX_HOME/etc/security, with the following files:

- cwallet.sso
- jazn-data.xml
- jps-config.xml
- README.txt

To set up RETL wallets, perform the following steps:

1. Set the following environment variables:
   - `ORACLE_SID=<retaildb>`
   - `RFX_HOME=/u00/rfx/rfx-13`
   - `RFX_TMP=/u00/rfx/rfx-13/tmp`
   - `JAVA_HOME=/usr/jdk1.6.0_12.64bit`
   - `LD_LIBRARY_PATH=$ORACLE_HOME`
   - `PATH=$RFX_HOME/bin:$JAVA_HOME/bin:$PATH`
2. Change directory to $RFX_HOME/bin.
3. Run setup-security-credential.sh.
   - Enter 1 to add a new database credential.
   - Enter the dbuseralias. For example, `retl_java_rms01user`.
   - Enter the database user name. For example, `rms01user`.
   - Enter the database password.
   - Re-enter the database password.
   - Enter D to exit the setup script.

4. Update your RETL environment variable script to reflect the names of both the Oracle Networking wallet and the Java wallet.

   For example, to configure RETLforRPAS, modify the following entries in `$RETAIL_HOME/RETLforRPAS/rfx/etc/rmse_rpas_config.env`.

   - The RETL_WALLET_ALIAS should point to the Java wallet entry:
     - `export RETL_WALLET_ALIAS="retl_java_rms01user"`
   - The ORACLE_WALLET_ALIAS should point to the Oracle network wallet entry:
     - `export ORACLE_WALLET_ALIAS="dvols29_rms01user"`
   - The SQLPLUS_LOGON should use the ORACLE_WALLET_ALIAS:
     - `export SQLPLUS_LOGON="/@${ORACLE_WALLET_ALIAS}"`
5. To change a password later, run `setup-security-credential.sh`.
   - Enter 2 to update a database credential.
   - Select the credential to update.
   - Enter the database user to update or change.
   - Enter the password of the database user.
   - Re-enter the password.

For Java Applications (SIM, ReIM, RPM, RIB, AIP, Alloc, ReSA, RETL)

For Java applications, consider the following:

- For database user accounts, ensure that you set up the same alias names between the password stores (database wallet and Java wallet). You can provide the alias name during the installer process.
- Document all aliases that you have set up. During the application installation, you must enter the alias names for the application installer to connect to the database and application server.
- Passwords are not used to update entries in Java wallets. Entries in Java wallets are stored in partitions, or application-level keys. In each retail application that has been installed, the wallet is located in <WEBLOGIC_DOMAIN_HOME>/retail/<appname>/config Example: /u00/webadmin/product/10.3.6/WLS/user_projects/domains/14_mck_soa_domain/retail/reim14/config
- Application installers should create the Java wallets for you, but it is good to know how this works for future use and understanding.
- Scripts are located in <WEBLOGIC_DOMAIN_HOME>/retail/<appname>/retail-public-security-api/bin for administering wallet entries.
- Example:
- /u00/webadmin/product/10.3.6/WLS/user_projects/domains/REIMDomain/retail/reim14/retail-public-security-api/bin
- In this directory is a script to help you update each alias entry without having to remember the wallet details. For example, if you set the RPM database alias to rms01user, you will find a script called update-RMS01USER.sh.

  Note: These scripts are available only with applications installed by way of an installer.

- Two main scripts are related to this script in the folder for more generic wallet operations: dump_credentials.sh and save_credential.sh.

- If you have not installed the application yet, you can unzip the application zip file and view these scripts in <app>/application/retail-public-security-api/bin.
- Example:
- /u00/webadmin/reim14/application/retail-public-security-api/bin

update-<ALIAS>.sh

update-<ALIAS>.sh updates the wallet entry for this alias. You can use this script to change the user name and password for this alias. Because the application refers only to the alias, no changes are needed in application properties files.

Usage:

```
update-<username>.sh <myuser>
```

Example:

```
/u00/webadmin/product/10.3.x/WLS/user_projects/domains/RPMDomain/retail/rpm14/reta
il-public-security-api/bin> ./update-RMS01USER.sh
usage: update-RMS01USER.sh <username>
<username>: the username to update into this alias.
Example: update-RMS01USER.sh myuser
Note: this script will ask you for the password for the username that you pass in.
/u00/webadmin/product/10.3.x/WLS/user_projects/domains/RPMDomain/retail/rpm14/reta
il-public-security-api/bin>
```

dump_credentials.sh

dump_credentials.sh is used to retrieve information from wallet. For each entry found in the wallet, the wallet partition, the alias, and the user name are displayed. Note that the password is not displayed. If the value of an entry is uncertain, run save_credential.sh to resave the entry with a known password.

```
dump_credentials.sh <wallet location>
```

Example:

```
dump_credentials.sh
location:/u00/webadmin/product/10.3.x/WLS/user_projects/domains/REIMDomain/retail/
reim14/config

Retail Public Security API Utility
==========================================
```

Below are the credentials found in the wallet at the location:/u00/webadmin/product/10.3.x/WLS/user_projects/domains/REIMDomain/retail/reim14/config

```
==========================================

Application level key partition name:reim14
User Name Alias:WLS-ALIAS User Name:weblogic
User Name Alias:RETAIL-ALIAS User Name:retail.user
User Name Alias:LDAP-ALIAS User Name:RETAIL.USER
User Name Alias:RMS-ALIAS User Name:rms14mock
User Name Alias:REIMBAT-ALIAS User Name:reimbat
```

save_credential.sh

save_credential.sh is used to update the information in wallet. If you are unsure about the information that is currently in the wallet, use dump_credentials.sh as indicated above.

```
save_credential.sh -a <alias> -u <user> -p <partition name>  –l <path of the
wallet file location where credentials are stored>
```

Example:

```
/u00/webadmin/mock14_testing/rtil/rtil/application/retail-public-security-api/bin>
save_credential.sh -l wallet_test -a myalias -p mypartition -u myuser

==========================================
Retail Public Security API Utility
==========================================

Enter password:
Verify password:
```

> **Note:** -p in the above command is for partition name. You must specify the proper partition name used in application code for each Java application.
>
> save_credential.sh and dump_credentials.sh scripts are the same for all applications. If using save_credential.sh to add a wallet entry or to update a wallet entry, bounce the application/managed server so that your changes are visible to the application. Also, save a backup copy of your cwallet.sso file in a location outside of the deployment path, because redeployment or reinstallation of the application will wipe the wallet entries you made after installation of the application. To restore your wallet entries after a redeployment/reinstallation, copy the backed up cwallet.sso file over the cwallet.sso file. Then bounce the application/managed server.

Usage

```
==========================================
Retail Public Security API Utility
==========================================
usage: save_credential.sh -au[plh]
E.g. save_credential.sh -a rms-alias -u rms_user -p rib-rms -l ./
 -a,--userNameAlias <arg>              alias for which the credentials
needs to be stored
 -h,--help                             usage information
 -l,--locationofWalletDir <arg>        location where the wallet file is
created.If not specified, it creates the wallet under secure-credential-wallet
directory which is already present under the retail-public-security-api/
directory.
 -p,--appLevelKeyPartitionName <arg>   application level key partition name
 -u,--userName <arg>                   username to be stored in secure
credential wallet for specified alias*
```

How does the Wallet Relate to the Application?

The ORACLE Retail Java applications have the wallet alias information you create in an <app-name>.properties file. Below is the reim.properties file. Note the database information and the user are presented as well. The property called datasource.credential.alias=RMS-ALIAS uses the ORACLE wallet with the argument of RMS-ALIAS at the csm.wallet.path and csm.wallet.partition.name = reim14 to retrieve the password for application use.

Reim.properties code sample:

```
datasource.url=jdbc:oracle:thin:@xxxxxxx.us.oracle.com:1521:pkols07
datasource.schema.owner=rms14mock
datasource.credential.alias=RMS-ALIAS
# ===============================================================
# ossa related Configuration
#
# These settings are for ossa configuration to store credentials.
# ===============================================================

csm.wallet.path=/u00/webadmin/product/10.3.x/WLS/user_projects/domains/REIMDomain/
retail/reim14/config
csm.wallet.partition.name=reim14
```

How does the Wallet Relate to Java Batch Program use?

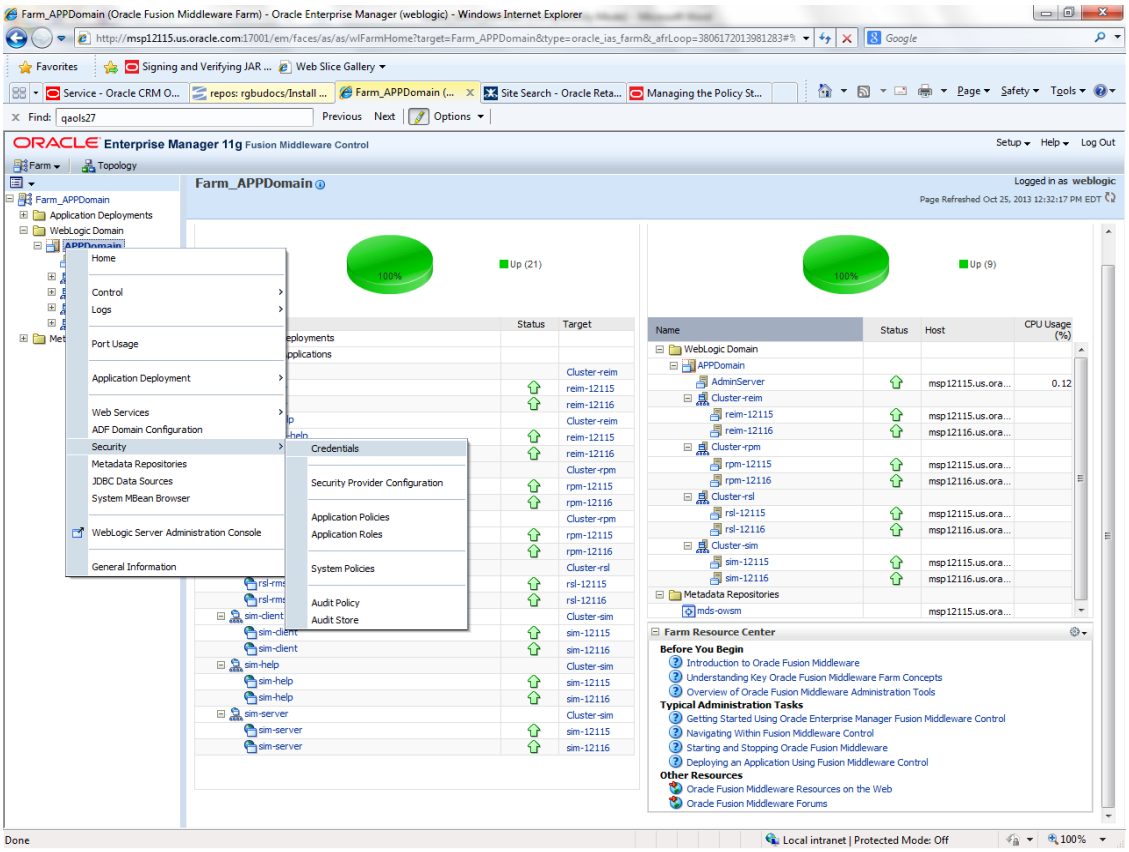
Some of the ORACLE Retail Java batch applications have an alias to use when running Java batch programs. For example, alias REIMBAT-ALIAS maps through the wallet to dbuser RMS01APP, already on the database. To run a ReIM batch program the format would be: reimbatchpgmname REIMBAT-ALIAS <other arguments as needed by the program in question>

Database Credential Store Administration

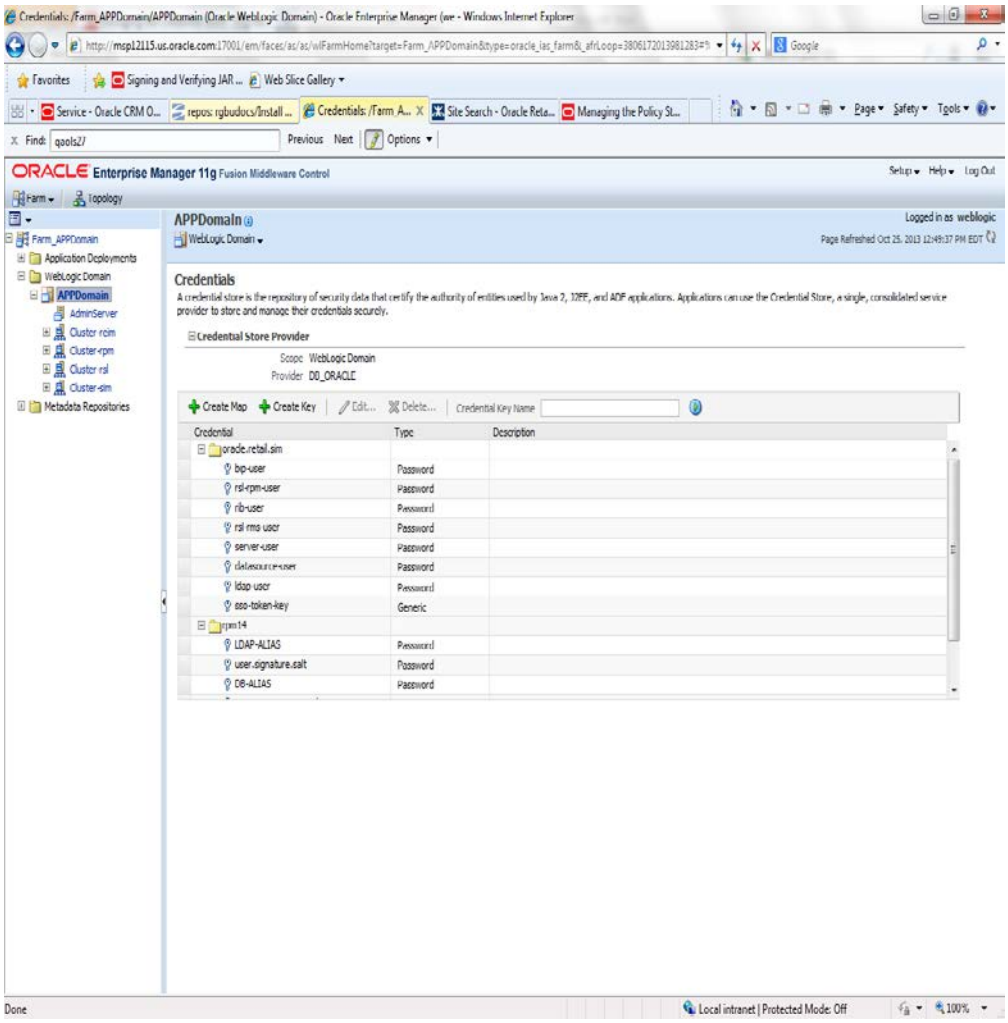
The following section describes a domain level database credential store. This is used in RPM login processing, SIM login processing, RWMS login processing, RESA login processing and Allocation login processing and policy information for application permission. Setting up the database credential store is addressed in the RPM, SIM, RESA, RWMS, and Alloc 14.1 install guides.

The following sections show an example of how to administer the password stores thru ORACLE Enterprise Manger Fusion Middleware Control, a later section will show how to do this thru WLST scripts.

1. The first step is to use your link to Oracle Enterprise Manager Fusion Middleware Control for the domain in question. Locate your domain on the left side of the screen and do a right mouse click on the domain and select **Security** > **Credentials**

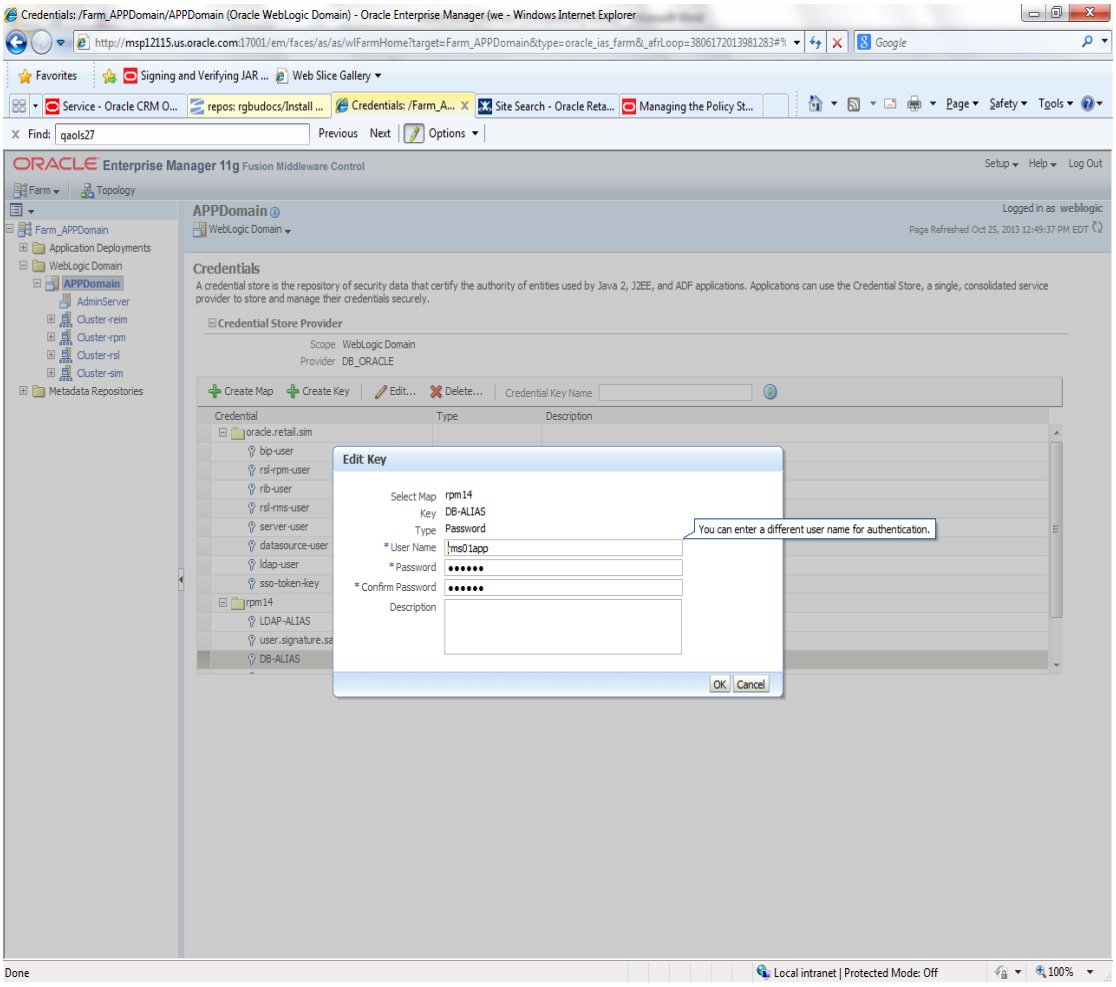


2. Click on Credentials and you will get a screen similar to the following. The following screen is expanded to make it make more sense. From here you can administer credentials.


Credentials /Farm_APPDomain/APPDomain (Oracle WebLogic Domain) - Oracle Enterprise Manager (we - Windows Internet Explorer
ORACLE Enterprise Manager 11g Fusion Middleware Control
APPDomain
Credentials
A credential store is the repository of security data that certify the authority of entities used by Java 2, J2EE, and ADF applications. Applications can use the Credential Store, a single, consolidated service provider to store and manage their credentials securely.
Credential Store Provider
Scope WebLogic Domain
Provider DD_ORACLE
Create Map
Create Key
Edit...
Delete...
Credential Key Name
Credential
Type
Description
oracle.retail.sim
bip-user
rsl-rpm-user
rib-user
rsl rms user
server-user
datasource-user
ldap user
sso-token-key
rpm14
LDAP-ALIAS
user.signature.salt
DB-ALIAS
Password
Generic
Done
Local intranet | Protected Mode: Off

The Create Map add above is to create a new map with keys under it. A map would usually be an application such as rpm14. The keys will usually represent alias to various users (database user, WebLogic user, LDAP user, etc). The application installer should add the maps so you should not often have to add a map.

Creation of the main keys for an application will also be built by the application installer. You will not be adding keys often as the installer puts the keys out and the keys talk to the application. You may be using EDIT on a key to see what user the key/alias points to and possibly change/reset its password. To edit a key/alias, highlight the key/alias in question and push the edit icon nearer the top of the page. You will then get a screen as follows:



The screen above shows the map (rpm14) that came from the application installer, the key (DB-ALIAS) that came from the application installer (some of the keys/alias are selected by the person who did the application install, some are hard coded by the application installer in question), the type (in this case password), and the user name and password. This is where you would check to see that the user name is correct and reset the password if needed. REMEMBER, a change to an item like a database password WILL make you come into this and also change the password. Otherwise your application will NOT work correctly.

Managing Credentials with WSLT/OPSS Scripts

This procedure is optional as you can administer the credential store through the Oracle enterprise manager associated with the domain of your application install for RPM, SIM, RESA, or Allocation.

An Oracle Platform Security Scripts (OPSS) script is a WLST script, in the context of the Oracle WebLogic Server. An online script is a script that requires a connection to a running server. Unless otherwise stated, scripts listed in this section are online scripts and operate on a database credential store. There are a few scripts that are offline, that is, they do not require a server to be running to operate.

Read-only scripts can be performed only by users in the following WebLogic groups: Monitor, Operator, Configurator, or Admin. Read-write scripts can be performed only by users in the following WebLogic groups: Admin or Configurator. All WLST scripts are available out-of-the-box with the installation of the Oracle WebLogic Server.

WLST scripts can be run in interactive mode or in script mode. In interactive mode, you enter the script at a command-line prompt and view the response immediately after. In script mode, you write scripts in a text file (with a py file name extension) and run it without requiring input, much like the directives in a shell script.

For platform-specific requirements to run an OPSS script, see http://docs.oracle.com/cd/E21764_01/core.1111/e10043/managepols.htm#CIHIBBDJ

The weakness with the WLST/OPSS scripts is that you have to already know your map name and key name. In many cases, you do not know or remember that. The database credential store way through enterprise manager is a better way to find your map and key names easily when you do not already know them. A way in a command line mode to find the map name and alias is to run orapki. An example of orapki is as follows:

/u00/webadmin/product/wls_apps/oracle_common/bin> ./orapki wallet display –wallet /u00/webadmin/product/wls_apps/user_projects/domains/APPDomain/config/fmwconfig

(where the path above is the domain location of the wallet)

Output of orapki is below. This shows map name of rpm14 and each alias in the wallet:

Oracle PKI Tool : Version 11.1.1.7.0

Requested Certificates:

User Certificates:

Oracle Secret Store entries:

rpm14@#3#@DB-ALIAS

rpm14@#3#@LDAP-ALIAS

rpm14@#3#@RETAIL.USER

rpm14@#3#@user.signature.salt

rpm14@#3#@user.signature.secretkey

rpm14@#3#@WEBLOGIC-ALIAS

rpm14@#3#@WLS-ALIAS

Trusted Certificates:

Subject: OU=Class 1 Public Primary Certification Authority,O=VeriSign\, Inc.,C=US

OPSS provides the following scripts on all supported platforms to administer credentials (all scripts are online, unless otherwise stated. You need the map name and the key name to run the scripts below

- listCred
- updateCred
- createCred
- deleteCred
- modifyBootStrapCredential
- addBootStrapCredential

listCred

The script `listCred` returns the list of attribute values of a credential in the credential store with given map name and key name. This script lists the data encapsulated in credentials of type password only.

Script Mode Syntax

```
listCred.py -map mapName -key keyName
```

Interactive Mode Syntax

```
listCred(map="mapName", key="keyName")
```

The meanings of the arguments (all required) are as follows:

- `map` specifies a map name (folder).
- `key` specifies a key name.

Examples of Use:

The following invocation returns all the information (such as user name, password, and description) in the credential with map name `myMap` and key name `myKey`:

```
listCred.py -map myMap -key myKey
```

The following example shows how to run this command and similar credential commands with WLST:

```
/u00/webadmin/product/wls_apps/oracle_common/common/bin>
sh wlst.sh

Initializing WebLogic Scripting Tool (WLST)...

Welcome to WebLogic Server Administration Scripting Shell


wls:/offline> connect('weblogic','password123','xxxxxx.us.oracle.com:17001')
Connecting to t3://xxxxxx.us.oracle.com:17001 with userid weblogic ...
Successfully connected to Admin Server 'AdminServer' that belongs to domain
'APPDomain'.

wls:/APPDomain/serverConfig> listCred(map="rpm14",key="DB-ALIAS")
Already in Domain Runtime Tree

[Name : rms01app, Description : null, expiry Date : null]
PASSWORD:retail
*The above means for map rpm14 in APPDomain, alias DB-ALIAS points to database
user rms01app with a password of retail
```

updateCred

The script `updateCred` modifies the type, user name, and password of a credential in the credential store with given map name and key name. This script updates the data encapsulated in credentials of type password only. Only the interactive mode is supported.

Interactive Mode Syntax

```
updateCred(map="mapName", key="keyName", user="userName", password="passW",
[desc="description"])
```

The meanings of the arguments (optional arguments are enclosed by square brackets) are as follows:

- `map` specifies a map name (folder) in the credential store.
- `key` specifies a key name.
- `user` specifies the credential user name.
- `password` specifies the credential password.
- `desc` specifies a string describing the credential.

Example of Use:

The following invocation updates the user name, password, and description of the password credential with map name `myMap` and key name `myKey`:

```
updateCred(map="myMap", key="myKey", user="myUsr", password="myPassw")
```

createCred

The script `createCred` creates a credential in the credential store with a given map name, key name, user name and password. This script can create a credential of type password only. Only the interactive mode is supported.

Interactive Mode Syntax

```
createCred(map="mapName", key="keyName", user="userName", password="passW",
[desc="description"])
```

The meanings of the arguments (optional arguments are enclosed by square brackets) are as follows:

- `map` specifies the map name (folder) of the credential.
- `key` specifies the key name of the credential.
- `user` specifies the credential user name.
- `password` specifies the credential password.
- `desc` specifies a string describing the credential.

Example of Use:

The following invocation creates a password credential with the specified data:

```
createCred(map="myMap", key="myKey", user="myUsr", password="myPassw")
```

deleteCred

The script `deleteCred` removes a credential with given map name and key name from the credential store.

Script Mode Syntax

```
deleteCred.py -map mapName -key keyName
```

Interactive Mode Syntax

```
deleteCred(map="mapName",key="keyName")
```

The meanings of the arguments (all required) are as follows:

- `map` specifies a map name (folder).
- `key` specifies a key name.

Example of Use:

The following invocation removes the credential with map name `myMap` and key name `myKey`:

```
deleteCred.py -map myMap -key myKey
```

modifyBootStrapCredential

The offline script `modifyBootStrapCredential` modifies the bootstrap credentials configured in the default jps context, and it is typically used in the following scenario: suppose that the policy and credential stores are LDAP-based, and the credentials to access the LDAP store (stored in the LDAP server) are changed. Then this script can be used to seed those changes into the bootstrap credential store.

This script is available in interactive mode only.

Interactive Mode Syntax

```
modifyBootStrapCredential(jpsConfigFile="pathName", username="usrName",
password="usrPass")
```

The meanings of the arguments (all required) are as follows:

- `jpsConfigFile` specifies the location of the file `jps-config.xml` relative to the location where the script is run. Example location: /u00/webadmin/product/wls_apps/user_projects/domains/APPDomain/config/fmwconfig. Example location of the bootstrap wallet is /u00/webadmin/product/wls_apps/user_projects/domains/APPDomain/config/fmwconfig/bootstrap
- `username` specifies the distinguished name of the user in the LDAP store.
- `password` specifies the password of the user.

Example of Use:

Suppose that in the LDAP store, the password of the user with distinguished name `cn=orcladmin` has been changed to `welcome1`, and that the configuration file `jps-config.xml` is located in the current directory.Then the following invocation changes the password in the bootstrap credential store to `welcome1`:

```
modifyBootStrapCredential(jpsConfigFile='./jps-config.xml',
username='cn=orcladmin', password='welcome1')
```

Any output regarding the audit service can be disregarded.

addBootStrapCredential

The offline script `addBootStrapCredential` adds a password credential with given map, key, user name, and user password to the bootstrap credentials configured in the default jps context of a jps configuration file.

Classloaders contain a hierarchy with parent classloaders and child classloaders. The relationship between parent and child classloaders is analogous to the object relationship of super classes and subclasses. The bootstrap classloader is the root of the Java classloader hierarchy. The Java virtual machine (JVM) creates the bootstrap classloader, which loads the Java development kit (JDK) internal classes and `java.*` packages included in the JVM. (For example, the bootstrap classloader loads `java.lang.String`.)

This script is available in interactive mode only.

Interactive Mode Syntax

```
addBootStrapCredential(jpsConfigFile="pathName", map="mapName", key="keyName",
username="usrName", password="usrPass")
```

The meanings of the arguments (all required) are as follows:

- `jpsConfigFile` specifies the location of the file `jps-config.xml` relative to the location where the script is run. Example location: /u00/webadmin/product/wls_apps/user_projects/domains/APPDomain/config/fmwconfig
- `map` specifies the map of the credential to add.
- `key` specifies the key of the credential to add.
- `username` specifies the name of the user in the credential to add.
- `password` specifies the password of the user in the credential to add.

Example of Use:

The following invocation adds a credential to the bootstrap credential store:

```
addBootStrapCredential(jpsConfigFile='./jps-config.xml', map='myMapName',
key='myKeyName', username='myUser', password ='myPass')
```

Quick Guide for Retail Password Stores (db wallet, java wallet, DB credential stores)

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
RMS batch	DB	<RMS batch install dir (RETAIL_HOME)>/.wallet	n/a	<Database SID>_<Database schema owner>	<rms schema owner>	Compile, execution	Installer	n/a	Alias hard-coded by installer
RMS forms	DB	<forms install dir>/base/.wallet	n/a	<Database SID>_<Database schema owner>	<rms schema owner>	Compile	Installer	n/a	Alias hard-coded by installer
ARI forms	DB	<forms install dir>/base/.wallet	n/a	<Db_Ari01>	<ari schema owner>	Compile	Manual	ari-alias	
RMWS forms	DB	<forms install dir>/base/.wallet	n/a	<Database SID>_<Database schema owner>	<rwms schema owner>	Compile forms, execute batch	Installer	n/a	Alias hard-coded by installer
RPM batch plsql and sqlldr	DB	<RPM batch install dir>/.wallet	n/a	<rms schema owner alias>	<rms schema owner>	Execute batch	Manual	rms-alias	RPM plsql and sqlldr batches
RWMS auto-login	JAVA	<forms install dir>/base/.javawallet							
			<RWMS Installation name>	<RWMS database user alias>	<RWMS schema owner>	RWMS forms app to avoid dblogin screen	Installer	rwms14inst	
			<RWMS Installation name>	BI_ALIAS	<BI Publisher administrative user>	RWMS forms app to connect to BI Publisher	Installer	n/a	Alias hard-coded by installer

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
AIP app	JAVA	<weblogic domain home>/retail/<deployed aip app name>/config							Each alias must be unique
			aip14	<AIP weblogic user alias>	<AIP weblogic user name>	App use	Installer	aip-weblogic-alias	
			aip14	<AIP database schema user alias>	<AIP database schema user name>	App use	Installer	aip01user-alias	
			aip14	<rib-aip weblogic user alias>	<rib-aip weblogic user name>	App use	Installer	rib-aip-weblogic-alias	
RPM app	DB credential store		Map=rpm14 or what you called the app at install time.	Many for app use					<weblogic domain home>/config/fmwconfig/jps-config.xml has info on the credential store. This directory also has the domain cwallet.sso file.
RPM app	JAVA	<weblogic domain home>/retail/<deployed rpm app name>/config							Each alias must be unique
			rpm14	<rpm weblogic user alias>	<rpm weblogic user name>	App use	Installer	rpm-weblogic-alias	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
			rpm14	<rpm batch user name> is the alias. Yes, here alias name = user name	<rpm batch user name>	App, batch use	Installer	RETAIL.USER	
	JAVA	<retail_home>/orpatch/config/javaapp_rpm							Each alias must be unique
			retail_installer	<rpm weblogic user alias>	<rpm weblogic user name>	App use	Installer	weblogic-alias	
			retail_installer	<rms shema user alias>	<rms shema user name>	App, batch use	Installer	rms01user-alias	
			retail_installer	<reim batch user alias>	<reim batch user name>	App, batch use	Installer	reimbat-alias	
			retail_installer	<LDAP-ALIAS>	cn=rpm.admin,cn=Users,dc=us,dc=oracle,dc=com	LDAP user use	Installer	LDAP_ALIAS	
RelM app	JAVA	<weblogic domain home>/retail/<deployed reim app name>/config							Each alias must be unique
			<installed app name, ex: reim14>	<reim weblogic user alias>	<reim weblogic user name>	App use	Installer	weblogic-alias	
			<installed app name, ex: reim14>	<rms shema user alias>	<rms shema user name>	App, batch use	Installer	rms01user-alias	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
			<installed app name, ex: reim14>	<reim webservice validation user alias>	<reim webservice validation user name>	App use	Installer	reimwebservice-alias	
			<installed app name, ex: reim14>	<reim batch user alias>	<reim batch user name>	App, batch use	Installer	reimbat-alias	
			<installed app name, ex: reim14>	<LDAP-ALIAS>	cn=REIM.ADMIN,cn=Users,dc=us,dc=oracle,dc=com	LDAP user use	Installer	LDAP_ALIAS	
	JAVA	<retail_home>/orpatch/config/javaapp_reim							Each alias must be unique
			retail_installer	<reim weblogic user alias>	<reim weblogic user name>	App use	Installer	weblogic-alias	
			retail_installer	<rms shema user alias>	<rms shema user name>	App, batch use	Installer	rms01user-alias	
			retail_installer	<reim webservice validation user alias>	<reim webservice validation user name>	App use	Installer	reimwebservice-alias	
			retail_installer	<reim batch user alias>	<reim batch user name>	App, batch use	Installer	reimbat-alias	
			retail_installer	<LDAP-ALIAS>	cn=REIM.ADMIN,cn=Users,dc=us,dc=oracle,dc=com	LDAP user use	Installer	LDAP_ALIAS	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
RESA app	DB credential store		Map=resa14 or what you called the app at install time	Many for login and policies					<weblogic domain home>/config/fmwconfig/jps-config.xml has info on the credential store. This directory also has the domain cwallet.sso file. The bootstrap directory under this directory has bootstrap cwallet.sso file.
RESA app	JAVA	<weblogic domain home>/retail/<deployed resa app name>/config							Each alias must be unique
			<installed app name>	<resa weblogic user alias>	<resa weblogic user name>	App use	Installer	wlsalias	
			<installed app name>	<resa schema db user alias>	<rmsdb shema user name>	App use	Installer	Resadb-alias	
			<installed app name>	<resa schema user alias>	<rmsdb shema user name>>	App use	Installer	resa-alias	
	JAVA	<retail_home>/orpatch/config/javaapp_resa							Each alias must be unique

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
			retail_installer	<resa weblogic user alias>	<resa weblogic user name>	App use	Installer	wlsalias	
			retail_installer	<resa schema db user alias>	<rmsdb shema user name>	App use	Installer	Resadb-alias	
	JAVA	<retail_ home>/orpatch/config/javaapp_rasrm							Each alias must be unique
			retail_installer	<alloc weblogic user alias>	<alloc weblogic user name>	App use	Installer	weblogic-alias	
Alloc app	DB credential store		Map=alloc 14 or what you called the app at install time	Many for login and policies					<weblogic domain home>/config/fmwconfig/jps-config.xml has info on the credential store. This directory also has the domain cwallet.sso file. The bootstrap directory under this directory has bootstrap cwallet.sso file.
Alloc app	JAVA	<weblogic domain home>/retail/config							Each alias must be unique

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
			<installed app name>	<alloc weblogic user alias>	<alloc weblogic user name>	App use	Installer	weblogic-alias	
			<installed app name>	<rms schema user alias>	<rms schema user name>	App use	Installer	dsallocAlias	
			<installed app name>	<alloc batch user alias>	<SYSTEM_ ADMINISTRATOR>	Batch use	Installer	alloc14	
	JAVA	<retail_ home>/orpatch/config/javaapp_alloc							Each alias must be unique
			retail_installer	<alloc weblogic user alias>	<alloc weblogic user name>	App use	Installer	weblogic-alias	
			retail_installer	<rms schema user alias>	<rms schema user name>	App use	Installer	dsallocAlias	
			retail_installer	<alloc batch user alias>	<SYSTEM_ ADMINISTRATOR>	Batch use	Installer	alloc14	
	JAVA	<retail_ home>/orpatch/config/javaapp_rasrm							Each alias must be unique
			retail_installer	<alloc weblogic user alias>	<alloc weblogic user name>	App use	Installer	weblogic-alias	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
SIM app	DB credential store		Map=oracle.retail.sim	Aliases required for SIM app use					<weblogic domain home>/config/fmwconfig/jps-config.xml has info on the credential store. This directory also has the domain cwallet.sso file.
	JAVA	<weblogic domain home>/retail/<deployed sim app name>/batch/resources/conf	oracle.retail.sim	<sim batch user alias>	<sim batch user name>	App use	Installer	BATCH-ALIAS	
	JAVA	<weblogic domain home>/retail/<deployed sim app name>/wireless/resources/conf	oracle.retail.sim	<sim wireless user alias>	<sim wireless user name>	App use	Installer	WIRELESS-ALIAS	
RETL	JAVA	<RETL home>/etc/security	n/a	<target application user alias>	<target application db userid>	App use	Manual	retl_java_rms01user	User may vary depending on RETL flow's target application
RETL	DB	<RETL home>/.wallet	n/a	<target application user alias>	<target application db userid>	App use	Manual	<db>_<user>	User may vary depending on RETL flow's target application
RIB	JAVA	<RIBHOME DIR>/deployment-home/conf/security							<app> is one of aip, rfm, rms, rpm, sim, rwms, tafr
JMS			jms<1-5>	<jms user alias> for jms<1-5>	<jms user name> for jms<1-5>	Integration use	Installer	jms-alias	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
WebLogic			rib-<app>-app-server-instance	<rib-app weblogic user alias>	<rib-app weblogic user name>	Integration use	Installer	weblogic-alias	
Admin GUI			rib-<app>#web-app-user-alias	<rib-app admin gui user alias>	<rib-app admin gui user name>	Integration use	Installer	admin-gui-alias	
Application			rib-<app>#user-alias	<app weblogic user alias>	<app weblogic user name>	Integration use	Installer	app-user-alias	Valid only for aip, rpm, sim
DB			rib-<app>#app-db-user-alias	<rib-app database schema user alias>	<rib-app database schema user name>	Integration use	Installer	db-user-alias	Valid only for rfm, rms, rwms, tafr
Error Hospital			rib-<app>#hosp-user-alias	<rib-app error hospital database schema user alias>	<rib-app error hospital database schema user name>	Integration use	Installer	hosp-user-alias	
RFI	Java	<RFI-HOME>/retail-financial-integration-solution/service-based-integration/conf/security							
			<installed app name>	rfiAppServerAdminServerUserAlias	<rfi weblogic user name>	App use	Installer	rfiAppServerAdminServerUserAlias	
			<installed app name>	rfiAdminUiUserAlias	<ORFI admin user>	App use	Installer	rfiAdminUiUserAlias	
			<installed app name>	rfiDataSourceUserAlias	<ORFI schema user name>	App use	Installer	rfiDataSourceUserAlias	

Retail app	Wallet type	Wallet loc	Wallet partition	Alias name	User name	Use	Create by	Alias Example	Notes
			<installed app name>	ebsDataSourceUserAlias	<EBS schema user name>	App use	Installer	ebsDataSourceUserAlias	
			<installed app name>	smtpMailFromAddressAlias	<From email address>	App use	Installer	smtpMailFromAddressAlias	

E

Appendix: Single Sign-On for WebLogic

Single Sign-On (SSO) is a term for the ability to sign onto multiple Web applications via a single user ID/Password. There are many implementations of SSO. Oracle provides an implementation with Oracle Access Manager.

Most, if not all, SSO technologies use a session cookie to hold encrypted data passed to each application. The SSO infrastructure has the responsibility to validate these cookies and, possibly, update this information. The user is directed to log on only if the cookie is not present or has become invalid. These session cookies are restricted to a single browser session and are never written to a file.

Another facet of SSO is how these technologies redirect a user's Web browser to various servlets. The SSO implementation determines when and where these redirects occur and what the final screen shown to the user is.

Most SSO implementations are performed in an application's infrastructure and not in the application logic itself. Applications that leverage infrastructure managed authentication (such as deployment specifying Basic or Form authentication) typically have little or no code changes when adapted to work in an SSO environment.

What Do I Need for Single Sign-On?

A Single Sign-On system involves the integration of several components, including Oracle Identity Management and Oracle Access Management. This includes the following components:

- An Oracle Internet Directory (OID) LDAP server, used to store user, role, security, and other information. OID uses an Oracle database as the back-end storage of this information.
- An Oracle Access Manager (OAM) 11g Release 2 server and administrative console for implementing and configuring policies for single sign-on.
- A Policy Enforcement Agent such as Oracle Access Manager 11g Agent (WebGate), used to authenticate the user and create the Single Sign-On cookies.
- Oracle Directory Services Manager (ODSM) application in OIM11g, used to administer users and group information. This information may also be loaded or modified via standard LDAP Data Interchange Format (LDIF) scripts.
- Additional administrative scripts for configuring the OAM system and registering HTTP servers.

Additional WebLogic managed servers will be needed to deploy the business applications leveraging the Single Sign-On technology.

Can Oracle Access Manager Work with Other SSO Implementations?

Yes, Oracle Access Manager has the ability to interoperate with many other SSO implementations, but some restrictions exist.

Oracle Single Sign-on Terms and Definitions

The following terms apply to single sign-on.

Authentication

Authentication is the process of establishing a user's identity. There are many types of authentication. The most common authentication process involves a user ID and password.

Dynamically Protected URLs

A Dynamically Protected URL is a URL whose implementing application is aware of the Oracle Access Manager environment. The application may allow a user limited access when the user has not been authenticated. Applications that implement dynamic protection typically display a Login link to provide user authentication and gain greater access to the application's resources.

Oracle Identity Management (OIM) and Oracle Access Manager (OAM) for 11g

Oracle Identity Management (OIM) 11g includes Oracle Internet Directory and ODSM. Oracle Access Manager (OAM) 11g R2 should be used for SSO using WebGate. Oracle Forms 11g contains Oracle HTTP server and other Retail Applications will use Oracle WebTier11g for HTTP Server.

MOD_WEBLOGIC

mod_WebLogic operates as a module within the HTTP server that allows requests to be proxied from the OracleHTTP server to the Oracle WebLogic server.

Oracle Access Manager 11g Agent (WebGate)

Oracle WebGates are policy enforcement agents which reside with relying parties and delegate authentication and authorization tasks to OAM servers.

Oracle Internet Directory

Oracle Internet Directory (OID) is an LDAP-compliant directory service. It contains user ids, passwords, group membership, privileges, and other attributes for users who are authenticated using Oracle Access Manager.

Partner Application

A partner application is an application that delegates authentication to the Oracle Identity Management Infrastructure. One such partner application is the Oracle HTTP Server (OHS) supplied with Oracle Forms Server or WebTier11g Server if using other Retail Applications other than Oracle Forms Applications.

All partner applications must be registered with Oracle Access Manager (OAM) 11g. An output product of this registration is a configuration file the partner application uses to verify a user has been previously authenticated.

Statically Protected URLs

A URL is considered to be Statically Protected when an Oracle HTTP server is configured to limit access to this URL to only SSO authenticated users. Any unauthenticated attempt to access a Statically Protected URL results in the display of a login page or an error page to the user.

Servlets, static HTML pages, and JSP pages may be statically protected.

What Single Sign-On is not

Single Sign-On is NOT a user ID/password mapping technology.

However, some applications can store and retrieve user IDs and passwords for non-SSO applications within an OID LDAP server. An example of this is the Oracle Forms Web Application framework, which maps Single Sign-On user IDs to a database logins on a per-application basis.

How Oracle Single Sign-On Works

Oracle Access Manager involves several different components. These are:

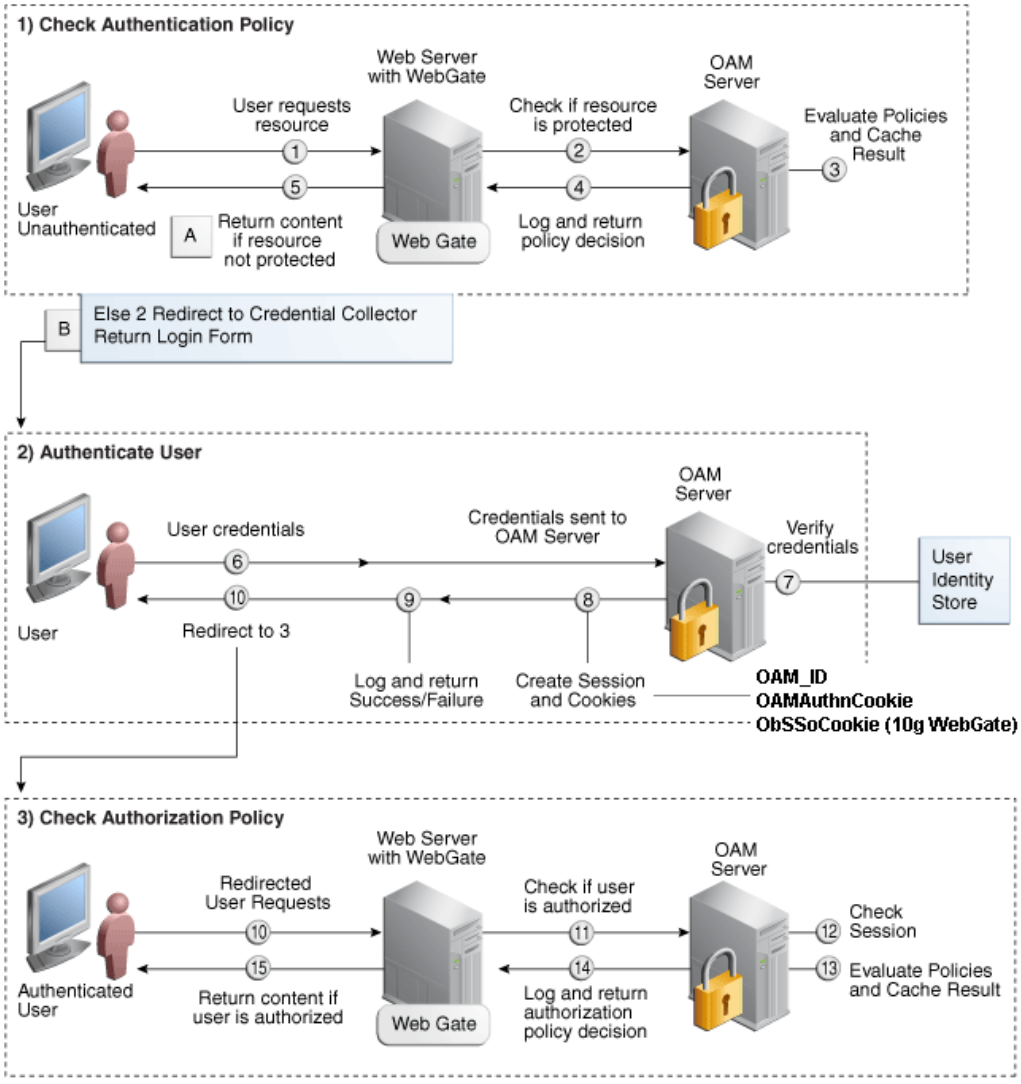
- The Oracle Access Manager (OAM) server, which is responsible for the back-end authentication of the user.
- The Oracle Internet Directory LDAP server, which stores user IDs, passwords, and group (role) membership.
- The Oracle Access Manager Agent associated with the Web application, which verifies and controls browser redirection to the Oracle Access Manager server.
- If the Web application implements dynamic protection, then the Web application itself is involved with the OAM system.

About SSO Login Processing with OAM Agents

1. The user requests a resource.
2. Webgate forwards the request to OAM for policy evaluation
3. OAM:
   a. Checks for the existence of an SSO cookie.
   b. Checks policies to determine if the resource is protected and if so, how?
4. OAM Server logs and returns the decision
5. Webgate responds as follows:
   - **Unprotected Resource:** Resource is served to the user
   - **Protected Resource:**
     Resource is redirected to the credential collector.
     The login form is served based on the authentication policy.
     Authentication processing begins
6. User sends credentials
7. OAM verifies credentials
8. OAM starts the session and creates the following host-based cookies:
   - **One per partner:** OAMAuthnCookie set by 11g WebGates using authentication token received from the OAM Server after successful authentication.
     Note: A valid cookie is required for a session.
   - **One for OAM Server:** OAM_ID
9. OAM logs Success of Failure.
10. Credential collector redirects to WebGate and authorization processing begins.
11. WebGate prompts OAM to look up policies, compare them to the user's identity, and determine the user's level of authorization.
12. OAM logs policy decision and checks the session cookie.
13. OAM Server evaluates authorization policies and cache the result.
14. OAM Server logs and returns decisions

15. WebGate responds as follows:
    - If the authorization policy allows access, the desired content or applications are served to the user.
    - If the authorization policy denies access, the user is redirected to another URL determined by the administrator.

SSO Login Processing with OAM Agents



Installation Overview

Installing an Oracle Retail supported Single Sign-On installation using OAM11g requires installation of the following:

1. Oracle Internet Directory (OID) LDAP server and the Oracle Directory Services Manager. They are typically installed using the Installer of Oracle Identity Management . The ODSM application can be used for user and realm management within OID.
2. Oracle Access Manager 11gR2 has to be installed and configured.
3. Additional midtier instances (such as Oracle Forms 11gr2) for Oracle Retail applications based on Oracle Forms technologies (such as RMS). These instances must be registered with the OAM installed in step 2.
4. Additional application servers to deploy other Oracle Retail applications and performing application specific initialization and deployment activities must be registered with OAM installed in step 2.

Infrastructure Installation and Configuration

The Infrastructure installation for Oracle Access Manager (OAM) is dependent on the environment and requirements for its use. Deploying Oracle Access Manager (OAM) to be used in a test environment does not have the same availability requirements as for a production environment. Similarly, the Oracle Internet Directory (OID) LDAP server can be deployed in a variety of different configurations. See the *Oracle Identity Management Installation Guide11g*.

OID User Data

Oracle Internet Directory is an LDAP v3 compliant directory server. It provides standards-based user definitions out of the box.

Customers with existing corporate LDAP implementations may need to synchronize user information between their existing LDAP directory servers and OID. OID supports standard LDIF file formats and provides a JNDI compliant set of Java classes as well. Moreover, OID provides additional synchronization and replication facilities to integrate with other corporate LDAP implementations.

Each user ID stored in OID has a specific record containing user specific information. For role-based access, groups of users can be defined and managed within OID. Applications can thus grant access based on group (role) membership saving administration time and providing a more secure implementation.

User Management

User Management consists of displaying, creating, updating or removing user information. There are many methods of managing an LDAP directory including LDIF scripts or Oracle Directory Services Manager (ODSM) available for OID11g.

ODSM

Oracle Directory Services Manager (ODSM) is a Web-based application used in OID11g is designed for both administrators and users which enables you to configure the structure of the directory, define objects in the directory, add and configure users, groups, and other entries. ODSM is the interface you use to manage entries, schema, security, adapters, extensions, and other directory features.

LDIF Scripts

Script based user management can be used to synchronize data between multiple LDAP servers. The standard format for these scripts is the LDAP Data Interchange Format (LDIF). OID supports LDIF script for importing and exporting user information. LDIF scripts may also be used for bulk user load operations.

User Data Synchronization

The user store for Oracle Access Manager resides within the Oracle Internet Directory (OID) LDAP server. Oracle Retail applications may require additional information attached to a user name for application-specific purposes and may be stored in an application-specific database. Currently, there are no Oracle Retail tools for synchronizing changes in OID stored information with application-specific user stores. Implementers should plan appropriate time and resources for this process. Oracle Retail strongly suggests that you configure any Oracle Retail application using an LDAP for its user store to point to the same OID server used with Oracle Access Manager.

F

Appendix: Installation Order

This section provides a guideline as to the order in which the Oracle Retail applications should be installed. If a retailer has chosen to use some, but not all, 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)
2. Oracle Retail Sales Audit (ReSA)
3. Oracle Retail Extract, Transform, Load (RETL)
4. Oracle Retail Active Retail Intelligence (ARI)
5. Oracle Retail Warehouse Management System (RWMS)
6. Oracle Retail Invoice Matching (ReIM)
7. Oracle Retail Price Management (RPM)

> **Note:** During installation of RPM, you are asked for the RIBforRPM provider URL. Because RIB is installed after RPM, make a note of the URL you enter. To change the RIBforRPM provider URL after you install RIB, edit the remote_service_locator_info_ribserver.xml file.

8. Oracle Retail Allocation
9. Oracle Retail Central Office (ORCO)
10. Oracle Retail Returns Management (ORRM)
11. Oracle Retail Back Office (ORBO)
12. Oracle Retail Store Inventory Management (SIM)

> **Note:** During installation of SIM, you are asked for the RIB provider URL. Because RIB is installed after SIM, make a note of the URL you enter. To change the RIB provider URL after you install RIB, edit 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 (RCM)
16. Oracle Retail Replenishment Optimization (RO)
17. Oracle Retail Analytic Parameter Calculator Replenishment Optimization (APC RO)
18. Oracle Retail Regular Price Optimization (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 Analytics
26. Oracle Retail Advanced Science Engine (ORASE)
27. Oracle Retail Integration Bus (RIB)
28. Oracle Retail Service Backbone (RSB)
29. Oracle Retail Financial Integration (ORFI)
30. Oracle Retail Point-of-Service (ORPOS)
    - Oracle Retail Mobile Point-of-Service (ORMPOS) (requires ORPOS)
31. Oracle Retail Markdown Optimization (MDO)
32. Oracle Retail Clearance Optimization Engine (COE)
33. Oracle Retail Analytic Parameter Calculator for Markdown Optimization (APC-MDO)
34. Oracle Retail Analytic Parameter Calculator for Regular Price Optimization (APC-RPO)
35. Oracle Retail Macro Space Planning (MSP)

    The Oracle Retail Enterprise suite includes Macro Space Planning. This can be installed independently of and does not affect the installation order of the other applications in the suite. If Macro Space Planning is installed, the installation order for its component parts is:
    - Oracle Retail Macro Space Management (MSM)
    - Oracle Retail In-Store Space Collaboration (ISSC) (requires MSM)
    - Oracle Retail Mobile In-Store Space Collaboration (requires MSM and ISSC)