Oracle® Financial Services Profitability Analytics Applications Pack

Installation and Configuration Guide

Release 8.1.2.0.0
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ORACLE

Oracle Financial Services Profitability Analytics Applications Pack Installation and Configuration Guide, Release 8.1.2.0.0

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Preface

This section provides information about the Oracle Financial Services Performance Analytics Pack (OFS PFT Pack) Installation and Configuration Guide.

You can find the latest copy of this document in the OHC Documentation Library which includes all the recent additions and revisions (if any) done to date.

Before you begin the installation, ensure that you have access to My Oracle Support (MOS) with the required login credentials to quickly notify us of any issues at any stage.

Topics:

1.1 Audience

The OFS Performance Analytics Pack (OFS PFT Pack) Installation and Configuration Guide is intended for administrators, and implementation consultants who are responsible for installing and maintaining the application pack components.

Anyone performing the installation is expected to be experienced in installing enterprise components and possess basic knowledge of the following:

- Performance Analytics Pack (OFS PFT Pack) components
- OFSAA architecture
- UNIX commands
- Database concepts
- Web server or web application server

1.2 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For more information, visit My Oracle Support or visit Oracle Accessibility Learning and Support if you are hearing impaired.

1.3 Related Documents

We strive to keep this document and all other related documents updated regularly.

Visit the OHC Documentation Library to download the latest version available. The list of related documents is provided here.

- OFS Performance Analytics Release Notes, Release 8.1.2.0.0
- OFS Performance Analytics Operational User Guide
- OFS Performance Analytics Business Administrator User Guide
- OFS Performance Analytics Business User Guide
- OFS Performance Analytics OBIEE Reports User Guide
- OFS Enterprise Financial Performance Analytics User Guide
- OFS Performance Analytics API Reference Guide

Oracle Financial Services Performance Analytics Applications Pack Security Guides:

- OFS Enterprise Financial Performance Analytics Security Guide
- OFS Institutional Performance Analytics Security Guide
- OFS Retail Performance Analytics Security Guide

Oracle Financial Services Performance Analytics Applications Pack Cloning Guides:

- OFS Enterprise Financial Performance Analytics Cloning Reference Guide
- OFS Institutional Performance Analytics Cloning Reference Guide
- OFS Retail Performance Analytics Cloning Reference Guide

1.4 Additional Documents to Read

Oracle Financial Services Profitability Management Applications Pack is built on the Oracle Financial Services Advanced Analytical Applications Infrastructure (OFS AAI).

See the following OFS AAI documents as no separate documents are required at the pack or application level for Oracle Financial Services Profitability Management Applications Pack:

- OFS Analytical Applications Infrastructure (OFS AAAI) Application Pack Installation and Configuration Guide Release 8.1.2.0.0
- OFS Analytical Applications Infrastructure Administration Guide Release 8.1.x
- OFS Analytical Applications Infrastructure User Guide Release 8.1.2.0.0
- OFS Analytical Applications Infrastructure Cloning Reference Guide Release 8.1.x
- OFS Analytical Applications Infrastructure Security Guide Release 8.1.x

You can access the common document from the OHC Documentation Library:

- OFS Analytical Applications 8.1.2.0.0 Technology Matrix

1.5 Conventions

The following text conventions are used in this document:

Table 1-1 Conventions Used in this Guide

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

1.6 Abbreviations

The following table lists the abbreviations used in this document:

Abbreviation	Meaning
BDP	Big Data Processing
DBA	Database Administrator
DDL	Data Definition Language
DEFQ	Data Entry Forms and Queries
DML	Data Manipulation Language
EAR	Enterprise Archive
EJB	Enterprise JavaBean
ERM	Enterprise Resource Management
FTP	File Transfer Protocol
HDFS	Hadoop Distributed File System
HTTPS	Hypertext Transfer Protocol Secure
J2C	J2EE Connector
J2EE	Java 2 Enterprise Edition
JCE	Java Cryptography Extension
JDBC	Java Database Connectivity
JDK	Java Development Kit
JNDI	Java Naming and Directory Interface
JRE	Java Runtime Environment
JVM	Java Virtual Machine
LDAP	Lightweight Directory Access Protocol
LHS	Left Hand Side
MFA	Multi-Factor Authentication
MOS	My Oracle Support
OFSAA	Oracle Financial Services Analytical Applications
OFSAAI	Oracle Financial Services Analytical Application Infrastructure

Abbreviation	Meaning
OFSAAAI	Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack
OHC	Oracle Help Center
OLAP	On-Line Analytical Processing
OLH	Oracle Loader for Hadoop
ORAAH	Oracle R Advanced Analytics for Hadoop
OS	Operating System
RAM	Random Access Memory
RDBMS	Relational Database Management System
RHEL	Red Hat Enterprise Linux
SFTP	Secure File Transfer Protocol
SID	System Identifier
SSL	Secure Sockets Layer
TNS	Transparent Network Substrate
URL	Uniform Resource Locator
VM	Virtual Machine
WAR	Web Archive
XML	Extensible Markup Language

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About Oracle Financial Services Advanced Analytical Applications Infrastructure (OFSAAAI) Application Pack

Oracle Financial Services Advanced Analytical Applications Infrastructure (OFSAAAI) Application Pack provides integrated stress testing and modeling capabilities that you can readily apply across multiple risk areas enabling institutions to devise appropriate enterprise-wide and holistic risk and economic capital strategies.

OFSAAAI enables you to comply with regulatory requirements on stress testing, enables advanced customer and portfolio analytics, utilize multiple industry-standard techniques, test and model with complete data integrity.

OFSAAAI Application Pack includes the following applications:

Financial Services Analytical Applications Infrastructure: This application powers the Oracle Financial Services Analytical Applications family of products to perform the processing, categorizing, selection and manipulation of data and information required to analyze, understand and report on specific performance, risk, compliance and customer insight issues by providing a strong foundation for the entire family of Oracle Financial Services Analytical Applications across the domains of Risk, Performance, Compliance and Customer Insight.

Financial Services Enterprise Modeling: This application helps banking institutions to identify the business opportunities and to measure the risk prevailing in the competitive market to safeguard the regulatory and economic capital of banks.

Financial Services Big Data Processing: This option introduces, into the OFSAA platform (OFSAAI), the capability to run analytics on data stored in Hadoop Distributed File System (HDFS).

With the Big Data Processing (BDP) add-on option, all core data management frameworks within OFSAA such as Data Management Framework (T2T/ F2T), Data Quality Framework, and Rules framework are enhanced to operate on both Oracle RDBMS data sources as well as Apache Hive data sources. An OFSAA Run definition can contain tasks that transform data held in the Hive. OFSAA applications that use these platform frameworks for expressing application logic automatically gain the ability to manage data held in the Hive. The OFSAA platform leverages HiveQL and Map Reduce to process data directly in the Hadoop cluster without having to stage data in a relational database.

Financial Services Inline Processing Engine: This application provides real-time monitoring, detection and interdiction of single and complex fraud events across multiple channels and lines of business.

2.1 Oracle Financial Services Analytical Applications Infrastructure (OFSAAI)

Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) powers the Oracle Financial Services Analytical Applications family of products to perform the processing, categorizing, selection and manipulation of data and information required to analyze, understand and report on specific performance, risk, compliance and customer insight issues by providing a strong foundation for the entire family of Oracle Financial Services Analytical Applications across the domains of Risk, Performance, Compliance and Customer Insight.

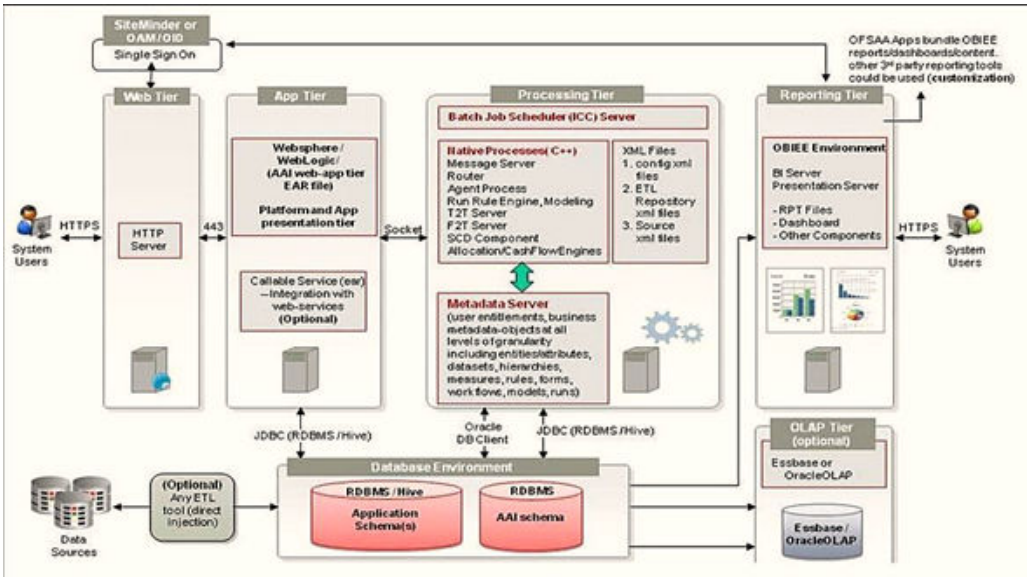
2.1.1 Components of OFSAAI

The OFSAA Infrastructure includes frameworks that operate on and with the Oracle Financial Services Analytical Applications Data Model and forms the array of components within the infrastructure.

The OFSAA Infrastructure components/frameworks are installed as two layers; primarily, the metadata server and Infrastructure services run on one layer, while the UI and presentation logic runs on the other. The UI and presentation layer is deployed on any of the supported J2EE Servers.

The following figure depicts the various frameworks and capabilities that make up the OFSAA Infrastructure.

Figure 2-1 Components of OFSAAI



2.1.2 OFSAA Infrastructure High Availability

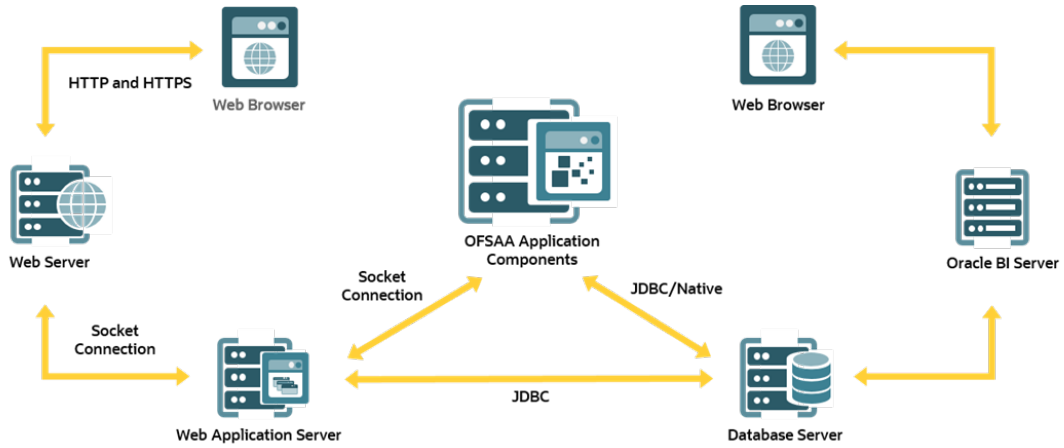
The current release of the OFSAA Infrastructure supports only the "Single Instance" installation for the Infrastructure components. However, the High Availability (HA) for

the Database Server and/ or the Web application server clustering and deployment are supported in this release.

This release supports the Active-Passive model of implementation for OFSAAI components. For more information, see Oracle Financial Services Analytical Applications Configuration for High Availability Best Practices Guide.

2.1.3 Deployment Topology

Figure 2-2 The logical architecture implemented for OFSAAAI Application Pack



2.2 About Oracle Financial Services Analytical Applications Infrastructure Extension Pack

The Oracle Financial Services Analytical Applications Infrastructure Extension (OFS AAIE) Pack adds a set of new advanced features for 8.1.2.0.0 Release across OFSAA applications. This pack can be installed on an OFSAA instance having one or more OFSAA application packs.

The Oracle Financial Services Analytical Applications Infrastructure Extension Pack includes the following advanced features and functionalities:

- Distributed Processing Capabilities
- Analytic Pipeline and Process models
- Attribution Analysis
- Content Management Interoperability Services

> **Note:**
>
> The pack is enabled by procurement of an additional license. For more information, see the OFS AAIE Release Notes and Installation Guide on the OHC

2.3 OFS Performance Analytics Pack

OFS Performance Analytics Pack (OFS PFT Pack) provides integrated stress testing and modeling capabilities that you can readily apply across multiple risk areas enabling institutions to devise appropriate enterprise-wide and holistic risk and economic capital strategies.

OFS PFT Pack enables you to comply with regulatory requirements on stress testing, enables advanced customer and portfolio analytics, utilize multiple industry-standard techniques, test and model with complete data integrity.

OFS PFT Pack includes the following applications:

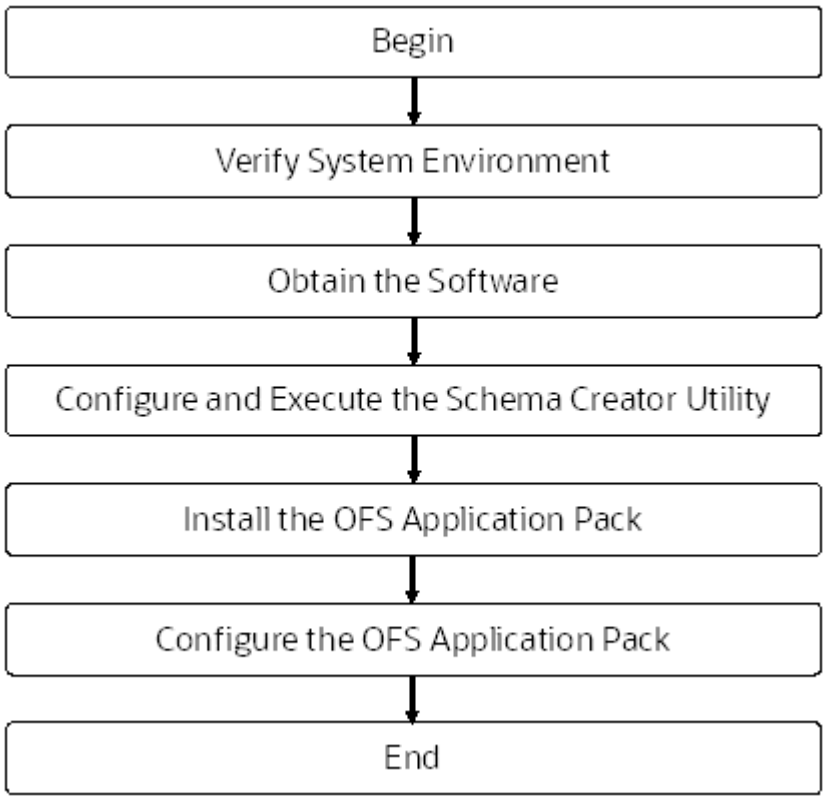
- **Financial Services Analytical Applications Infrastructure**: This application powers the Oracle Financial Services Analytical Applications family of products to perform the processing, categorizing, selection, and manipulation of data and information required to analyze, understand and report on specific performance, risk, compliance, and customer insight issues by providing a strong foundation for the entire family of Oracle Financial Services Analytical Applications across the domains of Risk, Performance, Compliance and Customer Insight.
- **Oracle Financial Services Enterprise Financial Performance Analytics**: This application is based upon a dedicated reporting mart built on the new Financial Services Data Model. OFSEFPA leverages several components of OBIEE technology including Dashboards and Answers. It includes various Dashboards and Reports for the user to carry out various Profitability Management based analytics.
- **Oracle Financial Services Institutional Performance Analytics**: This application provides strategic insights on the Profitability of the business and the underlying customers, Product holdings and Relationship depth across the organization, Behavioral and Engagement trends of its target segments exposures, commitments, line utilization, assets/liabilities, deposits, withdrawals, Fees, Income, recent transactions and so on, Efficiency of investments (like marketing, partner development), Efficiency of the sales force in terms of ongoing customer revenue generation, cross-sell and up-sell, product usage and pipeline.
- **Oracle Financial Services Retail Performance Analytics**: It focuses on the Summary performance of the LOBs and overall profitability, Portfolio mix, LOB specific profitability reports to be analyzed against key dimensions like customer segments, product family, region, branch, risk scores, and so on, Product holdings and Relationship depth across the LOBs, Customer Trends across performance drivers like Sales, Balances, Deposits, Product subscriptions (revenue services), Credit scores and delinquency bands, losses, and so on, Wallet Share analysis and customer lifetime value, Efficiency of investments (like marketing, branch, channel and so on) over time.

2.4 Installation Overview

Release 8.1.2.0.0 of OFSAA Application Packs support the fresh installation.

The following illustration shows the sequence of steps you need to follow to perform the installation.

Figure 2-3 Installation Flow of OFSAA Application Packs



3
Complete Installation Checklist

For a successful installation, perform the steps listed in the Complete Installation Checklist. You can use this checklist to have a glance at everything that you do to install this application. The link provided in each step takes you to a section either within this document or to another referenced document.

Table 3-1 Pre-installation Checklist

Sl. No.	Pre-installation Activity
1	Install all the prerequisite hardware and software given in the Tech Stack.
2	Verify the System Environment using the Environment Check Utility.
3	Configure the Database Instance settings.
4	Install and configure the web application server.
5	Configure the HTTP settings on the webserver.
6	Create the Installation, Download, and Metadata Repository Directories: • Installation directory • Temporary directory • Staging Area/Metadata Repository • Download directory
7	Configure the following Operating System and File System settings: • File Descriptor • Total number of processes • Port(s) • .profile file permissions • Add FTP/SFTP configuration for file transfer
8	Update the following Environment Settings required for the installation in the .profile file: • Java Settings • Oracle Database Server and Client Settings • Add TNS entries in the tnsnames.ora file • Oracle Essbase Settings • Time Zone Settings
9	Download the installer kit and erwin data models.
10	Perform prerequisites for installation.

Table 3-2 Installation Checklist

Sl. No.	Installation Activity
1	Extract the installer kit.
2	Configure the OFS_PFT_PACK.xmlfile.

Table 3-2 (Cont.) Installation Checklist

Sl. No.	Installation Activity
3	Configure the OFS_PFT_SCHEMA_IN.xml file.
4	Execute the Schema Creator Utility in Offline, Online, or TCPS modes and verify the log file.
5	Configure the OFSAAI_InstallConfig.xmlfile.
6	Configure the Silent.propsfile.
7	Trigger the application installation.

Table 3-3 Post-installation Checklist

Sl. No.	Post-installation Activity
1	Verify the installation logs.
2	Patch OFSAA Infrastructure Installation.
3	Back up the SCHEMA_CREATOR.xml, OFS_PM_SCHEMA_OUTPUT.xml, and Silent.props files.
4	Stop the OFSAA Infrastructure services.
5	Create and deploy EAR/WAR files.
6	Start the OFSAA Infrastructure services.
7	Configure the webserver.
8	Configure the Resource Reference in web application servers.
9	Configure the Resource Reference in web application servers.
10	Configure the Work Manager in the Web Application Servers.
11	Access the OFSAA application.
12	OFSAA Landing Page
13	Configure the excludeURLList.cfg file.
14	Change the ICC batch ownership.
15	Create Application Users.
16	Map the Application User(s) to User Groups.
17	Excel upload mapping and template.
18	Configure TDE and Data Redaction in OFSAAI.
19	Implement Data Protection in OFSAA.

Table 3-4 Additional Configuration

Sl. No.	Additional Configuration Activity
1	Add FTP/SFTP Configuration for File Transfer.
2	Configure the Infrastructure Server Memory.
3	Retrieve the Patch Information
4	Change IP or Hostname, Ports, Deployed Paths of the OFSAA Instance.
5	Configure the Infrastructure LDAP.

Table 3-4 (Cont.) Additional Configuration

Sl. No.	Additional Configuration Activity
6	Configure and deploy the OFSAAI web services.
7	Enable the parallel execution of DML statements.
8	Configure the message details in the Forms Designer.
9	Clear the application cache.
10	Configure the password changes.
11	Configure the Java Virtual Machine.
12	Configure the internal service (Document Upload/Download).

4
Hardware and Software Requirements

This section describes the Operating Systems, Database, Web Servers, and Web Application Server versions, and other variants on which this release of the OFS Performance Analytics Pack (OFS PFT Pack) is qualified.

See the Oracle Financial Services Analytical Applications 8.1.2.0.0 Technology Matrix for the hardware and software required for OFSAAI Release 8.1.2.0.0.

> **Note:**
>
> OFS PFT Application Pack installation can be performed on both Virtual and Physical servers.

The following software combinations are recommended.

Table 4-1 Recommended Software Combination

Operating System	Database	Web Application Server	Web Server
Oracle Linux	Oracle Database	Oracle WebLogic Server/ Apache Tomcat Server	Oracle HTTP Server/ Apache HTTP Server
Oracle Solaris	Oracle Database	Oracle WebLogic Server/ Apache Tomcat Server	Oracle HTTP Server/ Apache HTTP Server

4.1 Third-party Licensing Information

For details on the third-party software tools used in OFS Performance Analytics Pack (OFS PFT Pack), see the OFSAA Licensing Information User Manual.

Also, ensure that you have the following Python licenses:

- Python 3.9.4
- numpy 1.19.4
- pandas 1.2.4
- scikit-learn 0.24.2
- scipy 1.6.3
- seaborn 0.10.1
- statsmodels 0.12.2
- matplotlib 3.2.2
- imbalanced-learn 0.7.0

- cx_oracle 8.1.0
- sqlalchemy 1.3.18
- pmdarima 1.8.2

4.2 Verify System Environment

To verify your system environment meets the minimum requirements for the installation, a Pre-Install Check utility is available within the Install Kit archive file. This utility can also be obtained separately by contacting Oracle Support Services.

Though the system environment verification is an integral and automated part of the installation of this software product, Oracle strongly recommends running this utility before beginning the installation as part of your organization's "Installation Readiness Verification Process".

For more details on download and usage of this utility, see the Oracle Financial Services Analytical Applications Infrastructure Environment Check Utility Guide.

5
Pre-installation

This section contains the pre-installation requirements to install the OFS Performance Analytics Pack (OFS PFT Pack).

5.1 Pre-installation Checklist

You can use this checklist to have a quick glance at everything that you need to do before installing this application. The link provided in each step takes you to a section either within this document or to another referenced document.

Table 5-1 Pre-installation Checklist

Sl. No.	Pre-installation Activity
1	Install all the prerequisite hardware and software given in the Tech Stack.
2	Verify the System Environment using the Environment Check Utility.
3	Configure the Database Instance settings.
4	Install and configure the web application server.
5	Configure the HTTP settings on the webserver.
6	Create the Installation, Download, and Metadata Repository Directories: • Installation directory • Temporary directory • Staging Area/Metadata Repository • Download directory
7	Configure the following Operating System and File System settings: • File Descriptor • Total number of processes • Port(s) • .profile file permissions • Add FTP/SFTP configuration for file transfer
8	Update the following Environment Settings required for the installation in the .profile file: • Java Settings • Oracle Database Server and Client Settings • Add TNS entries in the tnsnames.ora file • Oracle Essbase Settings • Time Zone Settings
9	Download the installer kit and erwin data models.
10	Perform prerequisites for installation.

5.2 Oracle Database Instance Settings

Ensure that the following database instance settings are configured:

- NLS_CHARACTERSET to AL32UTF8
- NLS_LENGTH_SEMANTICS to BYTE
- OPEN CURSORS limit to greater than 1000

5.3 Web Application Server Settings

Ensure that the web application server is installed and the profile (when using WebSphere) or domain (when using WebLogic) is created.

Note the path values as shown in the following table as you will be prompted to enter the WebSphere Profile path, the WebLogic Domain path, or the Tomcat Deployment path during OFSAAI installation.

Table 5-2 Web Application Server Settings

Description	Example Value
For WebSphere, specify the WebSphere path as `<WebSphere profile directory>/installedApps/<NodeCellName>`.	`/data2/test//WebSphere/AppServer/profiles/<Profile_Name>/installedApps/aiximfNode01Cell`, where aix-imf is the Host name.
For WebLogic, specify the WebLogic home directory path.	`/<WebLogic home directory path>/bea/wlserver_10.3`
For Tomcat, specify the Tomcat directory path till `/webapps`.	`/oradata6/ revwb7/tomcat/webapps/`

> **Note:**
>
> See Configure the Web Server for WebSphere Profile and WebLogic Domain creation.

5.4 Web Server Settings

This is an optional requirement. If you have installed an HTTP Server, then configure the appropriate HTTP server settings:

Table 5-3 Web Server Settings

Description	Example Value
Apache HTTP Server/ Oracle HTTP Server/ IBM HTTP Server	Configure the HTTP Server and note down the IP/ Hostname and Port details as you will be prompted to enter these details during installation. Note: See Configure the Web Server for web server configuration.

5.5 Create the Installation, Download, and Metadata Repository Directories

To install OFSAAI, create the following directories:

- **OFSAA Download Directory (Optional)**: This is the directory where the downloaded installer/ patches can be copied. Create a download directory and copy the OFSAA Application Pack Installer File (archive). Assign 755 permission to this directory.
- **Temporary Directory**: Default temporary directory where the installation files are stored for a short time to support faster installation. Configure adequate space on the /tmp directory. It is recommended that you allocate more than 10 GB of space. Assign 755 permission to this directory with NOEXEC option disabled.

> **Note:**
>
> If NOEXEC option is enabled, the extraction of files by the installer into the /tmp directory is prevented and the binaries will not execute in the directory, which will fail the installation.

- **OFSAA Installation Directory (Mandatory)**: Create an installation directory where the product binaries are installed. Assign 755 user permission to the installation directory.
- **OFSAA Staging/Metadata Directory (Mandatory)**: A directory to hold the application metadata artifacts and additionally act as the staging area for the flat files. This directory is also referred to as "FTPSHARE". Create a Staging/Metadata Repository Directory to copy data files, save data extracts, and so on.
  The directory must exist on the same system as the OFSAA Installation. This directory can be configured on a different mount or under a different user profile. However, the owner of the installation directory must have RWX (775) permissions to this directory.

> **Note:**
>
> Ensure the OFSAA staging directory is not set to the same path as the OFSAA installation directory and is not a subdirectory inside the OFSAA installation directory.

5.6 Configure the OS File System Settings and Environment Settings in the .profile File

A .profile file is a start-up file of a UNIX user. Create the .profile file at the home directory of the logged-in user if it is not already available. The user must have 755 permission on the file to execute it. This file consists of various parameters for Environment Settings, OS, and File System Settings.

To set the parameters for the .profile file, login as a non-root user, and configure the environment settings.

> **Note:**
>
> Do not modify any other parameters other than the parameters mentioned in the following subsections.

5.6.1 Configure Operating System and File System Settings

Parameter	Configuration Action
Installation Directory	In the `.profile` file, set the variable FIC_HOME to point to the OFSAA Installation Directory.

Parameter	Configuration Action
File Descriptor Settings	In the `sysctl.conf` file, to change the number of file descriptors, do the following as the root user: 1. Edit the following line in the `/etc/sysctl.conf` file: fs.file-max = <value> where <value> is greater than 15000 2. Apply the change by running the following command: # /sbin/ sysctl -p **Note:** The value specified here is the minimum value to be set for the installation process to go forward. For other modules, this value may depend on the available resources and the number of processes executed in parallel.

Parameter	Configuration Action
Total Number of Process Settings	In the `sysctl.conf` File set the value to greater than 15000.
Port Settings	Default port numbers to be enabled on the system are 6500, 6501, 6505, 6507, 6509, 6510, 6666, 9999, and 10101.

> **Note:**
>
> The value specified here is the Minimum Value to be set for the Installation Process to go forward. For other modules, this value may depend on the available resources and the number of processes executed in parallel.

5.7 Preparing for Installation

This section describes how to download the installer and the mandatory prerequisites you must ensure installing the OFS Performance Analytics Pack (OFS PFT Pack).

5.7.1 Download the OFS OFS Performance Analytics Pack (OFS PFT Pack) Pack Installer and Erwin Data Models

To download the OFS Performance Analytics Pack (OFS PFT Pack) Installer Release v8.1.2.0.0, follow these steps:

1. Log in to My Oracle Support, and search for Patch ID **32677808** under the Patches and Updates tab.
2. Download the installer archive and copy (in Binary mode) to the download directory in the setup identified for OFS Performance Analytics Pack (OFS PFT Pack) installation.
3. Download the following Erwin Data Models from My Oracle Support:
   - OFS Enterprise Financial Performance Analytics (OFS EFPA) erwin data model: Patch ID **33762686**
   - OFS Institutional Performance Analytics (OFS IPA) Erwin data model Patch ID **33688756**

- OFS Retail Performance Analytics (OFS RPA) erwin data model: Patch ID **33688768**

You can search for the patch number in the Patches and Updates tab and download it.

> **Note:**
>
> Data model patches are now released at the granularity of each application. This is in contrast to the strategy followed for OFS PFT Applications Pack 8.0.x releases, where data model patches were only released at the pack level. Customers must download the data models as per the application licenses they hold and merge with the custom data model.
>
> - The installer will only upload the data model of the selected applications. Data models of the unselected or unlicensed applications will not be uploaded, that is data model upload is skipped for the unselected or unlicensed applications.
> - The installer will only execute the installer scripts of the selected applications. Scripts of the unselected or unlicensed applications will not be executed and are skipped.
> - If all applications in the pack are selected, then the installer handles both the data model upload and the installation scripts execution.

5.7.2 Prerequisites for Installation

Before beginning the installation, ensure that:

- You have executed the `.profile` file.
- Apex 21.1 and ORDS 21.1.3.153.1102 Software Installation to Database.
- Ensure that you have installed Python 3.9.4 and the libraries required as per the Tech Matrix.

5.7.2.1 Apex 21.1 and ORDS 21.1.3.153.1102 Software Installation to Database

To install Apex 21.1 and ORDS 21.1.3.153.1102 software, follow these steps:

1. Ensure that Apex 21.1 is installed.
   a. Download the APEX 21.1 software from the following link:
   Oracle APEX

   b. Installation Guide from the following link:
   Oracle APEX Installation Guide
2. Install ORDS.
   a. Download the ORDS 21.1.3.153.1102 software from the following link:
   Oracle REST Data Services

   b. Installation Guide
   Oracle REST Data Services Installation Guide

5.7.2.1.1 Mandatory Steps during ORDS Installation

The following are the mandatory steps to follow while installing the ORDS:

Unzip the ORDS distribution as follows:

```
cd /scratch/<user>/ORDS

unzip ords-21.1.3.153.1102.zip
```

1. Make a directory to hold the configuration under the ORDS zip kit path.
   ```
   mkdir -p /scratch/<user>/ORDS/conf
   ```
2. Edit the following details in the ords/params/ords_params.properties file provided with the ORDS software such as hostname, port, and servicename.

Figure 5-1 ords_params.properties File

3. Use the ords.war file to specify the configuration directory using the following command.
   ```
   java -jar ords.war configdir /scratch/<user>/ORDS/conf
   ```
4. Configure ORDS using the following command.
   ```
   java -jar ords.war
   ```
5. Database connection and URL mapping ORDS commands.
   Ensure that ofsaa is the database connection name. Run the following command.

   ```
   java -jar ords.war setup --database ofsaa
   ```
6. Create a URL mapping to the new database connection by running the following command.
   ```
   $JAVA_HOME/bin/java -jar ords.war map-url --type base-path /ofsaa
   ofsaa
   ```
7. Copy the Apex images from its Apex installer Kit extract to webapps path(deployment location in server):
   ```
   mkdir $CATALINA_HOME/webapps/i/

   cp -R /scratch/<user>/Apex/apex/images/* $CATALINA_HOME/webapps/i/
   ```
8. Deploy ORDS on server like Tomcat or WebLogic.
   - If it is Tomcat configure `server.xml` with ords context_name.
   - In WebLogic deploy and create the datasource for ords as well.

   For deploying on WebLogic server, follow these steps:

a. In the setup where apex images are present run below command which will generate `i.war`.
`jar -cvf i.war -C apex/images`

b. Move the configuration folder of ORDS setup to the WebLogic host location.

c. Create a folder at the deployed location `ords.ear`.

d. Create `ords.war` folder in the ords.ear folder and place `ords.war` in it.

e. Inflate the `ords.war` file using the command:
`jar -xvf ords.war`

f. Update the `web.xml` file in `ords.war/WEBINF/` to give `config.dir` path.

g. Delete the `ords.war` file in ords.war folder.

h. Create a folder at the deployed location `i.ear`.

i. Create `i.war` folder in the `i.ear` folder and place `i.war` in it.

j. Inflate the `i.war` file using command: `jar -xvf i.war`

k. Delete the `i.war` file in the `i.war` folder.

l. Navigate to the WebLogic console and then deploy `i.war` and `ords.war`.

9. Check the conf path (`/scratch/<user>/ORDS/conf`) in the `web.xml` file of ords if it is correctly configured. This path holds the configurations for ords.
`<deployed_path>/ords/WEB-INF/web.xml`

> **Note:**
>
> CORS filter needs to be enabled in ords to avoid CORS-related vulnerabilities.

10. This filter to be added to the `web.xml` file at `<deployed_path>/ords/WEB-INF/web.xml`.

11. Start the Servers.

5.7.2.1.2 ORDS Limitation for Web Sphere

ORDS has a limitation if the Web Server used is WebSphere.

If you are using the WebSphere, then follow these steps:

1. Deploy the Apex images and ORDS in Tomcat.

2. Navigate to `$FIC_HOME/ficweb/webroot/dashboard`, edit the file `launchUIApp.html`. Make changes in the variable var host with the servername and port number where the ORDS is deployed. For example: var host =" whf00pkx:9080";
See the following code snippet:

   You will be redirected to the page in a new window. Click to launch the page.

```
<script>

var app_id=getUrlParameter('uiAppId');

var user_id=getUrlParameter('userId');

var infodom=getUrlParameter('dsn');
```

```
var locale=getUrlParameter('locale');

var host ="EDIT THIS PART";
```

3. Take a backup of the ear and war file from `$FIC_HOME/ficweb`.
4. After making changes run the `ant.sh` file to generate the ear and war file.
5. Deploy the ear file on the WebSphere and run the application.

5.7.3 Compatibility Matrix

The following table lists the applications or app-combinations that must not be installed on a single infodom (pack-on-pack scenario).

Table 5-4 Compatibility Matrix

If you are installing	Do not install
OFS_PFT_PACK	OFS_PFT_INS_PACK and OFS_BD_PACK

> **Note:**
>
> If you are upgrading the OFSAA Application Pack to release v8.1.2.0.0, you must upgrade the other packs installed in the same environment to release v8.1.2.0.0, to ensure successful deployment.
> For example, If you are upgrading the OFS Profitability Applications Pack (OFS PFT Pack) to release v8.1.2.0.0, you must upgrade the other packs (ALM, IFRS, and so on) installed in the same environment to release v8.1.2.0.0, to ensure successful deployment.

5.7.4 Pre-installation Steps for OFS EFPA Application

Before installing the applications pack, do the following:

1. Take Backup of the table `FCT_MGMT_REPORTING`.
2. Update the `FCT_MGMT_REPORTING.N_COUNTRY_SKEY` parameter to `NULL`.

6
Installation

This section provides detailed steps to install the OFS Performance Analaytics Pack (OFS PFT Pack) Pack.

You can use the following checklist to have a quick glance at everything that you must do to install this application. The link provided in each step takes you to a section either within this document or to another referenced document.

Table 6-1 Installation Checklist

Sl. No.	Installation Activity
1	Extract the installer kit.
2	Configure the OFS_PFT_PACK.xmlfile.
3	Configure the OFS_PFT_SCHEMA_IN.xml file.
4	Execute the Schema Creator Utility in Offline, Online, or TCPS modes and verify the log file.
5	Configure the OFSAAI_InstallConfig.xmlfile.
6	Configure the Silent.propsfile.
7	Trigger the application installation.

6.1 Extract the Software

You must be logged in to the UNIX operating system as a non-root user to perform the following steps.

1. If you already have an unzip utility to extract the contents of the downloaded archive, skip this step. Download the unzip utility (OS-specific) unzip_<os>.Z and copy it in Binary mode to the directory that is included in your PATH variable.
   Uncompress the unzip installer file with the command:

   ```
   uncompress unzip_<os>.Z
   ```

   > **Note:**
   >
   > If an error message "uncompress: not found [No such file or directory]" is displayed, contact your UNIX administrator.

2. Assign 751 permission to the file using the following command:
   `chmod 751 unzip_<OS>`

   For example: `chmod 751 unzip_sparc`

3. Extract the contents of the OFS Performance Analaytics Pack (OFS PFT Pack) Release 8.1.2.0.0 installer archive file in the download directory using the following command:
   `unzip OFS_PFT_PACK.zip`

4. Navigate to the download directory and assign 750 permission to the installer directory using the following command:
   `chmod -R 750 OFS PFT Pack`

6.2 Configure the OFS_PFT_PACK.xml File

The `OFS_PFT_PACK.xml` file contains details on the various products that are packaged in the OFS Performance Analytics Pack (OFS PFT Pack).

The `OFS_PFT_PACK.xml` file has details of the products that are packaged in the OFS Performance Analytics Pack (OFS PFT Pack). This section provides information about the tags and parameters available in this file and the values you must update before installing the OFS Performance Analytics Pack (OFS PFT Pack). Enable licenses as per your Service Level Agreement (SLA).

To configure the `OFS_PFT_PACK.xml` file, follow these steps:

1. Navigate to the `OFS_PFT_PACK/conf` directory.
2. Open the `OFS_PFT_PACK.xml` file in a text editor.

Figure 6-1 Sample OFS_PFT_PACK.xml File

```
<APP_PACK_CONFIG>
    <APP_PACK_ID>OFS_PFT_PACK</APP_PACK_ID>
    <APP_PACK_NAME>Financial Services Profitability Applications Pack</APP_PACK_NAME>
    <APP_PACK_DESCRIPTION>Applications for Profitability in the Banking and Financial Services Domain</APP_PACK_DESCRIPTION>
    <VERSION>8.1.2.0.0</VERSION>
    <APP>
        <APP_ID PREREQ="" DEF_SEL_FLG="YES" ENABLE="YES">OFS_AAI</APP_ID>
        <APP_NAME>Financial Services Analytical Applications Infrastructure</APP_NAME>
        <APP_DESCRIPTION>Base Infrastructure for Analytical Applications</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
    <APP>
        <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_IPA</APP_ID>
        <APP_NAME>Financial Services Institutional Performance Analytics</APP_NAME>
        <APP_DESCRIPTION>Application for Institutional Performance Analytics</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
    <APP>
        <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_RPA</APP_ID>
        <APP_NAME>Financial Services Retail Performance Analytics</APP_NAME>
        <APP_DESCRIPTION>Application for Retail Performance Analytics</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
    <APP>
        <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_EFPA</APP_ID>
        <APP_NAME>Financial Services Enterprise Financial Performance Analytics</APP_NAME>
        <APP_DESCRIPTION>Application for Enterprise Financial Performance Analytics</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>

</APP_PACK_CONFIG>
```

3. Configure the `OFS_PFT_PACK.xml` file as mentioned in the following table.

Table 6-2 OFT_PFT_PACK.xml File Parameters

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Comments
APP_PACK_ID	Unique Application Pack Identifier	Y	Unique Seeded Value. Do not modify this value.
IS_OPT_INSTALL VALUE="TRUE"	Unique Application Entry	Y	Unique Seeded Value. Do not modify this value.
APP_PACK_NAME	Unique Application Pack Name	Y	Unique Seeded Value. Do not modify this value.

Table 6-2 (Cont.) OFT_PFT_PACK.xml File Parameters

APP_PACK_DESCRIPTION	Unique Application Pack Description	Y	Unique Seeded Value. Do not modify this value.
VERSION	Unique release version	Y	Unique Seeded Value. Do not modify this value.
APP	Unique Application Entries	Y	Unique Seeded Value. Do not modify this value.
APP_ID	Unique Application Identifier	Y	Unique Seeded Value. Do not modify this value.
APP_ID/ PREREQ	Prerequisite Application or Product	Y	Unique Seeded Value. For most applications, the prerequisite that is set is OFS AAAI. For all other applications, the default Application ID is set to none. You can set it for the applications you want to install. Do not modify this value.
APP_ID/ DEF_SEL_FLAG	Default Selected Flag	Y	In all Application Packs, Infrastructure would have this value set to YES. Do not modify this value.

Table 6-2 (Cont.) OFT_PFT_PACK.xml File Parameters

APP_ID/ ENABLE	Enable Application or Product	Y	• Default YES forInfrastructure • NO forothers Set this attribute value to YES against every APP_ID which is licensed and must be enabled for use. **NOTE**: The Application/Product cannot be disabled once enabled. Only Applications/ Products which are enabled are installed. In order to enable other licensed Applications/ Products, you need to reinstall by making the flag as Y for the App_ID. However, in case of reinstallation to enable the other Applications/ Products, execution of the schema creation utility must be skipped if it does not include any additional sandboxes to be created.
APP_NAME	Unique Application or Product Name	Y	Unique Seeded Value. Do not modify this value.
APP_DESCRIPTION	Unique Application or Product Name	Y	Unique Seeded Value. Do not modify this value.
VERSION	Unique release version	Y	Unique Seeded Value. Do not modify this value.

4. Save and close the file.

6.3 Configure the Schema Creator Utility

Creating database users/schemas (RDBMS) is one of the primary steps in the complete OFSAAAI installation process. The Schema Creator utility enables you to quickly get started with the installation by creating Database User(s)/ Schema(s) (RDBMS), assigning the necessary GRANT(s), creating the required entities in the schemas and so on.

The schema creator utility must be configured and executed before the installation of any OFSAA Application Pack.

6.3.1 Prerequisites

To configure the Schema Creator Utility, ensure that you obtain the following details:

- Oracle User ID and Password with SYSDBA privileges.
- JDBC Connection URL for RAC or Non-RAC database.
- The HOSTNAME and IP of the server on which OFSAA is being installed.

6.3.1.1 Configure the OFS_PFT_SCHEMA_IN.xml File

This section describes how to create database schemas, objects within schemas, and assign appropriate grants. Specify the database schemas required for the installation in the `OFS_PFT_SCHEMA_IN.xml`. Update the required values in this file before executing the Schema Creator Utility.

To configure the `OFS_PFT_SCHEMA_IN.xml` file, follow these steps:

1. Log in to the system as a non-root user.
2. Navigate to the `OFS_PFT_PACK/schema_creator/conf` directory.
3. Edit the `OFS_PFT_SCHEMA_IN.xml` file using a text editor and configure the values as mentioned in the following table.

Figure 6-2 Sample OFS_PFT_SCHEMA_IN.xml File

```
<APPPACKSCHEMA>
    <APP_PACK_ID>OFS_PFT_PACK</APP_PACK_ID>
    <IS_TCPS>FALSE</IS_TCPS>
    <JDBC_URL>jdbc:oracle:thin:@whf00aqw.in.oracle.com:1521/OFSAAWS1</JDBC_URL>
    <JDBC_DRIVER>oracle.jdbc.driver.OracleDriver</JDBC_DRIVER>
    <HOST>10.40.160.114</HOST>
    <SETUPINFO NAME="PDEV" PREFIX_SCHEMA_NAME="N" />
    <PASSWORD APPLYSAMEFORALL="Y" DEFAULT="" />
    <ADV_SEC_OPTIONS>
        <OPTION NAME="TDE" VALUE="FALSE"/>
        <OPTION NAME="DATA_REDACT" VALUE="TRUE" />
    </ADV_SEC_OPTIONS>
    <TABLESPACES>
        <TABLESPACE NAME="OFSAA_CONF_TBSP" VALUE="OFSAA_CONF_PADEV_TBSP" DATAFILE=
        "/scratch/oraofss/app/oraofss/oradata/OFSAADB/OFSAAWS1/pa811_conf_tablespace1.dbf" SIZE="128M"
        AUTOEXTEND="ON" ENCRYPT="OFF" />
        <TABLESPACE NAME="OFSAA_DATA_TBSP" VALUE="OFSAA_DATA_PADEV_TBSP" DATAFILE=
        "/scratch/oraofss/app/oraofss/oradata/OFSAADB/OFSAAWS1/pa811_data_tablespace2.dbf" SIZE="512M"
        AUTOEXTEND="ON" ENCRYPT="OFF" />
    </TABLESPACES>

        <SCHEMAS>
        <SCHEMA TYPE="CONFIG" NAME="PA811DCONF" PASSWORD="" APP_ID="OFS_AAI" DEFAULTTABLESPACE=
        "##OFSAA_CONF_TBSP##" TEMPTABLESPACE="TEMP"   QUOTA="UNLIMITED" />
        <SCHEMA TYPE="ATOMIC" NAME="PA811DATM" PASSWORD="" APP_ID="OFS_IPA" APP_GRP="1" INFODOM="PAOFSAA"
        DEFAULTTABLESPACE="##OFSAA_DATA_TBSP##" TEMPTABLESPACE="TEMP"  QUOTA="UNLIMITED" />
        <SCHEMA TYPE="ATOMIC" NAME="PA811DATM" PASSWORD="" APP_ID="OFS_RPA" APP_GRP="1" INFODOM="PAOFSAA"
        DEFAULTTABLESPACE="##OFSAA_DATA_TBSP##" TEMPTABLESPACE="TEMP"  QUOTA="UNLIMITED" />
        <SCHEMA TYPE="ATOMIC" NAME="PA811DATM" PASSWORD="" APP_ID="OFS_EFPA" APP_GRP="1" INFODOM="PAOFSAA"
        DEFAULTTABLESPACE="##OFSAA_DATA_TBSP##" TEMPTABLESPACE="TEMP"  QUOTA="UNLIMITED" />
    </SCHEMAS>

</APPPACKSCHEMA>
```

Table 6-3 OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<APP_PACK_ID>	Seeded unique ID for the OFS Application Pack.	Y	Seeded	Do not modify this value.
<IS_TCPS>	Enter if the TCPS configuration is required.	Y	Seeded, with FALSE as the default value.	Modify this to TRUE if you require the installer to uptake the configuration.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<JDBC_URL>	Enter the JDBC URL. You can enter the RAC/ NON-RAC enabled database connectivity URL.	Y	Example: jdbc:oracle:thin:@< DBSERVER IP/ HOST/ IP>:<PORT>:<SID> or jdbc:oracle:thin:@//[HOS T][:PORT]/ SERVICE or jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_ LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=[HOST])(port=[PORT]))(ADDRESS=(PROTOCOL=TCP)(HOST=[HOST])(PORT=[PORT]))(LOAD_BALANCE=yes)(FAILOVER=yes))(CONNECT_DATA=(SERVICE_ NAME=[SERVICE]))) For example: jdbc:oracle:thin:@// dbhost.server.com:1521/s ervice1 or jdbc:oracle:thin:@// dbshost.server.com:1521/ scan-1 or jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_	Ensure that you add an entry (with SID/ SERVICE NAME) in the tnsnames.ora file on the OFSAA server. The entry must match the SID/ SERVICE NAME used in the JDBC URL. Ensure that you have configured: a. The correct Oracle Wallet with the credentials for stored Sys, Config, and Atomic Users. b. The JDBC URL asfollows: jdbc:oracle:thin:/@ For more information on how to configure Oracle Wallets for OFSAA Installation and Data Sources, see the OFS Analytical ApplicationsInfrastructure Administration Guide.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
			LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost1.server.com)(port=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost2.s erver.com)(PORT=1521))(LOAD_BALANCE=yes)(FAILOVER=yes))(CONNECT_DATA=(SERVICE_NAME=service1))	
<JDBC_DRIVER>	The name of the driver is seeded.	Y	Example: oracle.jdbc.driver.OracleDriver	Only JDBC Thin Driver is supported. Do not modify this value.
<HOST>	Enter the Hostname/ IP Address of the system on which you are installing the OFSAA components.	Y	Host Name/IP Address	
<SETUPINFO>/PREFIX_SCHEMA_NAME	Identifies whether the value specifiedin <SETUPINFO>/NAME attribute must be prefixed to the schema name.	N	YES or NO	The default value is YES.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<SETUPINFO>/ NAME	Enter the acronym for the type of implementation. This information is displayed in the OFSAA Home Page. On executing the schema creator utility, this value is prefixed with each schema name. For example: dev_ofsaaconf, uat_ofsaatm.	Y	Accepts strings with a minimum length of two and a maximum of four. Example: DEV, SIT, PROD	This message appears in the OFSAA Landing Page as, "Connected To: DEV". The schemas being created get this prefix. For example, dev_nameconf, uat_nameconf, and so on.
<PASSWORD>/ DEFAULT*	Enter the password if you want to set a default password for all schemas. You also must set the APPLYSAMEFORALL attribute as Y to apply the default password for all the schemas.	N	The maximum length allowed is 30 characters. Special characters are not allowed.	On successful execution of the utility, the entered password in the OFS_PFT_SCHEMA_IN.xml file is nullified.
<PASSWORD>/ APPLYSAMEFORALL	If you have entered Y in the APPLYSAMEFORALL attribute and also have specified individual passwords for all the schemas, then the specified individual passwords will take precedence.	Y	Default value: N Permissible value: Y or N Enter Y if you want to apply the password specified in the DEFAULT attribute for all the schemas. If you enter N, provide individual passwords for all schemas.	Setting this attribute value is mandatory if the DEFAULT attribute is set.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<SCHEMA>/ TYPE	The types of schemas supported in this release are: ATOMIC, CONFIG, SANDBOX, and ADDON. By default, the schema types are seeded based on the Application Pack.	Y	ATOMIC/ CONFIG/ SANDBOX/ ADDON SANDBOX and ADDON schemas do not apply to OFS_PFT_PACK.	Only one CONFIG schema can exist in the file. Do not edit this attribute value. This schema identifies as the CONFIGURATION schema that holds the OFSAA setup details and other Metadata information. Multiple ATOMIC/ SANDBOX/ ADDON schemas can exist in the file.
<SCHEMA>/ NAME	The schemas' names are seeded based on the Application Pack by default. You can edit the schema names, if required. The Schema Name will have a prefix of the SETUPINFO/ NAME attribute. SCHEMA NAME must be the same for all the ATOMIC Schemas of the applications within an Application Pack.	Y	The permissible length is 15 characters and only alphanumeric characters are allowed. No special characters are allowed except underscore _.	The SETUPOINFO/ NAME attribute value is prefixed to the schema name being created. For example, if a name is set as 'ofsaatm' and setupinfo as 'uat', then the schema created is 'uat_ofsaatm'. NAME must be the same where APP_GRP=1 for all SCHEMA tags (not applicable for this Application).

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<SCHEMA>/ PASSWORD	Enter the password of the schema to be created. If this attribute is left blank, then the password specified in the <PASSWORD>/ DEFA ULT attribute is taken as the Schema Password.	N	The maximum length allowed is 30 characters. Special characters are not allowed.	It is mandatory to enter the password if you have set the <PASSWORD>/ APPLYSAMEFO RALL attribute as N.
<SCHEMA>/ APP_ID	The Application ID is seeded based on the Application.	Y	Unique Seeded Value	Identifies the Application/ Product for which the schema is being created. Do not modify this attribute value.
<SCHEMA>/ DEFAULTTA BLESPACE	Enter the available default tablespace for DB User. If this attribute is left blank, then USERS is set as the default tablespace.	N	Default value: USERS Permissible value: Any existing valid tablespace name.	Modify this value to associate any valid tablespace with the schema.
<SCHEMA>/ TEMPTABLE SPACE	Enter the available temporary tablespace for DB User. If this attribute is left bank, TEMP is set as the default tablespace.	N	Default value: TEMP Permissible value: Any existing valid temporary tablespace name.	Modify this value to associate any valid tablespace with the schema.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<SCHEMA>/ QUOTA	Enter the quota to be set on the DEFAULTTABLE SPA CE attribute for the schema/ user. By default, the quota size is set to 500M. Minimum: 500M or Unlimited on default Tablespace.	N	Example: 600M or 600m 20G or 20g UNLIMITED or unlimited	Modify this value to grant the specified quota on the mentioned tablespace to the user.
<SCHEMA>/ INFODOM	Enter the name of the Information Domain to associate this schema. The schema creator utility automatically derives an Information Domain Name based on the Application Pack if no value is specified for this attribute.	N	The permissible length is 16 characters and only alphanumeric characters are allowed. No special characters are allowed.	
<ADV_SEC_OPTIONS>/	Parent tag to hold Advance Security Options.	N	NA	Uncomment the tag and edit if you want to add security options. For example, TDE and Data Redact. For details, see the example following the rows.
<ADV_SEC_OPTIONS>/T DE	Tag to enable/ disable TDE feature.	N	The default value is FALSE. To enable TDE, set this value to TRUE.	Ensure this tag is not commented if you have uncommented <ADV_SEC_OPTIONS>.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<ADV_SEC_OPTIONS>/DATA_REDACT	Tag to enable/ disable the Data Redaction feature.	N	The default value is FALSE. To enable DATA_REDACT, set this value to TRUE.	Ensure this tag is not commented if you have uncommented< ADV_SEC_OPTIONS>.
<TABLESPACES>	Parent tag to hold <TABLESPACE> elements	N	NA	Uncomment the tag and edit only if tablespaces are to be created as part of the installation. For details, see the example that follows the table. When TDE is TRUE in ADV_SEC_OPTIONS, it is mandatory for the <TABLESPACES> tag to be present in the XML file.
<TABLESPACE>/NAME	Logical Name of the tablespace to be created.	Y	OFSAA_CONF_TBSP OFSAA_DATA_TBSP	Name, if specified, must be referred in the <SCHEMA DEFAULTTABLESPACE= "##NAME##"> attribute. Note the ## syntax.
<TABLESPACE>/VALUE	Physical Name of the tablespace to be created.	Y	NA	Value, if specified, is the actual name of the TABLESPACE.
<TABLESPACE>/DATAFI LE	Specifies the location of the data file on the server.	Y	NA	Enter the absolute path of the file to be created.
<TABLESPACE>/AUTOE XTEND	Specifies if the tablespace must be extensible or have a hard limit.	Y	ON or OFF	Set to ON to ensure that the tablespace does not run out of space when full.

Table 6-3 (Cont.) OFS_PFT_SCHEMA_IN.xml file (APPPACKSCHEMA Parameters)

Tag Name and Attribute Name	Description	Mandatory (Y or N)	Default Value or Permissible Value	Comments
<TABLESPACE> /ENCRYP T	Specifies if the tablespace (or tablespaces) must be encrypted using TDE.	Y	ON or OFF	Set to ON to ensure that the tablespaces when created are encrypted using TDE. **NOTE**: Encryption of tablespaces requires enabling Transparent Data Encryption (TDE) on the Database Server.

4. Save and close the file.

Example: The following snippet shows that TDE is enabled and hence the tablespace is shown with encryption ON.

```
<ADV_SEC_OPTIONS>
<OPTION NAME="TDE" VALUE="TRUE"/>
<OPTION NAME="DATA_REDACT" VALUE="FALSE"/>
</ADV_SEC_OPTIONS>
<TABLESPACES>

<TABLESPACE NAME="OFS_AAI_TBSP_1" VALUE="TS_USERS1" DATAFILE="/
scratch/ora12c/app/oracle/oradata/OFSPQA12CDB/ts_users1.dbf"
SIZE="500M" AUTOEXTEND="ON" ENCRYPT="ON" />
<TABLESPACE NAME="OFS_AAI_TBSP_2" VALUE="TS_USERS2" DATAFILE="/
scratch/ora12c/app/oracle/oradata/OFSPQA12CDB/ts_users2.dbf"
SIZE="500M" AUTOEXTEND="ON" ENCRYPT="ON" />
</TABLESPACES>


<SCHEMAS>
<SCHEMA TYPE="CONFIG" NAME="ofsaaconf" PASSWORD="" APP_ID="OFS_AAI"
DEFAULTTABLESPACE="##OFS_AAI_TBSP_1##" TEMPTABLESPACE="TEMP"
QUOTA="unlimited"/>
<SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_AAAI"
DEFAULTTABLESPACE="##OFS_AAI_TBSP_2##" TEMPTABLESPACE="TEMP"
QUOTA="unlimited" INFODOM="OFSAAAIINFO"/>
</SCHEMAS>
```

6.3.2 Configure the Schema Creator Utility for RDBMS Installation

If the installation is being performed for RDBMS, provide the Pack specific schema details in the `OFS_PFT_SCHEMA_IN.xml` file.

You can configure the following types of schemas:

- **CONFIG**: This schema holds the entities and other objects required for OFSAA setup configuration information. There can be only one CONFIG schema per OFSAA instance
- **ATOMIC**: This schema holds the data model entities. One ATOMIC schema is attached to one Information Domain. There can be multiple ATOMIC schemas per OFSAA Instance.

6.4 Execute the Schema Creator Utility

Depending on requirement, you must select the appropriate schema creator utility execution option from the following options:

- Execute the Schema Creator Utility in Offline Mode
- Execute the Schema Creator Utility in Online Mode
- Execute the Schema Creator Utility in TCPS Mode
- Execute the Schema Creator Utility while Installing Subsequent Applications Pack

6.4.1 Execute the Schema Creator Utility in Offline Mode

Choose the Offline Mode option if you do not have login credentials to the database with SYSDBA privileges. In this mode, the utility generates an SQL script with all the required DDLs for Users, Objects, and Grants. That script must be executed by the DBA on the appropriate database identified for OFSAA usage.

To execute the schema creator utility in the offline mode, you must have the following privileges:

- SELECT ON DBA_ROLES
- SELECT ON DBA_USERS
- SELECT ON DBA_DIRECTORIES
- SELECT ON DBA_TABLESPACES
- CREATE SESSION

> **Note:**
>
> Explicit Grants to the User are required. Grants assigned through Roles are not supported.

To execute the schema creator utility in the offline mode, follow these steps:

1. Log in to the system as a non-root user.
2. Navigate to the `OFS_PFT_PACK/schema_creator/bin` directory.

3. Execute the `osc.sh` file using the following command:
   `./osc.sh -o -s`

   The following message is displayed:

   You have chosen OFFLINE mode. Triggering the utility in OFFLINE mode will generate the script. Do you wish to proceed? (Y/y or N/n).

   Enter Y to proceed.

4. Enter the DB Username with SELECT privileges.

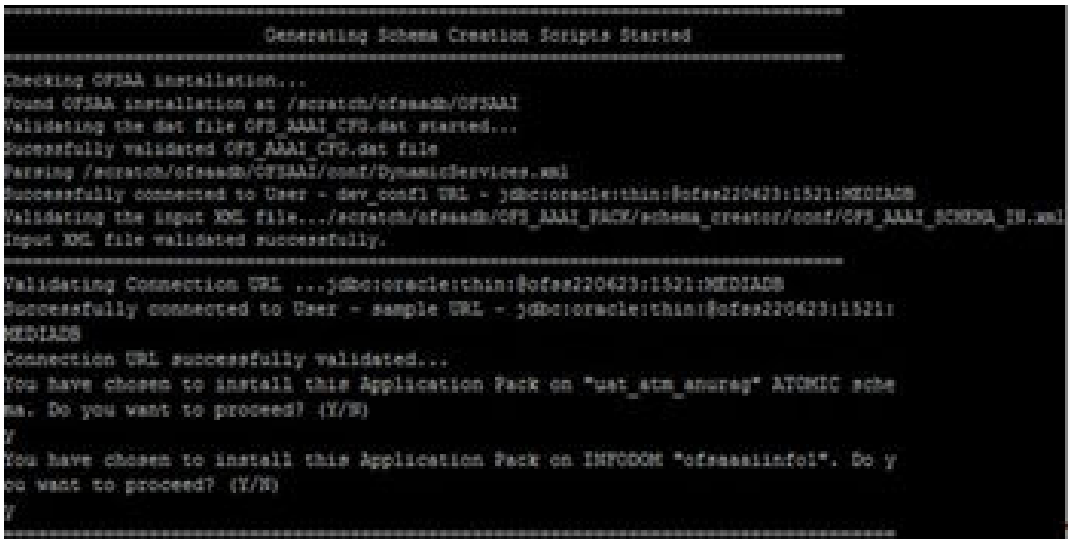
5. Enter the User Password.
   The console runs the initial validation checks and displays the following message:

   You have chosen to install this Application Pack on <Name of the Atomic Schema> ATOMIC schema. Do you want to proceed? (Y/N).

6. Enter Y to start the script generation.
   The following message is displayed:

   You have chosen to install this Application Pack on <Name of the Infodom>. Do you want to proceed? (Y/N). Enter Y to proceed.

Figure 6-3 Schema Creation in Offline Mode – Script Generation



7. On successful execution of the schema creator utility, the console displays the following status message:
   Schema Creator executed successfully.

   Execute the file `scratch/ofsaaapp/OFS_PFT_PACK/schema_creator/sysdba_output_scripts.sql` before proceeding with the installation.

> **Note:**
>
> If there are any errors during the SQL script execution, reconfigure the `OFS_PFT_SCHEMA_IN.xml` file and repeat steps in this procedure to execute the utility. This regenerates the script with the correct information.

8. Navigate to the `OFS_PFT_PACK/schema_creator` directory.
9. Log in to the database using credentials with SYSDBA privileges.
10. Execute the `sysdba_output_scripts.sql` file using the following command: `@sysdba_output_scripts.sql`

    Alternatively, you can copy the `sysdba_output_scripts.sql` file and SQLScripts folder to a remote server, and execute the `sysdba_output_scripts.sql` file after providing appropriate execute permissions.

> **Note:**
>
> See the `sysdba_output_scripts.log` file for execution status. If there are any errors, contact My Oracle Support. If there are no errors in the execution, the log file is empty.

As a result of this procedure, the `OFS_PFT_SCHEMA_OUTPUT.XML` file is generated. Do not modify this file.

6.4.2 Execute the Schema Creator Utility in Online Mode

In Online mode, the utility connects to the database and executes the DDLs for Users, Objects, and Grants. If you have SYSDBA privileges you can execute the Schema Creator Utility in Online mode and thereby create the Users, Objects, and Grants during the execution process. To execute the utility in the Online mode, you must connect as "<User> AS SYSDBA".

To execute the utility in Online mode, follow these steps:

1. Log in to the system as a non-root user.
2. Execute the utility with -s option. For Example: `./osc.sh -s`

The `OFS_PFT_SCHEMA_OUTPUT.xml` file is successfully generated. Do not modify this file.

6.4.3 Execute the Schema Creator Utility in TCPS Mode

If you intend to run the OFS Performance Analytics Pack (OFS PFT Pack) Installer in TCPS mode, it is mandatory to execute the schema creator utility with -s option and in online mode.

6.4.3.1 Prerequisites

The following are the prerequisites for this configuration:

1. UNIX user credentials with which OFSAA was installed.
2. UNIX user credentials with which Web Application Server (Oracle WebLogic (WLS)/ Apache Tomcat/ IBM WebSphere) was installed.
3. OFSAAI version should be 8.1.2.0.0 and later.
4. Ensure OFSAA installed and deployed is having JAVA 8 (Java version must support Java unlimited cryptographic policy. Java version 1.8.0_161+ supports unlimited cryptographic policy.)
5. Create Oracle Wallet on the OFSAA processing tier.

For information on Creating and Managing Oracle Wallet, see https://blogs.oracle.com/dev2dev/ssl-connection-to-oracle-db-using-jdbc,-tlsv12,-jks-or-oracle-wallets and https://blogs.oracle.com/weblogicserver/weblogic-jdbc-use-of-oracle-wallet-for-ssl.

6. Configure the Oracle Wallet with trusted certificates between the database server with TCPS configured and the database client to enable communication through the SSL protocol.For example, all the database utils such as sqlplus, tnsping, and sqlldr must work between the Client and the Server.

6.4.3.1.1 Configure OFSAA to Store Config Schema, Atomic Schema, and SysDBA Credentials with Oracle Wallet

To configure the OFSAA to store the Config and Atomic schema credentials with Oracle Wallet, follow these steps:

1. Log in as a UNIX user with the permission to modify the Oracle Wallet.
2. Execute the following command to configure Config Schema credentials. Enter the password to store the credentials in the Wallet when prompted.

   ```
   $ORACLE_HOME/bin/mkstore -wrl <WALLET_HOME> -createCredential -nologo
   CONFIG <CONFIG_DATABASE_USERNAME> <CONFIG_DATABASE_PASSWORD>
   ```

3. Execute the following command to configure the Atomic Schema credentials, Enter the password to store the credentials in the Wallet when prompted.

   ```
   $ORACLE_HOME/bin/mkstore -wrl <WALLET_HOME> -createCredential -nologo
   <ATOMICALIASNAME> <ATOMIC_DATABASE_USERNAME>
   <ATOMIC_DATABASE_PASSWORD>
   ```

4. Configure SysDBA credentials. Execute the following command to configure SysDBA Schema credentials. Enter the password to store the credentials in the Wallet when prompted.

   ```
   $ORACLE_HOME/bin/mkstore -wrl <WALLET_HOME> -createCredential -nologo
   SYS <SYS_DATABASE_USERNAME> <SYS_DATABASE_PASSWORD>
   ```

> **Note:**
>
> ATOMICALIASNAME value is a TNS alias for Atomic Schema and must not contain underscores.
>
> For example, if the Atomic Schema Name is PROD_OFSAAATM, then the value for ATOMICALIASNAME must be entered as PRODOFSAAATM.

For more detailed information about configuring Wallet with OFSAA, see the Configuring OFSAA and various Web Application Servers with Oracle Wallet section in the OFS Analytical Applications Infrastructure Application Pack Administration and Configuration Guide Release 8.1.x.

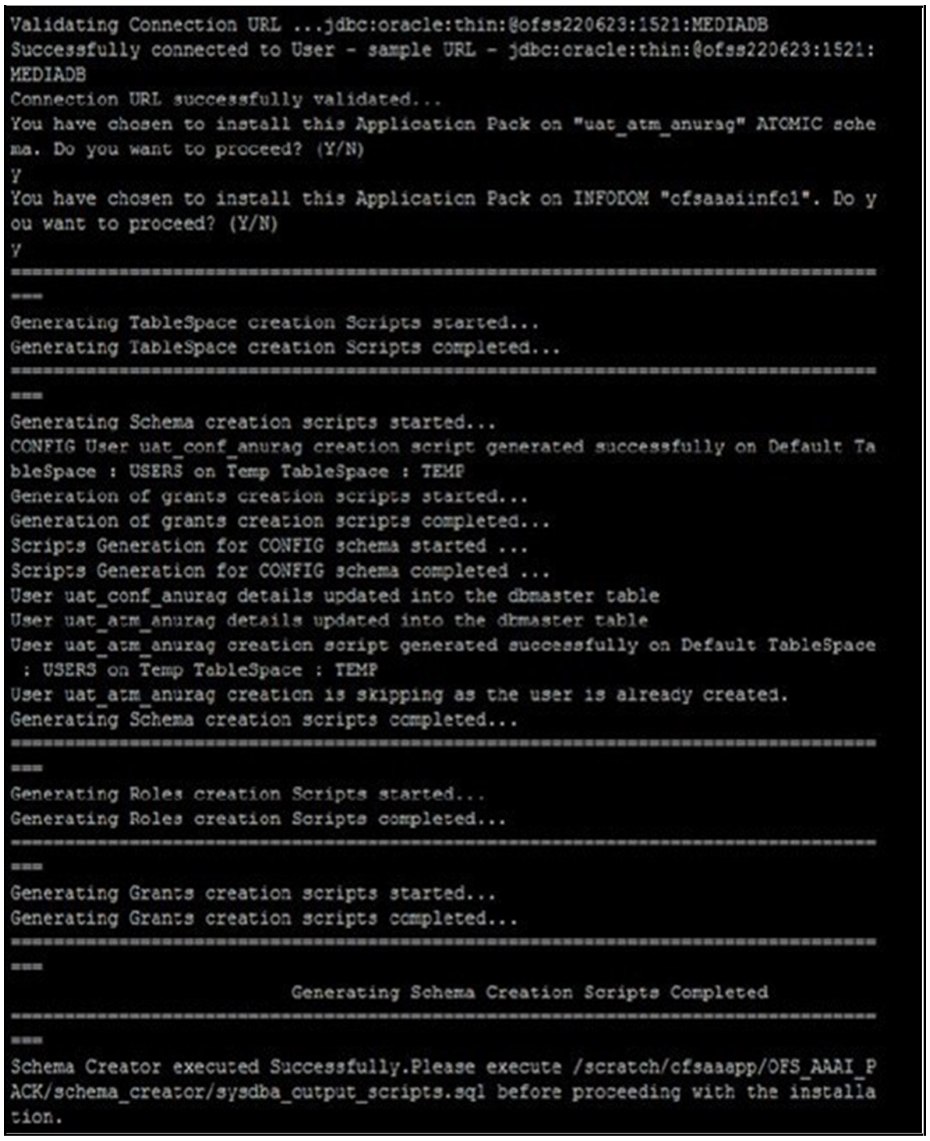
6.4.4 Execute the Schema Creator Utility when Installing the Subsequent Applications Pack

When executing the Schema Creator Utility during the installation of a subsequent application pack, you can choose to install the pack either on the same Information Domain/Atomic Schema of the existing application pack or on a new Information Domain/Atomic Schema. You can execute the Schema Creator Utility either in the Online or Offline modes.

To execute the Schema Creator Utility while creating the schemas for a subsequent application pack, follow these steps:

1. Edit the `OFS_PFT_PACK/schema_creator/conf/OFS_PFT_SCHEMA_IN.xml` file in a text editor. See the Configure the OFS_PFT_SCHEMA_IN.xml File section for values you must modify in the XML file.
2. Execute the utility.
   For Example: `./osc.sh -s`

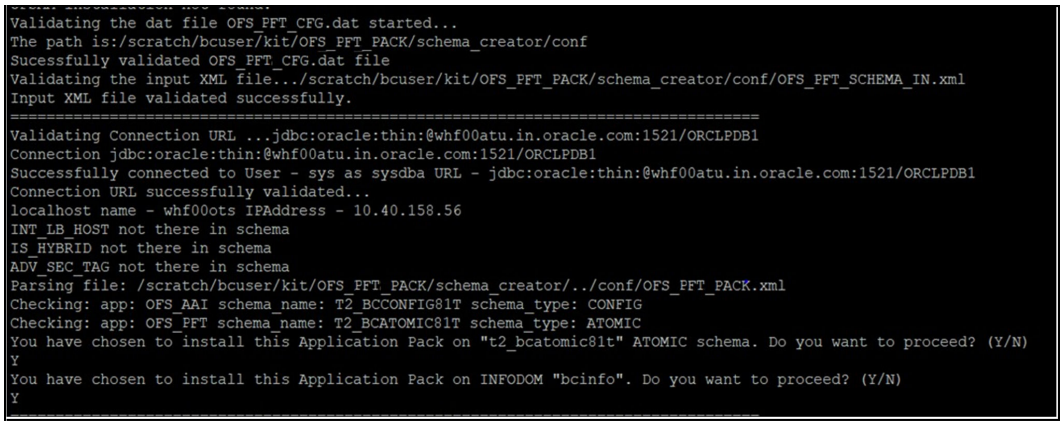
Figure 6-4 Schema Creator Utility



> **Note:**
>
> You must use the same config schema user name as the previous application pack.

3. The utility identifies the application packs that are already installed on the current OFSAA setup and displays the following on the console:
   - Atomic schema of the existing application pack
   - Information Domain Name of the existing pack
   - List of installed application packs
4. Select the Atomic User on which you want to install the application pack.

Figure 6-5 Select the Atomic User



On successful execution of the Schema Creator Utility, the console displays the following status message: Success.

Please proceed with the installation.

> **Note:**
>
> a. See the log file in the `OFS_PFT_PACK/schema_creator/logs` directory for the execution status.
>
> b. See the `sysdba_output_scripts.log` file for execution status if executed in offline mode. This log will be empty if there are no errors in the execution.
>
> c. If there are any errors, contact My Oracle Support.

6.5 Configure the OFSAAI_InstallConfig.xml File

To configure the OFS_InstallConfig.xml file, follow these steps:

- Navigate to the OFS_AAAI_PACK/OFS_AAI/conf/ directory.
- Open the OFSAAI_InstallConfig.xml file in a text editor.
- Configure the OFSAAI_InstallConfig.xml file as mentioned in the following table.

You must manually set the InteractionVariable parameter values as mentioned in the table. If a value is not applicable, enter NA. Ensure that the value is not entered as NULL.

Table 6-4 Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
<Layer name="GENERAL">		
InteractionGroup name="WebServerType"		

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
WEBAPPSERVERTYPE	Identifies the web application server on which the OFSAA Infrastructure web components are deployed. Set the following numeric value depending on the type of web application server: • Apache Tomcat = 1 • IBM WebSphere Application Server = 2 • Oracle WebLogic Server = 3 For example, `<InteractionVariablename= "WEBAPPSERVERTYPE">3</ InteractionVari able>`	Yes
InteractionGroup name=”OFSAA Infrastructure Server Details”		

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
DBSERVER_IP	Identifies the host name or IP address of the system on which the Database Engine is hosted. **Note:** For RAC Database, the value must be NA. For example, `<InteractionVariable name="DBSERVER_IP">14.15.16.1`	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
	7</InteractionVariable> or <InteractionVariable name="DBSERVER_IP">dbhost.server.com</InteractionVariable>	
InteractionGroup name=”Database Details”		

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
ORACLE_SID/SERVICE_NAME	Identifies the Oracle DB Instance SID or `SERVICE_NAME` **Note:** The Oracle_SID value must be exactly the same as it is mentioned in `JDBC_URL`. For example, `<InteractionVariable name="ORACLE_SID/SERVICE_NAME">ofsaser</InteractionVariable>`	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
ABS_DRIVER_PATH	Identifies the directory where the JDBC driver (ojdbc<version>.jar) exists. This is typically the `$ORACLE_HOME/jdbc/lib` directory. For example, `<InteractionVariable name="ABS_DRIVER_PATH">">/oradata6/revwb7/oracle </InteractionVariable>` **Note:** See Hardware and Software Requirements to identify the correct ojdbc<version>.jar file version to be copied.	Yes
InteractionGroup name=”OLAP Detail		

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
OLAP_SERVER_ IMPLEMENTATION	Identifies whether the OFSAA Infrastructure OLAP component must be configured. It depends on whether you intend to use the OLAP feature. The following numeric value must be set depending on the choice: • YES: 1 • NO: 0 **Note:** If the value for `OLAP_SERVER_IMPLEMENTATION` is set to 1, the installer checks if the following environment	No

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
	variables are set in the `.profile` file: • ARBORPATH • HYPERION_HOME • ESSBASEPATH	
InteractionGroup name="SFTP Details"		
SFTP_ENABLE	Identifies if the SFTP (Secure File Transfer Protocol) feature is to be enabled. The following numeric value must be set depending on the choice: • SFTP: 1 • FTP: 0	Yes

> **Note:**
>
> The default value for `SFTP_ENABLE` is **1**, which signifies that SFTP is used. Oracle recommends using SFTP instead of FTP because SFTP is more secure. However, you can ignore this recommendation and use FTP by setting `SFTP_ENABLE` to **0**. You can change this selection later from the OFSAAI administration interface.

Set `SFTP_ENABLE` to **-1** to configure ftpshare and weblocal path as a local path mounted for the OFSAAI server.

FILE_TRANSFER_PORT	Identifies the port used for the file transfer service. The default value specified is **22** (SFTP). Specify the value as **21** or any other PORT value if the value for `SFTP_ENABLE` is **0**. For example, `<InteractionVariable name="FILE_TRANSFER_PORT">21</InteractionVariable>`	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
InteractionGroup name=”Locale Detail”		
LOCALE	Identifies the locale information to be used during the installation. This release of the OFSAA Infrastructure supports only US English. For example, `<InteractionVariable name="LOCALE">en_US</InteractionVariable>`	Yes
InteractionGroup name=”OFSAA Infrastructure Communicating ports"		
	Note: The following ports are used internally by the various OFSAA Infrastructure services. The default values mentioned are set in the installation. If you intend to specify a different value, update the parameter value accordingly, ensure that the port value is in the range 1025 to 65535, and the respective port is enabled.	
JAVAPORT	9999	Yes
NATIVEPORT	6666	Yes
AGENTPORT	6510	Yes
ICCPORT	6507	Yes
ICCNATIVEPORT	6509	Yes
OLAPPORT	10101	Yes
MSGPORT	6501	Yes
ROUTERPORT	6500	Yes
AMPORT	6505	Yes
InteractionGroup name="Web Details"		
Note: If the value for `HTTPS_ENABLE` is set to **1**, ensure that you have a valid certificate available from a trusted CA and it is configured on your web application server.		
HTTPS_ENABLE	Identifies whether the UI must be accessed using HTTP or HTTPS scheme. The default value is set to 0. The numeric value must be set depending on the following options: • YES: 1 • NO: 0 For example, `<InteractionVariable name="HTTPS_ENABLE">0</InteractionVariable>`	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory

WEB_SERVER_IP	Identifies the HTTP Server IP/ Host name or Web application server IP/ Host name, to be used to access the UI. This IP is typically the HTTP Server IP.
	If a separate HTTP Server is not available, then the value must be Web application server IP/Host name.
	For example,
	`<InteractionVariable name="WEB_SERVER_IP">10.11.12.13</InteractionVariable>`
	or
	`<InteractionVariable name="WEB_SERVER_IP">myweb.server.com</InteractionVariable>`
		No

WEB_SERVER_PORT	Identifies the Web Server Port, which is typically 80 for non SSL and 443 for SSL. If a separate HTTP Server exists, the port value must be the value configured for the Web Server. **Warning**: The installer will not accept the port value as: • 80, if the HTTPS_ENABLE variable is 1 • 443, if the HTTPS_ENABLE variable is 0 For example, `<InteractionVariable name="WEB_SERVER_PORT">80</InteractionVariable>`	No

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory

CONTEXT_NAME	Identifies the web application context name which is used to build the URL to access the OFSAA application. You can identify the context name from the following URL format:
	`<scheme>://<host>:<port>/ <context-name>/ login.jsp`
	The following is an example:
	`https://myweb:443/ ofsaadev/login.jsp`
	For example,
	`<InteractionVariable name="CONTEXT_ NAME">ofsaadev</ InteractionVariable>`
		Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
WEBAPP_CONTEXT_PATH	Identifies the absolute path of the exploded EAR file on the web application server. • For Tomcat, specify the Tomcat directory path till /webapps. For example, `/oradata6/ revwb7/tomcat/webapps/`. • For WebSphere, specify the WebSphere path as `<WebSphere profile directory>/installedApps/<NodeCellName>`. For example, `/ data2/test//WebSphere/AppServer/profiles/<Profile_Name>/installedApps/aiximfNode01Cell`, where aix-imf is the Host name. • For WebLogic, specify the WebLogic home directory path. For example, `/<WebLogic home directory path>/bea/wlserver_10.3` **Note:** For WebLogic, the value specified for this attribute is ignored	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
	and the value provided against the attribute WEBLOGIC_DOMAIN_HOME is considered.	

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
WEB_LOCAL_PATH	Identifies the absolute path to any directory on the web application server that can hold temporary files, which are uploaded as part of the usage of the application. Set this in the FTPSHARE location. **Note:** During a clustered deployment, ensure that this path and the directory are the same on all the nodes.	Yes

InteractionGroup name="Weblogic Setup Details”

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
WEBLOGIC_DOMAIN_HOME	Identifies the WebLogic Domain Home. For example, `<InteractionVariable name="WEBLOGIC_DOMAIN_HOME">/home/weblogic/bea/ user_ projects/ domains/ mydomain </ InteractionVariable>`	Yes. Specify the value only if WEBAPPSERVERTYPE is set as 3 (WebLogic)

InteractionGroup name="OFSAAI FTP Details"

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
OFSAAI_FTPSHARE_PATH	Identifies the absolute path of the directory that is identified as the file system stage area. **Note:** The directory must exist on the same system on which the OFSAA Infrastructure is being installed (can be on a separate mount).	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
	The user mentioned in the APP_SFTP_USER_ID parameter in the following example must have RWX permission on the directory. For example, `<InteractionVariable name="APP_FTPSHARE_PATH">">/oradata6/revwb7/ftpshare</InteractionVariable>`	
OFSAAI_SFTP_USER_ID	Identifies the user who has RWX permissions on the directory identified for the parameter `APP_FTPSHARE_PATH`.	Yes
OFSAAI_SFTP_PRIVATE_KEY	Identifies the SFTP private key for OFSAAI. For example, `<InteractionVariable name="OFSAAI_SFTP_PRIVATE_KEY">/home/ofsaapp/.ssh/id_rsa</InteractionVariable>` By default, the value is **NA**, which indicates that, for authentication, you are prompted to enter the password for the user <OFSAAI_SFTP_USER_ID>. For more information on how to generate an SFTP Private key, see the Set Up SFTP Private Key section.	No
OFSAAI_SFTP_PASSPHRASE	Identifies the passphrase for the SFTP private key for OFSAAI. For example, `InteractionVariable name="OFSAAI_SFTP_PASSPHRASE">enter a pass phrase here</InteractionVariable>` By default, the value is **NA**. If the `OFSAAI_SFTP_PRIVATE_KEY` value is given and the `OFSAAI_SFTP_PASSPHRASE` value is **NA**, then the passphrase is identified as empty.	No

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
InteractionGroup name="Hive Details" The default value set for the interaction variables under this group is NA.		
	Note: The following values are required only for Hive Configuration.	
HIVE_SERVER_PORT	Identifies the port used for the file transfer service. The default value is 22 (SFTP). To use this port for FTP, set this value to **21**. For example, `<InteractionVariable name="HIVE_SERVER_PORT">22</InteractionVariable>`	Yes
HIVE_SERVER_FTPDRIVE	Identifies the absolute path to the directory identified as file system stage area of the HIVE server. For example, `<InteractionVariable name="HIVE_SERVER_FTPDRIVE">/scratch/ofsaa/ftpshare</InteractionVariable>`	Yes

HIVE_SERVER_FTP_USERID	Identifies the user who has RWX permissions on the directory identified under the parameter `HIVE_SERVER_FTPDRIVE`.
	`For example,`
	`<InteractionVariable name="HIVE_SERVER_FTP_USERID">ofsaa</InteractionVariable>`
		Yes

HIVE_SERVER_FTP_PROTOCOL	If the `HIVE_SERVER_PORT` is **21**, then set the value to **FTP**. If not, set it to **SFTP**. For example, `<InteractionVariable name="HIVE_SERVER_FTP_PROTOCOL">SFTP</InteractionVariable>`	Yes

Table 6-4 (Cont.) Table 19: OFSAA Infrastructure Installation Tasks and Descriptions

InteractionVariable Name	Significance and Expected Value	Mandatory
HIVE_SFTP_PRIVATE_KEY	Identifies the SFTP private key for the HIVE server. For example, `<InteractionVariable name="HIVE_SFTP_PRIVATE_KEY">/scratch/testuser/.ssh/id_rsa</InteractionVariable>` By default, the value is **NA**, which indicates that, for authentication, you are prompted to enter the password for the user `<HIVE_SERVER_FTP_USERID>`. For more information on generating SFTP Private key, see the Set Up SFTP Private Key section.	
HIVE_SFTP_PASSPHRASE	Identifies the passphrase for the SFTP private key for HIVE. For example, `<InteractionVariable name="HIVE_SFTP_PASSPHRASE">NA</InteractionVariable>` By default, the value is **NA**. If the `HIVE_SFTP_PRIVATE_KEY` value is **NA**, then the passphrase is identified as empty.	

6.5.1 Set Up the SFTP Private Key

Log in to OFSAA UNIX user using the Putty tool, where you plan for installation and generate a pair of authentication keys using the ssh-keygen command. If required, set passphrase. Otherwise, the OFSAAI_SFTP_PASSPHRASE tag must be set to NA.

To generate a private key, enter the commands as shown:

```
ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ofsaapp/.ssh/id_rsa):
Created directory '/home/ofsaapp/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ofsaapp/.ssh/id_rsa.
Your public key has been saved in /home/ofsaapp/.ssh/id_rsa.pub.
The key fingerprint is:
3e:4f:05:79:3a:9f:96:7c:3b:ad:e9:58:37:bc:37:e4
```

```
ofsaapp@OFSASERVER:~> cat /home/ofsaapp/.ssh/id_rsa.pub >> /home/
ofsaapp/.ssh/authorized_keys
```

Ensure the following permissions exist for the given directories:

- permissions of .ssh must be 700
- permissions of .ssh/authorized_keys must be 640
- permission of .ssh/id_rsa must be 400
- Permission of UNIX User created must be 755

6.6 Configure the Silent.props File

This section is applicable for a new installation of OFS Performance Analytics Pack (OFS PFT Pack) Release 8.1.2.0.0. In the installer kit path `OFS_PFT_PACK/appsLibConfig/conf/`, rename the `Silent.template` file to `Silent.props`. Edit the `Silent.props` file and modify only the following parameters.

> **Note:**
>
> In the pack-on-pack scenario, the parameters `OFS_EFPA_SEGMENT_1_CODE`, `OFS_IPA_SEGMENT_1_CODE`, `OFS_RPA_SEGMENT_1_CODE` must be same as the parameters `SEGMENT_1_CODE` of the previously installed application pack. Do not modify these parameters if there are no other packs than the OFS Performance Analytics Pack (OFS PFT Pack) installed.

Table 6-5 Parameters for Silent.props File

Property Name	Description of Property	Permissible Values	Comments
LOG_MODE	Mode for logging	0 = Debug (Passwords will not be printed in the log file) 1 = General (Password will be printed in the log file)	Default: 0 This is optional.
SEGMENT_1_CODE	Segment Code	Not Applicable	Mandatory **NOTE**: The Segment Code should be in upper case.
APPFTP_LOG_PATH	Infodom Maintenance log path (to be created) for the new Infodom for applayer	Not Applicable	# Mandatory if this an App Layer Installation and if you want to create a new infodom. # That is, you have specified INSTALL_APP=1 and INFODOM_TYPE=0

Table 6-5 (Cont.) Parameters for Silent.props File

Property Name	Description of Property	Permissible Values	Comments
DBFTP_LOG_PATH	Infodom Maintenance log path (to be created) for the new Infodom for DBLayer	Not Applicable	# Mandatory if this an App Layer Installation and if you want to create a new Infodom. # That is, you have specified INSTALL_APP=1 and INFODOM_TYPE=0
UPLOAD_MODEL	To perform the Model Upload.	0: No 1: Yes	Mandatory
MODEL_TYPE	The released data model or a customized data model.	0: Released 1: Customized	Mandatory only if you want to upload the data model.
DATAMODEL	The path for the customized data model.	Not Applicable	Mandatory only if you want to upload the customized data model.
DM_DIRECTORY	The file name for the customized data model.	Not Applicable	Mandatory only if you want to upload the customized data model.
OBI Parameters			
OFS_EFPA_OBI_HOST	The hostname or IP Address of the OBIEE server.	For example: 10.11.12.13 Or myweb.server.com	Mandatory
OFS_EFPA_OBI_PORT	The port number of the OBIEE server.	For example: 9500	Mandatory
OFS_EFPA_OBI_CONTEXT	The context of the OBIEE.	For example: Analytics	Mandatory
OFS_EFPA_OBI_PROTOCOL	The protocol details of the OBIEE server.	http or https	Mandatory
OFS_IPA_OBI_HOST	The hostname or IP Address of the OBIEE server.	For example: 10.11.12.13 or myweb.server.com	Mandatory
OFS_IPA_OBI_PORT	The port number of the OBIEE server.	For example: 9500	Mandatory
OFS_IPA_OBI_CONTEXT	The context of the OBIEE.	For example: Analytics	Mandatory
OFS_IPA_OBI_PROTOCOL	The protocol details of the OBIEE server.	http or https	Mandatory
OFS_RPA_OBI_HOST	The hostname or IP Address of the OBIEE server.	For example: 10.11.12.13 or myweb.server.com	Mandatory

Table 6-5 (Cont.) Parameters for Silent.props File

Property Name	Description of Property	Permissible Values	Comments
OFS_RPA_OBI_PORT	The port number of the OBIEE server.	For example: 9500	Mandatory
OFS_RPA_OBI_CONTEXT	The context of the OBIEE.	For example: Analytics	Mandatory
OFS_RPA_OBI_PROTOCOL	The protocol details of the OBIEE server.	http or https	Mandatory
ETL_APPSRC_TYPE	Create new ETL App or Src pair or use an existing one.	0 = New 1 = Existing	#Mandatory if this an App layer installation. # That is, you have specifiedINSTALL_APP=1. # 0 = If you want to create a new ETL app or src pair # 1 = If you want to use an existing pair
ETL_APP_1_DESC	Description for the ETL App	Not Applicable	# Mandatory if you want to create a new ETL app or src pair. #That is, you have specified ETL_APPSRC_TYPE=0
ETL_SRC_1_1_DESC	Description for the ETL Staging source description	Not Applicable	# Mandatory if you want to create a new ETL app or src pair. #That is, you have specified ETL_APPSRC_TYPE=0
ETL_SRC_1_2_DESC	Description for the ETL Processing source description	Not Applicable	# Mandatory if you want to create a new ETL app or src pair. #That is, you have specified ETL_APPSRC_TYPE=0
ETL_APP_1_NAME	ETL application name	Not Applicable	This is for the App Layer installation.
ETL_SRC_1_1_NAME	ETL Staging source name	Not Applicable	This Source must be mapped to the above ETL Application.
ETL_SRC_1_2_NAME	ETL Processing source name	Not Applicable	This Source must be mapped to the above ETL Application.

6.7 Install the OFS Performance Analytics Pack (OFS PFT Pack) Pack

This topics describes the step-by-step instructions to install the OFS Profitability Analytics Pack (OFS PFT Pack).

Before you begin the installation, ensure you have configured and executed the following files:

1. Configure the OS File System Settings and Environment Settings in .profile File
2. Configure the OFS_PFT_PACK.xml File
3. Configure the OFS_PFT_SCHEMA_IN.xml File
4. Configure the OFSAAI_InstallConfig.xml File (Do not configure this file if an installation of OFSAAI 8.1.2 already exists.)
5. Execute the Schema Creator Utility
6. Configure the Silent.props File

To install the OFS Performance Analytics Pack (OFS PFT Pack), follow these steps:

1. Log in to the system as a non-root user.
2. Identify a directory for installation and set the same in the user .profile file as follows: FIC_HOME=<OFSAA Installation Directory>

   ```
   FIC_HOME=<OFSAA Installation Directory>
   export FIC_HOME
   ```

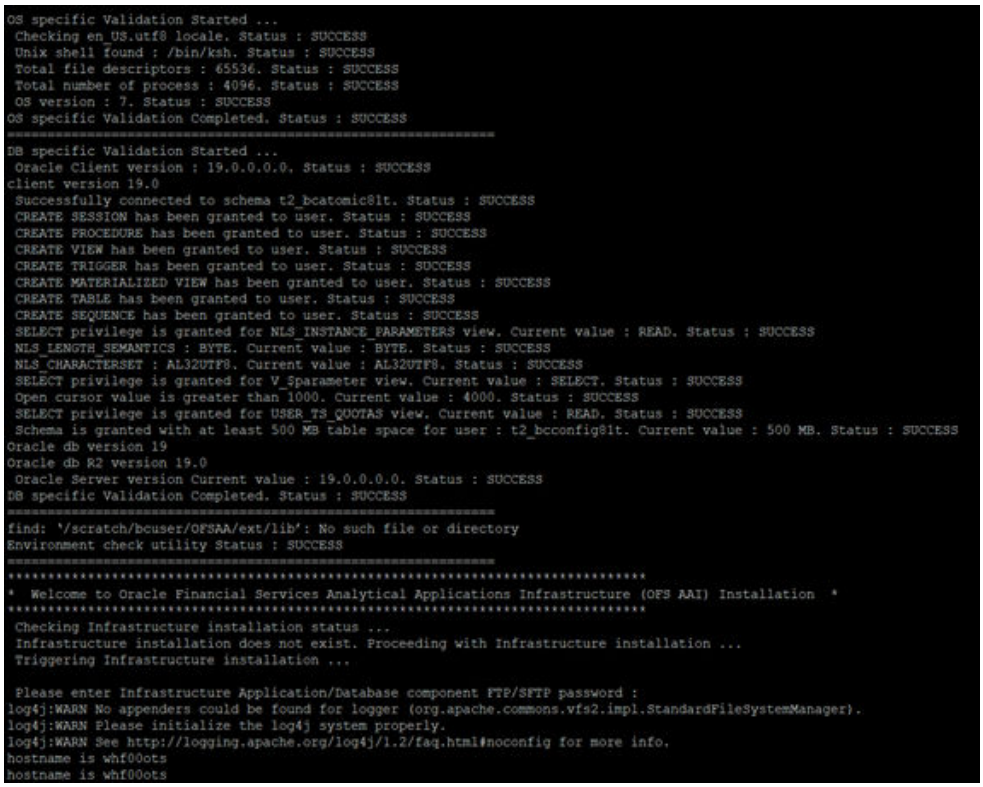
3. Execute the user .profile file.
   ```
   . ./.profile
   ```
4. Navigate to the OFS_PFT_PACK/bin directory.

   > **Note:**
   >
   > Do not install the new applications in the same segment if the preinstalled applications use the Run Management functionality of OFSAAI.

5. Enter the following command in the console to execute the application pack installer.
   ```
   ./setup.sh SILENT
   ```

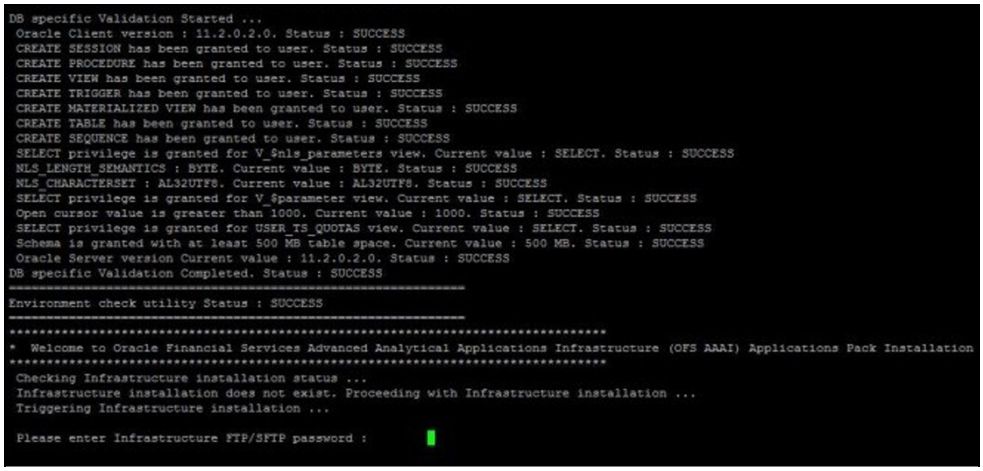
   The installer proceeds with the pre-installation checks.

Figure 6-6 Installation



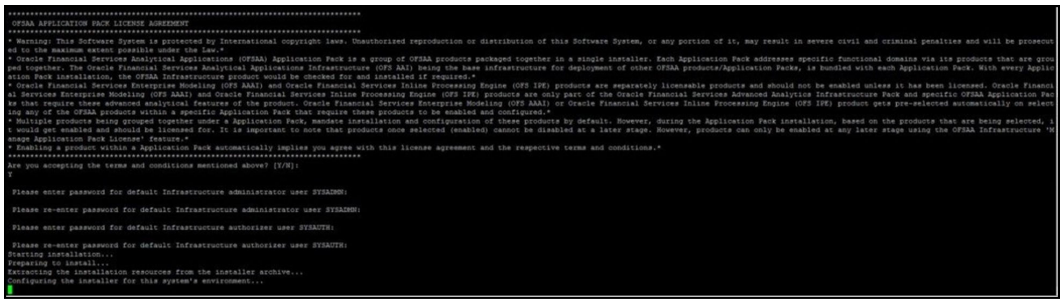
6. Enter the OFSAA Processing Tier FTP/SFTP password value when prompted in the Command Prompt and proceed.

Figure 6-7 OFSAA Processing Tier FTP/SFTP password



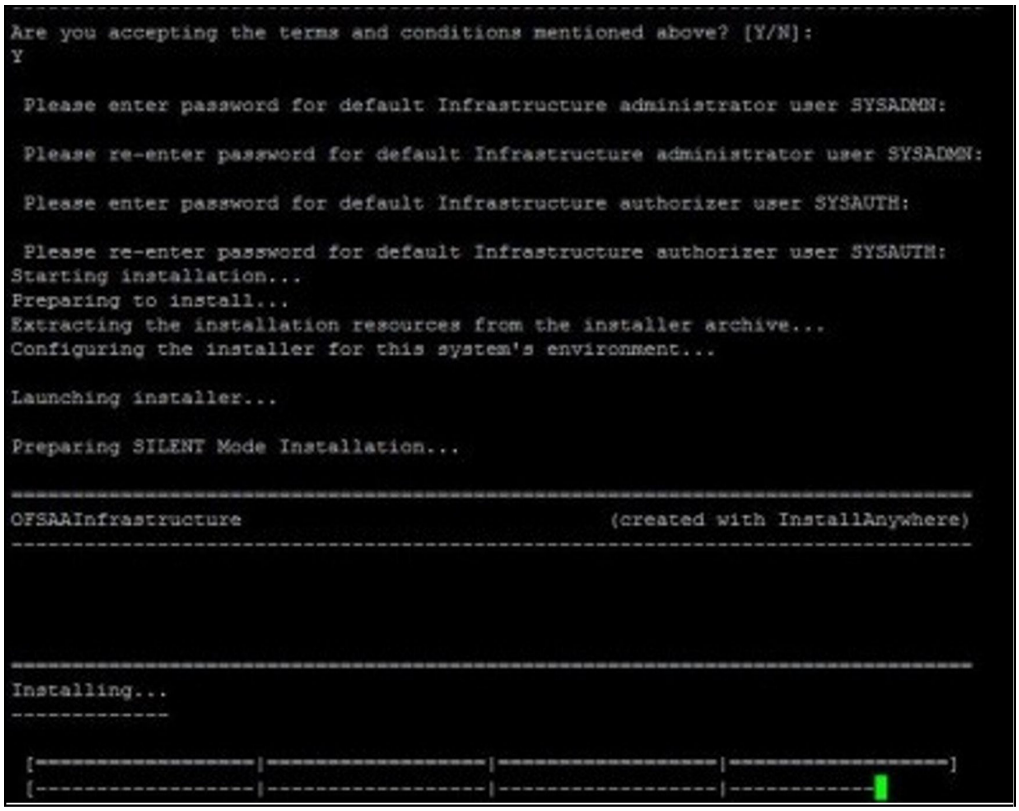
7. The process displays the OFSAA License. Enter Y and proceed.

Figure 6-8 OFSAA License Agreement



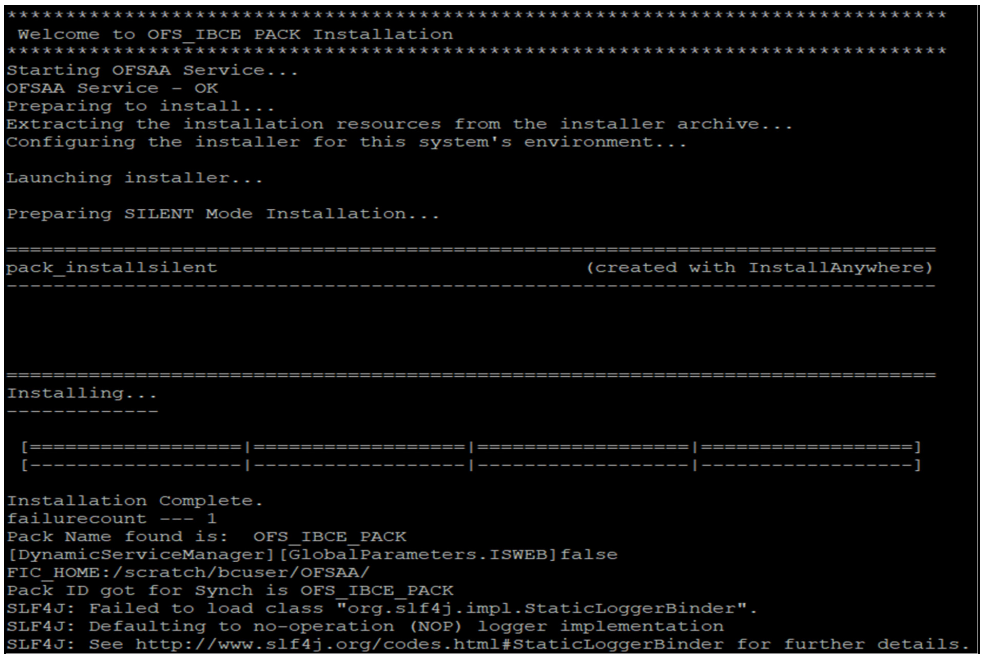
8. The installer installs the OFS AAI application.

Figure 6-9 OFS AAI Installation



9. After OFS AAAI is installed, the OFS Performance Analytics applications installation begins.

Figure 6-10 OFS Performance Analytics Applications Installation



The OFSAA Infrastructure installation performs a post-install health check automatically on the successful installation of the product.

The following message is displayed in the console:

Installation completed

10. To verify if the release is applied successfully, check the log files mentioned in the Verify the Log File Information section.
11. After the installation OFS Performance Analytics Pack (OFS PFT Pack) 8.1.2.0.0 is successful, complete the required Post-installation steps.

7
Post-installation

After the successful installation of the OFS Performance Analytics Pack (OFS PFT Pack) Release 8.1.2.0.0, follow the post-installation procedures.

Post-installation Checklist

You can use this checklist to have a quick glance at everything that you will be doing after installing this application. The link provided in each step takes you to a section either within this document or to another referenced document.

Table 7-1 Post-installation Checklist

Sl. No.	Post-installation Activity
1	Verify the installation logs.
2	Patch OFSAA Infrastructure Installation.
3	Back up the SCHEMA_CREATOR.xml, OFS_PM_SCHEMA_OUTPUT.xml, and Silent.props files.
4	Stop the OFSAA Infrastructure services.
5	Create and deploy EAR/WAR files.
6	Start the OFSAA Infrastructure services.
7	Configure the webserver.
8	Configure the Resource Reference in web application servers.
9	Configure the Resource Reference in web application servers.
10	Configure the Work Manager in the Web Application Servers.
11	Access the OFSAA application.
12	OFSAA Landing Page
13	Configure the excludeURLList.cfg file.
14	Change the ICC batch ownership.
15	Create Application Users.
16	Map the Application User(s) to User Groups.
17	Excel upload mapping and template.
18	Configure TDE and Data Redaction in OFSAAI.
19	Implement Data Protection in OFSAA.

7.1 Verify the Log File Information

See the following logs files for more information:

- `Pack_Install.log` file in the `OFS_PFT_PACK/logs/` directory.
- Infrastructure installation log files in the `OFS_PFT_PACK/OFS_AAI/logs/` directory.

- `OFS_EFPA_installation.log` file in the `OFS_PFT_PACK/OFS_EFPA/logs` directory.
- `OFS_IPA_installation.log` file in the `OFS_PFT_PACK/OFS_IPA/logs` directory.
- `OFS_RPA_installation.log` file in the `OFS_PFT_PACK/OFS_RPA/logs` directory.

7.2 Backup SCHEMA_CREATOR_IN.xml, OFS_PFT_SCHEMA_OUTPUT.xml and Silent.props Files

Back up the `SCHEMA_CREATOR.xml`, `OFS_PFT_SCHEMA_OUTPUT.xml`, and `Silent.props` files as they can be reused when upgrading existing applications or installing new applications.

Table 7-2 Directory of Files to Backup

File Name	Directory
OFS_PFT_SCHEMA_IN.xml	OFS_PFT_PACK/schema_creator/conf
OFS_PFT_SCHEMA_OUTPUT.xml	OFS_PFT_PACK/schema_creator/
Silent.props	OFS_PFT_PACK/appsLibConfig/conf

7.3 Stop the Infrastructure Services

To stop Infrastructure services, follow these steps:

1. On the machine where the Infrastructure Application components are installed, navigate to the $FIC_APP_HOME/common/FICServer/bin directory, and execute the following command:
   `./stopofsaai.sh`
2. To stop the ICC server on the machine where the Infrastructure Default Application components are installed, navigate to the $FIC_HOME/ficapp/icc/bin directory, and execute the following command:
   `./iccservershutdown.sh`

   > **Note:**
   >
   > Only the Infrastructure Default Application Server will hold the ICC component.

3. To stop the Back-end server on the machine where the Infrastructure database components are installed, navigate to the $FIC_DB_HOME/bin directory, and execute the following command:
   `./agentshutdown.sh`

7.4 Create the EAR/WAR File

The EAR/WAR files are automatically generated during the new installation. However, see this section if you have to create EAR/WAR files after installation or upgrade.

7.5 Start the Infrastructure Services

Start the infrastructure servers after the installation and the post-installation steps are completed. Log on to each machine and execute the .profile file. Start all the servers mentioned from the same shell encoding.

> **Note:**
>
> The servers mentioned in this section are dependent on each other. It is mandatory to maintain the order in which the servers are started. Allow each of the servers to initialize completely before starting the next server.

1. On the machine where the Infrastructure Application components are installed, navigate to the `$FIC_APP_HOME/common/FICServer/bin` directory, and execute the following command to start the Infrastructure Server:
   `./startofsaai.sh`

   > **Note:**
   >
   a. You can also start the Infrastructure Server by executing the command "nohup ./ startofsaai.sh &". Starting the process using "nohup" and "&" returns the command prompt without having to wait until the process completes. However, this command cannot be used when you are starting the server for the first time or starting after changing the user password in the configuration database schema.
   >
   b. When you start the server, the following error is displayed:
   `java.io.FileNotFoundException:`
   >
   `/ftpshare/<INFODOM>/erwin/fipxml/<INFODOM>_DATABASE.XML (No such file or directory)`
   >
   Ignore this error.

2. Start the ICC server.
   On the machine where the Infrastructure Default Application components are installed, navigate to the $FIC_HOME/ficapp/icc/bin directory, and execute the following command to start the "ICC server":

   `./iccserver.sh`

   > **Note:**
   >
   Only the Infrastructure Default Application Server holds the ICC component.

3. Start the Backend Services using one of the following options:
   - On the machine where Infrastructure Database components are installed, navigate to the `$FIC_DB_HOME/bin` directory, and execute the following command to start the "Agent server":

```
./agentstartup.sh
```

- Using nohup execute the following command:
  ```
  nohup ./agentstartup.sh &
  ```

> **Note:**
>
> This agent internally starts the Router, Message Server, OLAP Data Server, and AM Services.

7.6 Configure the Web Server

This step assumes the installation of a web server exists as per the prerequisites.

Refer to the product-specific installation guide to install and configure the web server. If an installation already exists, skip, and proceed to the next step.

> **Note:**
>
> - See the Oracle Financial Services Analytical Applications Infrastructure Security Guide for configurations to secure your web server.
> - You must enable a sticky session/affinity session configuration on the web server. See the respective product-specific Configuration Guide for more details. Additionally, you also must enable the sticky session/ affinity session configuration at the Load Balancer level if you have configured a Load Balancer in front of the web server.

This step assumes the installation of a web application server exists as per the prerequisites. To configure the Web application server for OFSAA Deployment refer to the following sections.

Topics:

Note:

- Make a note of the IP Address/ Hostname and Port of the webapplication server. This information is required during the installation process (required if the web server is not configured).
- Add umask 0027 in the .profile of the UNIX account which manages the WEB server to ensure restricted access permissions.
- See the OFSAA Secure Configuration Guide/ Security Guide mentioned in the Related Documents section for additional information on securely configuring your web server.

7.6.1 Configure WebSphere Application Server for Application Deployment

You can deploy multiple OFSAA applications on different profiles of a stand-alone WebSphere application server. To create multiple WebSphere "Profiles" in a stand-alone server, use the command line option as explained in the following section. A profile is the set of files that define the runtime environment. At least one profile must exist to run the WebSphere Application Server.

7.6.1.1 Create a New Profile in WebSphere

The Profile is created in WebSphere through the command line using the manageprofiles.sh that resides in the `<WebSphere Install directory>/AppServer/bin` directory.

Use the following command to create a profile without admin security through the command line:

```
"manageprofiles.sh -create -profileName <profile> -profilePath <profile_ path> -
templatePath <template_path> -nodeName <node_name> -cellName

<cell_ name> -hostName <host_name>"
```

Example:

```
$usr/home>./manageprofiles.sh -create -profileName mockaix

-profilePath/websphere/webs64/Appserver/profiles/mockaix

-templatePath/websphere/webs64/Appserver/profileTemplates/default

-nodeName ipa020dorNode04 cellName ipa020dorNode04Cell -hostName ipa020dor
```

The command to create a profile with admin security through command line is as follows:

```
"manageprofiles.sh -create -profileName <profile> -profilePath <profile_ path> -
templatePath <template_path> -nodeName <node_name> -cellName

<cell_name> -hostName <host_name> -enableAdminSecurity true -adminUserName<Admin
User Name> -adminPassword < Admin User Password> -samplespassword<sample User
Password>"
```

Example:

```
$usr/home>./manageprofiles.sh -create -profileName mockaix
```

```
-profilePath/websphere/webs64/Appserver/profiles/mockaix

-templatePath/websphere/webs64/Appserver/profileTemplates/default

-nodeName ipa020dorNode04 -cellName ipa020dorNode04Cell -hostName
ipa020dor -enableAdminSecurity true -adminUserName ofsaai -adminPassword
ofsaai -samplespassword ofsaai"
```

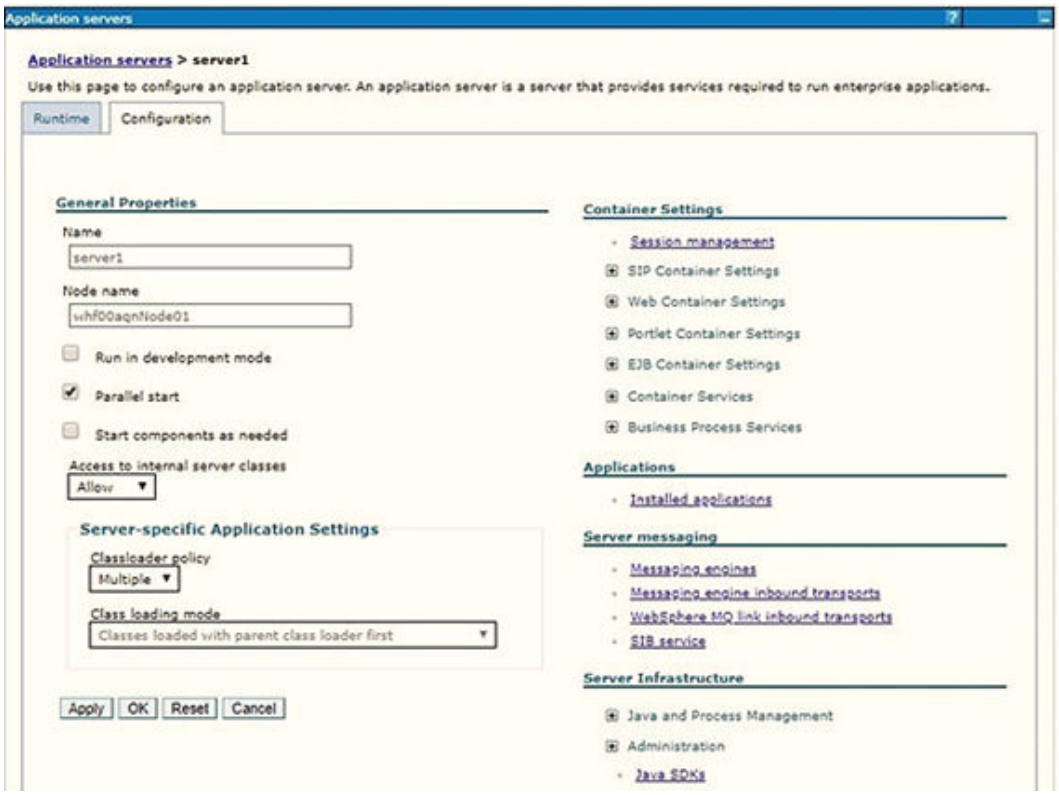
> **Note:**
>
> While using the manageprofiles.sh command to create a New Profilein WebSphere, you can also use "-validatePorts"to validate if the specified ports are not reserved or in use. Additionally, you can specify new ports with "-startingPort <baseport>" which specifies the starting port number to generate and assign allports for the profile. For more information on using these ports, refer to WebSphere manageprofilescommand.

7.6.1.2 Manage IBM WebSphere SDK Java Technology Edition Versions

Follow these steps to check the java version and set it to JAVA 8.X SDK:

1. Enter the WebSphere URL in the format http://HOST_NAME:PORT_NUMBER/ibm/console (use https if SSL is enabled.). For example, http://192.168.1.0:9000/ibm/console.
2. Log in with your administrator user ID and password.
3. From the LHS menu, click **Servers** to expand and view the menu.
4. Click **Server Types** to expand the menu further and then click **WebSphere Enterprise Application Servers** to view the Application servers window.
5. On the **Application servers** window, click the required Application Server link. For example, server1 in the following figure:

Figure 7-1 Application Server Java SDKs



6. Click the Java SDKs link from the Server Infrastructure section to view the list of Java SDKs.

Figure 7-2 Application Server List of Java SDKs

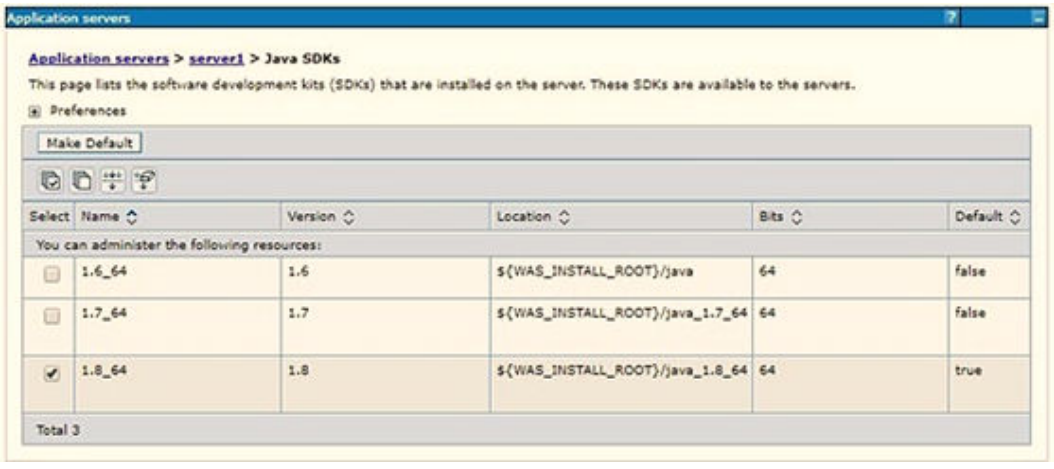
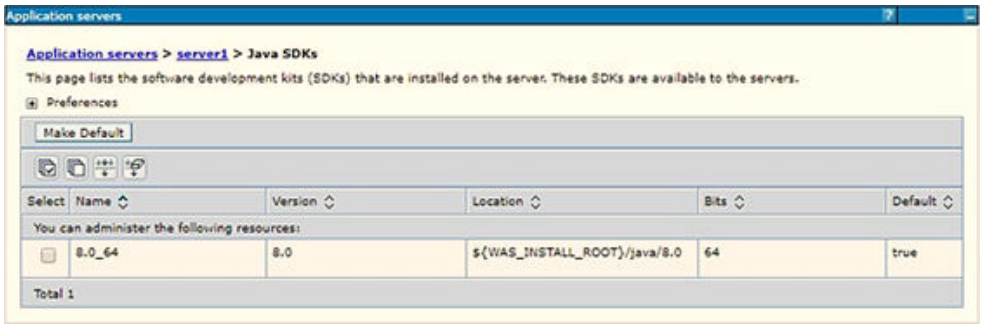


Figure 7-3 Application Server List of Java SDKs



7. Select 8.0_64.
8. Click **Make Default** and save to master repository.
9. Restart the WebSphere Application Server to apply the changes to the IBM application profile.

7.6.1.3 Manage Applications in WebSphere

To manage the installed applications in WebSphere, follow these steps:

1. Open the administrator console using the following URL:

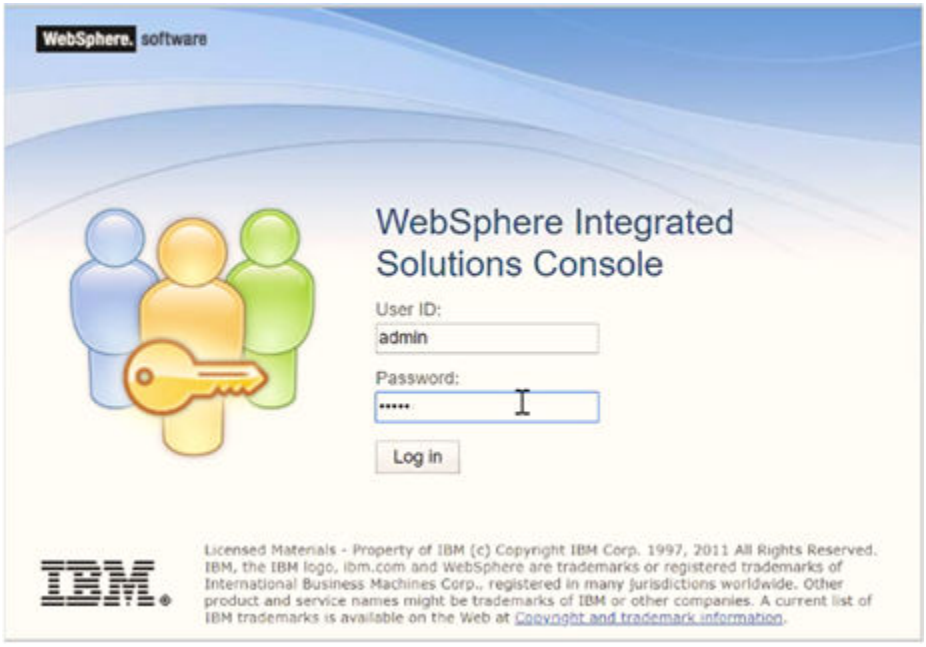
   `http://<ipaddress>:<Administrative Console Port>/ibm/console`

   For example: `http://10.111.222.333:9003/ibm/console` (https if SSL is enabled.)

> **Note:**
>
> Administrative Console Port value is available in the serverindex.xml file within the <WebSphere Profile Directory>/config/cells/<Node Cell>/nodes/<Node Name> directory.

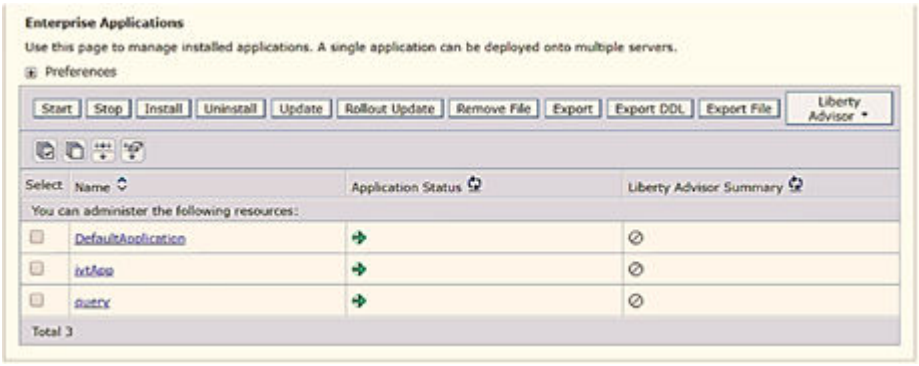
The Integrated Solutions Console Login window is displayed.

Figure 7-4 Integrated Solutions Console Login



2. Log in with the User ID provided with admin rights.
3. From the LHS menu, expand the **Applications > Application Type> WebSphere Enterprise Applications** to display the Enterprise Applications window.

Figure 7-5 Enterprise Applications



This Enterprise Applications window helps you to:

- Install new application
- Uninstall existing applications
- Start or Stop the installed applications

7.6.1.4 Configure WebSphere Application Server to Initialize Filters before Initializing Load-On-Startup Servlets and Allowing Empty Servlets Maps

The custom configuration information in this section initializes the filters before initializing load-onstartup servlets and allows empty servlet maps when you start an application.

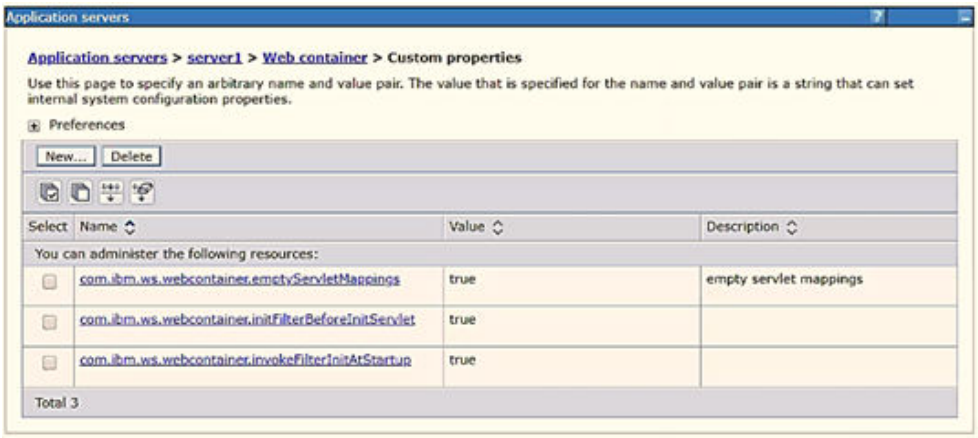
To configure custom properties for filters, follow these steps:

This is a mandatory configuration for OFSAA with WebSphere for both fresh and upgrade installation.

1. Enter the WebSphere URL in the format http://HOST_NAME:PORT_NUMBER/ibm/console (use https if SSL is enabled.). For example, http://192.168.1.0:9000/ibm/console.
2. Log in with your administrator user ID and password.
3. From the left menu, click Servers to expand the menu.
4. Click Server Types to expand the menu further and then click WebSphere Enterprise Application Servers to view the Application servers window.
5. On the Application servers window, click the required Application Server link.
6. Click **Web Container Settings** and then **Custom Properties** to view the Custom Properties window.

   Web Container Initialize Filters Before Servlet

Figure 7-6 Web Container Initialize Filters Before Servlet



7. Click **New** and enter the following properties:
   - `com.ibm.ws.webcontainer.initFilterBeforeInitServlet` to true.
   - `com.ibm.ws.webcontainer.invokeFilterInitAtStartup` to true.
   - `com.ibm.ws.webcontainer.emptyServletMappings` to true.
8. Click **OK** and then click **Save** on the Console to save the customized configurations.
9. Restart the WebSphere Application Server to apply the changes.

7.6.1.5 Configure WebSphere Application Server Persistence to JPA Specification 2.0

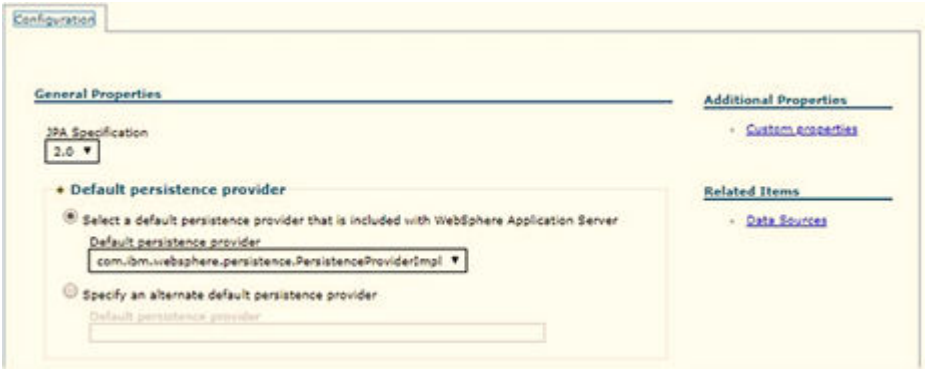
The persistence configuration information in this section sets JPA 2.0 specification in WebSphere over the default JPA 2.1 specification.

This is a mandatory configuration for OFSAA with WebSphere for both fresh and upgrade installation.

To set the JPA 2.0 as the default persistence provider, follow these steps:

1. Enter the WebSphere URL in the format http://HOST_NAME:PORT_ NUMBER/ibm/console (use https if SSL is enabled.). For example, http://192.168.1.0:9000/ibm/console.
2. Log in with your administrator user ID and password.
3. From the LHS menu, click **Servers** to expand the menu.
4. Click **Server Types** to expand the menu further and then click WebSphere Enterprise Application Servers to view the Application servers window.
5. On the Application servers window, click the required Application Server link.
6. Click **Container Services** and then click **Default Java Persistence API settings** to display the Configuration window:

Figure 7-7 Default Java Persistence Settings JPA Specification 2.0



7. From the **JPA Specification** drop-down, select **2.0** to change the default JPA Specification from 2.1 to 2.0.
8. Click **OK** and then click **Save** on the Console to save the customized configurations.
9. Restart the WebSphere Application Server to apply the changes.

7.6.1.6 Configure WebSphere Application Server to Use a Load Balancer or Proxy Server

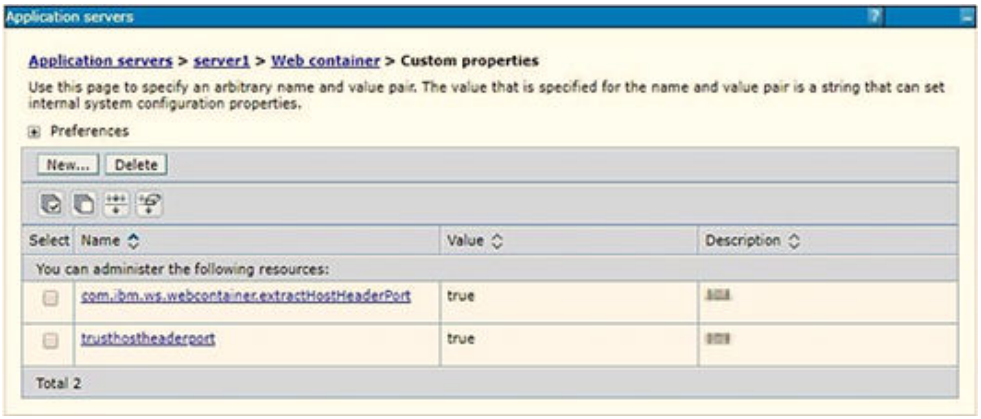
The configuration prevents the process server from redirecting to an internal port when using a load balancer or proxy server.

The following steps describe the configuration:

1. Enter the WebSphere URL in the format http://HOST_NAME:PORT_NUMBER/ibm/console (use https if SSL is enabled.). For example, http://192.168.1.0:9000/ibm/console.

2. Log in with your administrator user ID and password.
3. From the LHS menu, click **Servers** to expand and view the menu.
4. Click **Server Types** to expand the menu further and then click **WebSphere Enterprise Application Servers** to view the Application servers window.
5. On the **Application servers** window, click the required **Application Server** link. For example, server1.
6. Click **Web Container Settings** and then **Custom Properties** to view the **Custom Properties** window.

Figure 7-8 Application Servers Load Balancer Proxy Server



7. Click **New** and enter the following properties:
   - com.ibm.ws.webcontainer.extractHostHeaderPort: true
   - Trusthostheaderport: true
8. Click **OK** and then click **Save** on the Console to save the customized configurations.
9. Restart the WebSphere Application Server to apply the changes.

7.6.1.7 Delete WebSphere Profiles

To delete a WebSphere profile, follow these steps:

1. Select the check box adjacent to the required application and click **Stop**.
2. **Stop** the WebSphere profile to be deleted.
3. Navigate to WebSphere directory:

   ```
   <WebSphere_Installation_Directory>/AppServer/bin/
   ```

4. Execute the command:

   ```
   manageprofiles.sh -delete -profileName <profile_name>
   ```

5. Delete the profile directory.

   Example: `<WebSphere_Installation_ Directory>/AppServer/profiles/<profile_name>`

6. Execute the command:

   ```
   manageprofiles.sh -validateAndUpdateRegistry
   ```

7.6.1.8 Configure WebSphere Memory Settings

To configure the WebSphere Memory Settings, follow these steps:

1. Navigate to **WebSphere applications server > Application servers > server1 > Process definition > Java Virtual Machine**.
2. Change the memory setting for Java Heap:
   - Initial heap size = 512
   - Maximum heap size = 3072

7.6.1.9 Configure WebSphere for Rest Services Authorization

For more information, see the OFS Analytical Applications Infrastructure Administration Guide.

7.6.2 Configure WebLogic for Application Deployment

You can deploy multiple Infrastructure applications on different domains of a stand-alone WebLogic application server. To create multiple WebLogic "Domains" in a stand-alone server, you can use the Domain Creation wizard. A domain is the set of files that define the runtime environment. At least one domain must exist to run the WebLogic Application Server.

You can deploy multiple Infrastructure applications on different domains of a stand-alone WebLogic application server. To create multiple WebLogic "Domains" in a stand-alone server, you can use the Domain Creation wizard. A domain is the set of files that define the runtime environment. At least one domain must exist to run the WebLogic Application Server.

This section covers the following topics:

- Create Domain in WebLogic Server
- Delete Domain in WebLogic
- Configure WebLogic Memory Settings

7.6.2.1 Create Domain in WebLogic Server

To create a new domain using Configuration Wizard in WebLogic, follow these steps:

1. Navigate to the directory `<WLS_HOME>/wlserver/common/bin` and execute the command:

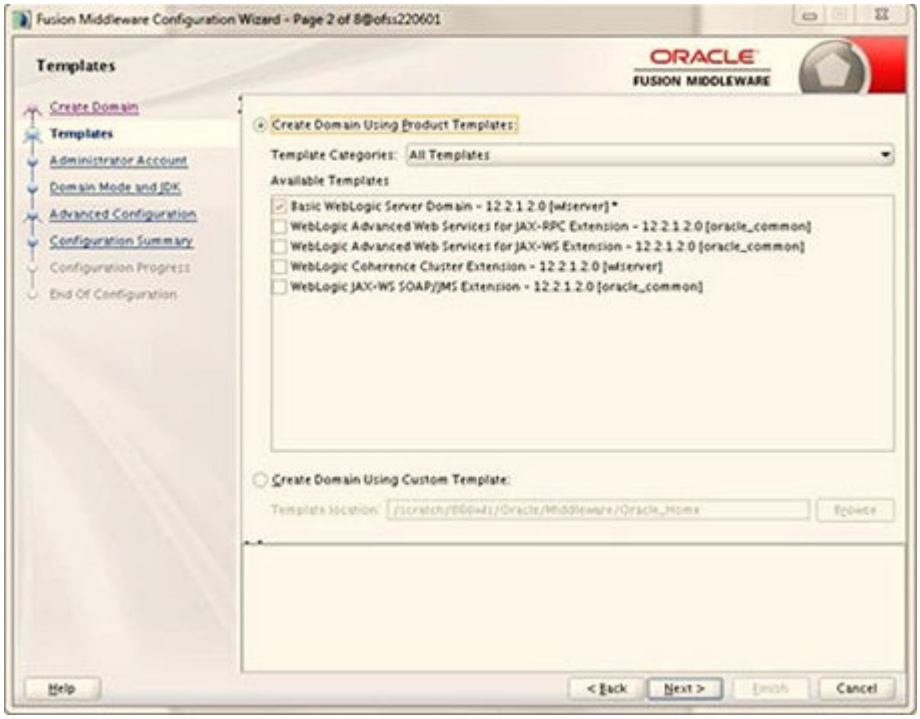
   ```
   ./config.sh
   ```

   The **Welcome** window of the Configuration Wizard is displayed.

Figure 7-9 Configuration Type

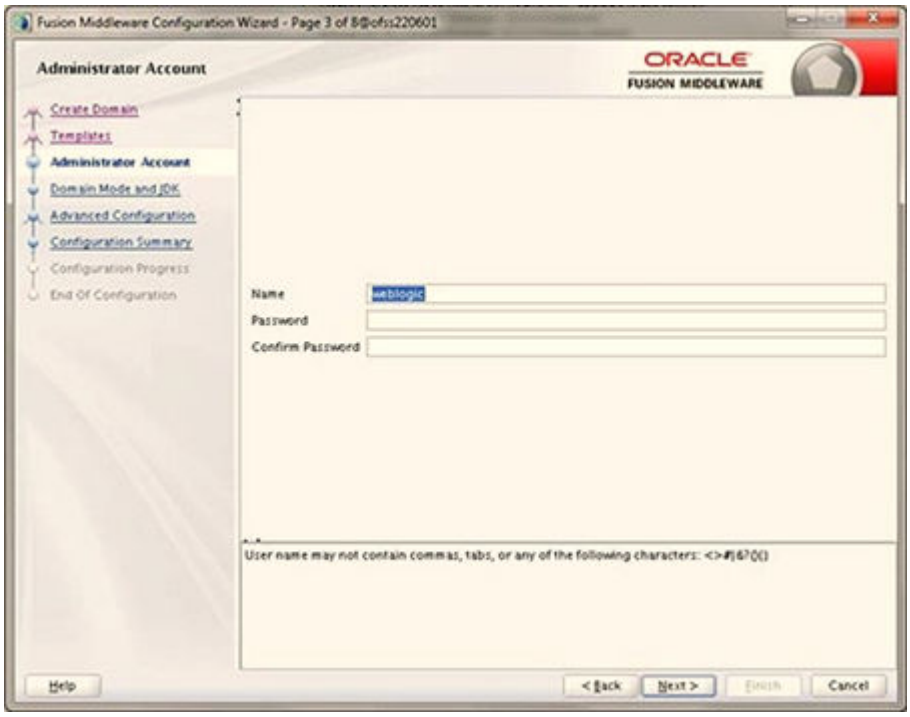
2. Select **Create a new domain** option and click **Next** to the **Templates** window.

Figure 7-10 Templates



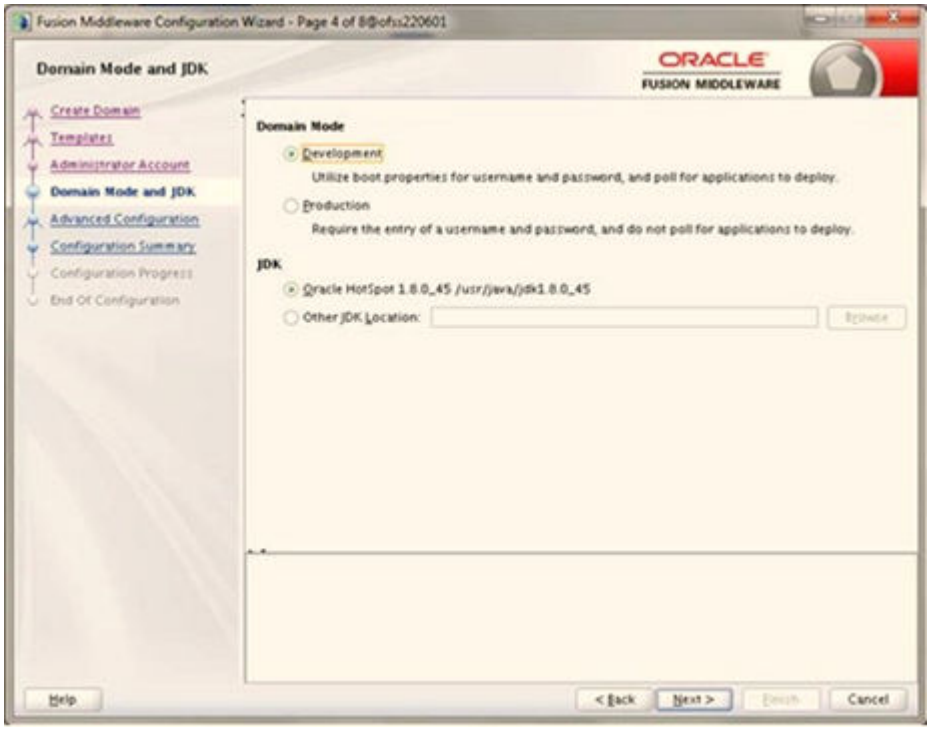
3. Select the **Create Domain Using Product Templates** option and click **Next** to display the **Administrator Account** window.

Figure 7-11 Administrator Account



4. Enter the user name to be assigned to the administrator, the password, and confirm the password. Click **Next** to the Domain Mode and JDK window.

Figure 7-12 Domain Mode and JDK

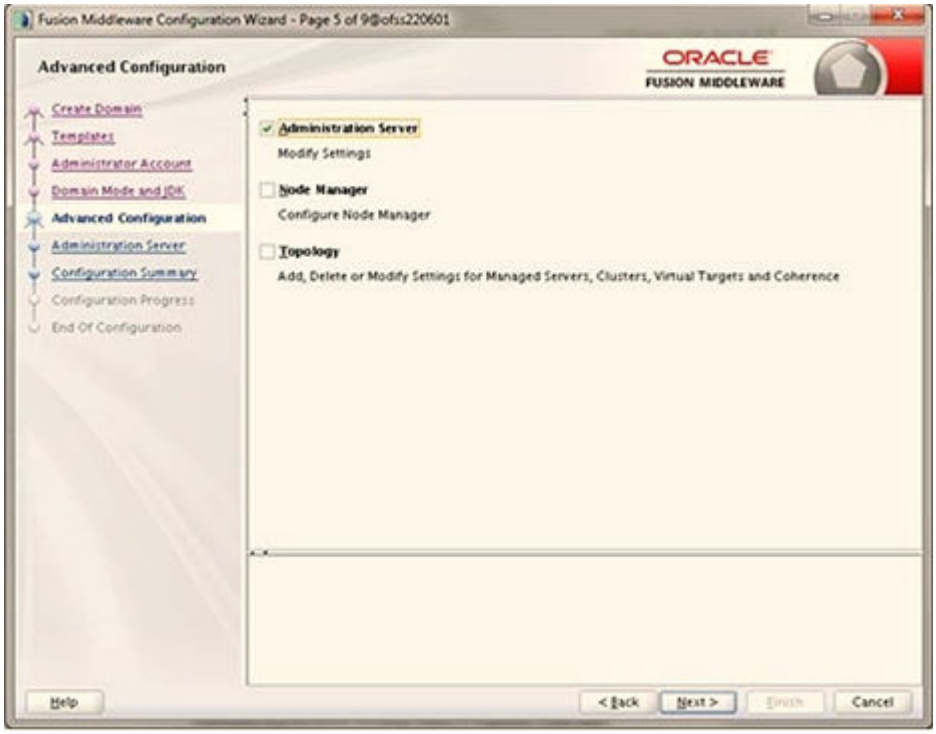


5. Select from the following options:

a. In the Domain Mode section, select the required mode (Development or Production).

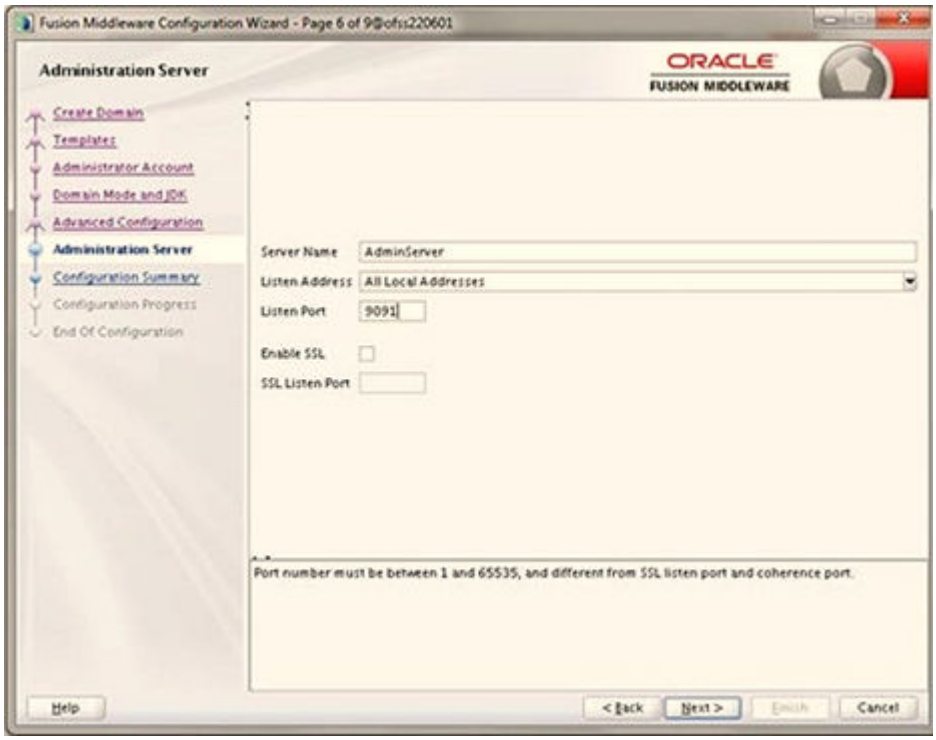
b. In the JDK section, select the required option. If you select **Other JDK Location**, click **Browse**, navigate to the JDK location, and select. Click **Next** to display the Advanced Configuration window.

Figure 7-13 Advanced Configuration



6. Select the **Administration Server**. A WebLogic Server domain must have an Administration Server. You can also select **Manages Servers, Clusters and Machines**, and **RDBMS Security Store** if required. Click **Next** to display the **Administration Server** window.

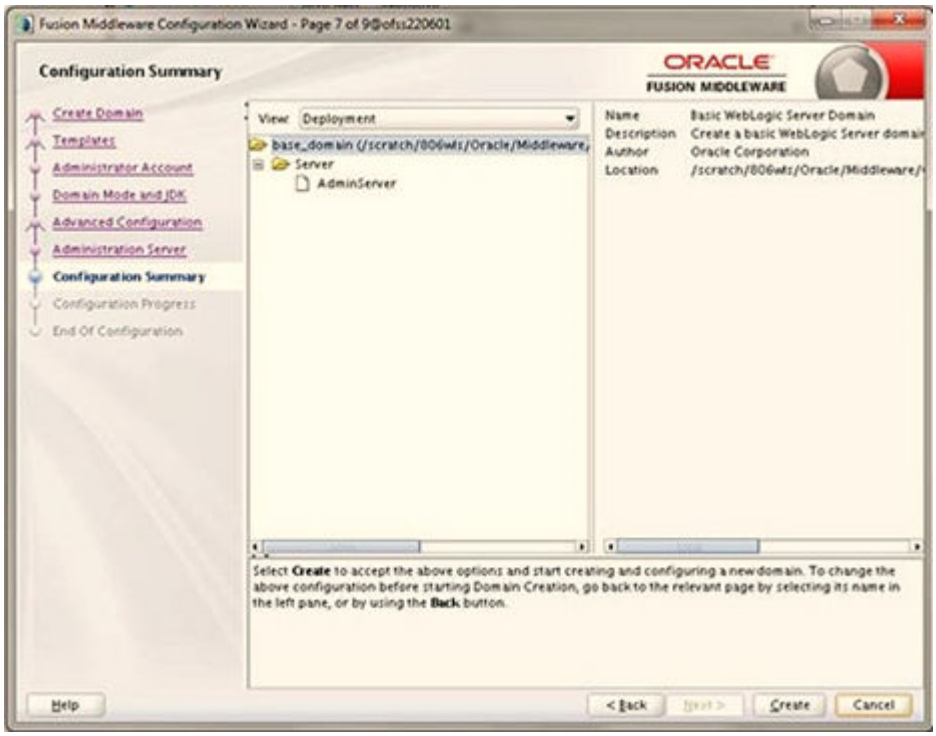
Figure 7-14 Administration Server



7. Enter Administration Server details such as the **Server Name, Listen address, Listen Port, Enable SSL** (for secure login using https, select this check box), and **SSL Listen Port**. Click **Next** to display the **Configuration Summary** window.

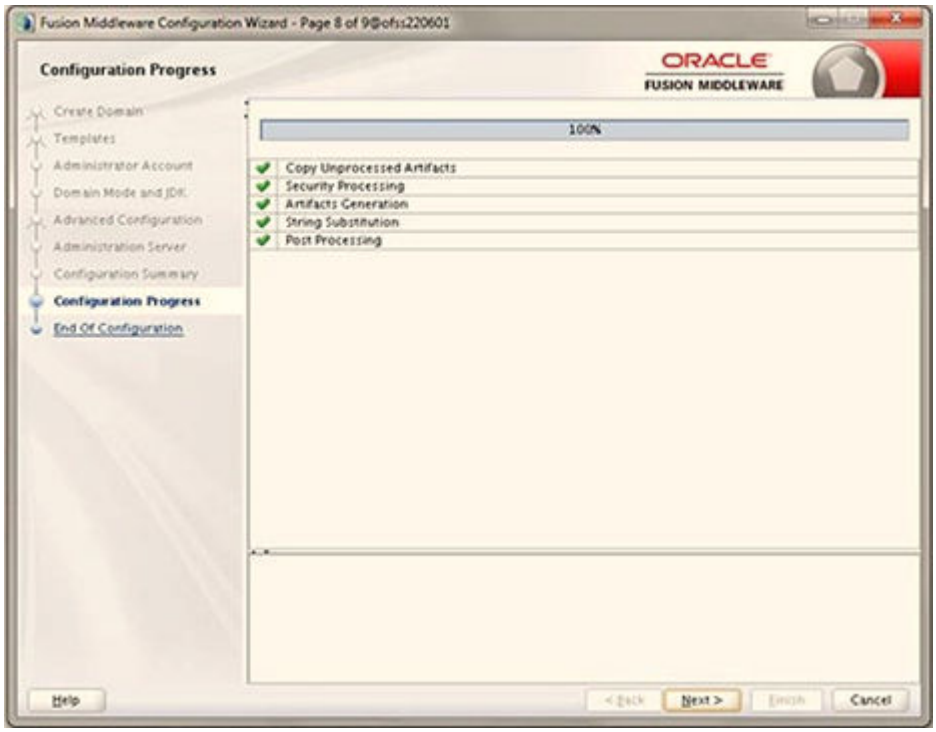
> **Note:**
>
> Make a note of the Listen Port or SSL Listen Port value (for example: 7007) since the same has to be re-entered in the Servlet port field during Infrastructure installation.

Figure 7-15 Configuration Summary



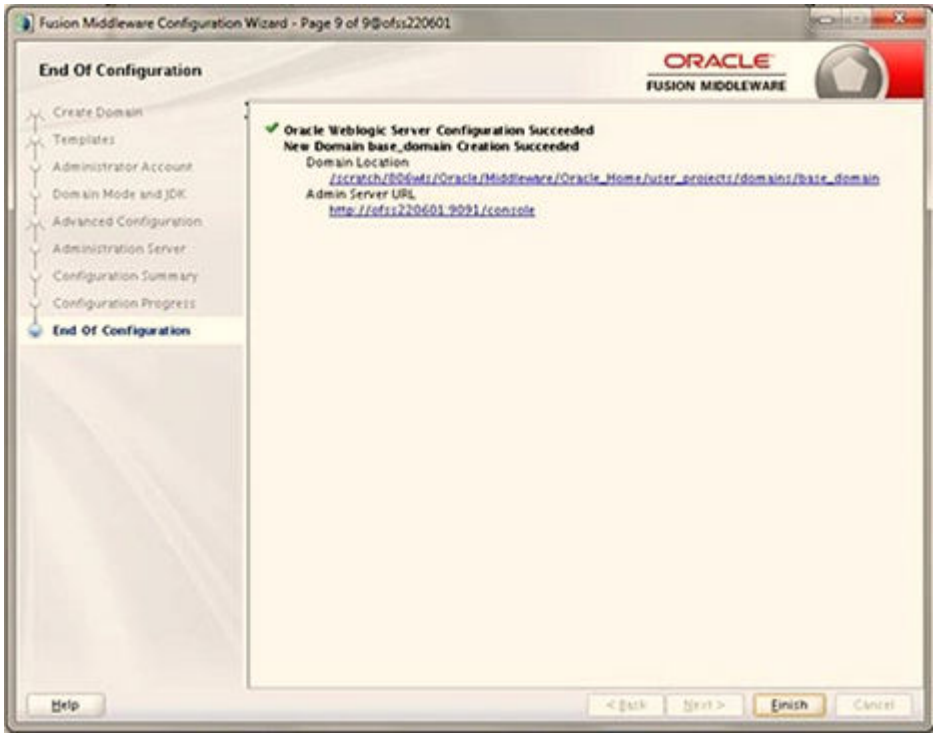
8. Verify the configuration details of the WebLogic domain and click **Create** to display the **Configuration Progress** window with the status indication of the domain creation process.

Figure 7-16 Creating Domain



9. Click **Next** when 100% of the activity is complete. The **End of Configuration** window is displayed.

Figure 7-17 End of Configuration



10. Click **Finish**. The domain server is created enabling the deployment of multiple Infrastructure applications on a single WebLogic.

> **Note:**
>
> - Record the HTTPS port specified during this process and use it as a servlet port or web server port during OFSAAI Installation.
> - To enable https configuration on Infrastructure, assign value 1 to "HTTPS_ENABLE" in `OFSAAI_InstallConfig.xml` for silent mode OFSAAI installation.

11. Add a java option entry `-DUseSunHttpHandler=true` in the `WLS_HOME/bin/"setDomainEnv.sh"` file (Required only if a self-signed certificate is used).

7.6.2.2 Delete Domain in WebLogic

To delete a domain in WebLogic, follow these steps:

1. Navigate to the following directory:

   `<WebLogic Installation directory>/user_projects/domains/<domain name>/ bin`

2. Execute `stopWebLogic.sh` to stop the Weblogic domain.

3. Delete the Weblogic domain.

7.6.2.3 Configure WebLogic Memory Settings

To configure the WebLogic Memory Settings, follow these steps:

1. Change the memory setting for Java Heap to `-Xms512m -Xmx3072m` in the setDomainEnv.sh file, which resides in the `<DOMAIN_HOME>/bin` directory and the `CommEnv.sh` file which resides in the `common/bin` directory
2. Edit this file for customizing memory settings and garbage collector settings depending on the available hardware configuration.

   Example 1:

```
if [ "${JAVA_VENDOR}" = "Sun" ] ; then WLS_MEM_ARGS_64BIT="-Xms512m
-
Xmx1024m"
export WLS_MEM_ARGS_64BIT WLS_MEM_ARGS_32BIT="-Xms512m -Xmx1024m"
export WLS_MEM_ARGS_32BIT else WLS_MEM_ARGS_64BIT="-Xms512m -
Xmx1024m"
export WLS_MEM_ARGS_64BIT WLS_MEM_ARGS_32BIT="-Xms512m -Xmx1024m"
export WLS_MEM_ARGS_32BIT
```

   Example 2:

```
JAVA_VM=
MEM_ARGS="-Xms256m -Xmx1024m"
```

7.6.3 Configure Apache Tomcat Server for Application Deployment

This section is applicable only when the Web application server type is Tomcat. This section includes the following topics:

7.6.3.1 Tomcat User Administration

The Tomcat administration and manager application does not provide a default login. You are required to edit `"$CATALINA_HOME/conf/tomcat-users.xml"` as follows:

This file contains an XML <user> for each user that will display the username and password used by the admin to log in to Tomcat and the role names to which the admin user is associated with.

For example, <user name="admin" password="admin" roles="standard,manager" />

- Add the manager role to any one of the existing username/password combinations as shown in the preceding example.
- Use the same username/password to which the manager role is assigned to access the Tomcat Application Manager.
- If the Tomcat server is already running, it requires a re-start after the preceding configuration is done.

7.6.3.2 Configure Servlet Port

The default servlet port configured for the Tomcat installation is 8080. Ignore this section if you must use the default port.

If you must use a different port number, you must first configure the port in the server.xml file in the conf directory of the Tomcat Installation directory. To configure the Servlet Port, follow these steps:

1. Navigate to `$CATALINA_HOME/conf. Open server.xml` and locate the tag: `"Define a non-SSL HTTP/1.1 Connector on port 8080 "`

   Against this tag, a parameter is specified 'Connector port = "8080"'. Edit this value to the new port number that was used during the Infrastructure installation process.

2. Save your changes in the `server.xml` file.

> **Note:**
>
> Make a note of the servlet port configured. This information is required during the installation of the OFSAA Application Pack.

7.6.3.3 Configure SSL Port

If you must configure and access your OFSAA setup for HTTPS access, ensure that the following connect tag under Define a SSL HTTP/1/1 Connector on port 8443 in the `<Tomcat_installation_directory>/conf/server.xml` file is uncommented for SSL Configuration. (By default, it is commented).

<Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true" maxThreads="150" scheme="https" secure="true" clientAuth="false" sslProtocol="TLS"

> **Note:**
>
> - Make a note of the servlet port configured. This information is required during the installation of the OFSAA Application Pack.
> - To enable https configuration on Infrastructure, assign value 1 to "HTTPS_ENABLE" in the `OFSAAI_InstallConfig.xml` file for SILENT mode OFSAAI installation.

For more information related to SSL Configuration on Tomcat, see http://tomcat.apache.org/.

7.6.3.4 Configure Apache Tomcat Memory Settings

To configure the Apache Tomcat Memory Settings, follow these steps:

1. Locate the `catalina.sh` file that resides in the `<CATALINA_HOME>/bin` directory.
2. Edit this file for customizing the memory settings and garbage collector settings depending on the available hardware configuration.

3. Add the memory setting for Java Heap to -Xms512m -Xmx1024m. For example:

```
if [ -z "$LOGGING_MANAGER" ]; then JAVA_OPTS="$JAVA_OPTS -Xms512m -
Xmx1024m
-Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager"
else
JAVA_OPTS="$JAVA_OPTS -Xms512m -Xmx1024m $LOGGING_MANAGER"
fi
```

7.6.3.5 Configure Tomcat for User Group Authorization

Users with system authorization roles can access User Group Authorization. However, to make it available on the Tomcat web server, you must follow these configuration steps:

1. Navigate to the `$CATALINA_HOME/conf` directory and open the web.xml file.
2. Enter the following in the web.xml file.

```
<init-param>
<param-name>mappedfile</param-name>
<param-value>false</param-value>
</init-param>
```

3. Save and close the file.

7.6.3.6 Uninstall WAR Files in Tomcat

To uninstall WAR files in Tomcat, refer to Uninstalling WAR Files in Tomcat.

7.6.4 Additional Configurations for Web Servers

This section provides information for additional configuration required for the web servers on OFSAAAI.

> **Note:**
>
> The instructions in this section are applicable if you are upgrading from an earlier version of OFSAAI to 8.1.2.0.0.

- **Configuration for WebSphere**: To configure WebSphere, see the Configure WebSphere Application Server for Application Deployment section. Additionally, configure for REST services. For details, see the *Configuring WebSphere for REST Services Authorization* section in the OFS Analytical Applications Infrastructure Administration Guide.
- Additionally, you must configure the Work Manager in WebSphere and map it to the OFSAA instance. For details, see the Work Manager Configurations section in the OFS Analytical Applications Infrastructure Administration Guide.
- **Configuration for WebLogic**: To configure WebLogic, see the Configure WebLogic for Application Deployment section. Additionally, configure for REST services. For details, see the Configuring WebLogic for REST Services

Authorization section in the OFS Analytical Applications Infrastructure Administration Guide.

- Additionally, you must configure the Work Manager in WebLogic. For details, see the Work Manager Configurations section in the OFS Analytical Applications Infrastructure Administration Guide.
- Configuration for Tomcat: For the successful execution of Data Mapping in Tomcat, perform the configurations mentioned in the Configuration for Tomcat section in the OFS Analytical Applications Infrastructure Administration Guide.

For additional configurations, see the Configure Apache Tomcat Server for Application Deployment section.

7.7 Configure Application Security in WebSphere

This is a mandatory security procedure for WebSphere to restrict the unauthorized access of configuration files in directories. For detailed information, see the Oracle Financial Services Analytical Applications Infrastructure Security Guide.

7.7.1 Configure Resource Reference in WebSphere Application Server

This section is applicable only when the Web application server type is WebSphere.

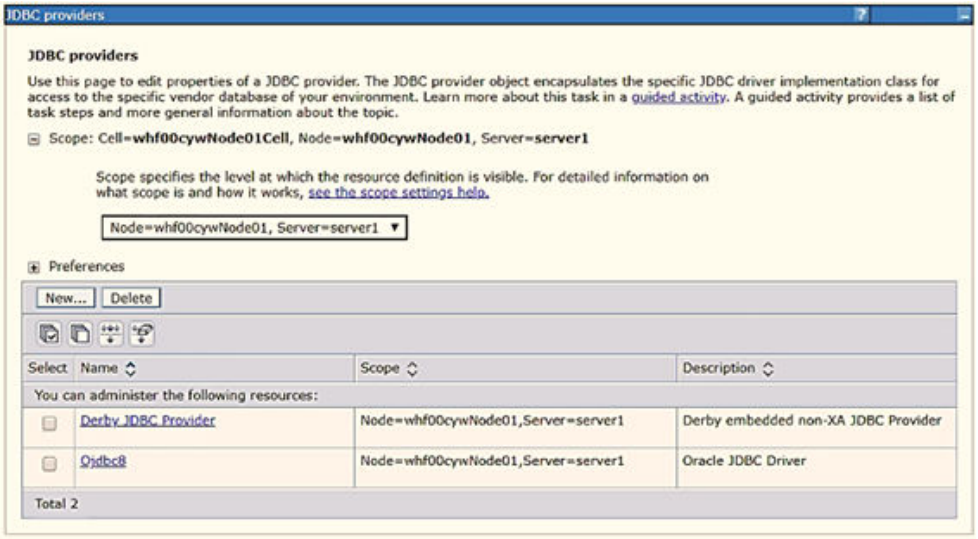
7.7.1.1 Create a JDBC Provider

To create the JDBC Provider in WebSphere Application Server, follow these steps:

1. Open the WebSphere admin console in the browser window:

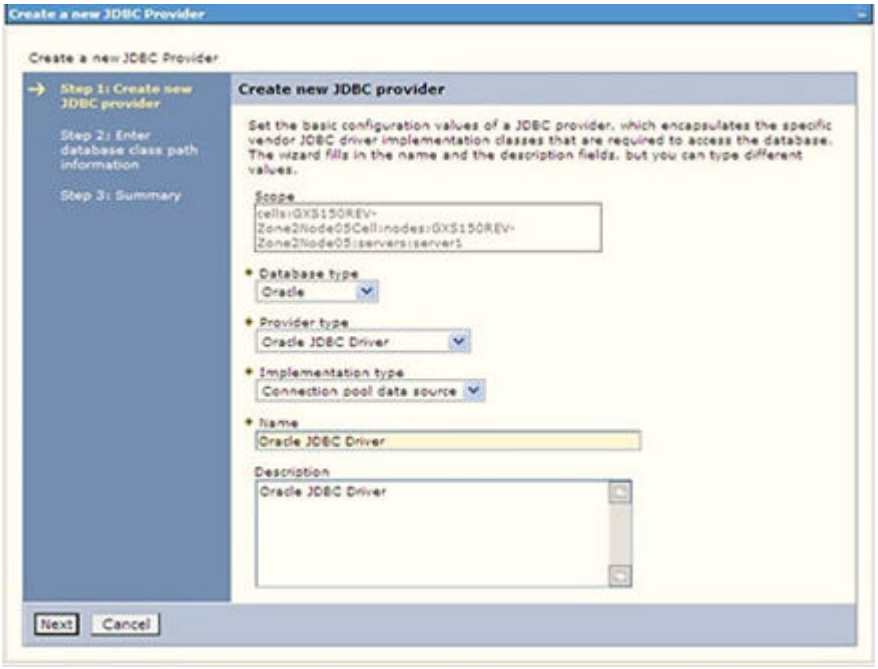
   http://<ipaddress>:<administrative console port>/ibm/console (https, if SSL is enabled). The Login window is displayed.
2. Log in with the user ID that has admin rights.
3. Expand the **Resources** option in the LHS menu and click **JDBC > JDBC Providers** to display the JDBC Providers window.

Figure 7-18 JDBC Providers



4. Select the **Scope** from the drop-down list. The Scope specifies the level at which the resource definition is visible.
5. Click **New** to add the new JDBC Provider under the Preferences section. The Create new JDBC Provider window is displayed.

Figure 7-19 Create a new JDBC Provider



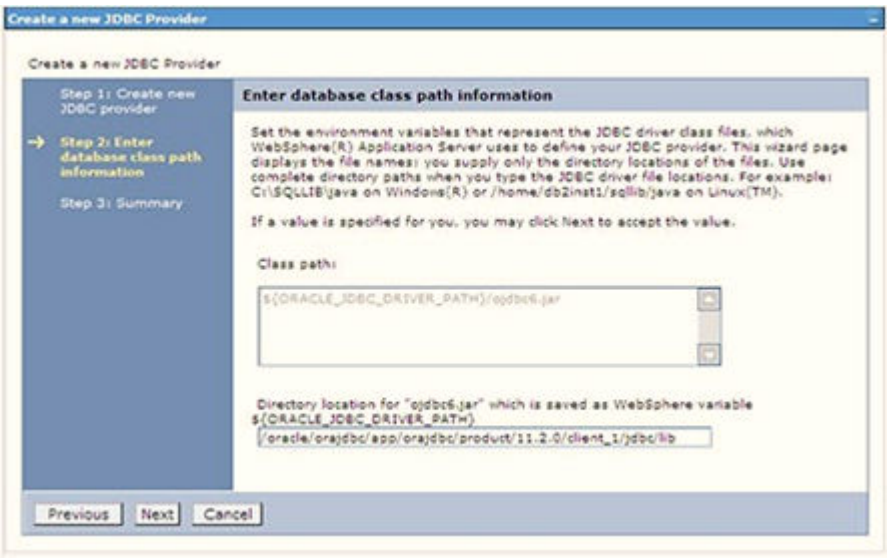
6. Enter the following details:
   a. **Database Type**: Oracle
   b. **Provider Type**: Oracle JDBC Driver
   c. **Implementation Type**: Connection pool data source

d. **Name**: The required display name for the resource.

e. **Description**: The optional description for the resource.

7. Click **Next**.

Figure 7-20 Enter database class path information



8. Specify the directory location for the ojdbc<version>.jar file. Do not use the trailing slash file separators.

   The Oracle JDBC driver can be downloaded from the following Oracle Download site:

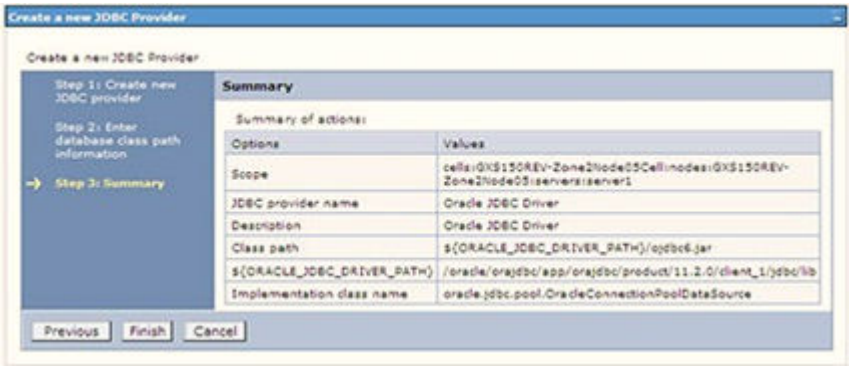
   - Oracle Database 18cg Release 3 JDBC Drivers
   - Oracle Database 19c Release 3 JDBC Drivers

   After downloading, you must copy the file in the required directory on the server.

> **Note:**
>
> See Hardware and Software Requirements to identify the correct ojdbc<version>.jar file version to be copied.

9. Click **Next** to display the **Summary** window.

Figure 7-21 Summary



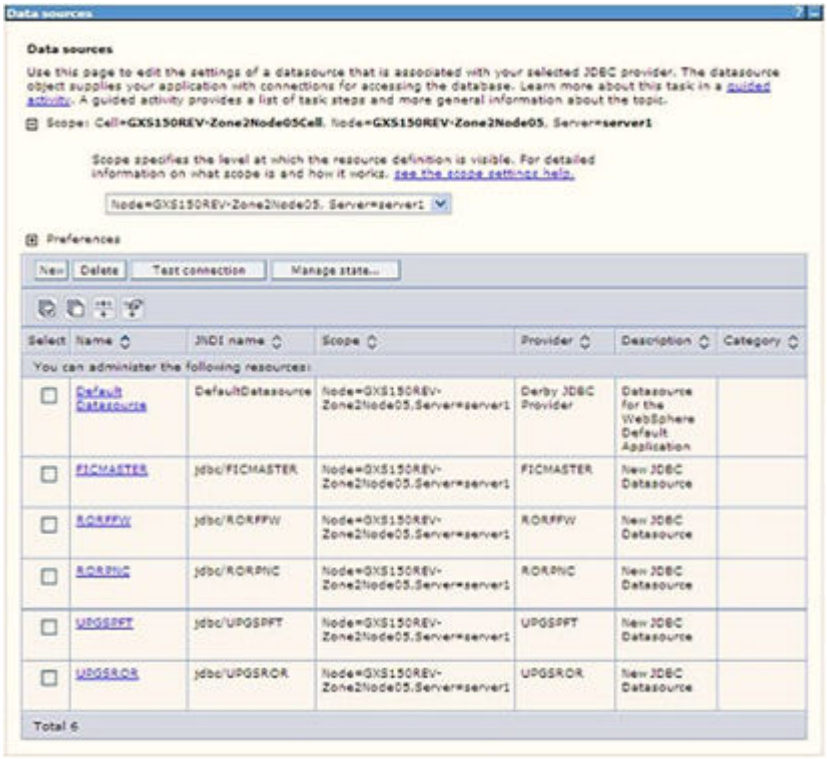
10. Verify the details and click **Finish** to create the JDBC Provider.
11. The options to Save and Review are displayed. Click **Save**.

7.7.1.2 Create Data Source

The following steps apply to both config and atomic data source creation. To create the data source, follow these steps:

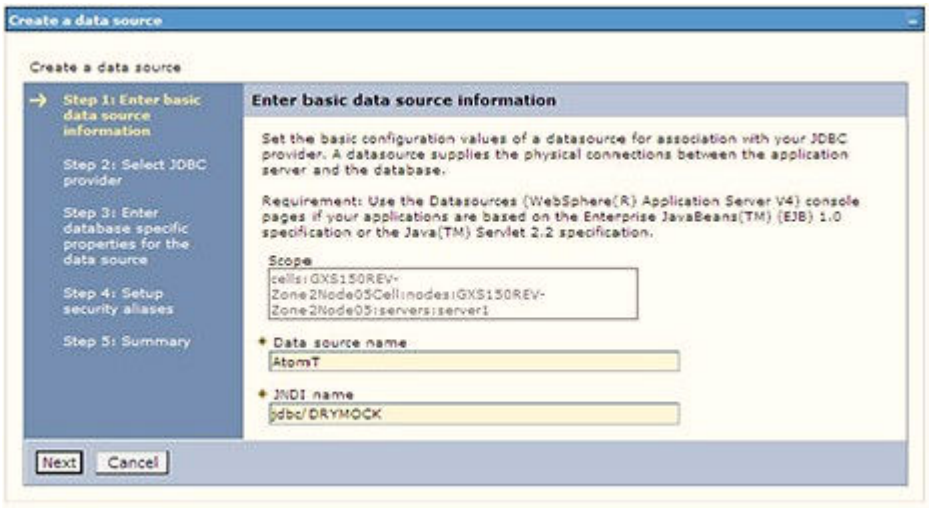
1. Open the following URL in the browser window: http://<ipaddress>:<administrative console port>/ibm/console (https if SSL is enabled). The Login window is displayed.
2. Log in with the user ID that has admin rights.
3. Expand the **Resources** option in the LHS menu and click **JDBC > Data sources** to display the Data sources window.

Figure 7-22 Data Sources



4. Select the **Scope** from the drop-down list. The scope specifies the level at which the resource definition is visible.
5. Click **New** to display the Create a Data Source window.

Figure 7-23 Create Data Source



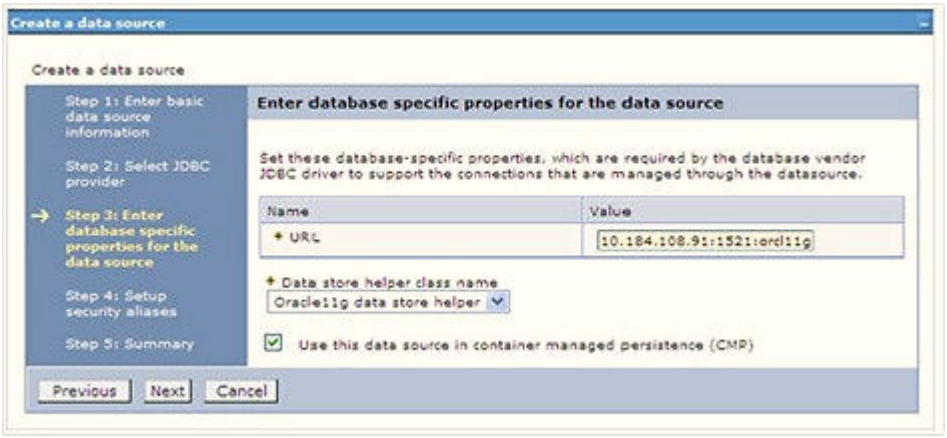
6. Specify the **Data source name** and **JNDI name** for the new "Data Source".
7. The **JNDI name** and **Data source name** are case sensitive and ensure that JNDI name is the same as the "Information Domain" name.

8. Click **Next** to display the Select JDBC provider window.

Figure 7-24 Select JDBC provider

9. Select the option **Select an Existing JDBC Provider** and select the required JDBC provider from the drop-down list. Click **Next**.

Figure 7-25 Enter database specific properties



10. Specify the database connection URL.

    For example: `jdbc:oracle:thin:@<DB_SEREVER_IP>:<DB_SERVER_PORT>:<SID>`

11. Select **Data Store Helper Class Name** from the drop-down list and ensure that the **Use this data source in container managed persistence (CMP)** check box is selected.

> **Note:**
>
> For RAC configuration, provide the RAC URL specified during installation.

Example: `jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=10.11.12.13)(port=1521))`

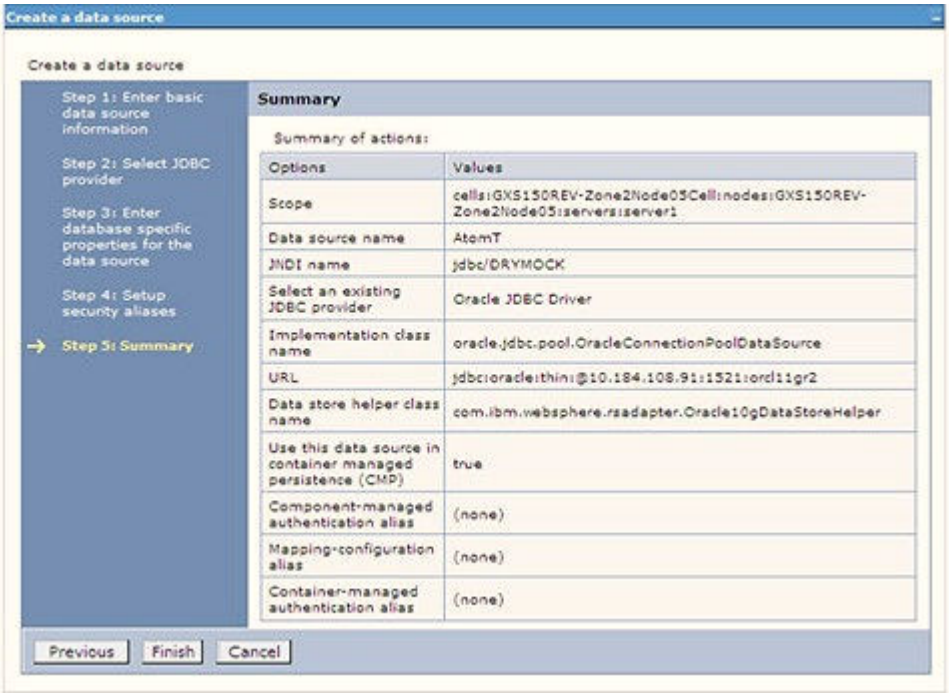
```
(ADDRESS=(PRO TOCOL=TCP)(HOST=10.11.12.14)(PORT=1521))(LOAD_ BALANCE=no)
(FAILOVER=yes))(CONNECT_DATA=(SERVICE_NAME=pqadb))
```

12. Click **Next**.

Figure 7-26 Enter Database specific properties

13. Map the J2C authentication alias, if already created. If not, you can create a new J2C authentication alias by accessing the link given (**Global J2C authentication alias**) or you can continue with the data source creation by clicking **Next** and then **Finish**.

Figure 7-27 Summary



You can also create and map J2C authentication alias after creating the data source.

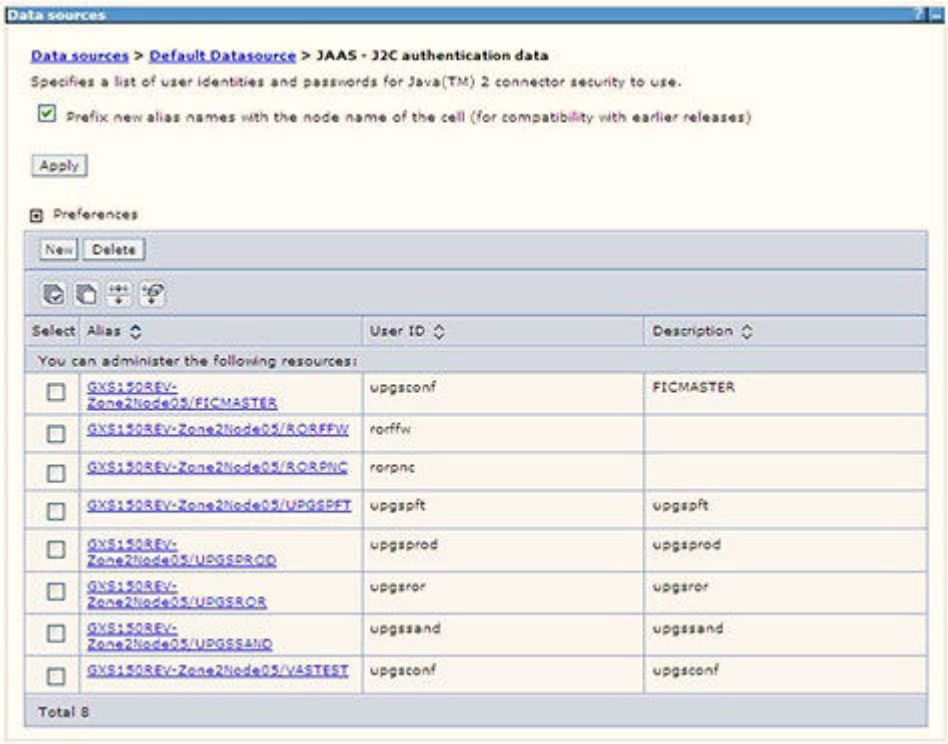
14. You must create another Data source by following the same procedure with jdbc/FICMASTER as JNDI name pointing to the "configuration schema" of Infrastructure.

7.7.1.3 Create J2C Authentication Details

The following steps apply to create both config and atomic J2C Authentication. To create J2C Authentication details, follow these steps:

1. Select the newly created Data Source and click JAAS J2C authentication data link under Related Items.

Figure 7-28 JAASJ2C authentication data



2. Click **New** under the **Preferences** section.

Figure 7-29 JAASJ2C authentication data New

3. Enter the Alias, User ID, Password, and Description. Verify that the user ID is the Oracle user ID created for the respective Config and Atomic Schema for the "Information Domain".

   Specify the Config database user ID and password information for the jdbc/FICMASTER data source, and the Atomic database user ID and password information for the Atomic schema data source that you created earlier.

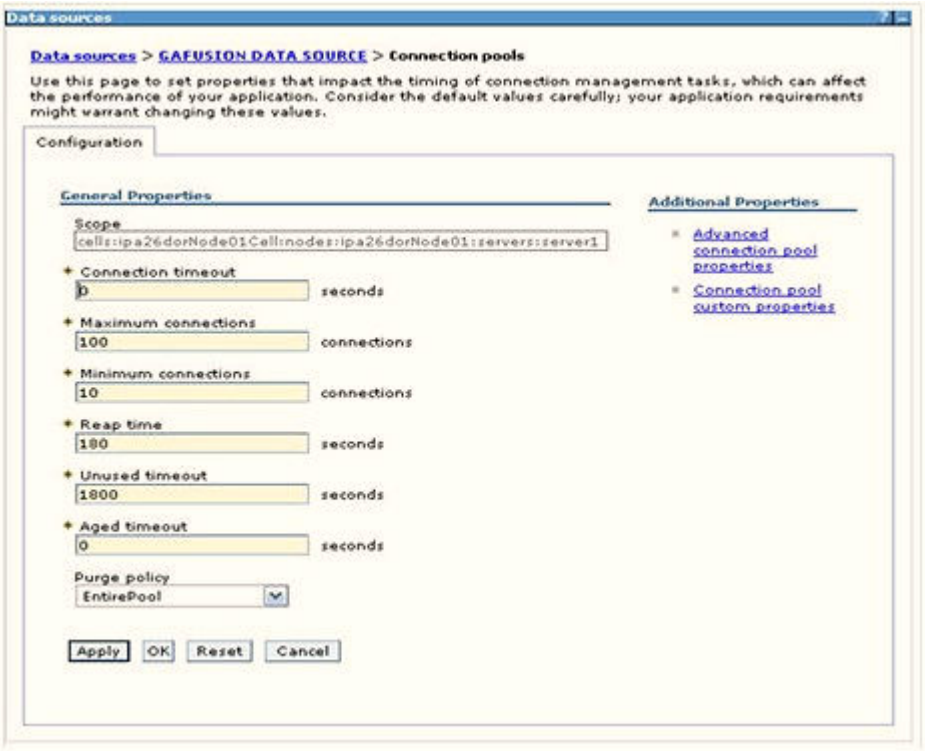
4. Click **Apply** and save the details.

7.7.1.4 Define JDBC Connection Pooling

To define the JDBC connection pooling, ensure that you have created JDBC Provider and Data source to access the data from the database.

1. Expand the **Resources** option in the LHS menu and click **JDBC > Data sources** option to display the Data sources window.
2. Click the newly created Data Source `$DATA_SOURCE$` and navigate to the path **Data sources > GAFUSION DATA_SOURCE > Connection pools**.

Figure 7-30 Connection Pools



3. Set the following values:
   a. **Connection timeout**: 0
   b. **Maximum connections**: 100
   c. **Minimum connections**: 10

   You can also define **Reap time**, **Unused timeout**, and **Aged timeout** as required.

7.7.2 Configure Resource Reference in WebLogic Application Server

This section applies only when the Web application server type is WebLogic. This section includes the following topics:

- Create Data Source
- Create GridLink Data Source
- Configure Multi Data Sources
- Configure Advanced Settings for Data Source
- Configure JDBC Connection Pooling
- Create WorkManager

In the WebLogic server, you can create a "Data Source" in the following ways:

- For a non-RAC Database instance, a Generic Data Source must be created. See Create Data Source.
- For a RAC Database instance, a Gridlink Data Source must be created. See Create GridLink Data Source.

- When Load Balancing/Fail over is required, a Multi Data Source must be created. See Configure Multi Data Sources.

7.7.2.1 Create Data Source

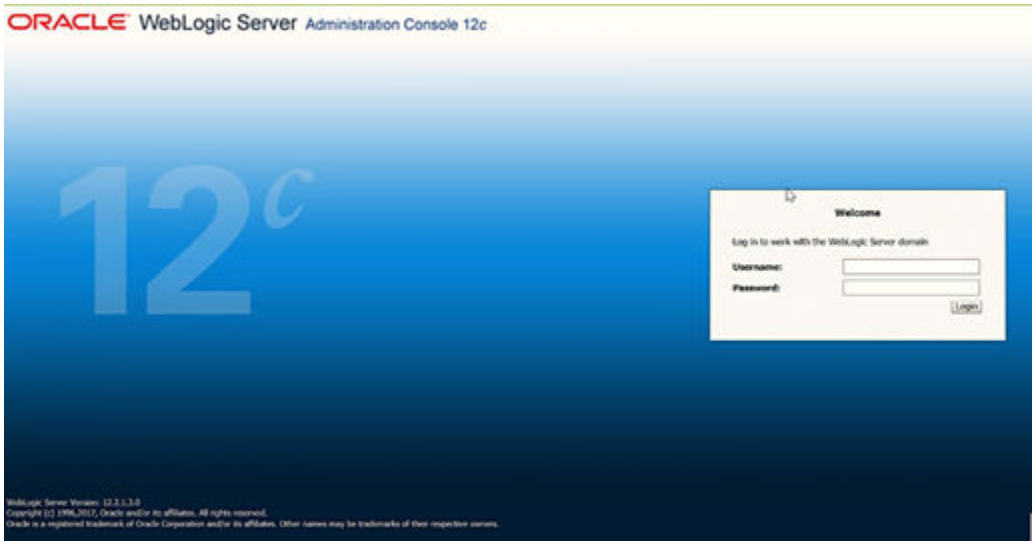
The following steps apply to both config and atomic data source creation.

1. Open the following URL in the browser window:

   http://<ipaddress>:<administrative console port>/console. (https, if SSL is enabled). The Welcome window is displayed.

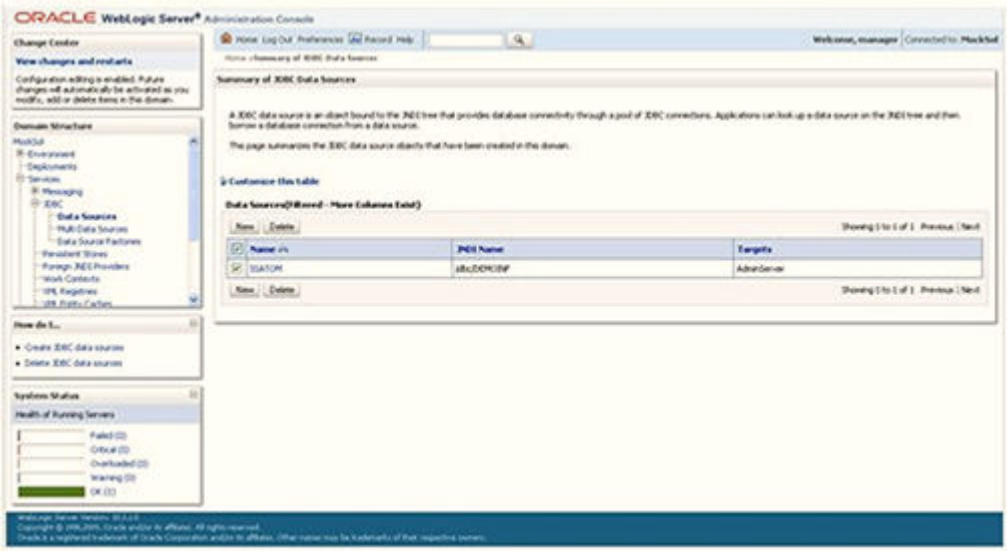
2. Log in with the Administrator **Username** and **Password**.

Figure 7-31 Welcome



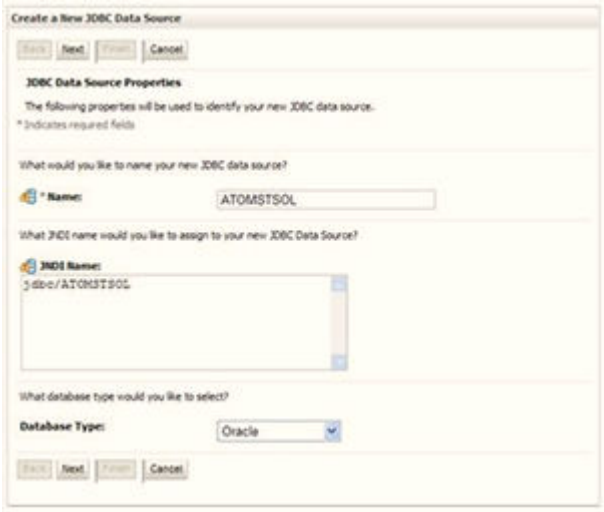
3. From the LHS menu (Domain Structure), click Services > Data Sources to display the Summary of JDBC Data Sources window.

Figure 7-32 Summary of JDBC Data Sources



4. Click New and select Generic Data Source to display the Create a New JDBC Data Source window.

Figure 7-33 Create a New JDBC Data Source



You can also select **GridLink Data Source** or **Multi Data Source** while creating a Data Source. For more information, see Create Data Source or Configure Multi Data Sources.

Figure 7-34 JDBC Data Source Properties

5. Enter JDBC data source Name, JNDI Name, and select the Database Type from the drop-down list.
6. Ensure the following:
   a. The JNDI Name field must be in the format jdbc/informationdomain
   b. The same steps must be followed to create a mandatory data source pointing to the "configuration schema" of infrastructure with jdbc/FICMASTER as JNDI name.
   c. JNDI Name is the same as mentioned in the web.xml file of OFSAAI Application.
   d. Required "Database Type" and "Database Driver" must be selected.

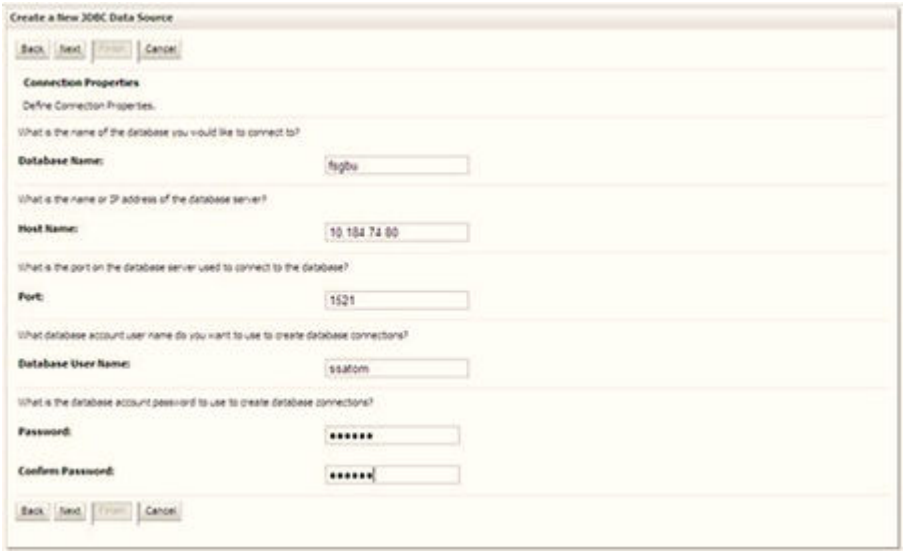
Data sources must be created for atomic and atomiccnf schemas following the same steps.

7. Click **Next**.

Figure 7-35 Transaction Options

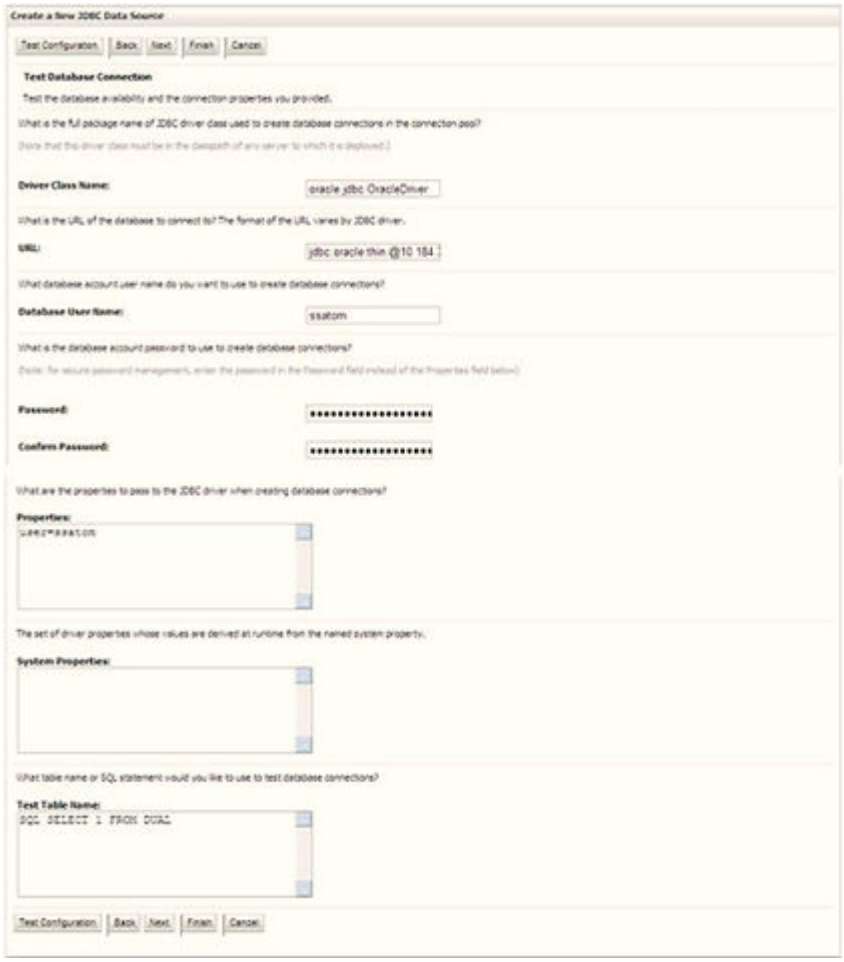
8. Select the **Database Driver** from the drop-down list. You must select the Database Driver depending on database setup, that is, with or without RAC. Click **Next**.

Figure 7-36 Database Name



9. Select the **Supports Global Transactions** check box and the **One-Phase Commit** option.
10. Click **Next** to display the Connection Properties window.

Figure 7-37 Database Details



11. Enter the required details such as the **Database Name**, **Host Name**, **Port**, **Oracle User Name**, **Password**, and **Confirm Password**.
12. Click **Next** to display the Test Database Connection window.

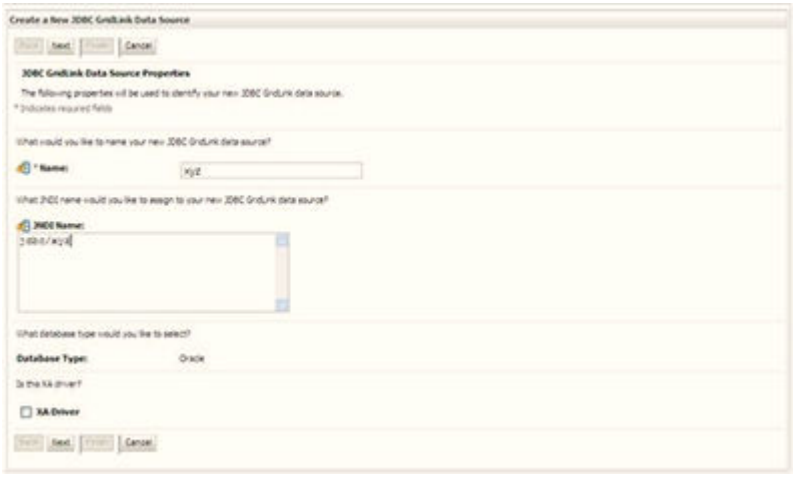
Figure 7-38 Select Targets

13. Verify the details and click **Test Configuration** and test the configuration settings. A confirmation message is displayed stating "Connection test succeeded."
14. Click **Finish**. The created "Data Source" is displayed in the list of Data Sources.

> **Note:**
>
> - "User ID" is the Oracle user ID that is created for the respective "Information Domain".
> - "User ID" specified for a data source with "FICMASTER" as "JNDI" name must be the Oracle user ID created for the "configuration schema".

15. Select the new **Data Source** and click the **Targets** tab.

Figure 7-39 Data Source

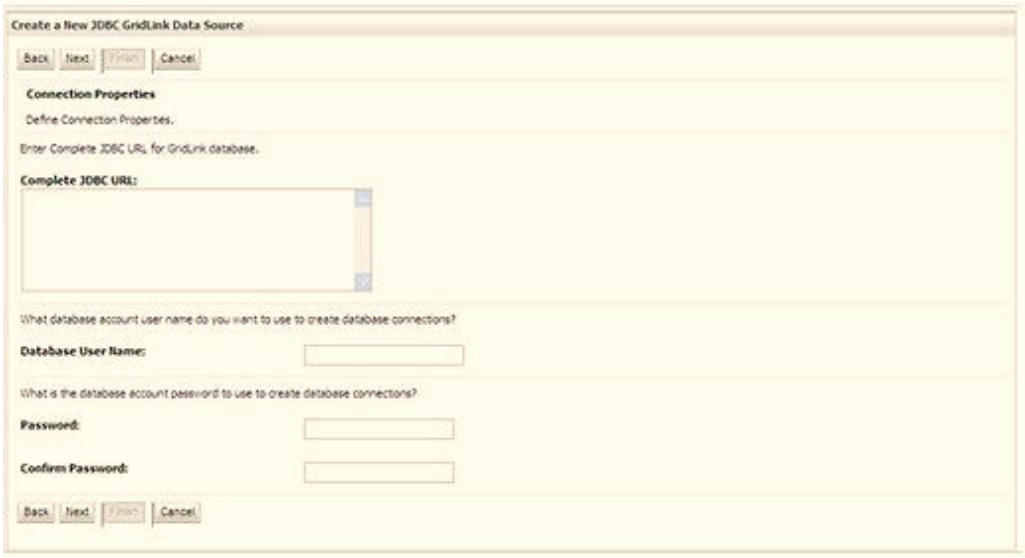


16. Select the **AdminServer** option and click **Finish**.

7.7.2.2 Create GridLink Data Source

If you have selected the option, New > GridLink Data Source while creating the "Data Source", you can directly specify the JDBC URL as indicated.

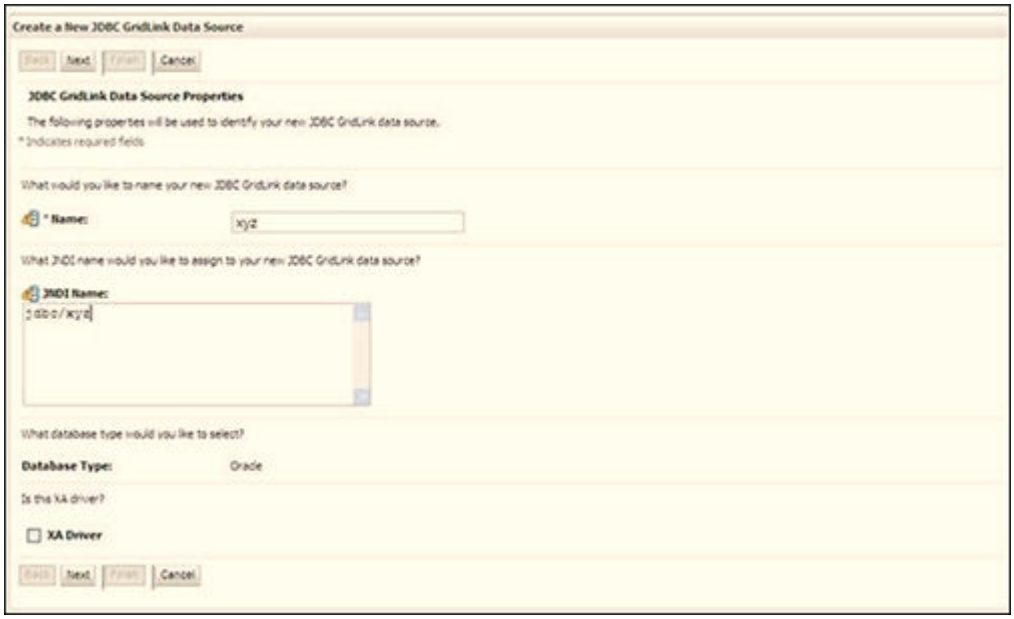
Figure 7-40 GridLink Data Source



1. Enter the Data Source Name and JNDI Name.

   Ensure that the "JNDI Name" field is specified in the format "jdbc/infodomname" and the XA Driver check box is not selected. Click Next.

   Figure 7-41 JNDI Name



2. Specify Complete JDBC URL, Database User Name, and Password. Click Finish. The created "Data Source" is displayed in the list of Data Sources.

7.7.2.3 Configure Multi-data Sources

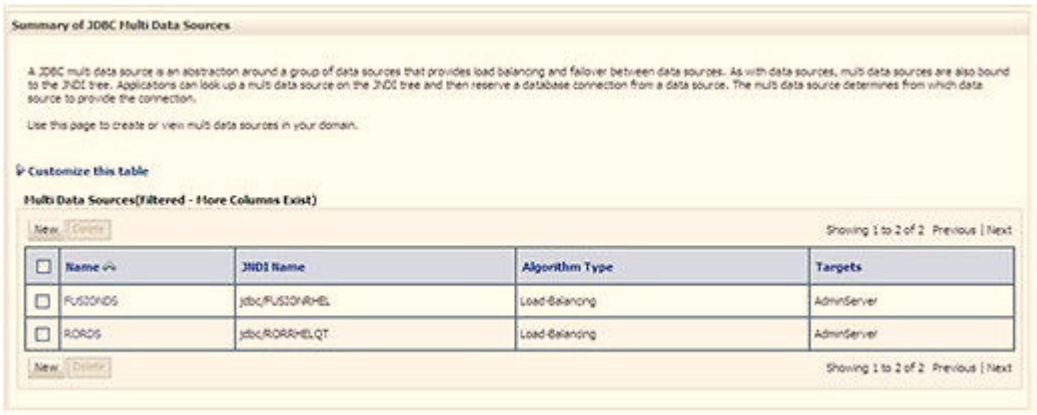
A JDBC multi-data source is an abstraction around a group of data sources that provides load balancing and failover between data sources. As with data sources,

multi-data sources are also bound to the JNDI tree. Applications can look up a multi-data source on the JNDI tree and then reserve a database connection from a data source. The multi-data source determines from which data source to provide the connection.

When the database used is Oracle RAC (Real Application Clusters), which allows Oracle Database to run across a set of clustered servers, then a group of data sources can be created for instances running on a set of clustered servers and a JDBC multi-data source can be created so that applications can look up a multi-data source on the JNDI tree to reserve database connection. If a clustered server fails, Oracle continues running on the remaining servers.

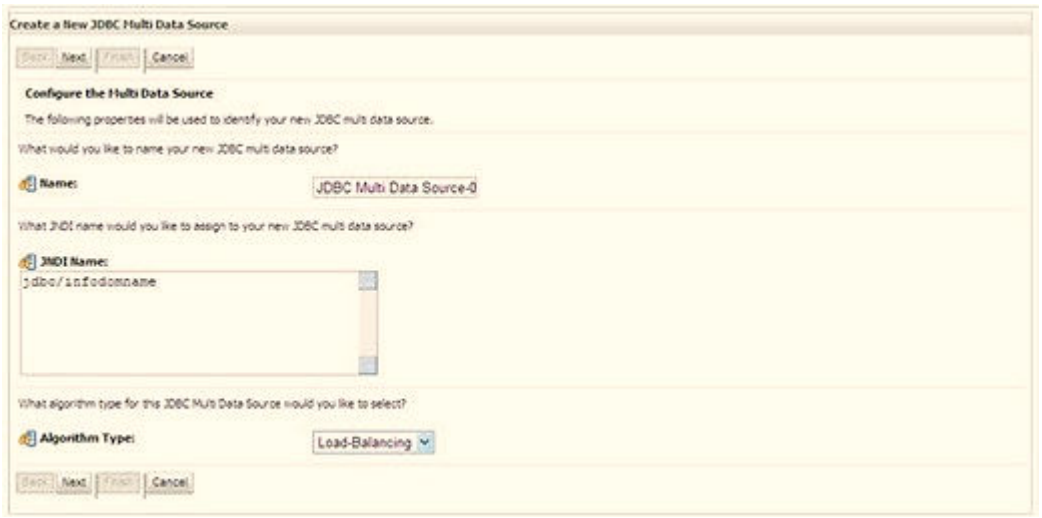
1. Open the WebLogic Admin Console in the browser window: http://<ipaddress>:<administrative console port>/console. (https if SSL is enabled). The Login window is displayed.
2. Login with the **User ID** that has admin rights.
3. In the LHS menu (Domain Structure), select **Services > JDBC > Multi Data Sources** to display the Summary of JDBC Multi Data Sources window.

Figure 7-42 Multi Data Sources



4. Click **New** to display the New JDBC **Multi Data Source** window.

Figure 7-43 Configure Multi Data Source

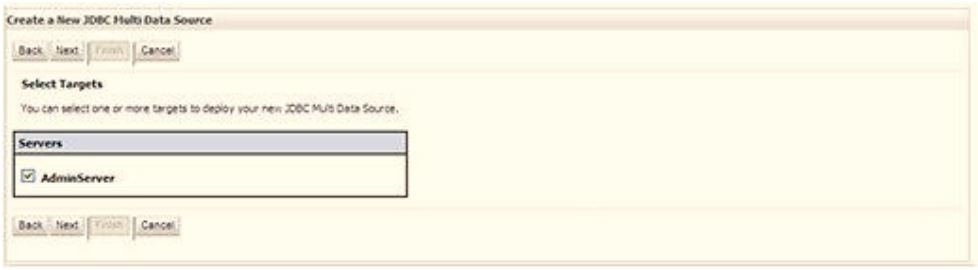


Ensure that the Data Sources which must be added to the new JDBC Multi Data Source are created.

5. Enter the **JDBC Source Name**, **JNDI name**, and select the **Algorithm Type** from the drop-down list. Click **Next**.

> **Note:**
>
> - The JNDI Name must be specified in the format jdbc/ infodomname.
> - The JNDI Name of the Data Sources that is added to the new JDBC Multi data source must be different from the JNDI name specified during Multi Data Source.
> - The same steps must be followed to create a mandatory data source pointing to the "configuration schema" of infrastructure with jdbc/ FICMASTER as JNDI name for Data Source.
> - The JNDI Name provided in the multi-data source must be the same name that is mentioned in the web.xml file of OFSAAI Application.
> - You can select the **Algorithm Type** as **Load-Balancing**.

Figure 7-44 Select Targets



6. Select the **AdminServer** check box and click **Next**.

Figure 7-45 Select Data Source Type

7. Select the type of data source to add to the new JDBC Multi Data Source. Click **Next**.

Figure 7-46 Add Data Sources

8. Map the required Data Source from the Available Data Sources. Click Finish. The New JDBC Multi Data Source is created with added data sources.

7.7.2.4 Configure Advanced Settings for Data Source

To configure the advanced setting for the data source, follow these steps:

1. Click the new Data Source from the Summary of JDBC Data Sources window to display the Settings for **Data Source Name** window.
2. Select the Connection Pooling tab given under Configuration.
3. Navigate to the Advanced option at the bottom of the window, and check the Test Connection of Reserve check box (enables WebLogic Server to test a connection before giving it to a client).

   To verify if the data source is valid, select "Data Source Name". For example, FICMASTER.
4. Select the server and click Test Data Source. A message is displayed indicating that the test was successful.

   After the "Data Source" is created successfully, the following messages are displayed: All changes are activated. No restart is necessary.

   Settings updated successfully.

If not, follow these same steps to recreate the data source.

7.7.2.5 Configure JDBC Connection Pooling

To define the JDBC connection pooling, ensure that you have created the JDBC Provider and Data Source to access the data from the database.

1. Click the newly created Data Source $DATA_SOURCE$ and navigate to the path **Home >Summary of Services: JDBC >Summary of JDBC Data Sources >JDBC Data Source-<INFODDOM_NAME>**.
2. Set the following values:
   a. **Initial Capacity**: 10
   b. **Maximum Capacity**: 100
   c. **Capacity Increment**: 1

d. **Statement Cache Type**: LRU

e. **Statement Cache Size**: 10

3. Click **Save**.

7.7.2.6 Create Workmanager

A Workmanager is used to re-trigger failed messages. To create a Workmanager, follow these steps:

- The **Name** field must have the value wm/WorkManager-TFLT
- The **Type** field must have the value Work Manager.
- The **Targets** field must have the value AdminServer
- The **Scope** field must have the value Global
- The **Stuck Thread Action** field must have the value Ignore stuck threads Click **Save**.

Figure 7-47 WorkManager Screen 1

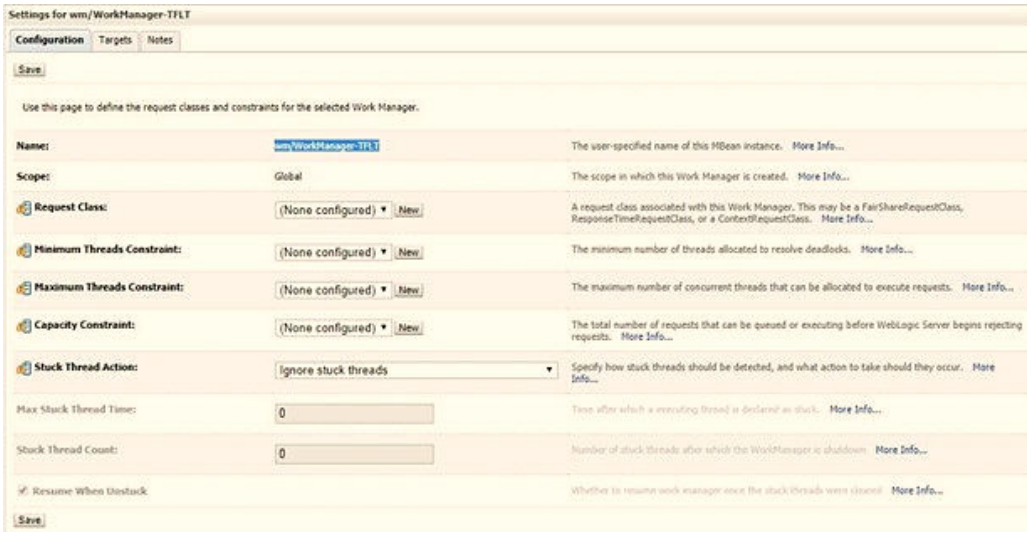
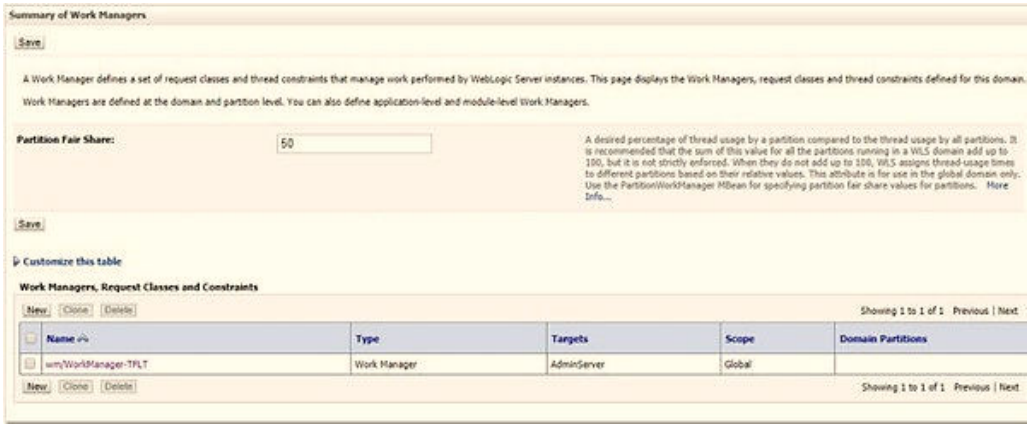


Figure 7-48 Workmanager Screen 2



7.7.3 Configure Resource Reference in Tomcat Application Server

This section is applicable only when the Web application server type is Tomcat and includes the following topics:

- Create Data Source
- Define JDBC Connection Pooling
- Configure ClassLoader for Apache Tomcat

Copy the Oracle JDBC driver file, `ojdbc<version>.jar` from `<Oracle Home>/jdbc/lib` and place it in `<Tomcat Home>/lib`.

See Hardware and Software Requirements to identify the correct `ojdbc<version>.jar` file version to be copied.

7.7.3.1 Create Data Source

To create a "data source" for Infrastructure application, navigate to `<Tomcat Home>/conf` directory and edit the following block of text by replacing the actual values in the `server.xml` file.

> **Note:**
>
> The User-IDs for configuration/ atomic schemas have the prefix of setup info depending on the value set for PREFIX_SCHEMA_NAME in the `<<APP Pack>>_SCHEMA_IN.XML` file of the Schema Creator Utility.
>
> For example: If the value set for PREFIX_SCHEMA_NAME is DEV and the schema name is mentioned as ofsaaconf, then the actual schema created in the database is DEV_ofsaaconf.

```
<Context path ="/<context name>" docBase="<Tomcat Installation Directory>/
webapps/<context name>" debug="0" reloadable="true" crossContext="true">

<Resource auth="Container" name="jdbc/FICMASTER" type="javax.sql.DataSource"
driverClassName="oracle.jdbc.driver.OracleDriver" username="<user id for the
configuration schema>" password="<password for the above user id>"
url="jdbc:oracle:thin:@<DB engine IP address>:<DB Port>:<SID>" maxActive="100"
maxIdle="30" maxWait="10000"/>

<Resource auth="Container"

name="jdbc/< INFORMATION DOMAIN NAME >"

type="javax.sql.DataSource" driverClassName="oracle.jdbc.driver.OracleDriver"
username="<user id for the atomic schema>" password="<password for the above
user id>"

url="jdbc:oracle:thin:@<DB engine IP address>:<DB Port>:<SID>" maxActive="100"
maxIdle="30" maxWait="10000"/>

</Context>
```

> **Note:**
>
> - The <Resource> tag must be repeated for each Information Domain created.
> - After the configuration, the "WAR" file must be created and deployed in Tomcat.

7.7.3.2 Define JDBC Connection Pooling

To define the JDBC connection pooling, follow these steps:

1. Copy the $ORACLE_HOME/jdbc/lib/ojdbc<version>.jar file to the path $TOMCAT_DIRECTORY/lib/ directory.

   See Hardware and Software Requirements to identify the correct ojdbc<version>.jar file version to be copied.

2. Edit the server.xml file present under the $TOMCAT_DIRECTORY/conf/ directory with the following changes, which is required for connection pooling.

```
<Context path="/ $CONTEXTNAME$" docBase=" $APP_DEPLOYED_PATH$ "
debug="0" reloadable="true" crossContext="true">

<Resource auth="Container" name="jdbc/ $INFODOM_NAME$"
type="javax.sql.DataSource"

driverClassName="oracle.jdbc.driver.OracleDriver"
username=" $ATOMICSCHEMA_USERNAME$" password="$ATOMICSCHEMA_PASSWORD$"
url="$JDBC_CONNECTION_URL"

maxTotal="300" maxIdle="30" maxWaitMillis="10000"
removeAbandonedOnBorrow="true" removeAbandonedTimeout="60"
logAbandoned="true"/>

</Context>
```

Note:

- $APP_DEPLOYED_PATH$ must be replaced by the OFSAAI application deployed path.
- $INFODOM_NAME$ must be replaced by Infodom Name.
- $ATOMICSCHEMA_USERNAME$ must be replaced by an Atomic schema database user name.
- $ATOMICSCHEMA_PASSWORD$ must be replaced by an Atomic schema database password.
- $JDBC_CONNECTION_URL must be replaced by JDBC connection string jdbc:Oracle:thin:<IP>:<PORT>:<SID>.

  For example,

  – jdbc:oracle:thin

  – 192.168.0.1:1521:soluint

The User-IDs for configuration/ atomic schemas have the prefix of setupinfo depending on the value set for PREFIX_SCHEMA_NAME in the <<APP Pack>>_ SCHEMA_IN.XML file of Schema Creator Utility.
For example: if the value set for PREFIX_SCHEMA_NAME is DEV and the schema name is mentioned as ofsaaconf, then the actual schema created in the database is DEV_ofsaaconf.

7.7.3.3 Configure ClassLoader for Apache Tomcat

To configure the ClassLoader for Apache Tomcat, follow these steps:

1. Edit the `server.xml` file available in `$TOMCAT_HOME/conf/` directory.
2. Add the tag <Loader delegate="true" /> within the <Context> tag, above before the <Resource> tag. This is applicable only when the web application server is Apache Tomcat 8.

7.8 Configure Work Manager in Web Application Servers

The process Modelling framework requires creating a Work Manager and mapping it to the OFSAA instance. This configuration is required for WebSphere and WebLogic Web application server types.

7.8.1 Configure Work Manager in WebSphere Application Server

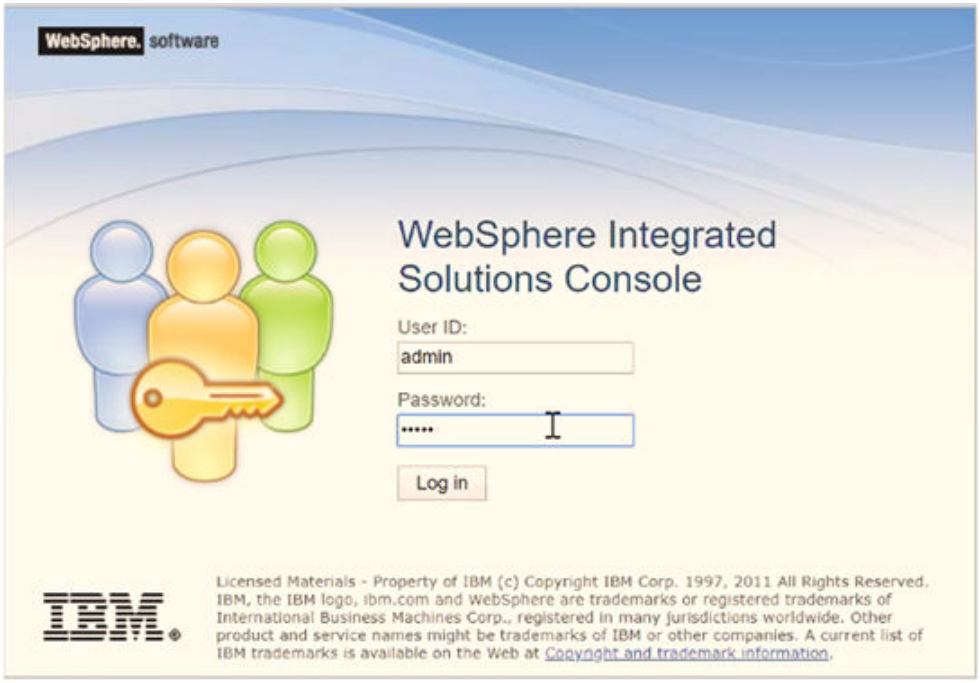
7.8.1.1 Create Work Manager

To create the Work Manager, follow these steps:

1. Open the WebSphere admin console in the browser window:

   http://<ipaddress>:<administrative console port>/ibm/console. (https if SSL is enabled). The Login window is displayed.

Figure 7-49 WebSphere Login page

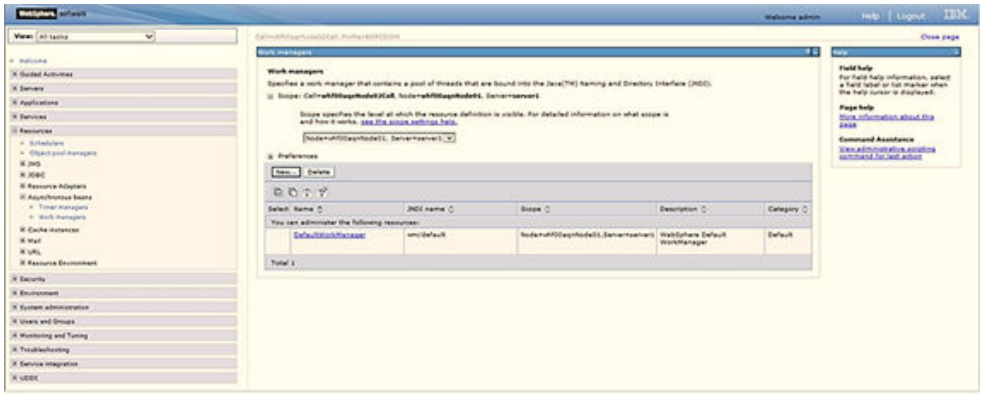


2. Log in with the user ID which has admin rights.

Figure 7-50 Home page

3. From the LHS menu, expand **Resources > Asynchronous beans** and select **Work Managers**.

Figure 7-51 Work Managers

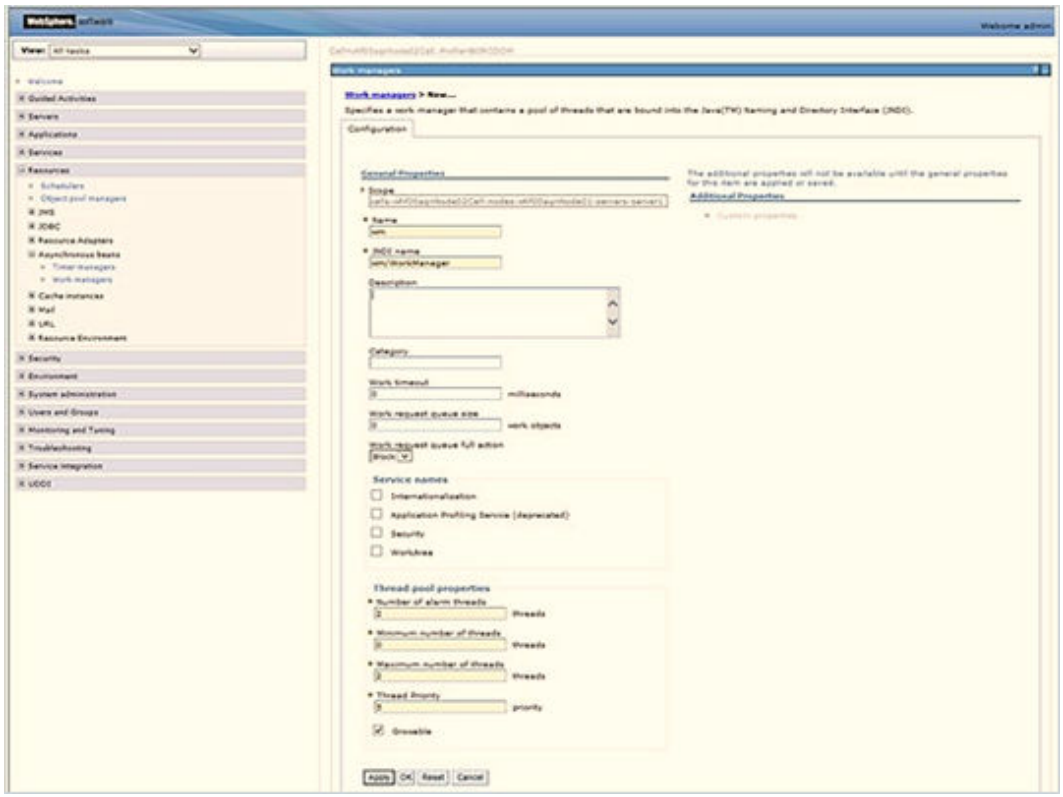


4. Select the required Scope from the drop-down list.

   For example, Node=whf00aqnNode01, Server=server1.

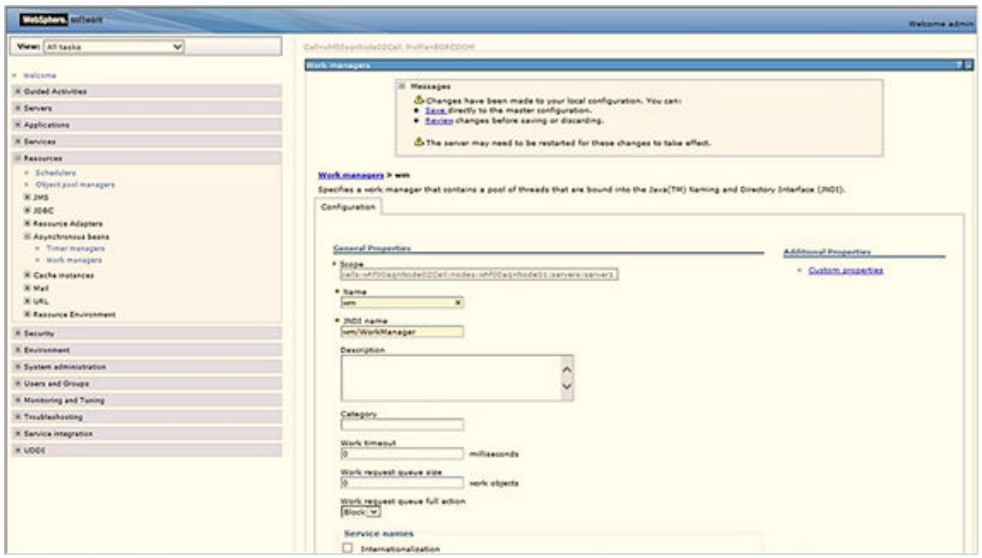
5. Click **New** in the **Preferences** section.

Figure 7-52 New Work Managers



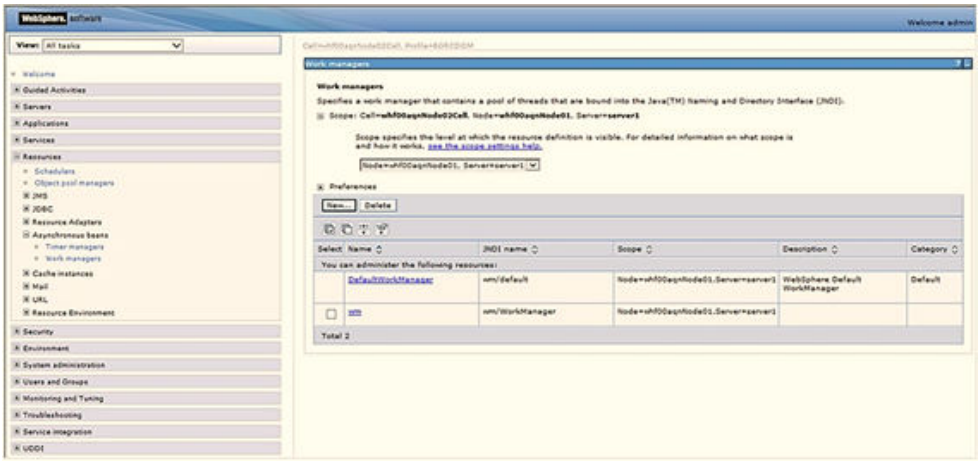
6. Enter the **Name** as 'wm' and JNDI name as 'wm/WorkManager ' in the respective fields.
7. Enter the **Thread pool properties**.
8. Click **Apply**.

Figure 7-53 Configure Work Managers



9. Click **Save**.

Figure 7-54 Work Managers Preferences



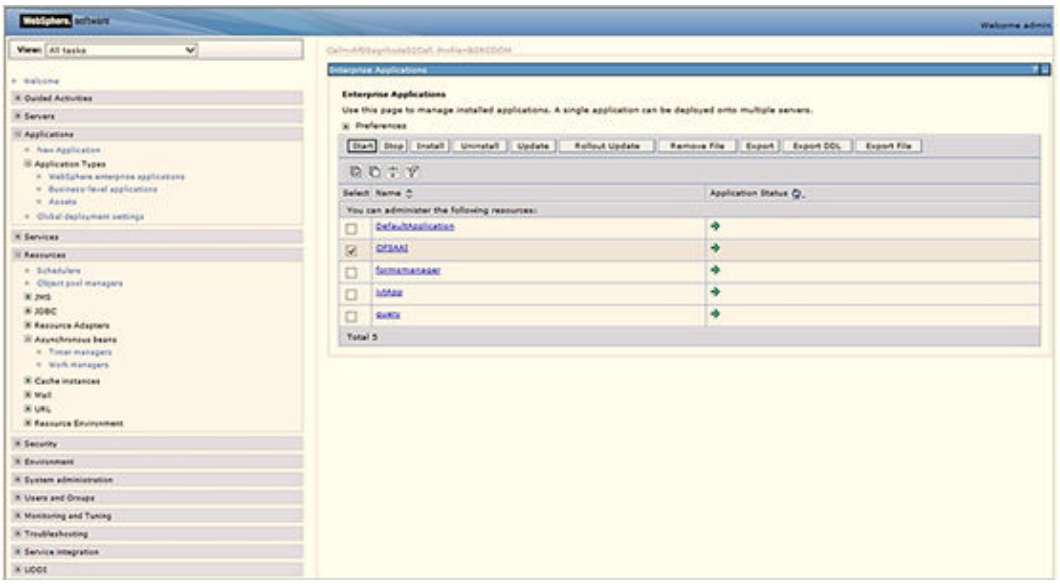
After creating the work manager, you must map it to an OFSAA instance.

7.8.1.2 Map Work Manager to OFSAA WebSphere Instance

To map the Work Manager to an OFSAA WebSphere Instance, follow these steps:

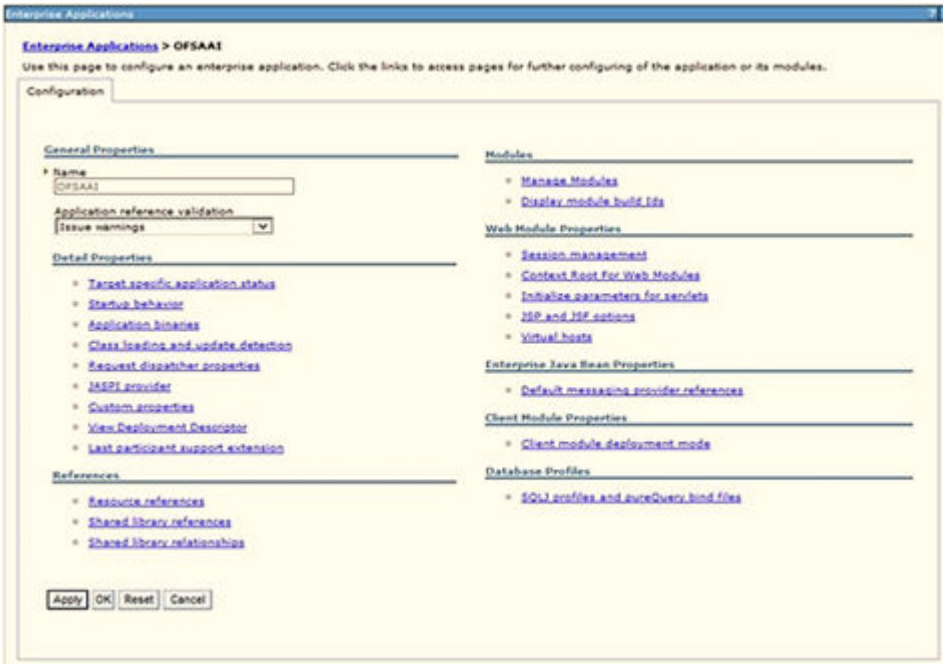
1. From the LHS menu, expand **Applications > Application Types** and click **WebSphere enterprise applications**.

Figure 7-55 Enterprise Applications



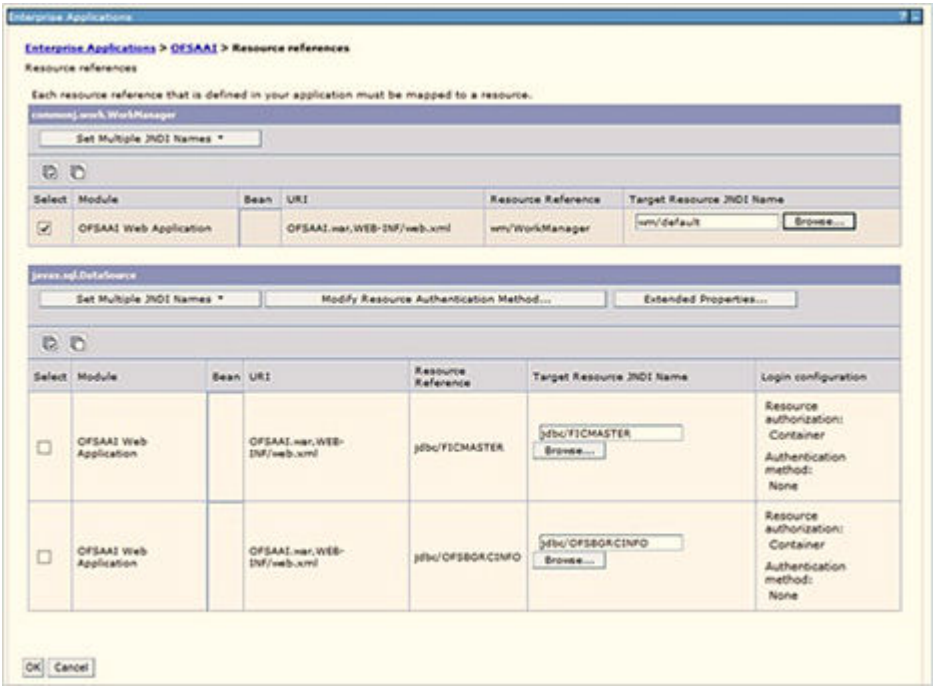
2. Click OFSAAI instance hyperlink.

Figure 7-56 OFSAAI



3. Click the **Resource references** link under the **References** section.

Figure 7-57 Resource References

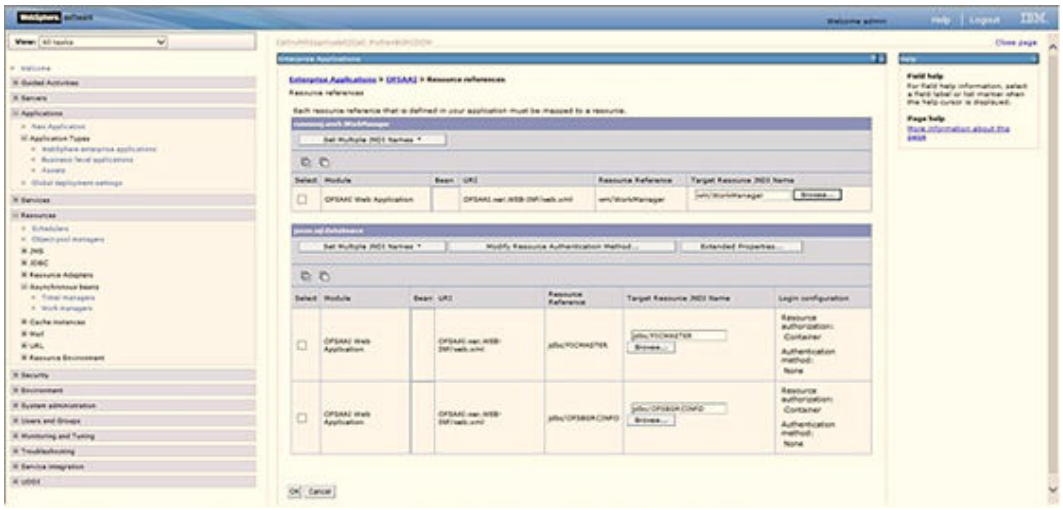


4. Click **Browse** corresponding to the Work Manager Resource Reference. The available resources are displayed.

Figure 7-58 Available Resources

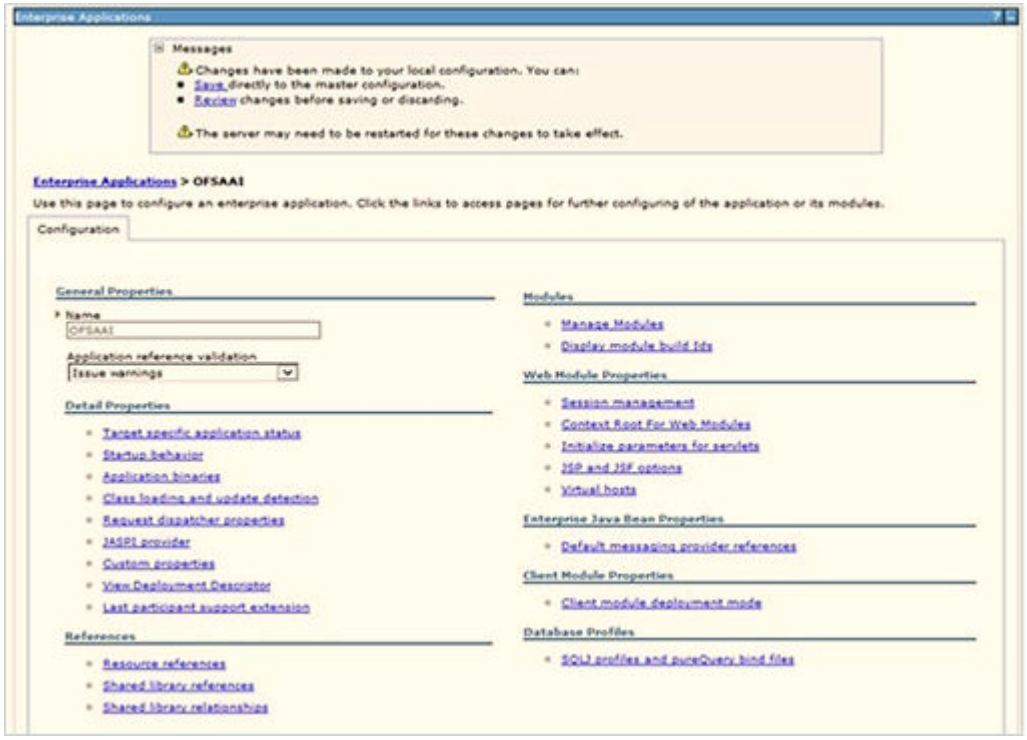
5. Select the newly created Work Manager ('wm') and click **Apply**.

Figure 7-59 Select Work Manager



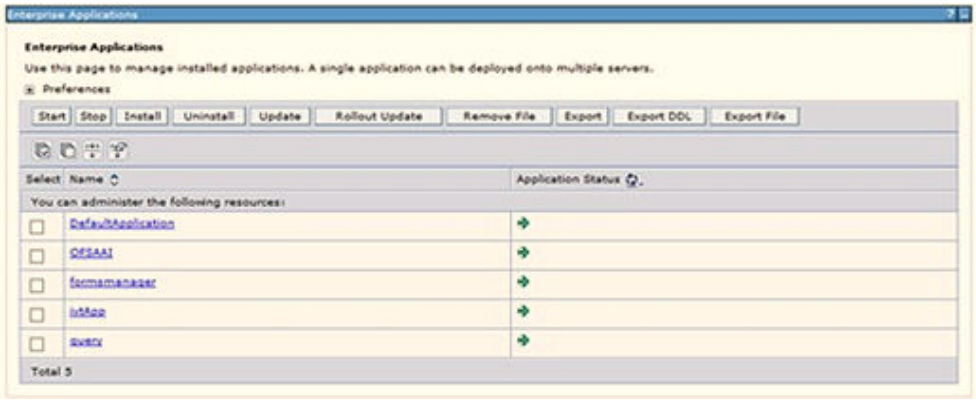
6. Select the Work Manager ('wm/WorkManager') and click **OK**.

Figure 7-60 OFSAAI Configuration



7. Click **Save**.

Figure 7-61 Enterprise Applications Preferences

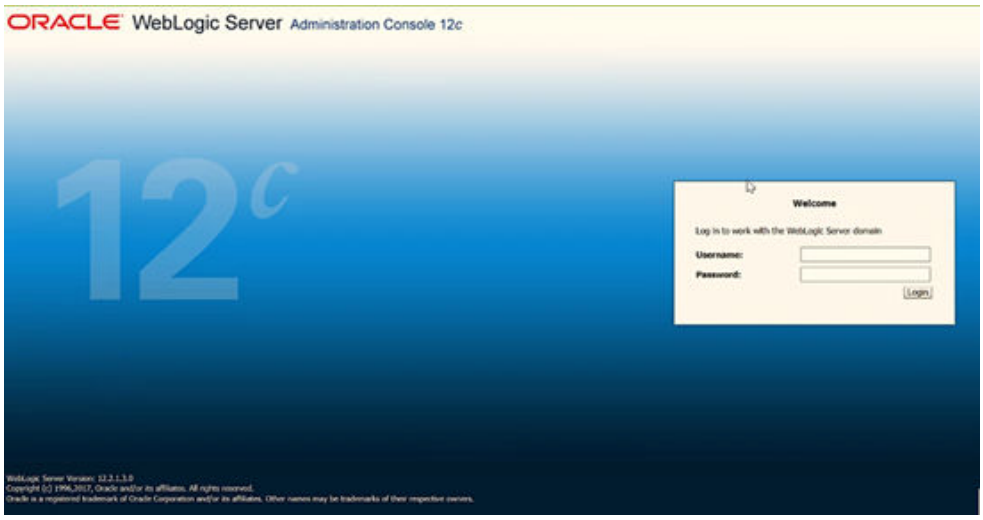


7.8.2 Configure Work Manager in WebLogic Application Server

To create the Work Manager in WebLogic application server, follow these steps:

1. Open the WebLogic admin console in the browser window: http://<ipaddress>:<administrative console port>/console. (https if SSL is enabled). The Welcome window is displayed.

Figure 7-62 WebLogic Login page

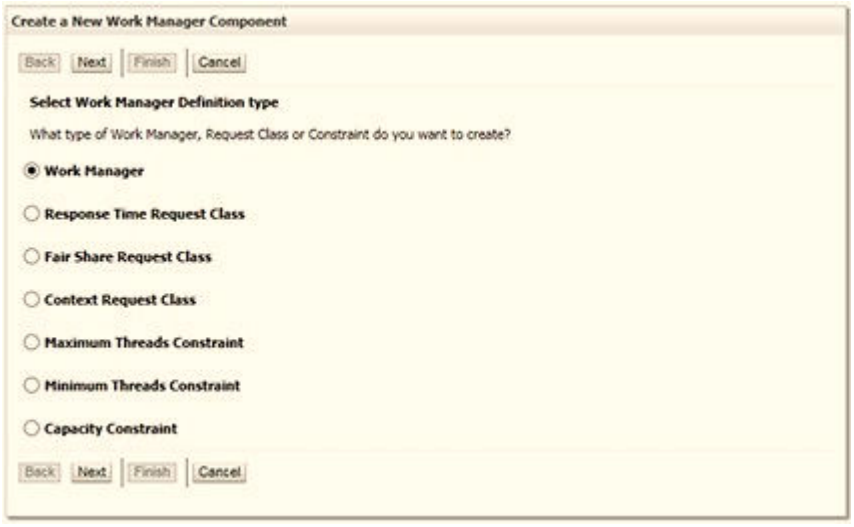


2. Log in with the user ID that has admin rights.
3. From the **Domain Structure** menu in the LHS, expand Environment and select **Work Managers** to display the Summary of Work Managers window.

Figure 7-63 Work Manager

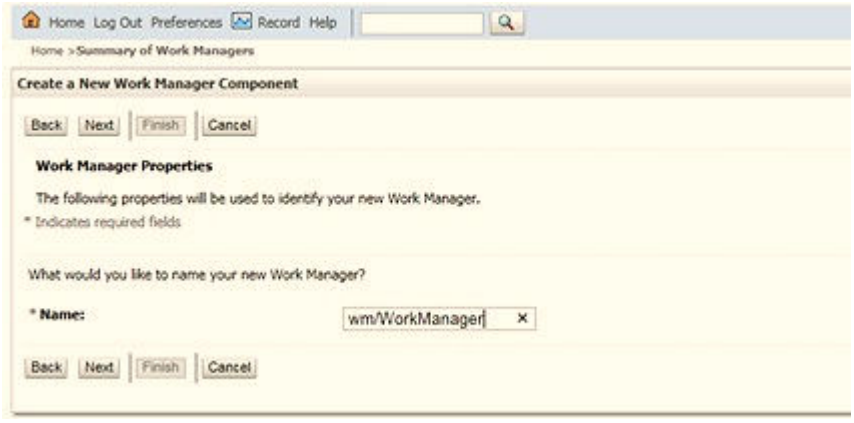
4. Click **New** to create a new Work Manager component.

Figure 7-64 New Work Manager



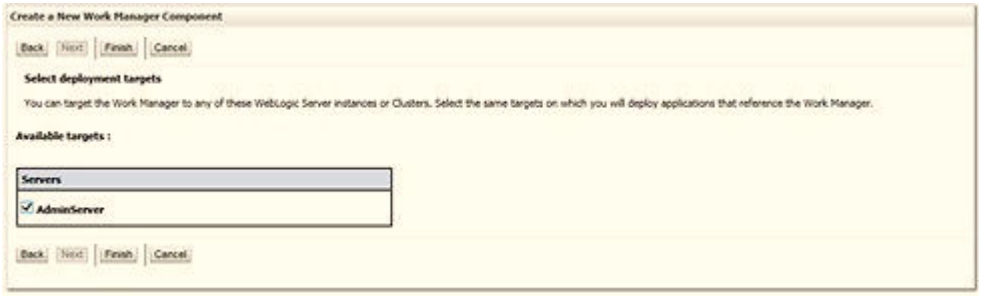
5. Select the Work Manager and click **Next**.

Figure 7-65 Work Manager



6. Enter the Name as 'wm/WorkManager' and click **Next**.

Figure 7-66 Select Deployment Targets



7. Select the required deployment target and click **Finish**.

Figure 7-67 Summary of Work Managers

7.9 Access the OFSAA Application

To access the OFSAA application, follow these steps:

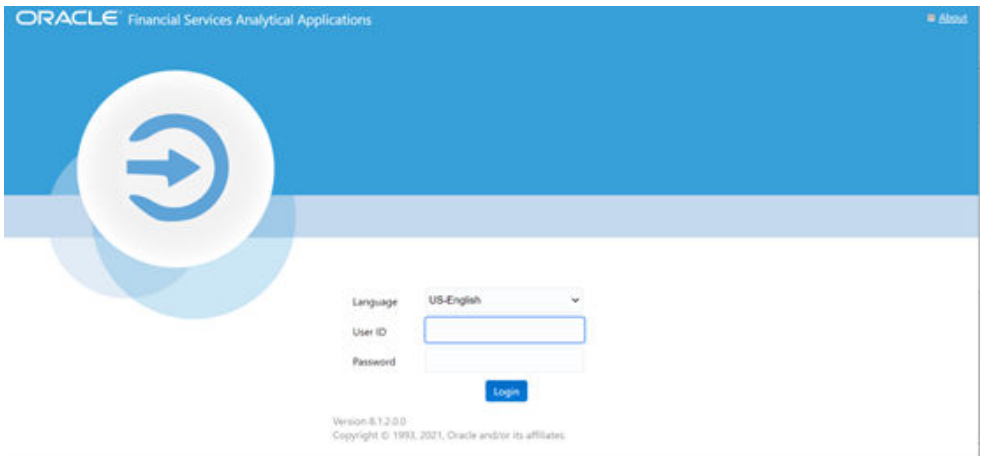
1. Open a browser and enter the URL in the following format:

   `<scheme>://<IP address/ hostname>:<port>/<context-name>/login.jsp`

   For example, `https://192.0.2.2/ofsaa/login.jsp`

   The OFSAA Login window is displayed.

Figure 7-68 OFSAA Login Window



With the installation of every OFSAA Application Pack, there are two seeded user profiles configured in the system:

- SYSADMN System Administrator
- SYSAUTH System Authorizer

The SYSADMN and SYSAUTH users are configured with a default password, which you will require to login for the first time. See the MOS Doc ID: 2691681.1 for the password.

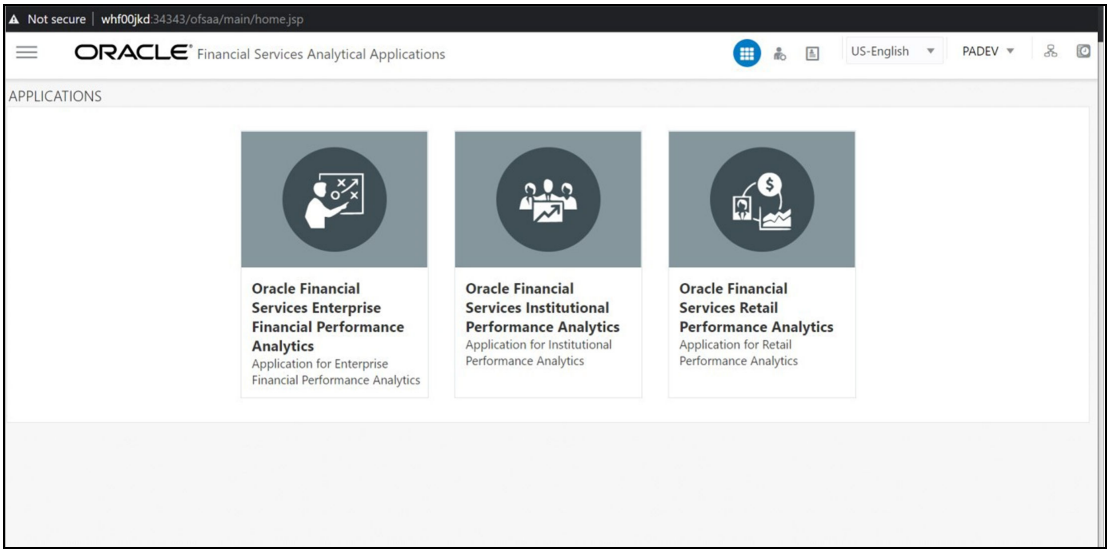
2. Log in to the application using the "SYSADMN" User ID and the default password. After the first login, you are prompted to change the password.

> **Note:**
>
> The password change is required only for a new installation scenario and not for upgrade scenarios.

7.10 OFSAA Landing Page

On successful log in, the OFSAA Landing page is displayed.

Figure 7-69 OFSAA Landing Page



OFSAA Landing page shows the available Applications as tiles, for which a user has access. Click the respective Application tile to launch that particular application. You can change the landing page based on your preference.

7.11 View OFSAA Product Licenses after Installation of Application Pack

In an integrated environment, where you have multiple applications installed on the same domain or infrastructure, OFSAAI allows you to see the other licensed applications through the UI.

For more information, see the *View OFSAA Product Licenses after Installation of Application Pack* in the OFS Analytical Applications Infrastructure User Guide Release 8.1.2.0.0.

7.12 Configure the excludeURLList.cfg File

To configure the excludeURLList.cfg file, follow these steps:

1. Go to $FIC_WEB_HOME/webroot/conf.
2. Create a backup of the file excludeURLList.cfg.
3. Edit the following details in excludeURLList.cfg file:
   - [SQLIA]./dataIntegrator/ to [ALL]./dataIntegrator/
   - [SQLIA]./ETLExtractionServlet to [ALL]./ETLExtractionServlet
4. Go to $FIC_WEB_HOME.
5. Backup the existing ear/war files.
6. Delete <app>.ear and <app>.war files.
7. Re-create the ear/war files by running ant.sh.
8. Use the new ear/war files and re-deploy them.
9. Re-start the OFSAA environment.

7.13 Change the ICC Batch Ownership

All the seeded batches in the OFS PA applications are automatically assigned to the SYSADMN user during installation.

To see the batches in the Batch Maintenance menu, you must execute the following query in the Config Schema of the database:

```
begin

AAI_OBJECT_ADMIN.TRANSFER_BATCH_OWNERSHIP ('fromUser','toUser','infodom');
end;

OR

begin

AAI_OBJECT_ADMIN.TRANSFER_BATCH_OWNERSHIP ('fromUser','toUser');

end;
```

Where:

- `fromUser` indicates the user who currently owns the batch.
- `toUser` indicates the user to whom the ownership must be transferred.
- `infodom` is an optional parameter. If specified, the ownership of the batches pertaining to that Infodom is changed.

7.14 Create Application Users

Create the application users in the OFSAA setup before use. For more information, see the User Administrator section in the Oracle Financial Services Analytical Applications Infrastructure User Guide.

> **Note:**
>
> This step may not be required if you have already set up users in the OFSAA setup.

7.15 Map Application User(s) to User Group

Starting the OFSAA 8.1 release, with the installation of every OFSAA Application Pack, pre-configured application user groups are seeded. These user groups are unique to every OFSAA Application Pack and have application roles pre-configured.

User Groups seeded with the OFSAAAI Application Pack are listed in the Seeded User Groups Table

Table 7-3 Seeded User Groups

Name	Description
Modeler Group	A user mapped to this group has access to all the menu items for Enterprise modeling but does not have authorization rights for sandbox population, model deployment, and modeling technique authorization.
Modeling Administrator Group	A user mapped to this group has access to all the menu items for Enterprise modeling and has authorization rights for the sandbox population, model deployment, and modeling technique authorization.
Business Administrator	A user mapped to this group has access to all the menu items and actions for the advanced operations of metadata objects.
Business Authorizer	A user mapped to this group has access to all the menu items and actions for authorization of changes to metadata objects.
Business Owner	A user mapped to this group has access to all the menu items and actions for read and write of metadata objects
Business User	A user mapped to this group has access to all the menu items and actions for access and read of metadata objects.

Table 7-3 (Cont.) Seeded User Groups

Name	Description
Identity Administrator	A user mapped to this group has access to all the menu items for managing User entitlements, User Group Entitlements, and Access Management configurations.
Identity Authorizer	A user mapped to this group has access to all the menu items for authorizing User entitlements, User Group Entitlements, and Access Management configurations.
System Administrator	A user mapped to this group has access to all menu items for managing the setup configurations.
Object Administrator	A user mapped to this group has access to all menu items for managing object migration and metadata traceability using the metadata browser.
Guest Group	A user mapped to this group has access to certain menu items with only access privileges.

Map the application user (s) to the respective Application User Group (s) and subsequently authorize the entitlements by logging in as SYSAUTH (System Authorizer) user.

For more information, see the Mapping/Unmapping Users section from the Oracle Financial Services Analytical Applications Infrastructure User Guide.

7.16 Excel Upload Mapping and Template

This section provides steps about the Excel Upload.

1. Post-installation, navigate to the ExcelUpload directory present in the path:p `Extracted Installer location/$FIC_HOME/dumps`
2. In the `ExcelUpload` directory, change the directory name from infodom to the name of the respective Infodom.
3. Copy the `ExcelUpload` directory to the `ftpshare/STAGE` directory.
4. Create the STAGE directory in the path `<TOMCAT_HOME>`.
5. Copy the `ExcelUpload` directory to the STAGE directory in the path `<TOMCAT_HOME>`.

7.17 Configure Transparent Data Encryption (TDE) and Data Redaction in OFSAA

Two features comprise of Oracle Advanced Security: Transparent Data Encryption and Oracle Data Redaction.

This section details the configurations required in case you want to enable TDE or Data Redaction in OFSAA applications.

- Prerequisites

- Transparent Data Encryption (TDE)

7.17.1 Prerequisites

Ensure the required Oracle Database Server versions are installed:

- Oracle Database Server Enterprise Edition 18c Release 3 - 64 bit RAC/Non-RAC with/ without partitioning option, Advanced Security Option.
- Oracle Database Server Enterprise Edition 19c Release 3 - 64 bit RAC/Non-RAC with/ without partitioning option, Advanced Security Option.

7.17.2 Transparent Data Encryption (TDE)

Transparent Data Encryption (TDE) enables you to encrypt sensitive data, such as Personally Identifiable Information (PII), that you store in tables and tablespaces. After the data is encrypted, this data is transparently decrypted for authorized users or applications when they access this data. To prevent unauthorized decryption, TDE stores the encryption keys in a security module external to the database, called a Keystore. For more details on TDE, see the Database Advanced Security Guide.

TDE tablespace encryption enables you to encrypt all of the data stored in a tablespace. To control the encryption, you use a Keystore and TDE master encryption key. Oracle Database supports both software keystores and hardware, or HSM-based, keystores. A software keystore is a container for the TDE master encryption key, and it resides in the software file system.

To configure TDE for OFSAA, follow these steps:

1. Create a new PDB (19c)/ instance (18c) on the same or different Database Server for TDE. For more information, see Configure Software Keystore and Encrypted Tablespace Creation.
2. Shutdown the OFSAAI Services.
3. Export all Configuration, Atomic, and Sandbox Schemas as per the applications installed in your OFSAA instance.

   For example:

   ```
   expdp SYSTEM/oracle@OFSA19c2DB DIRECTORY=data_pump_dir DUMPFILE=ofsaaconf_
   ofsaaatm_%U.dmp filesize=2G SCHEMAS=ofsaaconf,ofsaaatm LOGFILE=ofsaaconf_
   ofsaaatm_exp.log
   ```

   > **Note:**
   >
   > The above command will create data dumps as files of 2GB size each (multiples). Any other commands/ tools as appropriate may be used to archive the schemas.

4. Import all schemas that are exported using the above command, into the new DB instance.

   For example:

   ```
   impdp SYSTEM/oracle@OFSA12nDB DIRECTORY=data_pump_dir DUMPFILE=ofsaaconf_
   ofsaaatm_%U.dmp SCHEMAS=ofsaaconf,ofsaaatm LOGFILE=ofsaaconf_ofsaaatm_
   imp.log
   ```

> **Note:**
>
> - Restoring the exported dumps creates Configuration and Atomic Schema(s) with the same user credentials as that of the source, along with the existing grants.
> - If schemas are restored using a tool/ mechanism other than as mentioned in Steps 1 and 2, retain the user credentials of Configuration and Atomic Schemas the same as in the Source environment, along with the Schema grants.

5. Provide select grants on sys.V_$parameter to view Configuration and Atomic Schemas of Target Environment database.

   For example:

   ```
   Log in as sys user:
   SQL> GRANT SELECT ON SYS.V_$PARAMETER TO ofsaaconf;
   Grant succeeded
   SQL> GRANT SELECT ON SYS.V_$PARAMETER TO ofsaaatm;
   Grant succeeded
   ```

6. Update `.profile` for ORACLE_SID environment variable with new ORACLE_ SID.
7. Update JDBC URL by executing Port Changer utility. For details on how to execute Port Changer utility, see *Changing IP/Hostname, Ports, Deployed paths, Protocol of the OFSAA Instance* section under *Generic Configurations* chapter in OFS Analytical Applications Infrastructure Administration Guide.
8. Navigate to the `$FIC_WEB_HOME` directory and execute the following command to trigger the creation of the EAR/WAR file:

   ```
   ./ant.sh
   ```

9. The EAR/WAR file - <contextname>.ear/.war - is created in the `$FIC_WEB_HOME` directory.
10. On completion of the EAR/WAR file creation, the message "BUILD SUCCESSFUL" is displayed.
11. Edit the existing Connection Pool settings to point to the new JDBC URL and verify connections.
12. Clear the webserver cache and redeploy the application onto your configured web application server.
13. Restart the OFSAA Services. For more information, see Start the Infrastructure Services.

7.17.2.1 Configure a Software Keystore and Encrypted Tablespace Creation

A software keystore is a container for the TDE master encryption key, and it resides in the software file system. You must define a location for the key in the `sqlnet.ora` file so that the database locates the keystore (one per database) by checking the keystore location in the `sqlnet.ora` file. After defining the location, create the keystore and open it. Set the TDE master key after opening it and then encrypt the data.

To find whether a wallet is already existing, check the following entries:

1. The location specified by the ENCRYPTION_WALLET_LOCATION parameter in the `sqlnet.ora` file.
2. The location specified by the WALLET_LOCATION parameter in the `sqlnet.ora` file.

   Encrypted tablespaces can share the default database wallet. However, Oracle recommends that you use a separate wallet for transparent data encryption functionality by specifying the ENCRYPTION_WALLET_LOCATION parameter in the `sqlnet.ora` file.

> **Note:**
>
> You must have the required privileges to perform the following actions.

To configure the software keystore, follow the instructions in the following sections:

- Set the Software Keystore Location in the sqlnet.ora File
- Create the Software Keystore
- Open the Software Keystore
- Set the Software TDE Master Encryption Key
- Encrypting your Data

7.17.2.2 Test the Encryption

Test the encryption by checking if a tablespace is encrypted or not. Execute the following query to check:

```
SELECT tablespace_name, encrypted FROM dba_tablespaces;
```

The following result is displayed, which indicates whether the TABLESPACE is encrypted or not in the ENCRYPTED column.

Table 7-4 Testing the Encryption

TABLESPACE_NAME	ENCRYPTED
SYSTEM	NO
SYSAUX	NO
UNDOTBS1	NO
TEMP	NO
USERS	NO
ENCRYPTED_TS	YES

The above example indicates TABLESPACE `ENCRYPTED_TS` is created with Encryption ON.

7.18 Data Redaction

OFSAA is enhanced to enable masking of sensitive data and Personal Identification Information (PII) to adhere to Regulations and Privacy Policies. Oracle Data Redaction provides selective, on-the-fly redaction of sensitive data in database query results before display by applications so that unauthorized users cannot view the sensitive data. The stored data remains unaltered, while displayed data is transformed into a pattern that does not contain any identifiable information.

To enable Data Redaction, perform the following steps:

1. Log in as SYSDBA into the database.
2. Execute the `$FIC_HOME/utility/data_security/scripts/create_data_sec_roles.sql` file only once per database (PDB in case of 18c/19c).
3. Execute the following SQL statement to find out the list of atomic users from the table: select v_schema_name from aai_db_detail where V_DB_NAME <> 'CONFIG' AND V_DB_ TYPE = 'ORACLE'
4. Execute the `$FIC_HOME/utility/data_security/scripts/grant_data_sec_roles.sql` file for all atomic users found in the previous step.
5. From the Configuration window in the System Configuration module, select the Allow Data Redaction checkbox.
6. Run the Data Redaction utility.

   For more details on enabling Data Redaction, see the *Data Redaction* section in the *Data Security and Data Privacy* topic in the OFS Analytical Applications Infrastructure Administration Guide.

8
Upgrade

Topics:

8.1 Upgrade Scenarios

The possible upgrade scenarios and a high-level sequence of steps to complete the upgrade are summarized in this section.

Table 8-1 Upgrade Scenarios

Scenario	Upgrade Instructions
Upgrade from OFS Profitability Management 8.1.1..0 to OFS OFS PFT Pack 8.1.2.0.0	1. Run the Environment Check Utility tool and ensure that the hardware and software requirements are installed as per the OFS Analytical Applications Technology Matrix.http://docs.oracle.com/cd/E55339_01/homepage.htm 2. Update the `Silent.props` file present in the Release 8.1.2.0.0 pack. 3. Trigger the Release 8.1.2.0.0installation.
Upgrade from OFS PFT Release v8.1.0.0.0 In this scenario, you are upgrading the application pack from Release 8.1.1.0.0 to Release 8.1.2.0.0	1. Clone your existing environment to the 8.1.2.0.0OFS Analytical Applications Technology Matrix 2. Run the Environment Check Utility tool and ensure that the hardware and software requirements are installed as per the TechStack. 3. Trigger the Release 8.1.2.0.0installation.

8.2 Prepare for Upgrade

Before you install/upgrade any of your application packs to Release v8.1.2.0.0, ensure that all the application packs in your current OFSAA instance are available in Release v8.1.2.0.0 or later version.

Contact My Oracle Support (MOS) for more information about the release version details.

> **Note:**
>
> The minimum supported version is 8.1.1.0.0. If upgrading from a release before 8.1.0.0.0, then first upgrade to 8.1.1.0.0 or later. After this step, you can upgrade to 8.1.2.0.0.

Before starting upgrade, follow these steps:

1. Back up the OFSAA schemas from the Oracle Database server.
2. Backup the following environment files: from the `OFS_PFT_PACK>/schema_creator/conf` directory:
   - OFS_PFT_PACK.xml
   - OFS_PFT_SCHEMA_IN.xml
   - OFSAAI_InstallConfig.xml
   - See the OFS Analytical Applications Technology Matrix, Release 8.1.2.0.0 for the hardware and software required to upgrade to OFS AAAI Release 8.1.2.0.0.
   - Enable unlimited cryptographic policy for Java. For more information, see the *Enabling Unlimited Cryptographic Policy* section in the OFS Analytical Applications Infrastructure Administration and Configuration Guide.

8.2.1 Update the Silent.props File

Update the `Silent.props` file present in the Release 8.1.2.0.0 pack. . In the installer kit path `OFS_PFT_PACK/appsLibConfig/conf/`, rename the `Silent.template` file to `Silent.props`. Edit the `Silent.props` file and modify only the following parameters.

Most parameters in the `Silent.props` file for 8.1.2.0.0 have default values. Before triggering the installation, ensure that you review them thoroughly and update as required.

1. Navigate to the `OFS_PFT_PACK/appsLibConfig/conf` directory.
2. Open the `Silent.props` file and edit only the following parameters:

Table 8-2 Parameters for the Silent.props File

Property Name	Description of Property	Permissible Values	Comments
UPLOAD_MODEL	Whether you want to perform the Model Upload.	0: No 1: Yes	Mandatory
MODEL_TYPE	The released data model or a customized data model.	0: Released 1: Customized	Mandatory only if you want to upload the data model.
DATAMODEL	The path for the customized data model.	Not Applicable	Mandatory only if you want to upload the customized data model.

Table 8-2 (Cont.) Parameters for the Silent.props File

Property Name	Description of Property	Permissible Values	Comments
DM_DIRECTORY	The file name for the customized data model.	Not Applicable	Mandatory only if you want to upload the customized data model.

> **Note:**
>
> Do not modify any other parameter in the `silent.props` file other than those mentioned in the previous table in case of an upgrade.

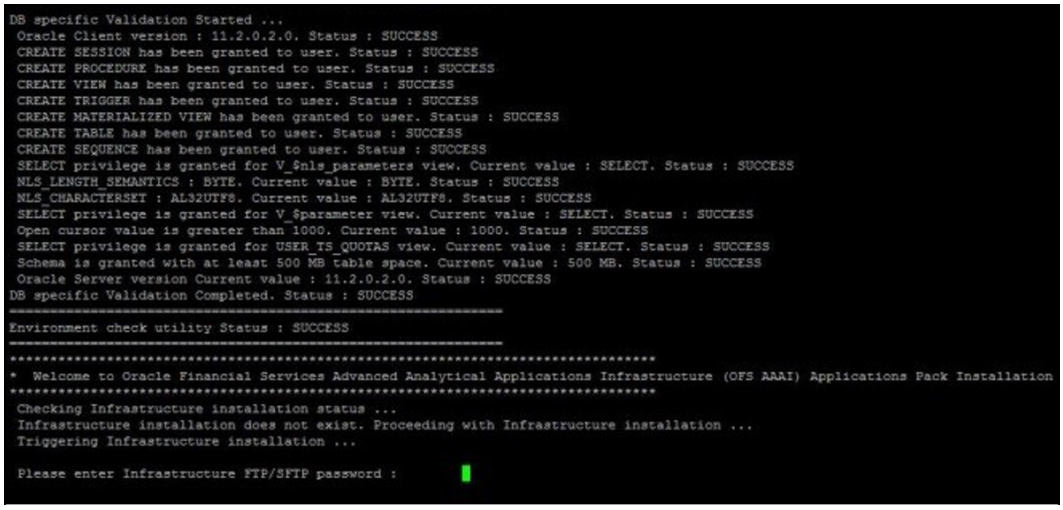
8.2.2 Trigger the Installation

To trigger the installation, follow these steps:

1. Navigate to `OFS_PFT_PACK/bin` folder.
2. Enter the following command in the console to execute the application pack installer.
   `./setup.sh SILENT`

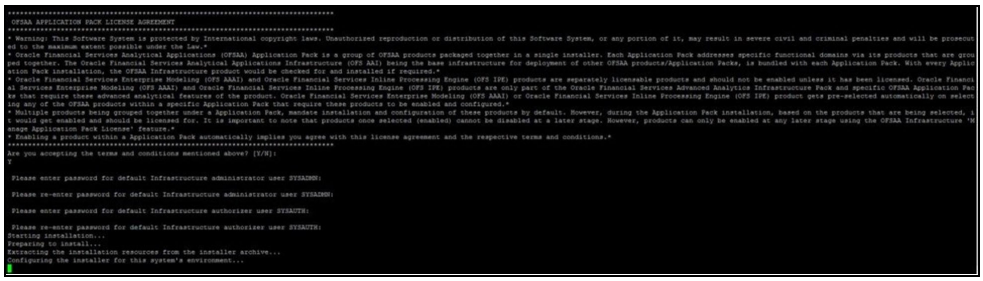
   The installer proceeds with the pre-installation checks.
3. Enter the OFSAA Processing Tier FTP/SFTP password value and proceed, when prompted.

Figure 8-1 OFSAA Processing Tier FTP/SFTP Password Prompt



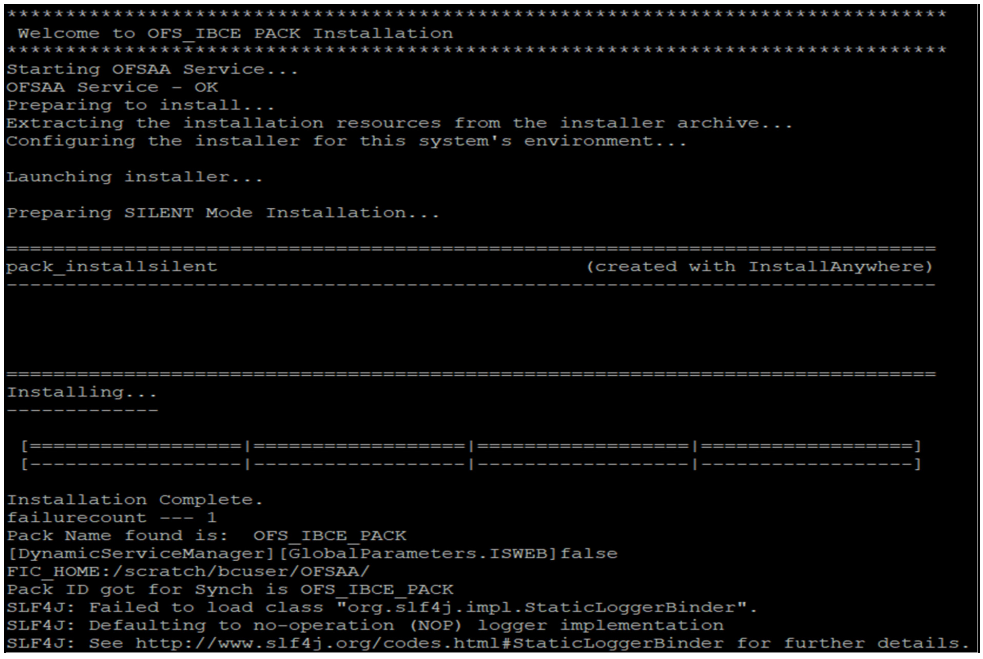
4. The OFSAA License is displayed. Enter **Y** and proceed.

Figure 8-2 Accept the OFSAA License Agreement



5. The OFS AAAI installation begins.

Figure 8-3 OFS PFT Installation



Data Model Upload may take several hours to complete.

6. After the installation is successful, the following message is displayed in the console:
Installation completed.
7. The OFSAA Infrastructure installation performs a post-install check automatically on the successful installation of the product.

8.3 Verify the Log File Information

See the following logs files for more information:

- `Pack_Install.log` file in the `OFS_PFT_PACK/logs/` directory.
- Infrastructure installation log files in the `OFS_PFT_PACK/OFS_AAI/logs/` directory.

- `OFS_EFPA_installation.log` file in the `OFS_PFT_PACK/OFS_EFPA/logs` directory.
- `OFS_IPA_installation.log` file in the `OFS_PFT_PACK/OFS_IPA/logs` directory.
- `OFS_RPA_installation.log` file in the `OFS_PFT_PACK/OFS_RPA/logs` directory.

8.4 Post Upgrade Steps

Perform the following steps after completing the upgrade:

- OFS EFPA Application Steps
- Remove ContextDocLoader from the web.xml File
- Verify FSI_DB_INFO Entries
- Upgrade Script for Release 8.1 to Release 8.1.2 Upgrade (Optional)

8.4.1 OFS EFPA Application Steps

After the installation is complete, follow these steps:

1. Seed `DIM_COUNTRY` with OTH and MSG with seeding script dim_country.sql.
2. Revert values in the `FCT_MGMT_REPORTING.N_COUNTRY_SKEY` from backup taken earlier.

8.4.2 Remove ContextDocLoader from the web.xml File

To remove the ContextDocLoader from the web.xml file, follow these steps:

1. Navigate to the `$FIC_WEB_HOME/webroot/WEB-INF` folder.
2. Open the `web.xml` file in a text editor.
3. Search for `ContextDocLoader` parameter and remove the following servlet entry:

```
<servlet>
<servlet-name>context</servlet-name>
<servlet-
class>com.ofs.fsapps.commonapps.core.summary.common.ContextDocLoade
r</servlet-class>
<load-on-startup>1</load-on-startup>
</servlet>
```

4. Create and deploy the EAR/WAR files.

8.4.3 Verify FSI_DB_INFO Entries

After completing the upgrade process, verify data for the correct schema name (`OWNER`) and Tablespace (`OUTPUT_TABLESPACE`) values in the `FSI_DB_INFO` table in the Atomic schema.

8.4.4 Upgrade Script for Release 8.1 to Release 8.1.2 Upgrade (Optional)

Run the following upgrade SQL script before upgrading the IPA, RPA, and EFPA applications if you are upgrading from Release 8.1.0.0.0 to Release 8.1.2.0.0. This step is optional.

```
CREATE TABLE BAK81_OFSA_OAM AS (SELECT * FROM
OFSA_OBJECT_APPLICATION_MAP)
/
DELETE FROM OFSA_OBJECT_APPLICATION_MAP
WHERE MD_FOLDER <> 'DEFAULT' and MD_CODE in
(
SELECT MD_CODE from
(
SELECT APP_ID, MD_CODE from OFSA_OBJECT_APPLICATION_MAP
WHERE APP_ID in ('OFS_IPA','OFS_RPA','OFS_EFPA')
group by APP_ID, MD_CODE having count(*) > 1
) T1
)
/
COMMIT
/
```

8.5 View OFSAA Product Licenses after Installation of Application Pack

In an integrated environment, where you have multiple applications installed on the same domain or infrastructure, OFSAAI allows you to see the other licensed applications through the UI.

For more information, see the *View OFSAA Product Licenses after Installation of Application Pack* in the OFS Analytical Applications Infrastructure User Guide Release 8.1.2.0.0.

9
Additional Configuration

You can use this checklist to have a glance at some additional configurations. The link provided in each step takes you to a section either within this document or to another referenced document.

Table 9-1 Additional Configuration

Sl. No.	Additional Configuration Activity
1	Add FTP/SFTP Configuration for File Transfer.
2	Configure the Infrastructure Server Memory.
3	Retrieve the Patch Information
4	Change IP or Hostname, Ports, Deployed Paths of the OFSAA Instance.
5	Configure the Infrastructure LDAP.
6	Configure and deploy the OFSAAI web services.
7	Enable the parallel execution of DML statements.
8	Configure the message details in the Forms Designer.
9	Clear the application cache.
10	Configure the password changes.
11	Configure the Java Virtual Machine.
12	Configure the internal service (Document Upload/ Download).

9.1 Add FTP/SFTP Configuration for File Transfer

In OFSAA, certain modules require the transfer of files from the web application server to the OFSAA server over SSH.

Follow these steps to ensure the OFSAA server recognizes the web application server during file transfers.

1. Log in to the web application server.
2. Type `sftp <user>@<OFSAA Server>`.
3. Specify **Yes** when prompted for permission.

   Are you sure you want to continue connecting (Yes/No)?

   This will add an entry into the "known_hosts" file.
4. A confirmation message is displayed:

   Permanently added <OFSAA Server> RSA) to the list of known hosts.

9.2 Configure Infrastructure Server Memory

The memory settings for Infrastructure Application Server, Tomcat, WebSphere, and WebLogic can be edited for customizing memory settings and garbage collector settings depending on the available hardware configuration as explained in the following section. These settings are the bare minimum and have to be incremented considering the deployment metrics into account. The increments are usually handled in multiples of 128 MB for heap and 64 MB for the stack.

You can configure the Infrastructure Application Memory settings as follows:

1. Locate the .profile file.
2. Edit X_ARGS field in this file for customizing memory settings and garbage collector settings depends on the hardware configuration.

   This has a default value X_ARGS="-Xms200m" X_ARGS=" "$X_ARGS" $DELIM -Xmx2048m"

> **Note:**
>
> Modify X_ARGS_APP variable in the .profile file to customize Java Memory Settings for Model Upload based on the Data Model size.

For Run and Rule executions, the following value is recommended:

```
X_ARGS_RNEXE="-Xms1g -Xmx1g -XX:+UseAdaptiveSizePolicy
-XX:MaxPermSize=512M -XX:+UseParallelOldGC
-XX:+DisableExplicitGC"
X_ARGS_RLEXE="-Xms1g -Xmx1g -XX:+UseAdaptiveSizePolicy
-XX:MaxPermSize=512M -XX:+UseParallelOldGC
-XX:+DisableExplicitGC"
```

9.3 Retrieve Patch Information

To identify the list of patches installed on your OFSAA setup, follow these steps:

1. Log in to the OFSAA application as a user with Object AdminAdvanced Role.
2. Navigate to **Object Administration** tab, expand **Utilities**, and click **Patch Information**.
3. The window displays the list of patches installed on the OFSAA setup across Applications/Platforms.

9.4 Change IP/ Hostname, Ports, Deployed Paths of the OFSAAInstance

For information on this section, see OFS Analytical Applications Infrastructure Administration User Guide.

9.5 Set Infrastructure LDAP Configuration

For more information on LDAP configuration, see OFSAAI Administration Guide.

9.6 Configure OFSAAI Web Services

Web Services in OFSAAI is meant for exposing a web service to "asynchronously" or "synchronously" execute requested tasks offered by OFSAAI. The following configuration steps are to be done only if you are using the Web Services feature of OFSAAI.

9.7 Enable Parallel Execution of DML statements

A configuration file, OracleDB.conf is introduced to accommodate any configurable parameter related to operations on the oracle database. If you do not want to set a parameter to a specific value, then the respective parameter entry can be removed/commented off form the OracleDB.conf file that resides in the path `$FIC_ DB_HOME/conf`.

As of now, the `OracleDB.conf` file has only one parameter namely CNF_DEGREE_OF_ PARALLELISM. This parameter indicates the degree of parallelism to be used for a DML operation if parallel DML is explicitly enabled in the session with the ENABLE PARALLEL DML clause of the ALTER SESSION statement. The default mode of a session is DISABLE PARALLEL DML. If CNF_DEGREE_OF_PARALLELISM is not set, then the default degree, as decided by Oracle will be used.

9.8 Configure Message Details in Forms Designer

You can configure the Message Details in Forms Designer under Data Entry Forms and Queries module by updating the details of the mail server in the NotificationConfig.cfg file that resides in the path `$FIC_APP_HOME/common/FICServer/conf`.

Ensure that the "authorized User details" for whom you must configure the Message details are included in Administration > Security Management > User Administrator > User Maintenance window.

Update the following parameters in the "NotificationConfig.cfg" file:

Table 9-2 NotificationConfig.cfg File Attributes

Parameter	Description
SMTP_SERVER_IP	Specify the hostname or IP address of the SMTP Server.
SMTP_DEBUG_MODE	To run SMTP service in Debug mode, set value to 'true', otherwise set value to 'false'.
SMTP_AUTHORIZATION	Set to 'true' if the SMTP server requires the client to be authenticated, otherwise set to 'false'.
SMTP_USERNAME	Username required for logging into the SMTP server, if authentication is not required use a dummy value.
SMTP_PASSWORD	Password required for logging into the SMTP server. If authentication is not required, use false value.

Table 9-2 (Cont.) NotificationConfig.cfg File Attributes

Parameter	Description
SMTP_MAILID	If the Messages must go from a Particular ID that ID must be added. The exchange server forces you to set a valid ID that is there in the exchange server. (Based on Security settings)

9.9 Clear the Application Cache

Ensure to clear the application cache before the deployment of Applications Pack Web Archive. This applies to all Web Servers (WebSphere, WebLogic, and Tomcat).

Before the deployment of the Infrastructure, Application Service Packs, or one-off patches, navigate to the following path depending on the WebServer configured and clear the cache:

- Tomcat
  `<Tomcat installation directory>/work/Catalina/localhost/<Application name>/org/apache/jsp`
- WebLogic
  `<Weblogic installation location>/domains/<Domain name>/servers/<Server name>/tmp/_WL_user/<Application name>/qaelce/jsp_servlet`
- WebSphere
  `<Websphere installation directory>/AppServer/profiles/<Profile name>/temp/<Node name>/server1/<Application name>/<.war file name>`

9.10 Configure Password Changes

This section explains about how to modify the OFSAA Infrastructure Config Schema and Atomic Schema passwords for non Wallet-based and Wallet-based setups.

9.11 Configure Java Virtual Machine

While running several database intensive tasks in parallel, fetching the database connection from the connection pool may face an error. To ensure no such error is encountered, add the line securerandom.source=file:/dev/./urandom in the java.security configuration file available in `$JAVA_HOME/jre/lib/security/ path`.

This must be configured on all the machines or virtual machines where the OFSAAI database components (ficdb layer) are installed.

9.12 Configure Internal Service (Document Upload/ Download)

This step can be ignored if it has already been configured as part of any previous IR/ML installation.

The Document Upload /Download feature has changed and can now be configured to use Internal service for document upload/download instead of the earlier ExeWebService.

To facilitate internal service for document upload/ download, perform the following configurations:

1. Create the directories download, upload, TempDocument, and Temp in the local path of the Web application server and provide Read/Write permission.
   - To find the exact location, execute the following query in the CONFIG schema:
     `select localpath from web_server_info`
   - To create directories with Read/Write permission, execute the command:
     `mkdir -m 777 download upload TempDocument Temp`
2. Create DocStorage directory in the FTPSHARE location of APP tier and provide Read/ Write permission.
   - To find the exact location, execute the query in the CONFIG schema:
     `select ftpdrive from app_server_info`
   - To create a directory with Read/Write permission, execute the command:
     `mkdir -m 777 DocStorage`

By default, the parameter DOCUMENT_SERVICE_TYPE_EXTERNAL value is set to FALSE in the Configuration table in CONFIG schema and hence the application “ExeWebService” will not be used. It is recommended that the value be set to FALSE and use the Internal service for document upload/ downloads. If you intend to continue using the External ExeWebService, set the value to TRUE.

Navigate to `$FIC_HOME/EXEWebService/<WEBSERVER_TYPE>` directory of WEB tier and type `./ant.sh`. This triggers the creation of the EAR/WAR file `EXEWebService.ear/.war`. The EAR/WAR file `EXEWebService.ear/.war` is created in the `$FIC_HOME/EXEWebService/<WEBSERVER_TYPE>` directory of WEB tier. Redeploy the generated EAR/WAR file onto your configured web application server.

10

Installing OFS Performance Analytics pack Pack on an Existing OFSAA Instance

You have already installed an application pack from release 8.1.x.0.0 and now you want to install another application pack from Release 8.1.2.0.0. For example, OFS Profitability Management pack (OFS PAM Pack) is already installed and now you want to install OFS Performance Analytics Pack (OFS PFT Pack).

For installation instructions the OFS Performance Analytics Pack (OFS PFT Pack), see the Installation section.

11

RPD, Catalog Deployment, and D3 Configuration for OAS and OBIEE

This chapter provides the configuration procedures for RPD, Catalog Deployment, and D3 for OAS and OBIEE.

Topics:

11.1 Data Visibility

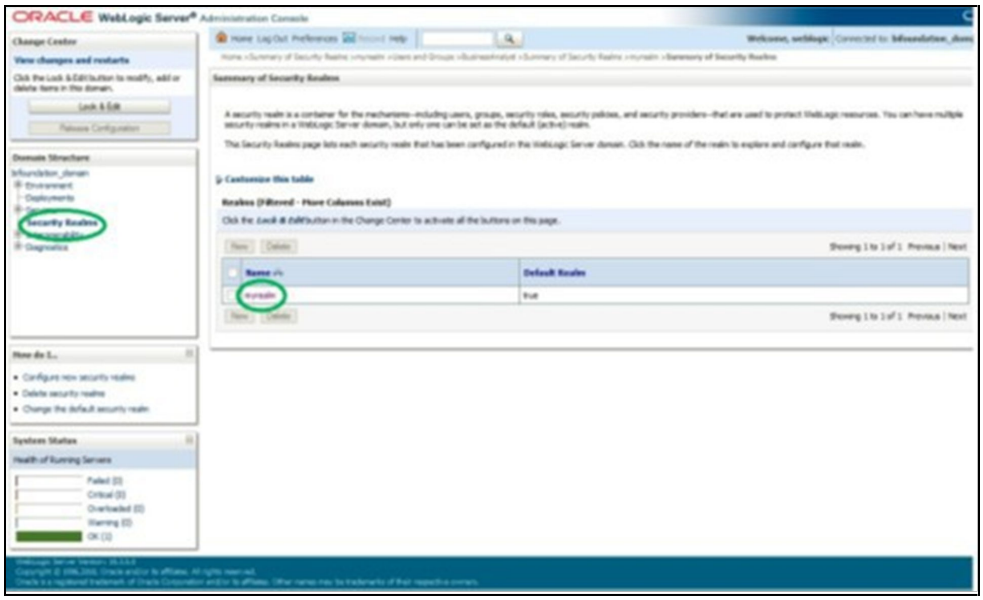
This has been implemented with the set of tables and OBIEE roles. Roles Created in OBIEE is to restrict data based on Manager Hierarchy.

11.1.1 Creating OBIEE Roles

To create the OBIEE Roles, follow these steps:

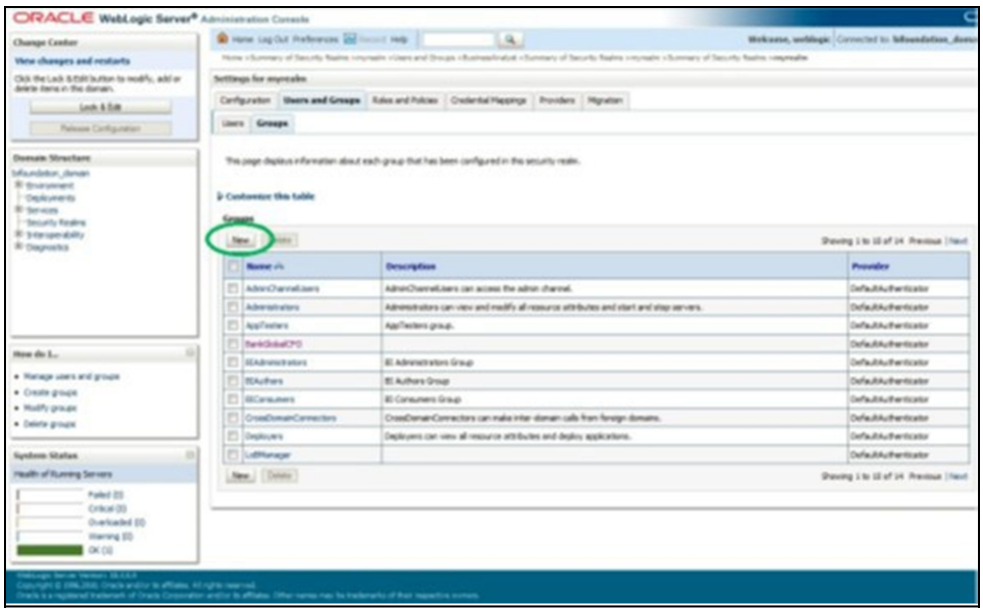
1. Open the Admin Console of OBIEE.
2. Click on **Security Realms** under Domain Structure.
3. Click on **myrealm** under Realms.

Figure 11-1 WebLogic Server Administration Console – Security Realms



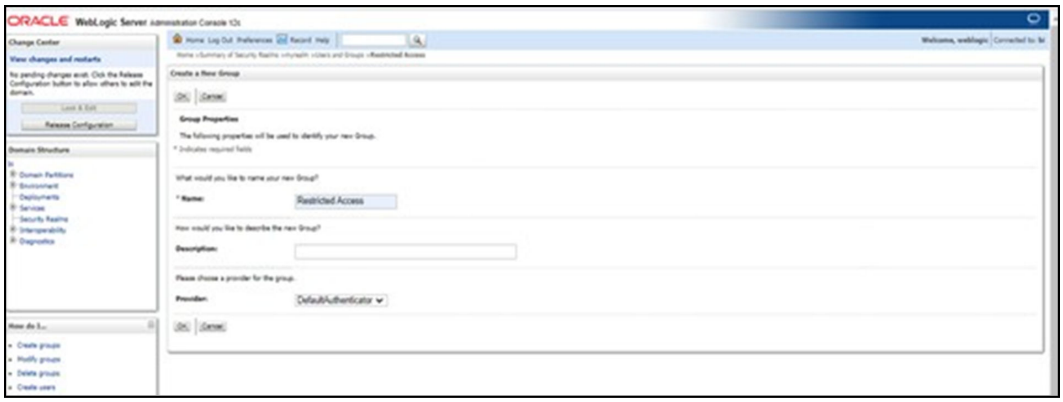
4. Click on **Groups** tab of **User and Groups**.

Figure 11-2 Groups Tab



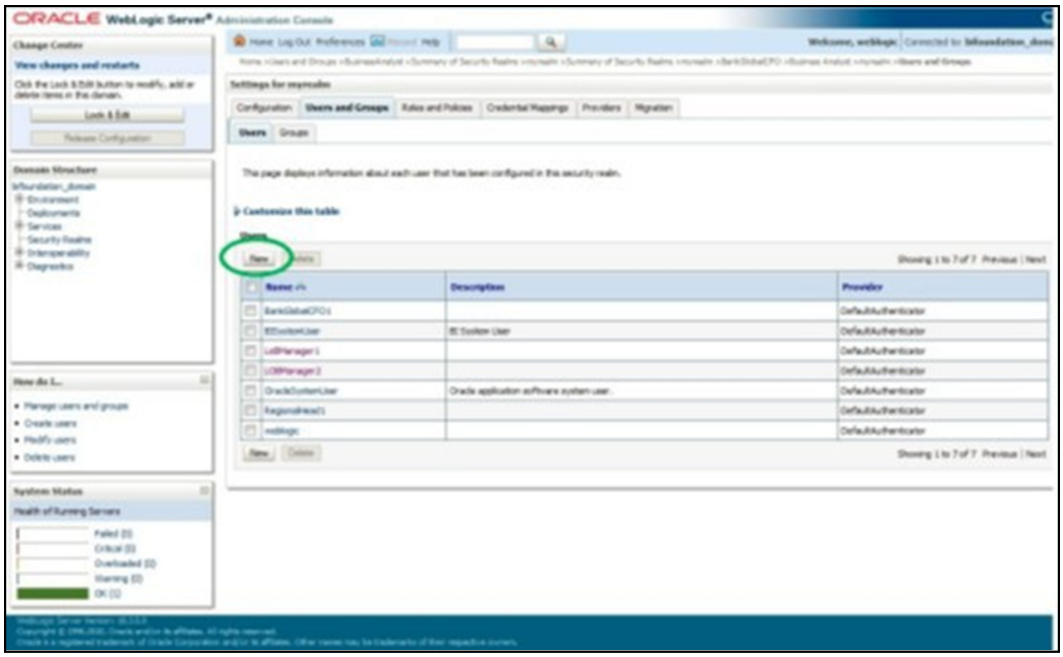
5. Click on **New** and create new user group as ‘Restricted Access’.

Figure 11-3 New User Group Creation



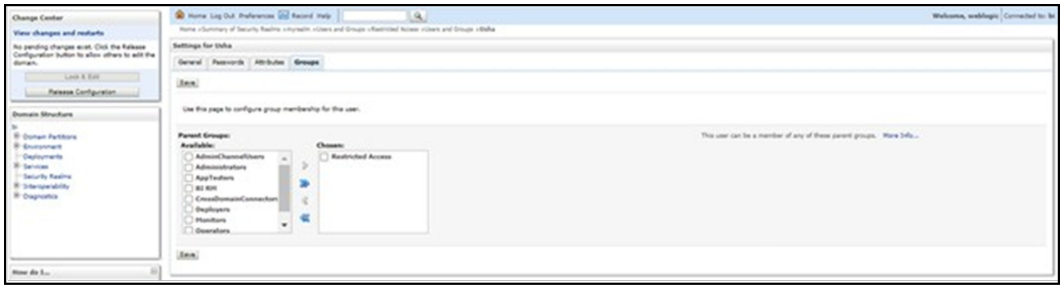
6. Create a new user under **Users** tab of **Users and Groups**.

Figure 11-4 New User Creation



7. Map the newly created users to ‘Restricted Access’ group, which need Data Visibility.

Figure 11-5 Mapping New Users to Restricted Access Group

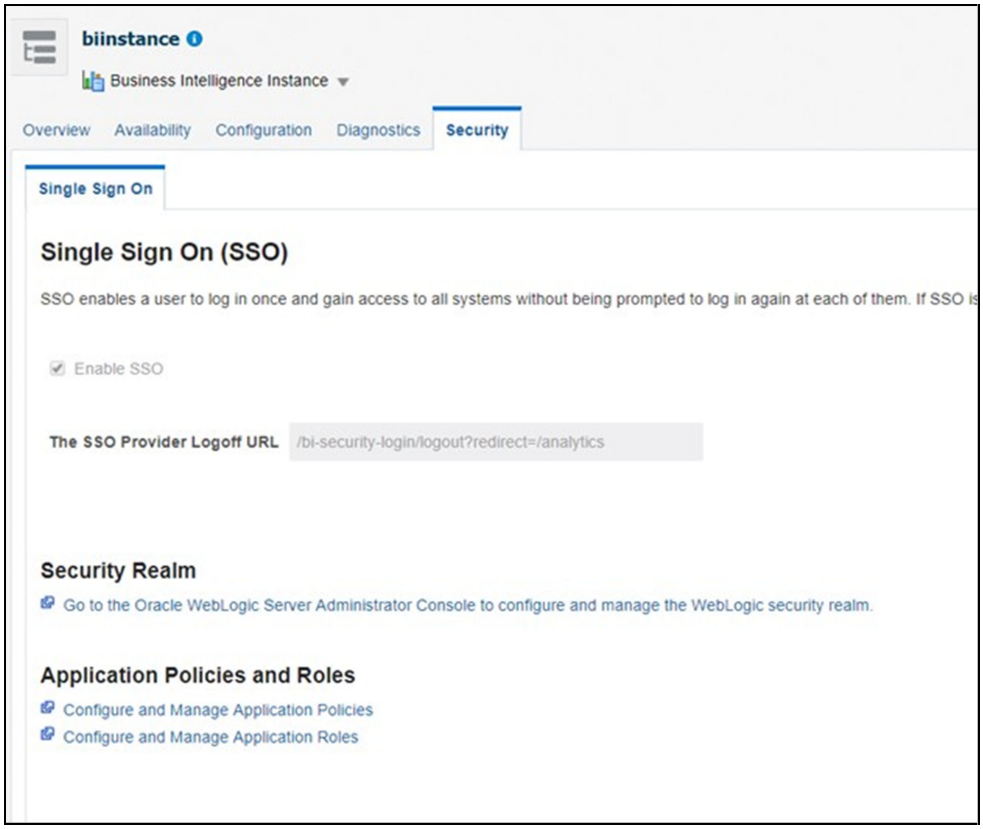


8. Close the Admin Console of OBIEE.
9. Open Enterprise Manager of OBIEE.
10. Click on **biinstance** under Business Intelligence.

Figure 11-6 BI Instance

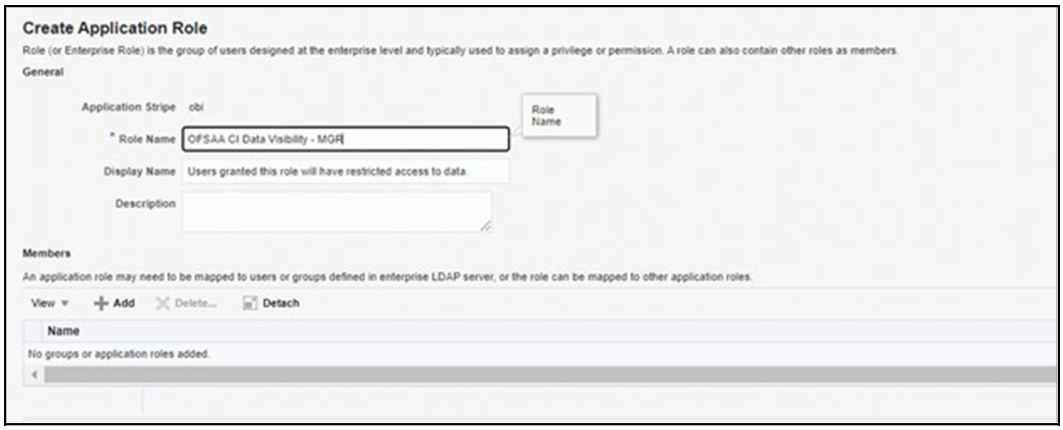
11. Click on **Security** under biinstance.

Figure 11-7 Security Tab



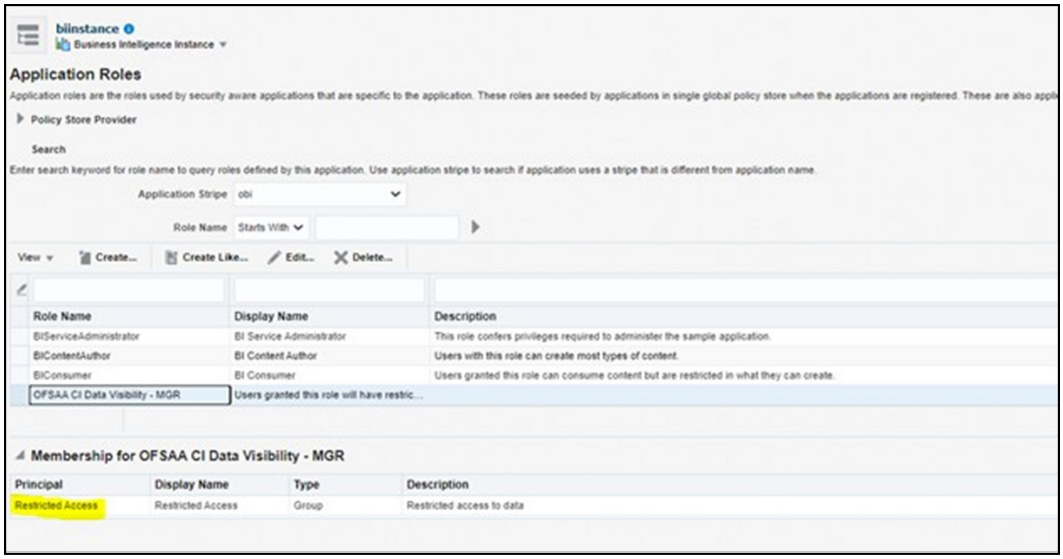
12. Click on **Configure and Manage Application Roles** to create Application Roles.
13. Map the newly created user group **Restricted Access** to the **BI Consumer Role**.
14. Click on **Create** and name as **OFSAA CI Data Visibility - MGR** role . Ensure to use the same name as it is referenced in RPD failed to do this should have access to all reports data.

Figure 11-8 Create Application Role



15. Map the user group, which need data visibility to the **OFSAA CI Data Visibility – MGR**.

Figure 11-9 OFSAA CI Data Visibility- MGR



11.1.2 Data Population as per Visibility Changes

- **FSI_M_USER**: This table stores all the users that have access to OBIEE. The User ID in this table must match the user's login ID of OBIEE.
- **FSI_M_USER_MANAER_MAP**: This table needs only those users details who need Restricted Access. The V_USERNAME has to be inserted with the login username created in OBIEE. `V_MANGER_CODE` has to be inserted with the manager code of the corresponding user from `DIM_MANAGEMENT` table. `V_USER_TYPE` is updated as 'R' which denotes Restricted Access. Fail to update this table may end up with report errors.

> **Note:**
>
> Users insertion in `FSI_M_USER` and `FSI_M_USER_MANAGER_MAP` has to be done directly into the table. For example, in presence of Single Signon System, these tables need to be loaded with data from Single Signon System directly.

11.2 Deploying the Report Analytics

The deployment of IPA, RPA, and EFPA Report Analytics involves the following tasks:

Topics:

- Port OBIEE Artifacts to Oracle Analytics Server
- Deploying OFS RPA RPD File
- Deploying OFS RPA Catalog Files

11.2.1 Port OBIEE Artifacts to Oracle Analytics Server

You can deploy the OBIEE artifacts in two ways as follows:

- Directly deploy the artifacts distributed with OFSAA on the Oracle Analytics Server (OAS).
- Perform an in-place upgrade from OBIEE to OAS and deploy the artifacts. For more information, see Upgrade from Oracle Business Intelligence 12c documentation.

> **Note:**
>
> See the MOS Doc ID 2648055.1 to confirm if your application or pack is certified for Oracle Analytics Server.

11.2.2 Deploying OFS IPA, RPA, and EFPA RPD Files

To deploy the RPD file, follow these steps:

1. Copy the RPD file from the following location for the IPA, RPA, and EFPA applications.

Table 11-1 RPD Files

Application	File Name	Location
IPA and RPA	OFSAA_Analytics.rpd	$FIC_HOME/OFS_RPA_DASHBOARDS/12.2.1.4.0/datamode l
EFPA	OFS_EFPA_Analytics.rpd	$FIC_HOME/OFS_EFPA_DASHBOARDS/12.2.1.4.0/datamod el

> **Note:**
>
> It is recommended to merge the OFSAA_Analytics.rpd and OFS_EFPA_Analytics.rpd files by creating fresh dummy.rpd files. You can then ignore the merge issues.
> Keep the merged rpd as the base in order to avoid the merge errors.

2. Paste the copied RPD file in the Windows machine where the OBIEE Windows Administration client or OAS Analytics client is installed and deploy. For more information on deployment, refer to your OBIEE 12c or OAS documentation.
3. Open the RPD file online with the default password.

> **Note:**
>
> The RPD files are configured with a default password, which you require to open for the first time. See the MOS Doc ID: 2691681.1 for the password.

4. In the OBIEE Windows Administration client, from the File menu, select **Save**.
5. Click **Yes** in the dialog box, Do you want to check global consistency?
6. Click **OK** to acknowledge the message, Consistency check didn't find any errors, warning, or best practices violations.
   You can ignore the warnings on the consistency check.

11.2.3 Deploying IPA, RPA, and EFPA Catalog Files

To deploy the Catalog files, follow these steps:

1. Copy the Catalog files from the following locations for the OFS IPA and OFS RPA application.

Table 11-2 Catalog Files

Application	File Name	Location
IPA	OFSAA_Analytics.catalog	$FIC_HOME/OFS_IPA_DASHBOARDS/12.2.1.4.0/content/catalog
IPA	OFSAA_Analytics_IPA.catalog	$FIC_HOME/OFS_IPA_DASHBOARDS/12.2.1.4.0/content/catalog
RPA	OFSAA_Analytics_RPA.catalog	$FIC_HOME/OFS_RPA_DASHBOARDS/12.2.1.4.0/content/catalog

Table 11-2 (Cont.) Catalog Files

Application	File Name	Location
EFPA	• OFS_EFPA_Management Reporting.catalog • OFS_EFPA_Financial Reporting.catalog	$FIC_HOME/ OFS_EFPA_DASHBOARDS/ 12.2.1.4.0/conte nt/catalog

2. Paste the copied catalog files to a local folder.
3. Open the analytics OBIEE or OAS URL-(http://<ipaddress>:<port>/analytics) and login with your server credentials.
4. Click the **Catalog** link available on the top right corner.
5. Click **Shared Folders** and then click **Un-Archive**.
6. Browse the path where catalog files are copied in the local folder. Select a file and click **Open**. Click **OK**. Repeat this for the remaining catalog files.
7. Click any of the **Dashboards** and verify if all the reports are available.

11.3 Post-Installation Steps

After successfully deploying the RPD and Catalog files, perform the following steps:

1. Apply the patch **Bundle Patch** for OBIEE 12.2.1.4.0. See the **Readme** packaged with the patch for further instructions on how to install the patch. See the Doc ID 2070465.1 for more information about the bundle patch.
2. Do the following changes in the instanceconfig.xml file:
   a. Backup and edit the instanceconfig.xml file located at:
   `$ORACLE_HOME/user_projects/domains/bi/config/fmwconfig/biconfig/ OBIP S`

Table 11-3 Tags and Changes for instanceconfig.xml File

Tag to be changed or added	Changes
Change the following tag: <Views>	<Charts> <DefaultWebImageType>html5</DefaultWebImageType> <MaxVisibleColumns>10000</MaxVisibleColumns> <MaxVisiblePages>600000</MaxVisiblePages> <MaxVisibleRows>900000</MaxVisibleRows> <MaxVisibleSections>600000</MaxVisibleSections> <JavaHostReadLimitInKB>8192</JavaHostReadLimitInKB> </Charts> <Cube> <CubeMaxRecords>9999999</CubeMaxRecords> <CubeMaxPopulatedCells>999999999</CubeMaxPopulatedCells> </Cube>
Change the followingtag: <Security>	<Security> <CheckUrlFreshness>false</CheckUrlFreshness> <EnableSavingContentWithHTML>true</EnableSavingContentWithHTML> </Security>
Add the following tag: <ServerIns tance>	<Prompts> <MaxDropDownValues>256</MaxDropDownValues> <ResultRowLimit>65000</ResultRowLimit> <AutoApplyDashboardPromptValues>true</AutoApplyDashboardPromptVal ues> <AutoSearchPromptDialogBox>true</AutoSearchPromptDialogBox> <AutoCompletePromptDropDowns> <SupportAutoComplete>true</SupportAutoComplete> <CaseInsensitive>true</CaseInsensitive> <MatchingLevel>MatchAll</MatchingLevel> <ResultsLimit>50</ResultsLimit> </AutoCompletePromptDropDowns> <ShowNullValueWhenColumnIsNullable>never</ShowNullValueWhenColumn IsNullable> </Prompts>

b. Save and close the file.

c. Restart the presentation server for the changes to take effect.

3. Do the following changes in the `NQSConfig.INI` file.
   Evaluate function is used in filters of many reports. To support the evaluation function in reports, the value of `EVALUATE_SUPPORT_LEVEL` must be set as `2` instead of `0` in the `NQSConfig.INI` file of the OBIEE server present in the `$ORACLE_HOME/user_projects/domains/bi/config/fmwconfig/biconfig/OBIS` directory.

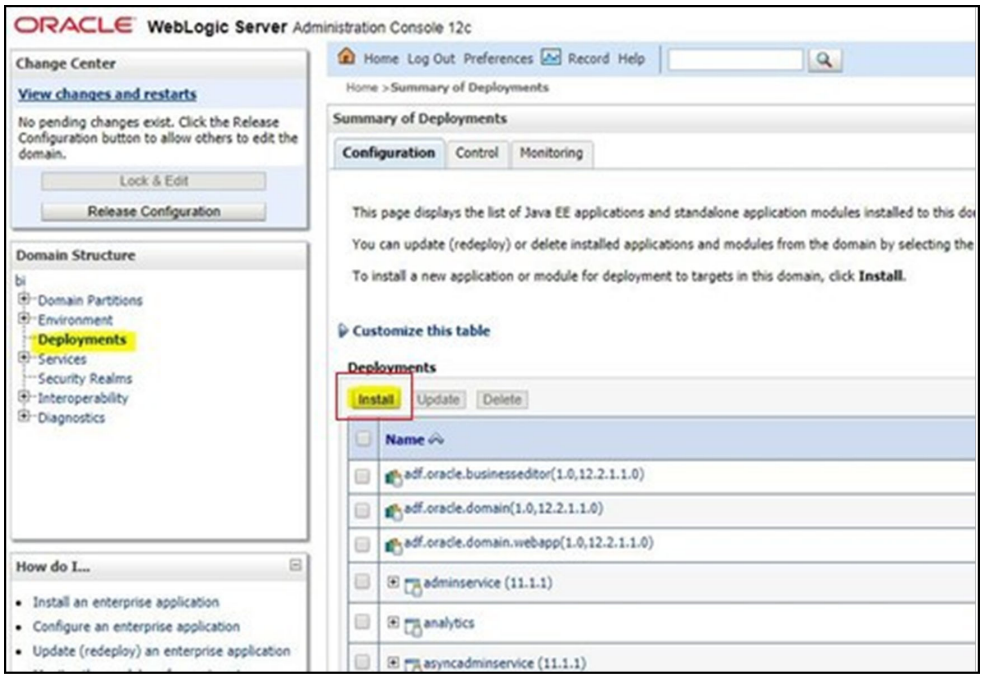
11.4 Deploying D3 on OBIEE Server

This section provides detailed steps to install and configure D3, a visualization framework, which is used in a few reports of the OFS RPA application.

To deploy the D3 in the OBIEE server, follow these steps:

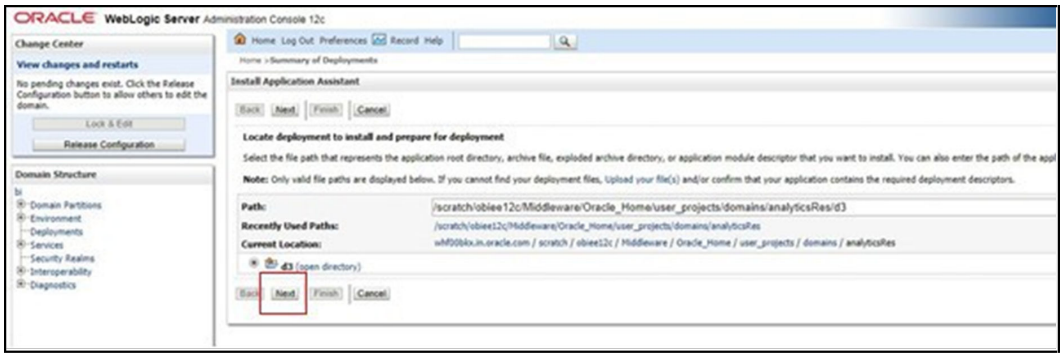
1. Copy the analyticsRes folder from `$FIC_HOME/OFS_RPA_DASHBOARDS` directory to OBIEE Server at the following location:
   `$ORACLE_HOME/user_projects/domains/`
2. Log in to the WebLogic server, navigate to **Deployments** in your Domain Structure, and then click **Install**.

Figure 11-10 WebLogic Administration Console



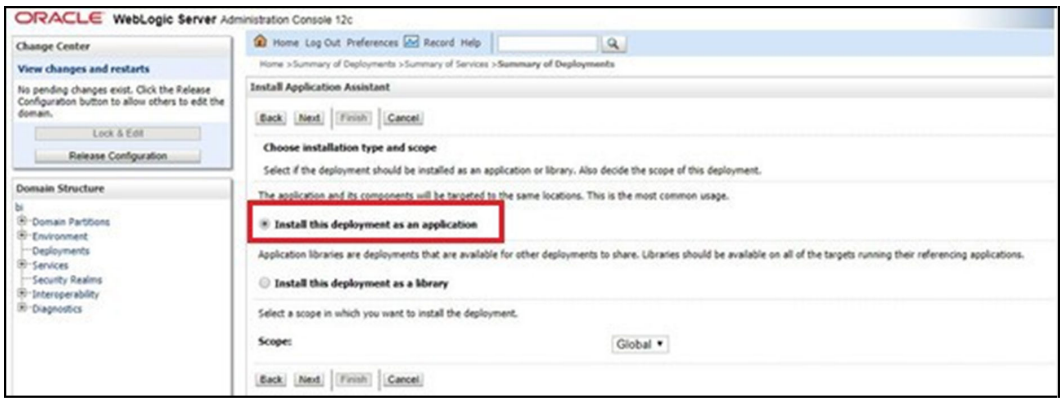
3. Paste the full path of the D3 directory, select D3 (open directory), and click **Next**.

Figure 11-11 Locale Deployment



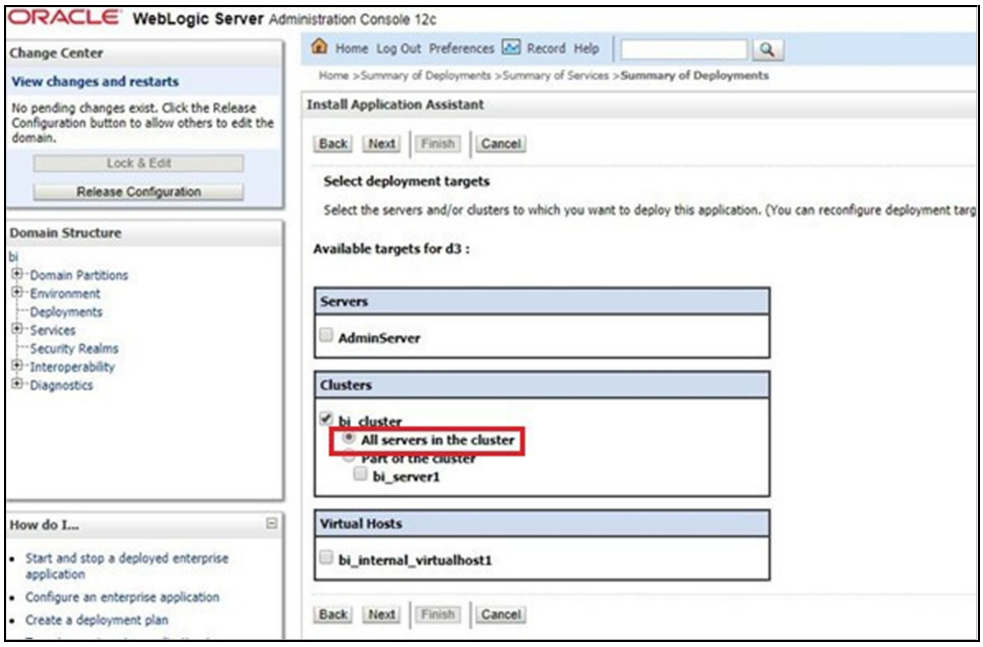
4. Select **Install this deployment as an application** and click **Next**.

Figure 11-12 Installation Type Selection



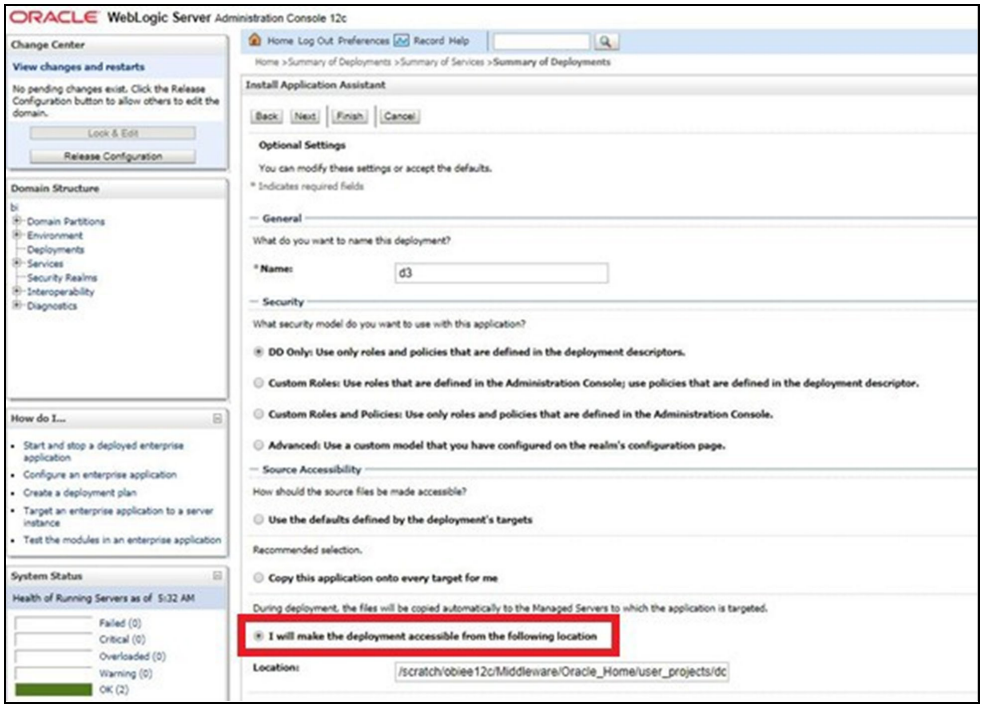
5. Select **bi_cluster**, and then select **All servers in the cluster**.

Figure 11-13 Deployment Targets



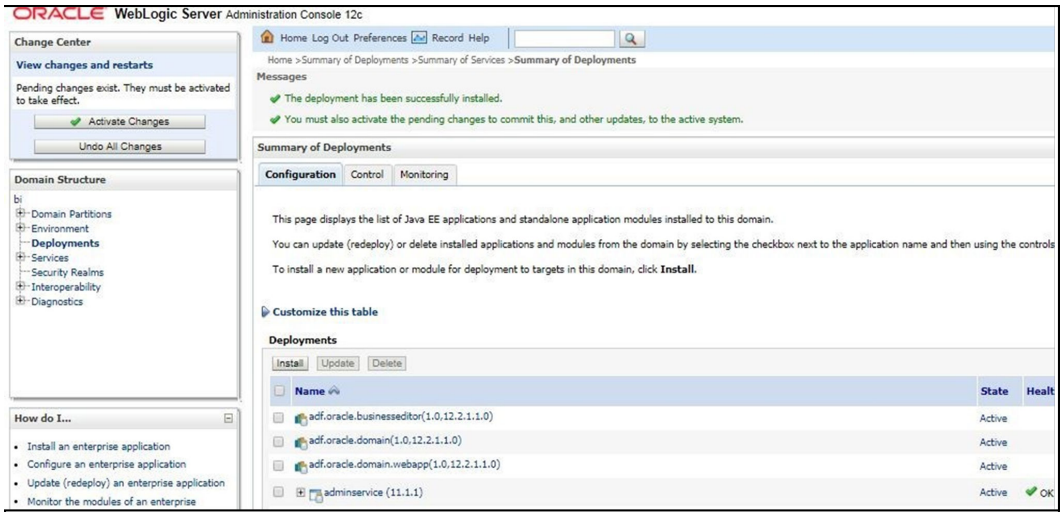
6. Select **I will make the deployment accessible from the following location** (as highlighted in the following screenshot) and click **Finish**.

Figure 11-14 Optional Settings



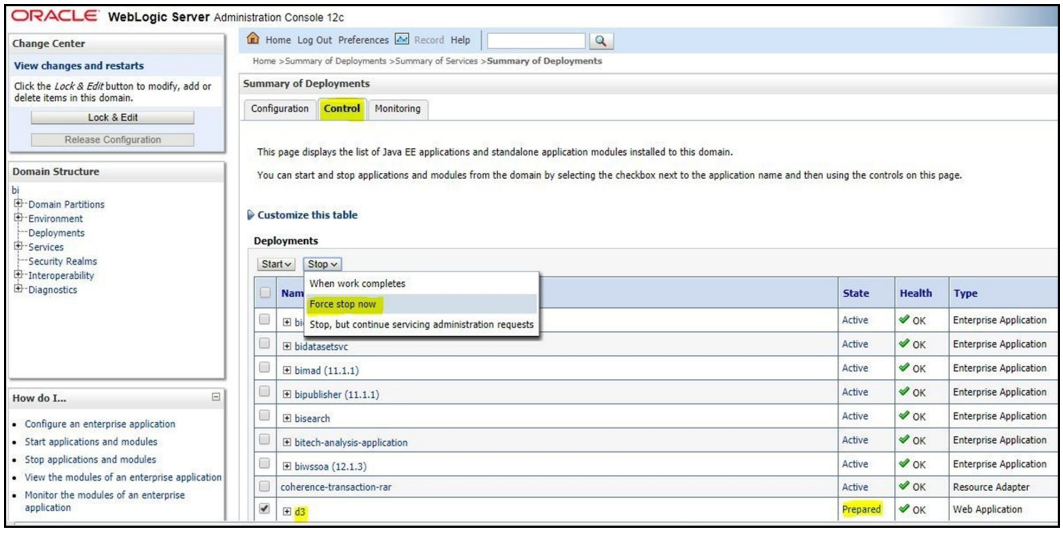
7. Click **Activate Changes**.

Figure 11-15 Summary of Deployments



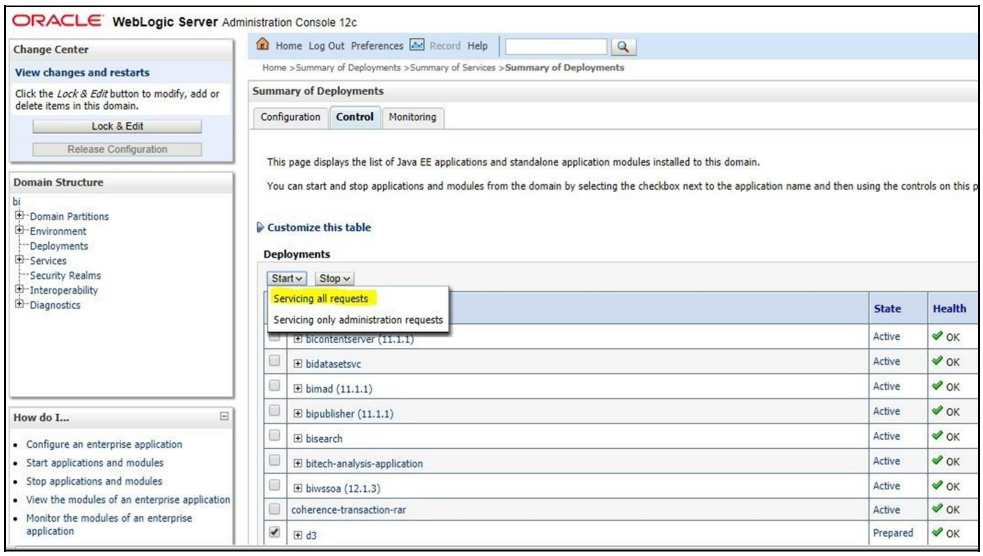
8. After activating the changes, the application is in a **Prepared** state. Select the **Control** tab. All the installed applications are displayed. Select the application from the **Deployments** table, click **Stop**, and then select **Force stop now** from the drop-down menu.

Figure 11-16 Customize the Deployed Applications



9. Start the application by selecting the check box next to it and then select **Servicing all requests** from the **Start** drop-down menu in the **Deployments** table in the WebLogic Server Administration Console.

Figure 11-17 Customize the Deployed Applications



10. The application changes to the **Active** state and is ready to use.

12

Migrate Excel Upload Functionality

This section provides detailed instructions to migrate excel upload functionality.

Topics:

13

Frequently Asked Questions (FAQs) and Error Dictionary

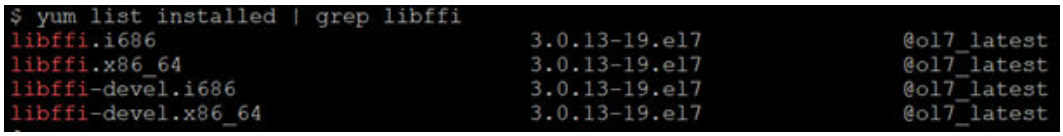
This section consists of resolution to the frequently asked questions and error codes noticed during OFSAAI installation.

A
Packaging the Python Libraries

To package the Python libraries, follow these steps:

1. The following sample installation steps are performed on Oracle Enterprise Linux 7.x.
2. Ensure that Oracle Enterprise Linux 7.x is installed.
3. Verify these libraries using the yum list as shown in the following command:
   `yum list installed | grep libffi`

Figure A-1 Python Libraries Verification



> **Note:**
>
> If any lib is not installed, then install it using the above command one-by-one.

4. Install the following libraries using the following commands:
   - `yum install libffi.i686`
   - `yum install libffi.x86_64`
   - `yum install libffi-devel.i686`
   - `yum install libffi-devel.x86_64`
5. Ensure that the version of Python is 3.8.3 using the following commands:

```
export http_proxy=www-proxy-idc.in.oracle.com:80

exporthttps_proxy=www-proxy-idc.in.oracle.com:80

wget https://www.python.org/ftp/python/3.9.4/Python-3.9.4.tgz tar xzf
Python-3.9.4.tgz

cd Python-3.9.4

./configure--prefix=$HOME/Python-3.9.4 --enable-optimizations -- without-
ensurepip

make install
```

6. Add `$HOME/Python-3.9.4/bin` in PATH in the `.profile` file.
7. After Python installation, execute the following command to install the setup tools:
   a. Verify if pip3 is installed using the following command:
      `Run pip3`
   b. If pip3 is not installed, then install it using the following command:

```
curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py python3
get-pip.py
```

c. Re-verify by executing: pip3 command (step a).

8. Install the Python libraries using the following commands:

```
pip3 install numpy==1.19.4 pip3 install pandas==1.2.4
pip3 install scikit-learn==0.24.2 pip3 install scipy==1.6.3
pip3 install seaborn==0.10.1 pip3 install statsmodels==0.12.2 pip3
install matplotlib==3.2.2
pip3 install imbalanced-learn==0.7.0 pip3 install cx_oracle==8.1.0
pip3 install sqlalchemy==1.3.18 pip3 install pmdarima==1.8.2
```

9. Python set up tools 57.0.0 wheel 0.36.2

```
python3 -m pip3 install --user --upgrade setuptools==57.0.0
wheel==0.36.2
```

10. If you face an SSL Error:

- Offline Installation of setuptools
  Download setuptools wheel from the following link:

  wget https://files.pythonhosted.org/
  packages/44/a6/7fb6e8b3f4a6051e72e4e2218889351f0ee484b
  9ee17e995f5ccff780300/setuptools-50.3.0-py3-none-any.whl

  ```
  pip3 install setuptools-50.1.0-py3-none-any.whl
  ```

- Offline Installation of wheel
  Download wheel utility as

  wget https://files.pythonhosted.org/
  packages/a7/00/3df031b3ecd5444d572141321537080b40c1c25
  e1caa3d86cdd12e5e919c/wheel-0.35.1-py2.py3-none-any.whl

  ```
  pip3 install wheel-0.35.1-py2.py3-none-any.whl
  ```