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FINANCIAL SERVICES

Oracle Financial Services Balance Sheet Planning Application Pack

Release: 8.0.8.0.0

Installation and Configuration Guide

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Contents

PREFACE

This Preface provides supporting information for the Oracle Financial Services Balance Sheet Planning (OFS BSP) and includes the following topics:

- Summary
- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Summary

You can find the latest copy of this document in OHC library which includes all the recent additions/revisions (if any) done till date.

Before you begin the installation, ensure that you have an access to the Oracle Support Portal with the required login credentials to quickly notify us of any issues at any stage. You can obtain the login credentials by contacting Oracle Support.

Audience

The Oracle Financial Services Balance Sheet Planning (OFS BSP) is intended for Administrators, Business User, Strategists, and Data Analyst, who are responsible for installing and maintaining the application pack components.

The document assumes you have experience in installing Enterprise components. Basic knowledge about the OFS BSP pack components, OFSAA Architecture, UNIX commands, Database concepts and Web Server/ Web Application Server is recommended.

Following are the expected preparations from the administrator before starting the actual installation:

- Awareness of the OFSAA Tier Architecture. For more information, see the Application Tiers section.
- Decision on the appropriate OFSAA Deployment Option. For more information, see the Recommended Deployment Options section.

Related Documents

This section identifies additional documents related to OFSAA Infrastructure. You can access Oracle documentation online from Oracle Help Center (OHC).

- Oracle Financial Services Balance Sheet Planning Application Pack User Guide

Conventions

The following text conventions are 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, folder paths, or placeholder variables for which you supply particular values.
`monospace`	monospace indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.
`Filenames`	filenames indicate the file names within a pragraph.
Hyperlink	Hyperlinks indicate the cross-references, external document links, and external website links.

Abbreviations

Abbreviation	Meaning
AIX	Advanced Interactive eXecutive
BDP	Big Data Processing
BSP	Balance Sheet Planning
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

Abbreviation	Meaning
GUI	Graphical User Interface
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
OFSAAI	Oracle Financial Services Analytical Application Infrastructure
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
SFTP	Secure File Transfer Protocol
SID	System Identifier
SSL	Secure Sockets Layer
TDE	Transparent Data Encryption

Abbreviation	Meaning
TNS	Transparent Network Substrate
URL	Uniform Resource Locator
VM	Virtual Machine
WAR	Web Archive
XML	Extensible Markup Language

CHAPTER 1 – ABOUT OFSAA AND OFSAA APPLICATION PACKS

This chapter includes the following topics:

About Oracle Financial Services Analytical Applications (OFSAA)

In today's turbulent markets, financial institutions require a better understanding of their risk-return, while strengthening competitive advantage and enhancing long-term customer value. Oracle Financial Services Analytical Applications (OFSAA) enable financial institutions to measure and meet risk adjusted performance objectives, cultivate a risk management culture through transparency, lower the costs of compliance and regulation, and improve insight into customer behavior.

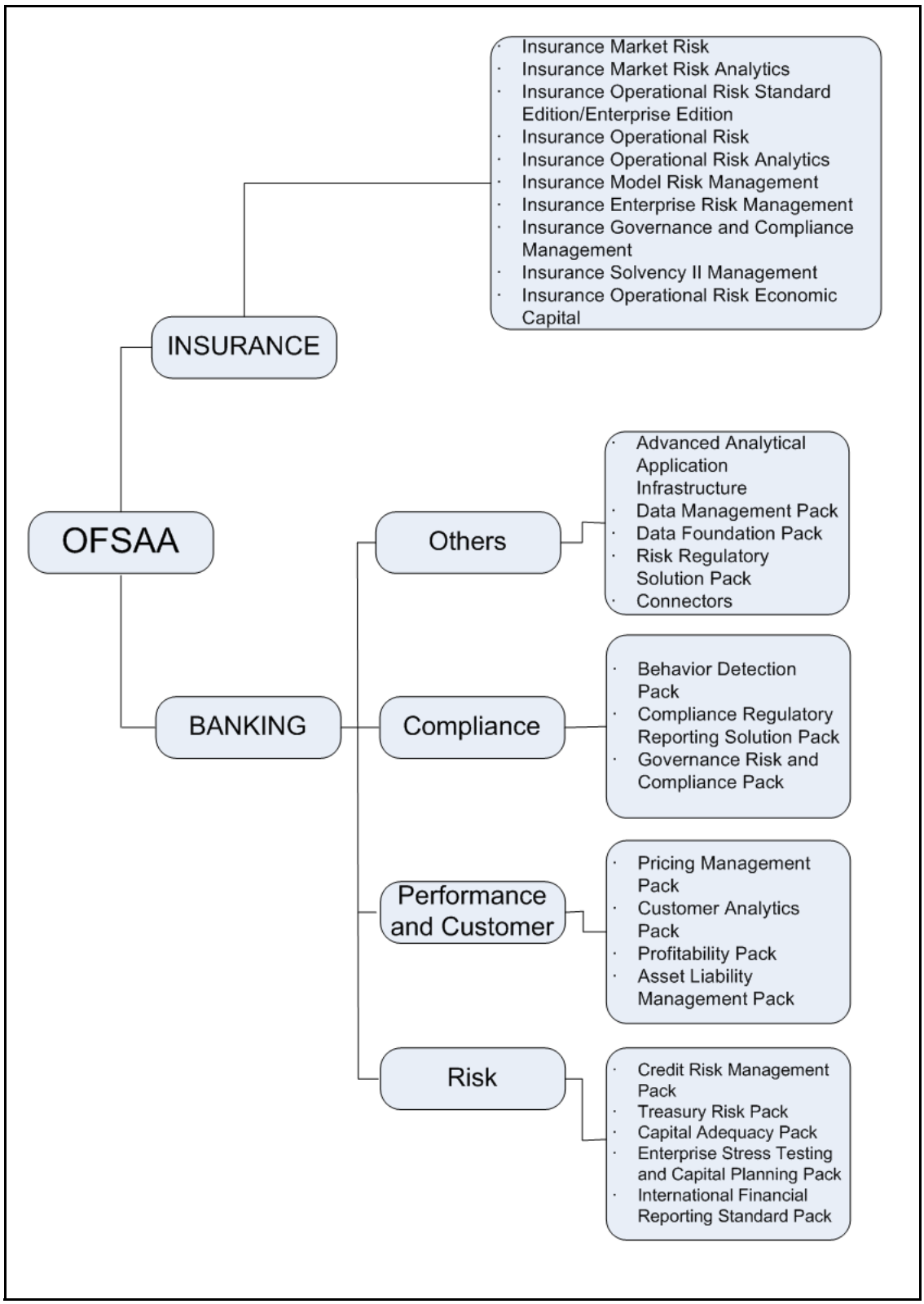
OFSAA uses industry-leading analytical methods, shared data model and applications architecture to enable integrated risk management, performance management, customer insight, and compliance management. OFSAA actively incorporates risk into decision making, enables to achieve a consistent view of performance, promote a transparent risk management culture, and provide pervasive intelligence.

Oracle Financial Services Analytical Applications delivers a comprehensive, integrated suite of financial services analytical applications for both banking and insurance domain.

About Oracle Financial Services Analytical Applications (OFSAA) Pack

OFSAA applications are packaged, and released as Application Packs starting from 8.0 release. An Application Pack is a group of OFSAA products packaged together in a single installer and addresses specific functional area via its products that are grouped together. Packaging applications in a group ensures simplified installation, maintenance, development and integration in an integrated deployment.

The following figure depicts the various application packs that are available across the OFSAA Banking and Insurance domains:



About Oracle Financial Services Balance Sheet Planning

OFS BSP 8.0.8.0.0 Pack includes the following applications:

- **Oracle Financial Services Analytical Applications Infrastructure**: Oracle Financial Services Analytical Applications Infrastructure (OFS AAI) powers the Oracle Financial Services Analytical Applications family of products to perform the processing, categorizing, selection and manipulation of data and information needed 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 Balance Sheet Planning**: The Oracle Financial Services Balance Sheet Planning application is a packaged web-based application built on top of Oracle Financial Services Advanced Analytical Applications Infrastructure (OFS AAI). It is designed to enable financial institutions to budget or forecast a full balance sheet and associated interest income and interest expense. The provision of balance sheet and net interest margin planning capability, when combined with OFS AAI functionality for fee and expense planning and process management, results in a complete and comprehensive planning solution for financial institutions. The high level features of Oracle Financial Services Balance Sheet Planning include:
  - Calculation of future projected cash flows for balance sheet products, including output of comprehensive balance, interest income/expense and interest rate data elements
  - Output of cash flow data for the current book of business separate from future new business volume cash flows, with aggregation to total balance sheet account level
  - Provision of broad balance sheet product support
  - Creation of budgets or forecasts in denominated and/or functional currencies
  - Provision of data entry/driver calculation tools to assist users with driver data generation
  - Employment of market interest rate based pricing, where new add volumes and repricing balances are priced at spreads to market interest rate indices
  - Provision of funds transfer pricing capabilities, integrating with and leveraging the existing Oracle Financial Services Funds Transfer Pricing engine. This functionality includes a full set of cash flow and non-cash flow based Transfer Pricing methodologies, as well as the ability to generate transfer pricing adjustments such as liquidity premiums, pricing incentives and other adjustments
  - Provision of two-way integration with the Oracle Financial Services Asset Liability Management application

About Oracle Financial Services Analytical Applications Infrastructure (OFS AAI)

Oracle Financial Services Analytical Applications Infrastructure (OFS AAI) powers the Oracle Financial Services Analytical Applications family of products to perform the processing, categorizing, selection and manipulation of data and information needed 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.

Components of OFSAAI

The OFSAA Infrastructure is comprised of a set of frameworks that operates on and with the Oracle Financial Services Analytical Applications Data Model and form the array of components within the Infrastructure.

The OFSAA Infrastructure components/ frameworks are installed in two layers; primarily the Metadata server and Infrastructure services run on one layer, and 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:

OFSAA Infrastructure High Availability

The current release of the OFSAA Infrastructure supports only "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 Active-Passive model of implementation for OFSAAI components. For more information, see Configuration for High Availability- Best Practices Guide.

About Data Security Configuration

Data Security refers to the protection of data against unauthorized access and data theft. OFSAA ensures Data Security with the following features:

- Multi-Factor Authentication
- Transparent Data Encryption (TDE)
- Data Redaction
- Key Management
- HTTPS
- Logging

For more details on the features in the previous list, see the relevant topics in this guide and the Data Security and Data Privacy section in the OFSAAI Administration Guide.

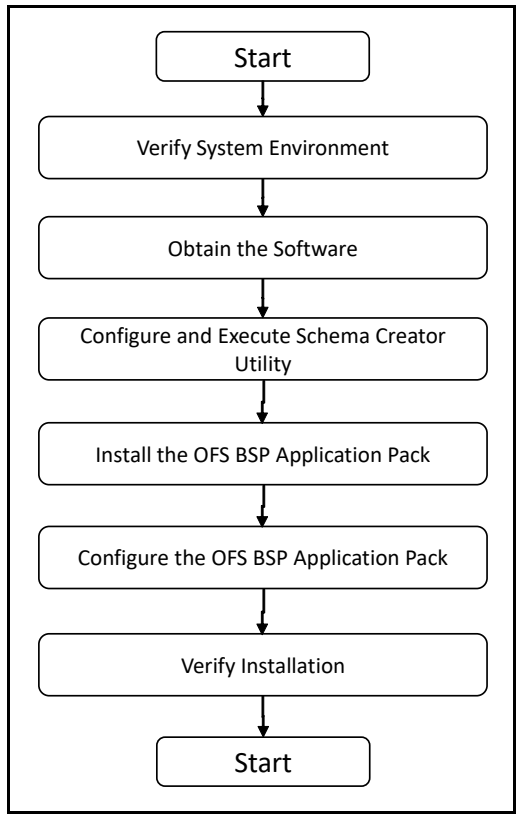
CHAPTER 2 – UNDERSTANDING OFS BSP INSTALLATIONS

This chapter includes the following topics:

Installation Overview

This release of the OFS BSP bundles the upgrade patch set along with the base installer. Users/ Administrators who wish to install a new OFS BSP 8.0.8.0.0 instance should download this installer. The following figure shows the order of procedures you will need to follow to install a new OFS BSP 8.0.8.0.0 instance.

This section gives an overview of the OFS BSP Installation. The following figure shows the order of procedures you need to follow:

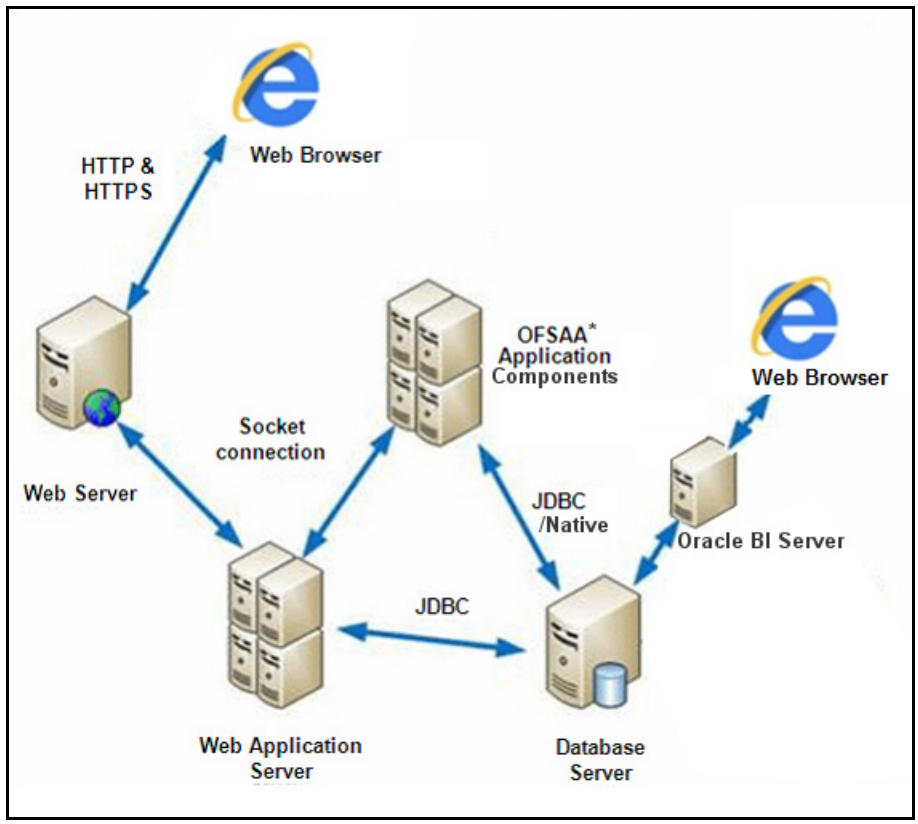


The following table describes the tasks and their descriptions:

Tasks	Details and Documentation
Verify Systems Environment	To verify that your system meets the minimum necessary requirements for installing and hosting the OFS BSP, see Verifying the System Environment.
Obtain the software	To access and download the OFS BSP, see Downloading and Copying the OFS BSP Installer.
Configure and Execute the Schema Creator Utility	For instructions on creating the database schemas, see Configuring and Executing the Schema Creator Utility.
Install OFS BSP	For instructions on Installing OFS BSP, see Installing the OFS BSP.
Configure OFS BSP Setup	See Post Installation Configuration.

Deployment Topology

The following figure depicts the typical deployment topology implemented for OFSAA Applications:



Hardware and Software Requirements

This section describes the various Operating Systems, Database, Web Server, and Web Application Server versions, and other variant details on which this release of the OFS BSP has been qualified.

OFS BSP installation can be performed on both Virtual and Physical servers.

Configurations Supported for Java 7

The following table shows the minimum hardware and software requirements for installing OFS BSP (for Java 7):

Requirement	Sub-Category	Value
Operating System	Oracle Linux / Red Hat Enterprise Linux (x86-64)	■ Red Hat Enterprise Linux or Oracle Linux Server release 6 update 6 to latest update version ■ Red Hat Enterprise Linux or Oracle Linux Server release 7 update 1 to latest update version
	Oracle Solaris (SPARC)/ Solaris x86	■ Oracle Solaris v5.10 Update 11 and above - 64 bit ■ Oracle Solaris v5.11 update 3 and above - 64 bit
	IBM AIX (PowerPC)	■ AIX 6.1 (TL 09 and above) - 64 bit ■ AIX 7.1 (TL 03 and above) - 64 bit
	Shell	KORN Shell (KSH)
	Note: ■ If the OS is IBM AIX 6.1 and the file size limit for the AIX user on the target server is too small, configure the size parameter setting for "Large File Support". Follow these steps: Change the file size limit for the user that initiates the transfer on the AIX system. To change the file size limit for a particular user, add or edit the fsize attribute for the user in the /etc/security/limits file on the AIX system. Change the file size limit to unlimited (fsize = -1) or to a size equal to the size of the file being transferred. This may require an restart of the AIX server to pick up the new configuration. For more information, see IBM Support. ■ If the operating system is RHEL, install the package **lsb_release** using one of the following commands by logging in as root user: ❍ `yum install redhat-lsb-core` ❍ `yum install redhat-lsb` ■ To install this release on Oracle Solaris OS, refer to the following list for version specific information: ❍ **Solaris 11** - Upgrade to Oracle Solaris 11.3 with SRU09 or higher. See https://docs.oracle.com/cd/E60778_01/html/E60743/gouaw.html#scrolltoc to upgrade to SRU09 if you have a lower SRU version. Additionally, install the required runtime libraries. For more information, see Installing Only the Runtime Libraries on Oracle Solaris 11. ❍ **Solaris 10** - Install the required OS patches. For more information, see Installing the Required Oracle Solaris 10 Patches. Additionally, install the required runtime libraries. For more information, see Installing Only the Runtime Libraries on Oracle Solaris 10.	
Java Runtime Environment	Oracle Linux / Red Hat Enterprise Linux	■ Oracle Java Runtime Environment (JRE) 1.7.x - 64 bit
	IBM AIX	IBM AIX Runtime, Java Technology JRE 1.7.x - 64 bit

<table>
<tr><th>Requirement</th><th>Sub-Category</th><th>Value</th></tr>
<tr><td rowspan="3">Oracle Database Server and Client</td><td colspan="2">■ Oracle Database Server Enterprise Edition 11g Release 2 (11.2.0.3.0 +) - 64 bit RAC/ Non-RAC with partitioning option
■ Oracle Database Server Enterprise Edition 11g Release 2 (11.2.0.4.0 +) - 64 bit RAC/Non-RAC with partitioning option, Advanced Security Option**
■ Oracle Database Server Enterprise Edition 12c Release 1 (12.1.0.1.0 +) - 64 bit RAC/ Non-RAC with partitioning option, Advanced Security Option**
■ Oracle Database Server Enterprise Edition 12C Release 2 (12.2.0.1.0 +) - 64 bit RAC/Non-RAC with partitioning option, Advanced Security Option**
Note: ** See the "Additional Notes" section in the 807 Tech Matrix for details.
■ Oracle Client 11g Release 2 (11.2.0.3.0+) - 64 bit
■ Oracle Client 12c Release 1 (12.1.0.1.0+) - 64 bit
■ Oracle Client 12C Release 2 (12.2.0.1+) - 64 bit
■ Oracle 11g Release 2 (11.2.0.3+) JDBC driver (Oracle thin driver)
■ Oracle 12C Release 1 (12.1.0.1+) JDBC driver (Oracle thin driver)
■ Oracle R Distribution (ORD) version 3.2.0/3.3.0 (Optional)
■ Oracle R Enterprise (Server) version 1.5 with ORD 3.2.0 and version 1.5.1 with ORD 3.3.0 (Optional).
Note: If you are upgrading the Database Server to Oracle Database 12c Release 1 or 2, see the procedure mentioned in the FAQ - How do I upgrade to Oracle Database 12c Release 1 or 2, if my previous database versions are Release 11.2.0.2+, 12.1.0.1 or 12.1.0.2.</td></tr>
<tr><td colspan="2">ORAAH Technical Description</td></tr>
<tr><td colspan="2"><table>
<tr><th>No.</th><th>Oracle R Enterprise</th><th>Oracle R Advanced Analytics for Hadoop</th><th>Open Source R or Oracle R Distribution</th><th>Oracle Database Enterprise Edition</th></tr>
<tr><td>1</td><td>1.5.1</td><td>2.7.1</td><td>3.3.0</td><td>11.2.0.4, 12.1.0.1, 12.1.0.2, 12.2.0.1</td></tr>
<tr><td>2</td><td>1.5.0</td><td>2.5.1, 2.6.0, 2.7.0</td><td>3.2.0</td><td>11.2.0.4, 12.1.0.1, 12.1.0.2</td></tr>
</table></td></tr>
<tr><td rowspan="2">OLAP</td><td>Oracle Hyperion Essbase</td><td>■ V 11.1.2.1+ (Server and Client) with Oracle 11g Database
■ V 11.1.2.3+ (Server and Client) with Oracle 12c Database</td></tr>
<tr><td colspan="2">Note: Oracle Hyperion Essbase is required only if you are using the OLAP feature of OFSAAI.</td></tr>
</table>

Requirement	Sub-Category	Value
Web Server/ Web Application Server	Oracle Linux / Red Hat Enterprise Linux / IBM AIX Oracle Solaris	Oracle HTTP Server 11.1.1.1/ Apache HTTP Server 2.2.x/ IBM HTTP Server ■ Oracle Weblogic Server 12.1.3+ with jersey 2.25 ■ Oracle WebLogic Server 12.2.x - (64 bit) ■ IBM WebSphere Application Server 8.5.5.9+ (Full Profile) with IBM Java Runtime - (64 bit) ■ Apache Tomcat version 8.5.32+ - (64 bit) **Note:** OFS Inline Processing Engine does not support Tomcat Web Application Server.
	Note: OFSAA Infrastructure web component deployment on Oracle WebLogic Server with Oracle JRockit is not supported.	
Big Data	Cloudera Distribution Hadoop 5.3.3	■ CDH Version 5.3.3 ■ Hadoop-2.5.0+cdh5.3.3+844 ■ Hive-0.13.1+cdh5.3.3+350 ■ Sqoop1 V 1.4.5+cdh5.3.3+67 ■ Sqoop2 V 1.99.4+cdh5.3.3+23 ■ Oracle Loader For Hadoop (OLH) V 3.2
	Cloudera Distribution Hadoop 5.4.4	■ CDH Version -5.4 ■ Hadoop-2.6.0+cdh5.4.4+597 ■ Hive V 1.1.0+cdh5.4.4+152 ■ Sqoop1 V 1.4.5+cdh5.4.4+101 ■ Sqoop2 V 1.99.5+cdh5.4.4+36
	Cloudera Distribution Hadoop 5.8.4	■ CDH Version -5.8.4 ■ Hadoop-2.6.0+cdh5.8.4+1801 ■ Hive-1.1.0+cdh5.8.4+723 ■ Sqoop-1.4.6+cdh5.8.4+100 ■ Sqoop2-1.99.5+cdh5.8.4+42
	Cloudera Hive Connectors	Hive JDBC Connectors V 2.5.15 and V 2.5.18
	Oracle R Advanced Analytics for Hadoop	Oracle R Advanced Analytics for Hadoop (ORAAH) 2.6.0/ 2.7.0.
	Hadoop Security Protocol	■ Kerberos R release 1.6.1 ■ Sentry-1.4.0
Desktop Requirements	Operating System	Windows 7/8/10

Requirement	Sub-Category	Value
	Browser	■ Microsoft Internet Explorer Browser 11.x ■ Chrome 57.x ■ FireFox 52.x **Note:** Turn off Pop-up blocker settings. For more information, see Internet Explorer Settings.
	Office Tools	■ MS Office 2007/ 2010/ 2013/ 2016 ■ Adobe Acrobat Reader 10 and 11
	Screen Resolution	1024*768 or 1280*1024
Other Software	Directory Services	OFSAAI is qualified on both OPEN LDAP 2.2.29+ and Oracle Internet Directory v 11.1.1.3.0. However, it can be integrated with other directory services software such as MS Active Directory.
	Note: Configuration of Directory services software for OFSAAI installation is optional. For more information on configuration, see LDAP Configuration section in OFSAAI Administration Guide. Open LDAP needs to be installed on MS Windows Server machine only.	

Configurations Supported for Java 8

The following table shows the minimum hardware and software requirements for installing OFS BSP (for Java 8):

Requirement	Sub-Category	Value
Operating System	Oracle Linux / Red Hat Enterprise Linux (x86-64)	■ Red Hat Enterprise Linux or Oracle Linux Server release 6 update 6 to latest update version ■ Red Hat Enterprise Linux or Oracle Linux Server release 7 update 1 to latest update version
	Oracle Solaris (SPARC)/ Solaris x86	■ Oracle Solaris v5.10 Update 11 and above - 64 bit ■ Oracle Solaris v5.11 update 3 and above - 64 bit
	IBM AIX (PowerPC)	■ AIX 6.1 (TL 09 and above) - 64 bit ■ AIX 7.1 (TL 03 and above) - 64 bit
	Shell	KORN Shell (KSH)
	Note: ■ If the OS is IBM AIX 6.1 and the file size limit for the AIX user on the target server is too small, configure the size parameter setting for "Large File Support". Follow these steps: Change the file size limit for the user that initiates the transfer on the AIX system. To change the file size limit for a particular user, add or edit the fsize attribute for the user in the /etc/security/limits file on the AIX system. Change the file size limit to unlimited (fsize = -1) or to a size equal to the size of the file being transferred. This may require an restart of the AIX server to pick up the new configuration. For more information, see IBM Support. ■ If the operating system is RHEL, install the package **lsb_release** using one of the following commands by logging in as root user: ❍ `yum install redhat-lsb-core` ❍ `yum install redhat-lsb` ■ To install this release on Oracle Solaris OS, refer to the following list for version specific information: ❍ **Solaris 11** - Upgrade to Oracle Solaris 11.3 with SRU09 or higher. See https://docs.oracle.com/cd/E60778_01/html/E60743/gouaw.html#scrolltoc to upgrade to SRU09 if you have a lower SRU version. Additionally, install the required runtime libraries. For more information, see Installing Only the Runtime Libraries on Oracle Solaris 11. ❍ **Solaris 10** - Install the required OS patches. For more information, see Installing the Required Oracle Solaris 10 Patches. Additionally, install the required runtime libraries. For more information, see Installing Only the Runtime Libraries on Oracle Solaris 10.	
Java Runtime Environment	Oracle Linux / Red Hat Enterprise Linux//IBM AIX Oracle Solaris	■ Oracle Java Runtime Environment (JRE) 1.7.x - 64 bit ■ Oracle Java Runtime Environment (JRE) 1.8.x - 64 bit
	IBM AIX	IBM AIX Runtime, Java Technology JRE 1.8.x - 64 bit

<table>
<tr><th>Requirement</th><th>Sub-Category</th><th>Value</th></tr>
<tr><td rowspan="4">Oracle Database Server and Client</td><td colspan="2">■ Oracle Database Server Enterprise Edition 11g Release 2 (11.2.0.3.0 +) - 64 bit RAC/ Non-RAC with partitioning option
■ Oracle Database Server Enterprise Edition 11g Release 2 (11.2.0.4.0 +) - 64 bit RAC/Non-RAC with partitioning option, Advanced Security Option**
■ Oracle Database Server Enterprise Edition 12c Release 1 (12.1.0.1.0 +) - 64 bit RAC/ Non-RAC with partitioning option, Advanced Security Option**
Note: See the "Additional Notes" section in the 807 Tech Matrix for details.
■ Oracle Client 11g Release 2 (11.2.0.3.0+) - 64 bit
■ Oracle Client 12c Release 1 (12.1.0.1.0+) - 64 bit
■ Oracle 11g Release 2 (11.2.0.3+) JDBC driver (Oracle thin driver)
■ Oracle 12C Release 1 (12.1.0.1+) JDBC driver (Oracle thin driver)
■ Oracle R Distribution (ORD) version 3.2.0/3.3.0 (Optional)
■ Oracle R Enterprise (Server) version 1.5 with ORD 3.2.0 and version 1.5.1 with ORD 3.3.0 (Optional).</td></tr>
<tr><td colspan="2">Oracle R Enterprise 1.5 and 1.5.1 requires Oracle Database Enterprise Edition / 11.2.0.4/ 12.1.0.1/ 12.1.0.2/12.2.0.1.</td></tr>
<tr><td colspan="2">ORD and ORE versions compatible along with Oracle DB version</td></tr>
<tr><td colspan="2"><table>
<tr><th>No.</th><th>Oracle R Enterprise</th><th>Oracle R Advanced Analytics for Hadoop</th><th>Open Source R or Oracle R Distribution</th><th>Oracle Database Enterprise Edition</th></tr>
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<tr><td>2</td><td>1.5.0</td><td>2.5.1, 2.6.0, 2.7.0</td><td>3.2.0</td><td>11.2.0.4, 12.1.0.1, 12.1.0.2</td></tr>
</table></td></tr>
<tr><td rowspan="2">OLAP</td><td>Oracle Hyperion Essbase</td><td>■ V 11.1.2.1+ (Server and Client) with Oracle 11g Database
■ V 11.1.2.3+ (Server and Client) with Oracle 12c Database</td></tr>
<tr><td colspan="2">Note: Oracle Hyperion Essbase is required only if you are using the OLAP feature of OFSAAI.</td></tr>
</table>

Requirement	Sub-Category	Value
Web Server/ Web Application Server	Oracle Linux / Red Hat Enterprise Linux / IBM AIX Oracle Solaris	Oracle HTTP Server 11.1.1.1/ Apache HTTP Server 2.2.x/ IBM HTTP Server ■ Oracle Weblogic Server 12.1.3+ with jersey 2.25 ■ Oracle WebLogic Server 12.2.x - (64 bit) ■ IBM WebSphere Application Server 8.5.5.9+ (Full Profile) with IBM Java Runtime - (64 bit) ■ Apache Tomcat version 8.0.47- (64 bit) **Note:** OFS Inline Processing Engine does not support Tomcat Web Application Server.
	Note: OFSAA Infrastructure web component deployment on Oracle WebLogic Server with Oracle JRockit is not supported.	
Big Data	Cloudera Distribution Hadoop 5.3.3	■ CDH Version 5.3.3 ■ Hadoop-2.5.0+cdh5.3.3+844 ■ Hive-0.13.1+cdh5.3.3+350 ■ Sqoop1 V 1.4.5+cdh5.3.3+67 ■ Sqoop2 V 1.99.4+cdh5.3.3+23 ■ Oracle Loader For Hadoop (OLH) V 3.2
	Cloudera Distribution Hadoop -5.4.4	■ CDH Version -5.4 ■ Hadoop-2.6.0+cdh5.4.4+597 ■ Hive V 1.1.0+cdh5.4.4+152 ■ Sqoop1 V 1.4.5+cdh5.4.4+101 ■ Sqoop2 V 1.99.5+cdh5.4.4+36
	Cloudera Distribution Hadoop 5.8.4	■ CDH Version -5.8.4 ■ Hadoop-2.6.0+cdh5.8.4+1801 ■ Hive-1.1.0+cdh5.8.4+723 ■ Sqoop-1.4.6+cdh5.8.4+100 ■ Sqoop2-1.99.5+cdh5.8.4+42
	Cloudera Hive Connectors	Hive JDBC Connectors V 2.5.15 and V 2.5.18
	Oracle R Advanced Analytics for Hadoop	Oracle R Advanced Analytics for Hadoop (ORAAH) 2.6.0/ 2.7.0.
	Hadoop Security Protocol	■ Kerberos R release 1.6.1 ■ Sentry-1.4.0

Requirement	Sub-Category	Value
Desktop Requirements	Operating System	MS Windows 7/8/10
	Browser	■ Microsoft Internet Explorer Browser 11.x ■ Chrome 57.x ■ FireFox 52.x **Note:** Turn off Pop-up blocker settings. For more information, see Internet Explorer Settings.
	Office Tools	■ MS Office 2007/ 2010/ 2013/ 2016 ■ Adobe Acrobat Reader 10 and 11
	Screen Resolution	1024*768 or 1280*1024
Other Software	Directory Services	OFSAAI is qualified on both OPEN LDAP 2.2.29+ and Oracle Internet Directory v 11.1.1.3.0. However, it can be integrated with other directory services software like MS Active Directory.
	Note: Configuration of Directory services software for OFSAAI installation is optional. For more information on configuration, see LDAP Configuration section in OFSAAI Administration Guide. Open LDAP needs to be installed on MS Windows Server machine only.	

Note: To upgrade an existing OFSAA 8.0.x Java 7 instance to Java 8, see Upgrading an Existing OFSAA 8.0.x Java 7 Instance to Java 8.

Recommended Software Combinations

OFS BSP recommends the following software combinations for deployment:

Operating System	Database	Web Application Server	Web Server
Oracle Linux 5.3 up to 5.10/ 6.0 and above	Oracle Database	Oracle WebLogic Server/ Apache Tomcat Server	Oracle HTTP Server/ Apache HTTP Server
Oracle Solaris 5.10/ 5.11	Oracle Database	Oracle WebLogic Server/ Apache Tomcat Server	Oracle HTTP Server/ Apache HTTP Server
IBM AIX 6.1	Oracle Database	IBM WebSphere Application Server/ Apache Tomcat Server	IBM HTTP Server/ Apache HTTP Server

Verifying the System Environment

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

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

Note: For more details on download and usage of this utility, see *Oracle Financial Services Analytical Applications Infrastructure Environment Check Utility Guide* given in the Related Documents section.

Understanding Installation Modes

The following modes of installation are available for the OFS BSP.

SILENT Mode

This mode mandates updating the installation configuration files with required details and performs installation in a "SILENT" non user interactive format.

See Silent Mode Installation for details on configuration required for SILENT Mode installation.

CHAPTER 3 – PREPARING FOR INSTALLATION

This chapter provides necessary information to review before installing the OFS BSP v8.0.8.0.0.

This chapter includes the following topics:

Installer and Installation Prerequisites

The following table mentions the list of prerequisites required before beginning the installation for OFS BSP. The Installer/ Environment Check utility notifies you if any requirements are not met.

Requirement	Sub-Category	Expected Value
Environment Settings	Java Settings	PATH in .profile to be set to include the Java Runtime Environment absolute path. The path should include Java version (Java 7 or Java 8) based on the configuration. **Note:** Ensure the absolute path to JRE/bin is set at the beginning of PATH variable. For example, PATH=/usr/java/jre1.6/bin:$ORACLE_HOME/bin:$PATH Ensure no SYMBOLIC links to JAVA installation is being set in the PATH variable.
	Enable unlimited cryptographic policy for Java	For more information, see the section Enabling Unlimited Cryptographic Policy from the OFS Analytical Applications Infrastructure Administration Guide.
	Oracle Database Settings	**Oracle Database Server** ■ TNS_ADMIN must be set in .profile file pointing to appropriate tnsnames.ora file. ■ Enable Transparent Data Encryption (TDE) and/ or Data Redaction** **Note:** For more information, see TDE, Data Redaction and the Corresponding Settings in OFSAA.
		OFSAA Processing Server ■ ORACLE_HOME must be set in .profile file pointing to appropriate Oracle Client installation. ■ PATH in .profile must be set to include appropriate $ORACLE_HOME/bin path. ■ Ensure that an entry (with SID/ SERVICE NAME) is added in the tnsnames.ora file.
	Oracle Essbase Settings	ARBORPATH, ESSBASEPATH, HYPERION_HOME to be set in the .profile pointing to an appropriate Oracle Essbase Client installation. **Note:** These settings are required only if you want to use Oracle Hyperion Essbase OLAP features.

Requirement	Sub-Category	Expected Value
OS/ File System Settings	File Descriptor Settings	Greater than 15000 **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.
	Total Number of Process Settings	Greater than 4096 **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.
	Port Settings	Default port numbers to be enabled on the system are 6500, 6501, 6505, 6507, 6509, 6510, 6666, 9999, and 10101.
	.profile permissions	User to have 755 permission on the .profile file.
	Installation Directory	A directory where the product files will be installed/ copied. Assign 755 permission on this directory. This directory needs to be set as FIC_HOME.
	Temporary Directory	Default temporary directory where installation files are stored for a short period of time to support faster installation. ■ For installation on UNIX OS, you UNIX administrator must give you the required read-write permissions for the /tmp directory and disable the NOEXEC option. ■ Configure adequate space on the /tmp directory. It is recommended that you allocate more than 10 GB of space. **Note:** If NOEXEC is enabled, the extraction of files by the installer in to /tmp directory is prevented and the binaries will not execute in the directory, which will fail the installation.
	Staging Area/ Metadata Repository	A directory to hold the application Metadata artifacts and additionally act as staging area for flat files. The directory should exist on the same system as the OFSAA Installation. This directory can be configured on different mount or under a different user profile. Assign 775 permission on this directory. **Note:** This directory is also referred to as FTPSHARE folder.
	Download Directory	A directory where the product installer files will be downloaded/ copied. Set 755 permission on this directory.
	OS Locale	■ Linux: en_US.utf8 ■ AIX: EN_US.UTF-8 ■ Solaris: en_US.UTF-8 To check the locale installed, execute the following command: `locale -a | grep -i 'en_US.utf'`

Requirement	Sub-Category	Expected Value
Database Settings	Database Instance Settings	NLS_CHARACTERSET to be AL32UTF8 NLS_LENGTH_SEMANTICS to be BYTE OPEN CURSORS limit to be greater than 1000
Web Application Server	WebSphere/ WebLogic/ Tomcat	Web Application Server should be installed and profile /domain created. You will be prompted to enter the WebSphere Profile path or WebLogic Domain path or Tomcat Deployment path during OFSAAI installation. **Note:** See Configuring Web Server for WebSphere Profile Creation and WebLogic Domain Creation.
Web Server	Apache HTTP Server/ Oracle HTTP Server/ IBM HTTP Server	This is an optional requirement. HTTP Server Installation to be present. You will be required to enter the Web Server IP/ Hostname and Port details during installation. Note: See Configuring Web Server for Web Server configuration.
Big Data	Cloudera CDH and Cloudera JDBC Connectors	This is an optional requirement and required if Oracle Financial Services - Big Data Processing license is enabled. For more information, see Installing Cloudera CDH.
Others	Oracle R/ Oracle R Enterprise	This is an optional requirement. For more details, see Configuration for Oracle R Distribution and Oracle R Enterprise (ORE).

Following step is applicable only if existing OFSAA setup version is 8.0.5.x.x and Configuration and Atomic Schema(s) were restored from exported dumps of other environment:

Login to Configuration Schema and execute the following SQL statements:

```
alter table AAI_AOM_APP_COMP_ATTR_MAPPING drop constraint AOM_APP_COMP_ATTR_PK drop index
/
alter table AAI_AOM_APP_COMP_ATTR_MAPPING add constraint AOM_APP_COMP_ATTR_PK primary key
(APP_COMP_ATTR_MAP_ID)
/
```

Note: Ensure that the tablespace(s) used for the database user(s) is set to AUTOEXTEND ON.

Common Installation Tasks

The following are the common pre-installation activities that you need to carry out before installing the OFS BSP.

This section includes the following topics:

Identifying the Installation, Download and Metadata Repository Directories

For installing any OFSAA Application Pack, the below folders/ directories required to be created.

- **OFSAA Download Directory (Optional)**: Create a download directory and copy the OFSAA Application Pack Installer File (Archive). This is the directory where the downloaded installer/ patches can be copied.
- **OFSAA Installation Directory (Mandatory)**: Create an installation directory. This is the directory where the installer installs or copies the product files. FIC_HOME variable to be set in the .profile file to point to the OFSAA Installation Directory.
- **OFSAA Staging/ Metadata Repository Directory (Mandatory)**: Create a Staging/ Metadata Repository Directory. This is the directory where you should copy data loading files, save data extracts and so on. Additionally, this folder also maintains the OFSAA Metadata artifacts. This is commonly referred as "FTPSHARE". This directory must be created on the same host as the OFSAA Installation Directory mentioned in the previous point in this list.

Note: Ensure that the user permission is set to 755 on the Installation and Download Directory and the user permission is set to 777 on the Staging Directory.

Downloading and Copying the OFS BSP Installer

To download and copy the OFS BSP Installer, follow these steps:

- This release of OFS BSP v8.0.8.0.0 is available for download in My Oracle Support (https://support.oracle.com) as Patch **29949626**. You need to have a valid Oracle account in order to download the software.
- Copy the downloaded installer archive to the Download Directory (in Binary Mode) on the setup identified for OFSAA installation.
- Download the mandatory one-off patch **30010232** from https://support.oracle.com. Extract and apply the patch 30010232. See the Readme available with the patch for further instructions on installing the patch.
- 3.Log in to My Oracle Support, search for the 33663417 Mandatory Patch in the Patches & Updates Tab and download it.

- **ATTENTION**: On the 10th of December 2021, Oracle released Security Alert CVE-2021-44228 in response to the disclosure of a new vulnerability affecting Apache Log4J prior to version 2.15. The application of the 33663417 Mandatory Patch fixes the issue.

  For details, see the My Oracle Support Doc ID 2827801.1.

Copying and Extracting the Software

Once you obtain the installer, copy the installer (in BINARY mode) to the system on which the OFSAA Infrastructure components will be installed.

Note: You must be logged in to the UNIX operating system as a non-root user.

---

1. 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. If you already have the unzip utility to extract the contents of the downloaded archive, skip to the next step.
2. Uncompress the unzip installer file using the command:

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

   Note: If you notice an error message "uncompress: not found [No such file or directory]", contact your UNIX administrator.

   ---

3. Give EXECUTE permission to the file using the command:

   ```
   chmod 751 unzip_<os>
   ```

   For example, `chmod 751 unzip_sparc`

4. Extract the contents of the OFS BSP 8.0.8.0.0 installer archive to Download Directory using the following command:

   ```
   unzip OFS_BSP_8.0.8.0.0_<OS>.zip
   ```

   Note: Do not rename the Application Pack installer folder name on extraction from the archive.

   ---

5. Give below permission to the installer folder. Navigate to the Download Directory and execute the command:

   ```
   chmod -R 750 OFS_BSP_PACK
   ```

Setting up the Web Server/ Web Application Server

For more information to set up the environment based on your selected Web Server/ Web Application Server, see Configuring Web Server and Configuring Web Application Server.

CHAPTER 4 – INSTALLING OFS BSP

This chapter describes the steps to be followed to install the OFS BSP.

This chapter includes the following topics:

Note: The minimum patch level of OFS AAI to be installed is OFS AAI v8.0.8.0.0 to install the OFS BSP v8.0.8.0.0. In case of an integrated environment where you are installing other EPM applications like ALM or FTP, the minimum version of ALM and FTP should be at least v8.0.7.0.0 or more. All the applications must share the same INFODOM, Database, and Schemas.

About Schema Creator Utility

Creating database users/ schemas (RDBMS/ HIVE) is one of the primary steps in the complete OFSAA installation process. The Schema Creator utility facilitates you to quickly get started with the OFSAA 8.0 installation by allowing easier and faster creation of database User(s)/ Schema(s) (RDBMS/ HIVE), assigning the necessary GRANT(s), creating the required entities in the schemas, and so on.

The schema creator utility should be configured and executed mandatorily every time prior to installation of any OFSAA Application Pack.

This section includes the following topics:

Configuring Schema Creator Utility for RDBMS Installation

OFS BSP specific schema details need to be filled in the `OFS_BSP_SCHEMA_IN.xml` file before executing the Schema Creator Utility. For more information on the xml file, see Configuring OFS_BSP_SCHEMA_IN.xml.

The following are the types of schemas that can be configured in the OFSAA:

- **CONFIG** - This schema holds the entities and other objects required for OFSAA setup configuration information.

  Note: 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.

  Note: For some application packs, there can be multiple ATOMIC schemas per OFSAA Instance, but the Profitability Pack supports only one atomic schema per OFSAA instance.

- **SANDBOX** - Denotes the schema that contains the data for all Sandbox executions. One SANDBOX schema is attached to one Sandbox Information Domain.

  Note: This Schema type is not applicable for OFS BSP. There can be multiple SANDBOX schemas per OFSAA Instance and a Sandbox Information Domain can have only one SANDBOX schema.

- **ADDON** - Denotes any additional schema used by the OFSAA Applications.

  Note: This Schema type is not applicable for OFS BSP.

Execution Modes in Schema Creator Utility

The Schema Configuration Utility supports the following modes of execution:

- **Online Mode**: In the Online mode, the utility connects to the database and executes the DDLs for Users, Objects and Grants. If you have the 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 Online mode, you need to connect as "<User> AS SYSDBA".

- **Offline Mode**: In the Offline mode, the utility generates SQL script with all the required DDLs for Users, Objects and Grants. This script needs to be executed by the DBA on the appropriate database identified for OFSAA usage. If you do not have the SYSDBA privileges, you can execute the Schema Creator Utility in Offline mode and generate the script file that contains the Schemas, Objects and Grants, information. Subsequently, a SYSDBA user can execute the script file manually.

To execute the utility in Offline mode:

1. Connect as any user with below grants (alternatively, you can also connect as a user with SYSDBA privileges):

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

   For more details, see Executing the Schema Creator Utility in Offline Mode.

2. If there are any errors during the script execution, reconfigure the `OFS_BSP_SCHEMA_IN.XML` file and execute the utility. This generates the scripts with corrected information. For more information, see Configuring OFS_BSP_SCHEMA_IN.xml.

Note: Do not modify the `OFS_BSP_SCHEMA_OUT.XML` file generated after the execution of this utility.

Selecting Execution Options in Schema Creator Utility

Depending on the option you choose to run the OFSAA Application Pack Installer, you need to choose the schema creator utility execution option. To run the OFSAA Application Pack installer in SILENT mode, it is mandatory to execute the schema creator utility with -s option.

Configuring and Executing the Schema Creator Utility

This section includes the following topics:

- Prerequisites
- Configuring the Schema Creator Utility
- Executing the Schema Creator Utility

Prerequisites

The following prerequisites must be ensured before configuring the Schema Creator Utility:

- You must have the Oracle User ID/Password with SYSDBA privileges.
- You must have the JDBC Connection URL for RAC/Non RAC database.
- The HOSTNAME/IP of the server on which OFSAA is getting installed.
- For enabling Transparent Data Encryption (TDE) in your OFSAA instance during installation, perform the steps explained in TDE, Data Redaction and the Corresponding Settings in OFSAA.
- It is recommended to set the `PGA_AGGREGATE_LIMIT` database-parameter value sufficiently, when Oracle 12c is installed
- You must add a TNS entry before the installation.

Note: The TNS Entry for an atomic schema should be without any special character, i.e '_'. If the atomic schema name is like 'DEV_ATOM', the TNS name should be like 'DEVATOM'.

Configuring the Schema Creator Utility

To configure the Schema Creator Utility, follow these steps:

1. Log in to the system as non-root user.
2. Navigate to the following path: *OFS_BSP_PACK/schema_creator/conf*.
3. Edit the `OFS_BSP_SCHEMA_IN.xml` file in a text editor.
4. Configure the elements as described in the Configuring OFS_BSP_SCHEMA_IN.xml.
5. Save the `OFS_BSP_SCHEMA_IN.xml` file.

Note: On successful execution of the utility, the entered password in the `OFS_BSP_SCHEMA_IN.xml` file is nullified.

Executing the Schema Creator Utility

This section includes the following topics:

- Executing the Schema Creator Utility in Online Mode
- Executing the Schema Creator Utility in Offline Mode
- Executing the Schema Creator Utility with -s option
- Executing the Schema Creator Utility for Subsequent Application Pack
- Verifying the Log File

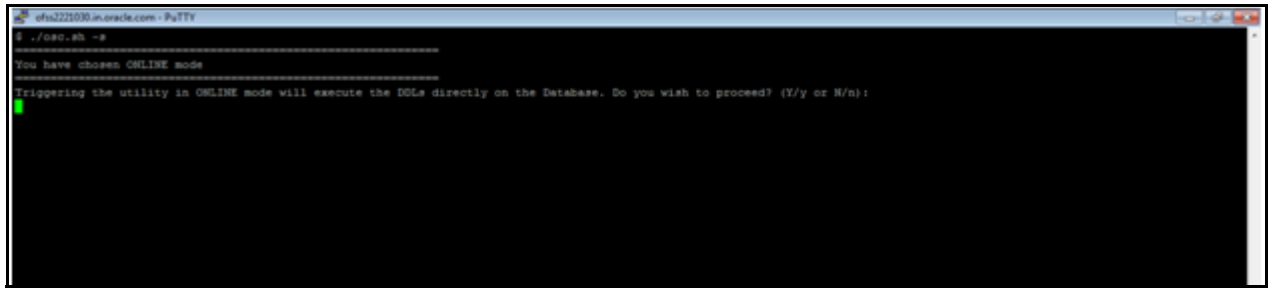
Executing the Schema Creator Utility in Online Mode

In Online Mode, the Schema Creator Utility will create all the Schemas, Schema Objects, Tablespaces, Grants, and Roles in the database during the execution process.

1. To execute the Schema Creator Utility in Online Mode, follow these steps:
2. Log in to the system as non-root user.
3. Navigate to the following folder path: *OFS_BSP_PACK/schema_creator/bin/*.

   Execute the following command:

   ```
   ./osc.sh
   ```
4. The following message is displayed: *You have chosen ONLINE mode. Triggering the utility in ONLINE mode will execute the DDLs directly on the Database. Do you wish to proceed? (Y/y or N/n)*.



5. Enter Y/y to proceed.
6. Enter the DB Username with SYSDBA Privileges.

   For example: SYS as SYSDBA.
7. Enter the User Password.

```
$ ./osc.sh
============================================================
You have chosen ONLINE mode
============================================================
Triggering the utility in ONLINE mode will execute the DDLs directly on the Database. Do you wish to proceed? (Y/y or N/n):
Y
============================================================
Java Validation Started ...
Java found in : /scratch/ofsaa/jdk1.6.0_25/jre/bin
JAVA Version found : 1.6.0_25
JAVA Bit Version found : 64-bit
Java Validation Completed. Status : SUCCESS
============================================================
DB specific Validation Started ...
Enter the DB User Name With SYSDBA Privileges:
sys as sysdba
Enter the User Password:
Oracle Client version : 11.2.0.3.0. Status : SUCCESS
Oracle Server version Current value : 11.2.0.3.0. Status : SUCCESS
DB specific Validation Completed. Status : SUCCESS
============================================================
```

8. The console runs the initial validation checks and then 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).

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

```
Java Validation Started ...
Java found in : /usr/java/jdk1.6.0_25/bin
JAVA Version found : 1.6.0_25
JAVA Bit Version found : 64-bit
Java Validation Completed. Status : SUCCESS
============================================================
DB specific Validation Started ...
Enter the DB User Name With SYSDBA Privileges:
sys as sysdba
Enter the User Password:
Oracle Client version : 11.2.0.3.0. Status : SUCCESS
Oracle Server version Current value : 11.2.0.1.0. Status : SUCCESS
DB specific Validation Completed. Status : SUCCESS
============================================================
================================================================================
                        Schema Creation Started
================================================================================
Checking OFSAA installation...
OFSAA installation not found.
Validating the dat file OFS_PFT_CFG.dat started...
Sucessfully validated OFS_PFT_CFG.dat file
Validating the input XML file.../scratch/ofsaebas/installer/OFS_PFT_PACK/schema_creator/conf/OFS_PFT_SCHEMA_IN.xml
Input XML file validated successfully.
================================================================================
Validating Connection URL ...jdbc:oracle:thin:@ofss222763:1521:FTPDEV
Successfully connected to User - sys as sysdba URL - jdbc:oracle:thin:@ofss222763:1521:FTPDEV
Connection URL successfully validated...
You have chosen to install this Application Pack on "dev_ofsaaatm" ATOMIC schema. Do you want to proceed? (Y/N)
Y
You have chosen to install this Application Pack on INFODOM "ofspftinfo". Do you want to proceed? (Y/N)
Y
================================================================================
Executing TableSpace Scripts started...
```

9. Enter Y/y to start the schema creation.

Or

Enter N/n if you want to quit executing the schema creation.

Note: On successful execution of schema creator utility, the console displays the following status message:

Schema Creator executed successfully. Please proceed with the installation.

See log file in *`OFS_BSP_PACK/schema_creator/logs`* folder for execution status. If there are any errors, contact Oracle Support.

Executing the Schema Creator Utility in Offline Mode

In Offline Mode, the Schema Creator Utility will create an output in SQL file format. This script has to be executed manually by logging as database user with SYSDBA privileges. The SQL file will contain the scripts for creation of Schemas, Schema Objects, Tablespaces, Grants, and Roles.

Prerequisites:

- Database user with below 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 non-root user.
2. Navigate to the following path: *OFS_BSP_PACK/schema_creator/bin*
3. Execute the osc.sh file using the following command:

   ```
   ./osc.sh -o
   ```
4. 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).
5. Enter Y/y to proceed.
6. Enter the DB Username with SELECT privileges.
7. Enter the User Password.

```
osc.sh
$ ./osc.sh -o
.profile executed
===========================================================
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):
y
===========================================================
Java Validation Started ...
Java found in : /scratch/ofsaa/jdk1.6.0_25/bin
JAVA Version found : 1.6.0_25
JAVA Bit Version found : 64-bit
Java Validation Completed. Status : SUCCESS
===========================================================
DB specific Validation Started ...
Enter the DB User Name with the following privileges:
1. CREATE SESSION
2. SELECT on DBA_ROLES
3. SELECT on DBA_USERS
4. SELECT on DBA_DIRECTORIES
5. SELECT on DBA_TABLESPACES
Enter the User Name:
sys as sysdba
Enter the User Password:
Oracle Client version : 11.2.0.3.0. Status : SUCCESS
Oracle Server version Current value : 11.2.0.3.0. Status : SUCCESS
DB specific Validation Completed. Status : SUCCESS
===========================================================
```

8. 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).

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

```
Java Validation Started ...
Java found in : /usr/java/jdk1.6.0_25/bin
JAVA Version found : 1.6.0_25
JAVA Bit Version found : 64-bit
Java Validation Completed. Status : SUCCESS
============================================================
DB specific Validation Started ...
Enter the DB User Name With SYSDBA Privileges:
sys as sysdba
Enter the User Password:
Oracle Client version : 11.2.0.3.0. Status : SUCCESS
Oracle Server version Current value : 11.2.0.1.0. Status : SUCCESS
DB specific Validation Completed. Status : SUCCESS
============================================================
================================================================================
                        Schema Creation Started
================================================================================
Checking OFSAA installation...
OFSAA installation not found.
Validating the dat file OFS_PFT_CFG.dat started...
Sucessfully validated OFS_PFT_CFG.dat file
Validating the input XML file.../scratch/ofsaebas/installer/OFS_PFT_PACK/schema_creator/conf/OFS_PFT_SCHEMA_IN.xml
Input XML file validated successfully.
================================================================================
Validating Connection URL ...jdbc:oracle:thin:@ofss222763:1521:FTPDEV
Successfully connected to User - sys as sysdba URL - jdbc:oracle:thin:@ofss222763:1521:FTPDEV
Connection URL successfully validated...
You have chosen to install this Application Pack on "dev_ofsaaatm" ATOMIC schema. Do you want to proceed? (Y/N)
Y
You have chosen to install this Application Pack on INFODOM "ofspftinfo". Do you want to proceed? (Y/N)
Y
================================================================================
Executing TableSpace Scripts started...
```

9. Enter Y/y to start the script generation.

   Or

   Enter N/n if you want to quit the script generation.

```
Executing TableSpace Scripts started...
Executing TableSpace Scripts completed...
================================================================================
Creating Schemas started...
CONFIG User dev_ofsaaconf successfully created on Default TableSpace : USERS on Temp TableSpace : TEMP
Grants creation scripts execution started...
Grants creation scripts execution completed...
Successfully connected to User - dev_ofsaaconf URL - jdbc:oracle:thin:@ofss222763:1521:FTPDEV
Scripts execution for CONFIG schema started ...
Scripts execution for CONFIG schema completed ...
User dev_ofsaaconf details updated into the dbmaster table
User dev_ofsaaatm details updated into the dbmaster table
User dev_ofsaaatm is successfully created on Default TableSpace : USERS on Temp TableSpace : TEMP
User dev_ofsaaatm already exists in dbmaster table.
User dev_ofsaaatm already exists in dbmaster table.
User dev_ofsaaatm already exists in dbmaster table.
User dev_ofsaaatm already exists in dbmaster table.
Creating Schemas completed ...
================================================================================
Roles creation scripts execution started ...
Roles creation scripts execution completed ...
================================================================================
Grants creation scripts execution started...
Grants creation scripts execution completed...
================================================================================
                        Schemas Creation Completed
================================================================================
Schema Creator executed Successfully.Please proceed with the installation.
```

Note: On successful execution of schema creator utility, the console displays the following status message:

Schema Creator executed successfully. Please execute scratch/ofsaaapp/OFS_BSP_PACK/schema_creator/sysdba_output_scripts.sql before proceeding with the installation.

10. Navigate to the directory: *OFS_BSP_PACK/schema_creator.*
11. Login to SQLPLUS with a user having SYSDBA Privileges.
12. Execute the sysdba_output_scripts.sql file using the following command:

    ```
    SQL>@sysdba_output_scripts.sql
    ```

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

Note: See the log `sysdba_output_scripts.log` file for execution status. If there are any errors, contact Oracle Support. This log would be empty if there are no errors in the execution.

Executing the Schema Creator Utility with -s option

If you want to run the OFSAA Application Pack Installer in SILENT mode, it is mandatory to execute the schema creator utility with -s option.

To execute the utility with -s option, follow these steps:

1. Edit the file *OFS_BSP_PACK/schema_creator/conf/*`OFS_BSP_SCHEMA_IN.xml` in text editor.
2. Execute the utility with -s option.

   For Example: `./osc.sh -s`

Note: To execute the utility in OFFLINE mode with SILENT option, enter following command:

```
/osc.sh -o -s
```

Executing the Schema Creator Utility for Subsequent Application Pack

While executing the schema creator utility for subsequent Application Pack, you can choose to install the pack either on the same Information Domain/Atomic Schema or on a new Information Domain/Atomic Schema. You can execute the Schema Creator Utility either in Online or Offline Mode.

Note: OFS BSP can be installed on any Information Domain/ Atomic schema where any OFS Application Packs are installed other than OFS Behavior Detection Application Pack or OFS Compliance Regulatory Reporting Application Pack.

To execute the schema creator utility while installing OFS BSP over an existing Application Pack, follow these steps:

1. Repeat the steps 1 to 9 from the Executing the Schema Creator Utility section.

   Note: Ensure to use the same config schema user name as the previous Application Pack.

2. The utility identifies the Application Packs that are already installed on the current OFSAA setup and displays the following on console:
   - Atomic schema of the Existing Application Pack
   - Information Domain Name of the Existing Pack, and the
   - List of Installed Application Packs Execute the ./osc.sh file.

```
Validating Connection URL ...jdbc:oracle:thin:@ofss220623:1521:MEDIADB
Successfully connected to User - sys as sysdba URL - jdbc:oracle:thin:@ofss220623:1521:MEDIADB
Connection URL successfully validated...
The following Application Packs are already installed in this OFSAA setup:


dev_atm1-           INFOTR-             "OFS_TR_PACK"


You have selected to install this Application Pack on "dev_atm3" ATOMIC schema. To proceed enter (Y/y). To change the selection, enter (N/n).
n
Choose the ATOMIC schema from the below list on which you wish to install this Application Pack:


1. dev_atm1-           INFOTR-             "OFS_TR_PACK"
2. dev_atm3


Enter the option number:2
============================================================================
Generating TableSpace creation Scripts started...
Generating TableSpace creation Scripts completed...
============================================================================
Generating Schema creation scripts started...
Skipping the creation of CONFIG user dev_conf1 as OFSAAI is already installed on dev_conf1
User dev_atm3 details updated into the dbmaster table
User dev_atm3 creation script generated successfully on Default TableSpace : USERS on Temp TableSpace : TEMP
User dev_atm3 creation is skipping as the user is already created.
Generating Schema creation scripts completed...
============================================================================
Generating Roles creation Scripts started...
Generating Roles creation Scripts completed...
============================================================================
Generating Grants creation scripts started...
Generating Grants creation scripts completed...
============================================================================
                    Generating Schema Creation Scripts Completed
============================================================================
Schema Creator executed Successfully.Please execute /scratch/ofsaadb/OFS_AAAI_PACK/schema_creator/sysdba_output_scripts.sql before proceeding with the installation.
$
```

3. Select the Atomic User, on which you want to install the Application Pack.

   On successful execution or schema creator utility, the following message is displayed: Schemas Creation Completed.

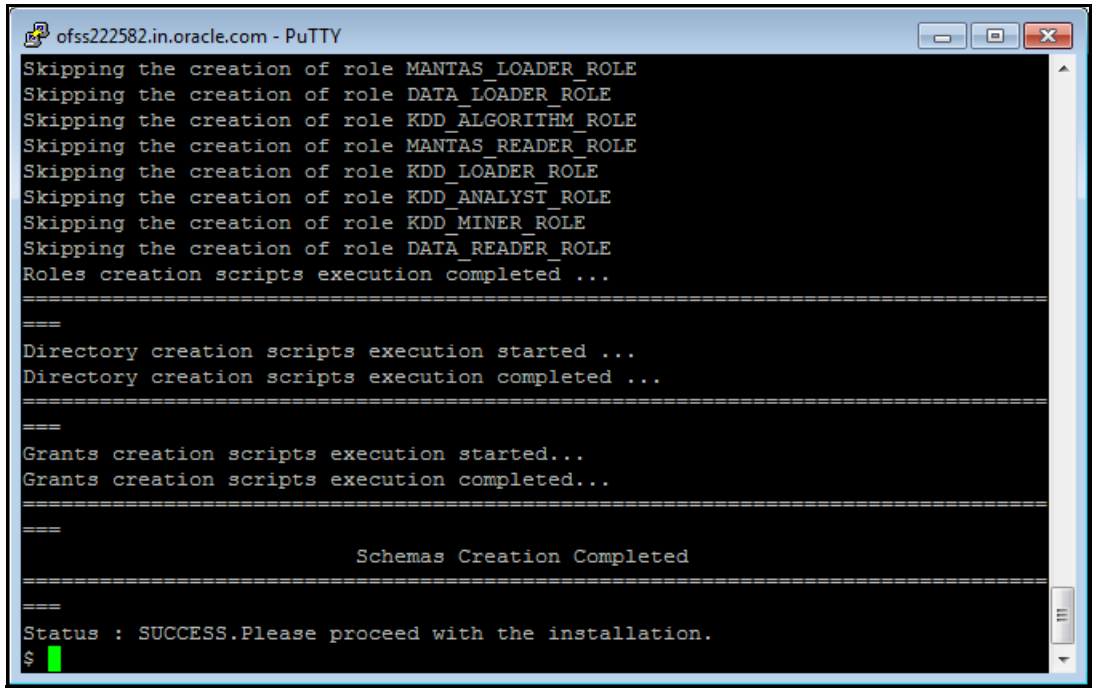
See the log file in *OFS_BSP_PACK/schema_creator/logs* folder for execution status.

See the log sysdba_output_scripts.log file for execution status, if executed in offline mode. This log would be empty if there are no errors in the execution.

If there are any errors, contact Oracle Support.

Verifying the Log File

If schema creation is successful, the console would display an appropriate message.



If the schema creation runs into errors, see the log files:

<<OFSBSP Installer folder>>/<<OFS_BSP_PACK>>/schema_creator/logs/ and <<OFS_BSP>>_OSC_<timestamp>.log for further details.

You may contact Oracle support anytime for assistance.

Installing the OFS BSP

Follow the instructions in this section to install the OFS BSP depending on the mode of installation.

This section includes the following topics:

Silent Mode Installation

Note: For Schema Creator Utility steps, see Executing the Schema Creator Utility.

1. Log in to the system as non-root user.
2. Identify a directory for installation and set the same in the user .profile file as below:

   `FIC_HOME=< OFSAA Installation Directory > export FIC_HOME`
3. Execute the user .profile.
4. Pre-Installation XML/ File Populations:

   Before Proceeding to SILENT Installer, we need to populate following files with pre-defined values.

   - `OFSAAI_InstallConfig.xml` (Location: *`OFS_BSP_PACK/OFS_AAI/conf`*). For more information, see Configuring OFSAAI_InstallConfig.xml File section.

     Note: If value for `HTTPS_ENABLE` is set to 1, ensure you have a valid certificate available from a trusted CA and the same is configured on your web application server.

   - `SILENT.props` File. (Location: *`OFS_BSP_PACK/OFS_BSP/conf`*)

     Note: The file name will be `SILENT.template` in the installer and it has to be renamed as `SILENT.props`.

     Do not install the new applications in the same segment if the pre-installed applications use run management.

Property Name	Description of Property	Permissible Values	Comments
UPLOAD_MODEL	whether you want to perform Model Upload	0 = No 1 = yes	Mandatory
MODEL_TYPE	Released data model or Customized data model	0 = released 1 = customized	# Mandatory only in the case of uploading the data model
DATAMODEL	the path for the customized data model	Not Applicable	# Mandatory only in the case of uploading the customized data model # Option selected for MODEL_TYPE=1
DM_DIRECTORY	the file name for the customized data model	Not Applicable	# Mandatory only in the case of uploading the customized data model # Option selected for MODEL_TYPE=1

Configuring Application Pack XML Files

OFS_BSP_PACK.xml

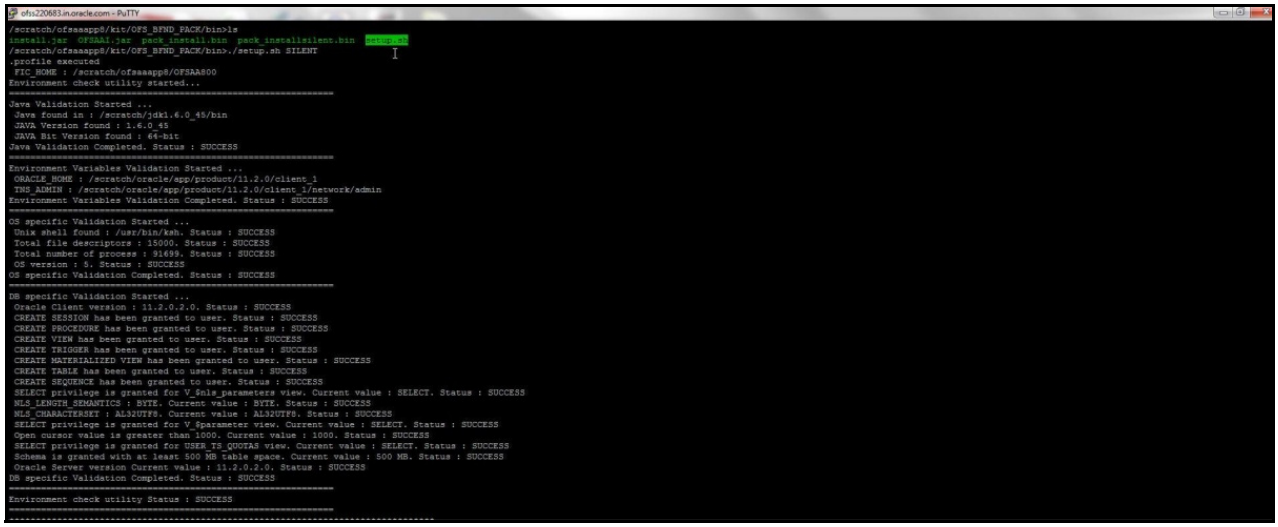
The `OFS_BSP_PACK.xml` file holds details on the various products that are packaged together in OFS BSP.

This section details the various tags/ parameters available in the file and the values that need to be updated. Prior to installing the OFS BSP in SILENT mode, it is mandatory to update this file.

Installation

1. Navigate to the following folder path: *`OFS_BSP_Pack/bin/`*.
2. Execute the `setup.sh` file using the following command:

   ```
   ./setup.sh SILENT
   ```
3. The installer will proceed with Pre-Installation Checks.



4. Enter the OFSAA Processing Tier FTP/SFTP password value, when prompted at the command prompt.

5. Enter the Password and Proceed. The process displays the OFSAA License. Enter: Y and Proceed.

6. First AAI will be Installed.

7. After AAI is installed, the OFS BSP installation begins.

Note: Data Model Upload may take several hours to get complete. You can check the Logs in *OFS_BSP_PACK/OFS_BSP/logs*.

8. Do not close the console until the installation is complete.

```
================================================================================
Installing...
-----------

 [==================|==================|==================|==================]
 [------------------|------------------|------------------|------------------]

Installation Complete.
.profile executed
**************************************************
CTRL characters removal started ...
CTRL characters removal over ...
Windows executable files removal started ...
Windows executable files removal over ...
We are now in /scratch/ofsaaapp8 ...
**************************************************
.profile executed
.profile executed
executing "ant"
Buildfile: /scratch/ofsaaapp8/OFSAA800/ficweb/build.xml
Trying to override old definition of datatype resources

existtest:
     [echo] Checking for file /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war existense

createwar:
     [echo] Creating /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war freshly..
      [war] Building war: /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war

BUILD SUCCESSFUL
Total time: 1 minute 13 seconds
OFSAA App Layer Services start-up check started...
Starting startofsaai.sh service...
nohup: appending output to `nohup.out'
OFSAA Service - OK
Starting icc service...
nohup: appending output to `nohup.out'
ICC service - OK
Shutting down icc service...
nohup: appending output to `nohup.out'
Shutting down OFSAA service...
nohup: appending output to `nohup.out'
OFSAAI App Layer Services check Status: SUCCESSFUL.
```

```
We are now in /scratch/ofsaaapp8 ...
*****************************************************
.profile executed
.profile executed
Executing "ant"
Buildfile: /scratch/ofsaaapp8/OFSAA800/ficweb/build.xml
Trying to override old definition of datatype resources

existtest:
     [echo] Checking for file /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war existense

createwar:
     [echo] Creating /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war freshly..
      [war] Building war: /scratch/ofsaaapp8/OFSAA800/ficweb/OFSAAI800.war

BUILD SUCCESSFUL
Total time: 1 minute 13 seconds
OFSAA App Layer Services start-up check started...
Starting startofsaai.sh service...
nohup: appending output to `nohup.out'
OFSAA Service - OK
Starting icc service...
nohup: appending output to `nohup.out'
ICC service - OK
Shutting down icc service...
nohup: appending output to `nohup.out'
Shutting down OFSAA service...
nohup: appending output to `nohup.out'
OFSAAI App Layer Services check Status: SUCCESSFUL.
OFSAAI DB Layer Services check started...
checking Router service...
Router Service - OK
checking AM service...
AM Service - OK
Checking MessageServer service...
DEBUG: main started.
DEBUG: TraceFileName = /scratch/ofsaaapp8/OFSAA800/ficdb/log/msg_trace_file.log
DEBUG: OpenFiles done.
MessageServer Service - OK
OFSAAI DB Layer File Services check Status: SUCCESSFUL.
*****************************************************
Installation completed...
*****************************************************
/scratch/ofsaaapp8/kit/OFS_BFND_PACK/bin>
```

9. Perform the steps mentioned in Post Installation Configuration section.
10. For enabling Transparent Data Encryption (TDE), see TDE, Data Redaction and the Corresponding Settings in OFSAA.
11. For enabling Data Redaction, see Data Redaction section under Data Security and Data Privacy chapter in OFS Analytical Applications Infrastructure Administration Guide 8.0.6.0.0.
12. For information on Data Protection Implementation, see Data Protection Implementation in OFSAA.

Verifying the Log File

See the following logs files for more information:

- See the `OFS_BSP_installation.log` located at *`OFS_BSP_PACK/OFS_BSP/logs`* folder for OFS BSP installation log file.
- See the `Pack_Install.log` located at *`OFS_BSP_PACK/logs/`* folder for OFS BSP installation log file.
- See the log file(s) located at *`OFS_BSP_PACK/OFS_AAI/logs/`* folder for Infrastructure installation log.
- See the `OFSAAInfrastucture_Install.log` located at *`$FIC_HOME`* folder for Infrastructure installation log.

Changes in .profile file for Solaris Operating System

For Solaris operating system, do the following changes in .profile file present in user's home directory.

1. For Solaris Sparc and X86 systems, append the path $FIC_DB_HOME/lib/libC++11/ to LD_LIBRARY_PATH variable in .profile file.

   For example:

   ```
   LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$FIC_DB_HOME/lib/libC++11
   ```

2. For Solaris Sparc, add the Oracle Developer Studio 12.5 installed path in the beginning of LD_LIBRARY_PATH variable in .profile file.

   For example:

   ```
   LD_LIBRARY_PATH=/opt/SunProd/studio12u5/developerstudio12.5/lib/compilers/CCgcc/lib/
   sparcv9:$LD_LIBRARY_PATH
   ```

CHAPTER 5 – POST INSTALLATION CONFIGURATION

After successfully installing the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack, follow the post installation steps mentioned below.

This chapter includes the following topics:

Note: Ensure that to clear the application cache prior to the deployment of Application Pack Web Archive. This is applicable to all Web Servers (WebSphere, WebLogic, Tomcat). For more information, See Clearing Application Cache section.

Grants for Model Executions

1. Grants- Connect; Data Redaction; RQADMIN; RQROLE; CREATE ANY MINING MODEL; CREATE MINING MODEL; SELECT ANY MINING Model; OLAP USER
2. Grant the following roles:

   Login as SYSDBA and execute the following queries:

```
grant execute on DBMS_REDACT to <SANDBOX SCHEMA>
/
Create role OFS_SEC_DATA
/
grant OFS_SEC_DATA to <SANDBOX SCHEMA>
/
```

```
create role OFS_NOSEC_DATA
/
grant EXEMPT REDACTION POLICY to OFS_NOSEC_DATA
/
grant OFS_NOSEC_DATA to <SANDBOX SCHEMA>
/
alter user <SANDBOX SCHEMA> default role none
/
```

3. After granting roles present in point number 5, alter user <SANDBOX SCHEMA> default role rqadmin;

User Creation, Roles and Permissions

After successful installation of the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack, perform the following post installation steps:

1. Create RCA user from sysadmin.
2. Authorize the user from sysauth.
3. Assign the user to RCA-related user groups.
4. Authorize the user group mapping to RCA.

Excel Upload Mapping and Template

1. Copy the ExcelUpload directory present in *$FICHOME/CIRCA/ExcelUpload*.
2. Change the name of directory named as infodom in ExcelUpload to respective infodom name.
3. Copy the ExcelUpload directory to *ftpshare/STAGE* directory.
4. Create *STAGE* directory in <TOMCAT_HOME>.
5. Copy the ExcelUpload directory to *STAGE* directory in <TOMCAT_HOME>.

Configure Resource Reference

Configure the resource reference in the Web Application Server configured for OFSAA Applications. See Configuring Resource Reference in Web Application Servers for details on configuring the resource reference in WebSphere, WebLogic, and Tomcat Application Servers.

Start/Stop OFSAA Infrastructure Services

Start the OFSAA Infrastructure Services prior to deployment or accessing the OFSAA Applications.

This chapter details on how to start and stop OFSAA Infrastructure services. This section includes the following sub-sections:

- Starting Infrastructure Services
- Starting Web Application Servers

Starting Infrastructure Services

Once the installation of Infrastructure has been completed successfully and the post-installation steps are completed, the servers must be started. Log on to each machine and run the .profile file. All servers mentioned must be started from the same shell encoding. The servers mentioned below 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 in which Infrastructure Application components have been installed, navigate to *$FIC_APP_HOME/common/FICServer/bin* and execute the following command to start the Infrastructure Server.

   ```
   ./startofsaai.sh
   ```

   Note: You can also start the Infrastructure Server by executing the command "nohup ./ startofsaai.sh &". Starting the process using "nohup" and "&" will return the command prompt without having to wait till the process completes. However, this command cannot be used when you are starting the server for the first time or starting after changing user password in the configuration database schema.You can also start the Infrastructure Server by executing the command "nohup ./ startofsaai.sh &". Starting the process using "nohup" and "&" will return the command prompt without having to wait till the process completes. However, this command cannot be used when you are starting the server after changing user password in the Configuration database schema.

2. Start ICC server:
   - On the machine in which Infrastructure default Application components have been installed, navigate to *$FIC_HOME/ficapp/icc/bin* folder.
   - Execute the command:

     ```
     ./iccserver.sh
     ```

     Note: Only Infrastructure Default Application Server would hold ICC component.

3. Stopping Infrastructure Services:
   - On the machine on which Infrastructure Database components have been installed, navigate to *$FIC_DB_HOME/bin* folder and execute the command to start "Agent server":

     ```
     ./agentstartup.sh
     ```

   Or

- Start Back-end services using the command:

  ```
  nohup ./agentstartup.sh &
  ```

  Note: This agent internally starts the Router, Message Server, OLAP data server and AM services.

Starting Web Application Servers

Start the Web Application Server depending on the type from the following table.

Start up Option	Description
Starting WebSphere profile	On the machine in which Web sphere is installed, navigate to [Webshpere_Install_Directory] /AppServer/<profiles>/<profile name>/bin and execute the command: `./startServer.sh server1`
Starting WebLogic Domain	On the machine in which WebLogic is installed navigate to <WebLogic Installation directory>/user_projects/domains/<domain name>/bin and execute the command: startWebLogic.sh -d64 **Note:** If WebLogic is already running, access the WebLogic Admin Console. Stop and start the application <context name>.ear.
Starting Tomcat Application	On the machine in which Tomcat is installed, navigate to <Tomcat_Install_ Directory>/bin and execute the command: `./startup.sh run`

Stopping Infrastructure Services

To stop Infrastructure services:

1. On the machine in which Infrastructure Application components have been installed, navigate to *$FIC_APP_HOME/common/FICServer/bin* folder and execute the command:

   ```
   ./stopofsaai.sh
   ```

2. To stop ICC server, on the machine in which Infrastructure default Application components have been installed, navigate to *$FIC_HOME/ficapp/icc/bin* folder and execute the command:

   ```
   ./iccservershutdown.sh
   ```

   Only Infrastructure Default Application Server would hold ICC component.

3. To stop Back-end server, on the machine in which Infrastructure database components have been installed, navigate to *$FIC_DB_HOME/bin* folder and execute the command:

   ```
   ./agentshutdown.sh
   ```

Add TNS entries in TNSNAMES.ORA file

Add TNS entries in the `tnsnames.ora` file, for every schema created for the Application Pack:

To find the tnsname for the entries, follow these steps:

1. Login to the application using System Administrator privileges.
2. Navigate to System Configuration & Identity Management tab.
3. Click Administration and Configuration >> System Configuration >> Database Details.
4. Expand the drop-down list for Name to get the list of TNS entry names.

Alternatively, you can connect to the CONFIG schema and execute the below query:

```
select dbname from db_master where dbname !='CONFIG'
```

Configuring Web Server

This section includes the following topics:

Configuring Web Server

This step assumes an installation of a Web Server exists as per the prerequisites.

Refer the product specific Installation Guide/ Configuration Guide to install/ configure the Web Server. If an installation already exists, skip and proceed to the next step.

Note: Make a note of the IP Address/ Host-name and Port of the web server. This information is required during the installation process.

See Oracle Financial Services Analytical Applications Infrastructure Security Guide for additional information on securely configuring your Web Server.

Ensure to enable sticky session/ affinity session configuration on the web server. See the respective product specific Configuration Guide for more details. Additionally, you also need to enable the sticky session/ affinity session configuration at Load Balancer level if you have configured a Load Balancer in front of the web server(s).

Configuring Web Application Server

This step assumes an installation of a web application server exists as per the prerequisites. To configure the Web Application Server for OFSAA Deployment refer the sections below.

This section includes the following topics:

- Configuring WebSphere Application Server for Application Deployment
- Configuring WebLogic for Application Deployment
- Configuring Apache Tomcat Server for Application Deployment

---

Note: Make a note of the IP Address/ Host-name and Port of the web application server. This information is required during the installation process (required if 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 Oracle Financial Services Analytical Applications Infrastructure Security Guide for additional information on securely configuring your Web Server.

Configuring WebSphere Application Server for Application Deployment

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

This section includes the following topics:

- Creating a New Profile in WebSphere
- Managing IBM WebSphere SDK Java Technology Edition Versions
- Managing Applications in WebSphere
- Deleting WebSphere Profiles
- Configuring WebSphere Shared Library to Support Jersey 2x and Jackson 2.9x Libraries
- WebSphere HTTPS Configuration
- WebSphere Memory Settings
- Configuring WebSphere for REST Services Authorization
- Configuring Application Security in WebSphere

Creating a New Profile in WebSphere

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

The command to create a profile without 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>"
```

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 Profile in 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 <base port>" which specifies the starting port number to generate and assign all ports for the profile. For more information on using these ports, see WebSphere manageprofiles command.

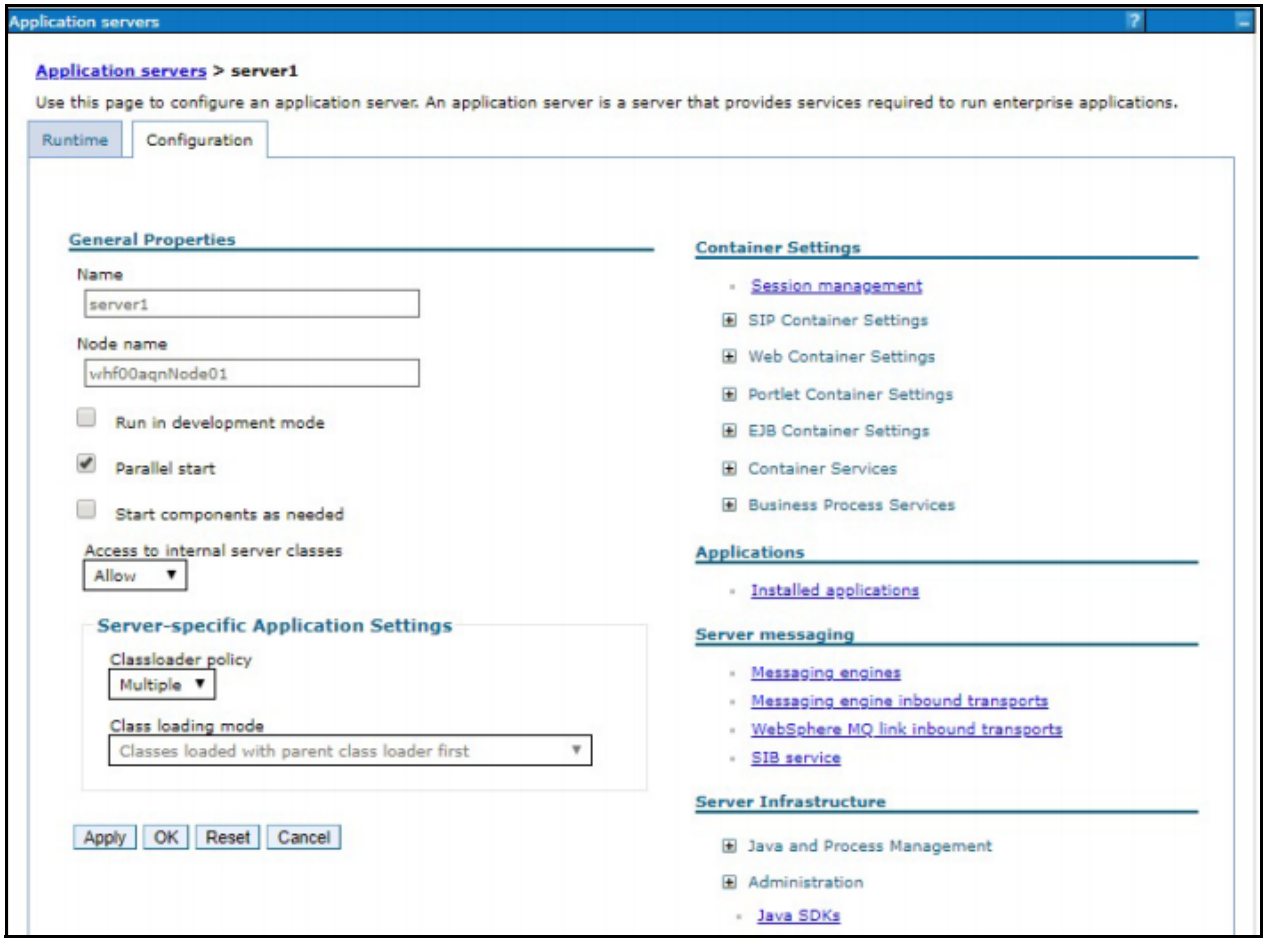
Managing IBM WebSphere SDK Java Technology Edition Versions

By default, WebSphere Application Server V8.5.5.X uses the Java 6.0 SDK. You must upgrade to Java 7.X SDK or JAVA 8.X SDK.

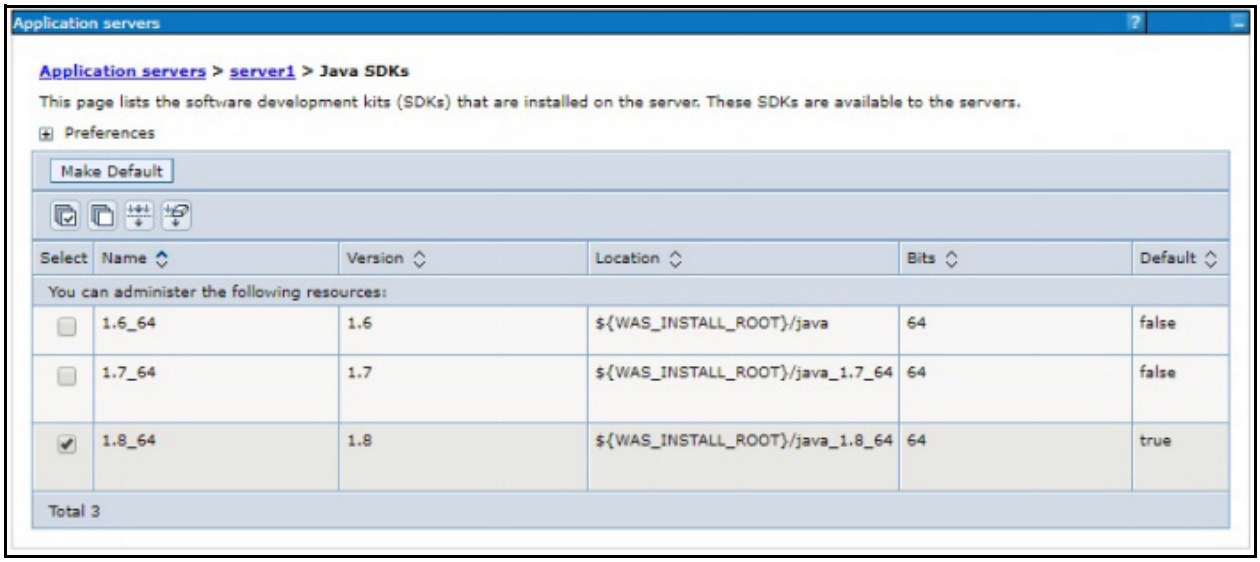
Prerequisites: Install the IBM WebSphere SDK Java Technology Edition Versions 1.7.X_64 or 1.8.X_64.

Perform the following steps to upgrade to Java 7.X SDK or 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. Login 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 Application servers window, click the required Application Server link. For example, server1 in the following illustration:



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



7. Select either **1.7_64** or **1.8_64** based on the JVM version with which you plan to install OFSAA or have installed with.
8. Click **Make Default** button and save to master repository.
9. Restart the WebSphere Application Server to apply the changes to the IBM application profile.

Managing Applications in WebSphere

To manage the installed applications in WebSphere, do the following:

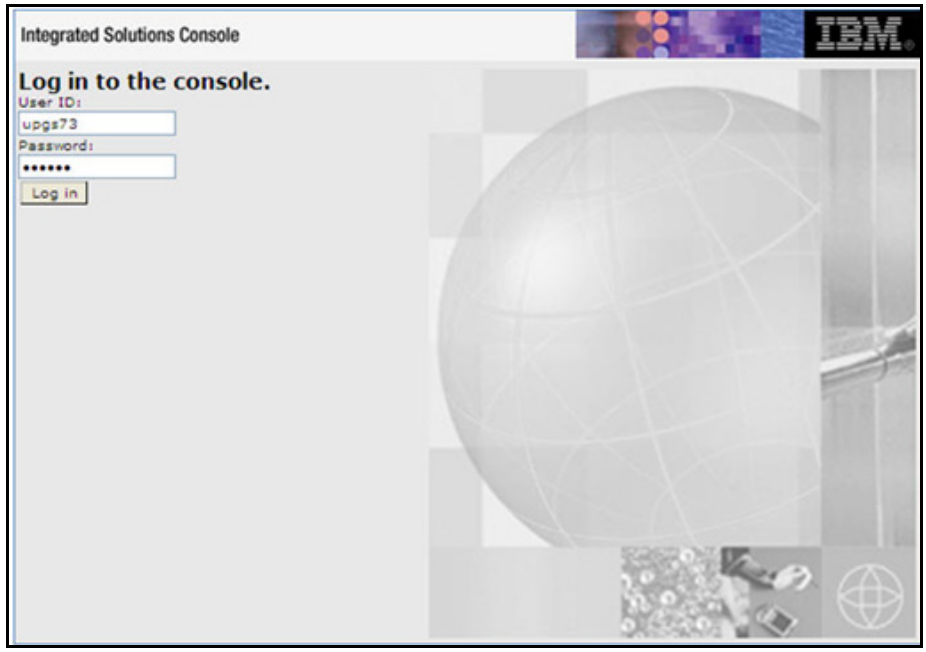
1. Open the administrator console using the following URL:

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

   Example: `http://10.111.222.333:9003/ibm/console` (https if SSL is enabled)

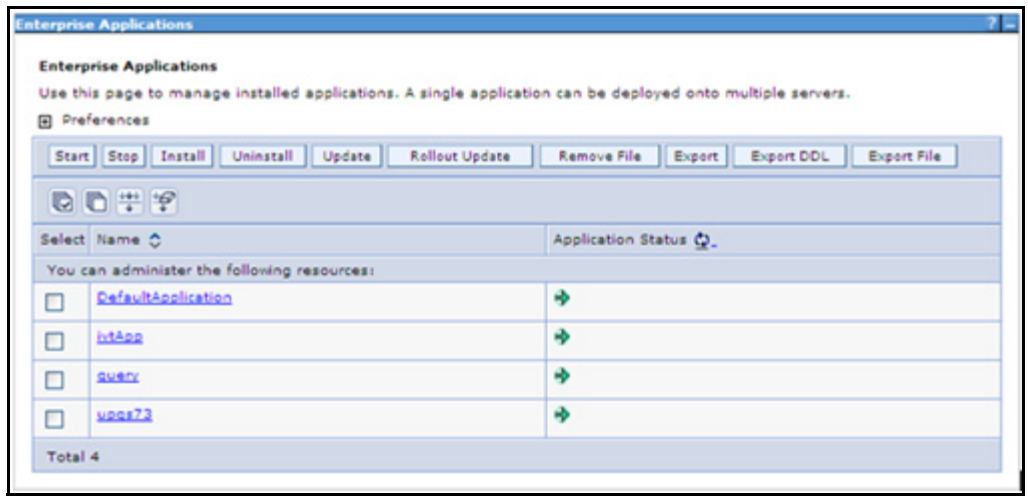
   Note: Administrative Console Port value is available in serverindex.xml file within *`<WebSphere Profile Directory>/config/cells/<Node Cell>/nodes/<Node Name>`* directory.

   The Integrated Solutions Console Login window is displayed.



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

The Enterprise Applications screen is displayed.



4. This Enterprise Applications screen helps you to:
   - Install new application
   - Un-install existing applications
   - Start or Stop the installed applications

Deleting WebSphere Profiles

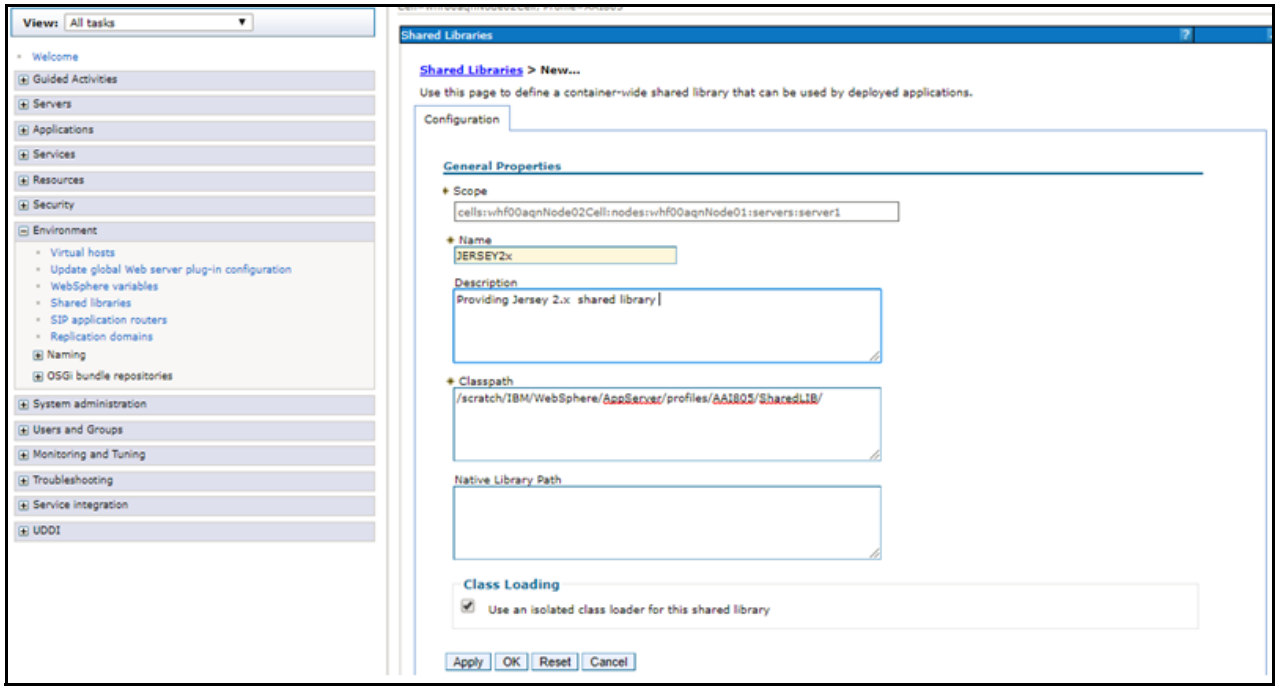
To delete a WebSphere profile, do the following:

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 profile folder.
   Example: *<WebSphere_Installation_Directory>/AppServer/profiles/<profile_name>*
6. Execute the command:
   `manageprofiles.sh -validateAndUpdateRegistry`

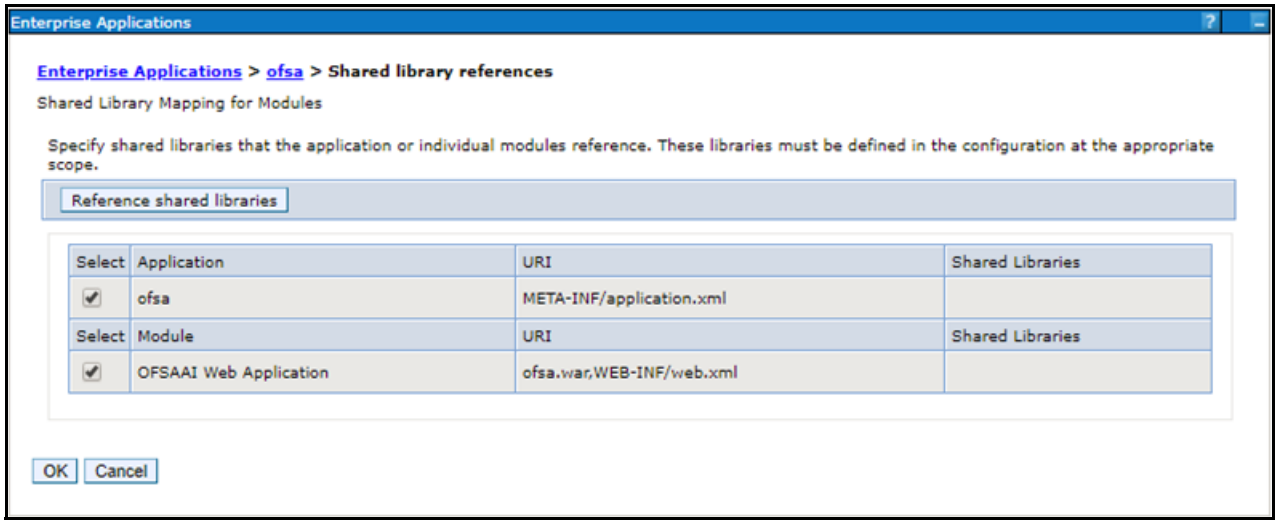
Configuring WebSphere Shared Library to Support Jersey 2x and Jackson 2.9x Libraries

Perform the following configuration to set WebSphere shared library to support jersey 2x and Jackson 2.9x libraries.

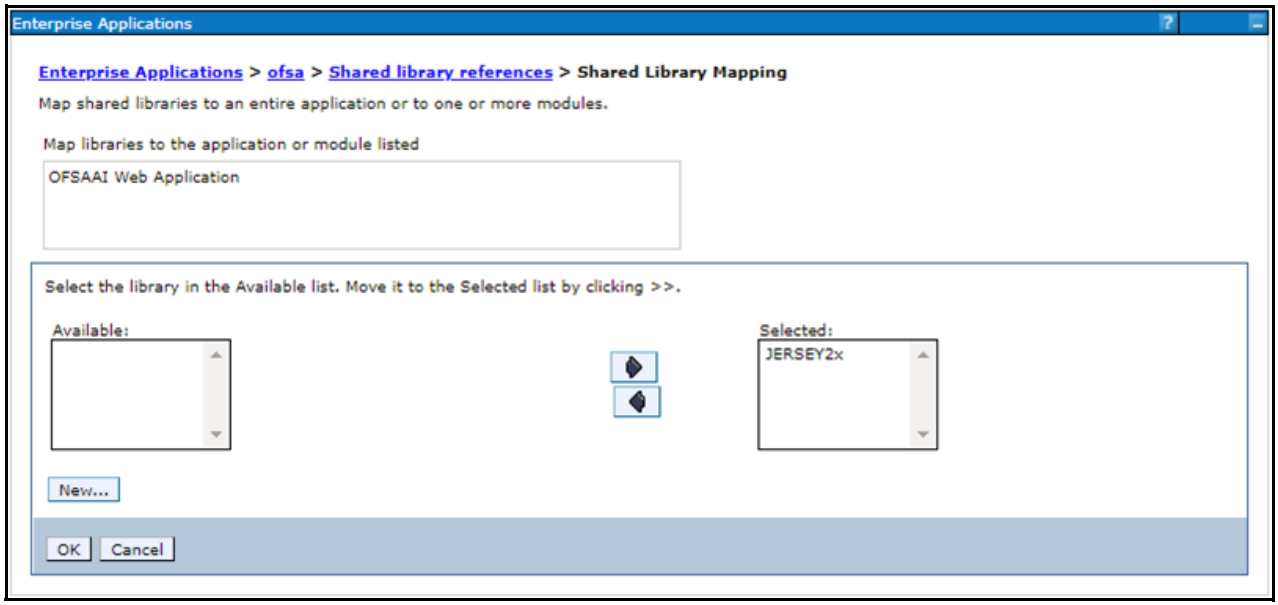
1. Click **Environment** from the menu on the left to expand and view the list. Click **Shared Libraries** to open the Shared Libraries window.



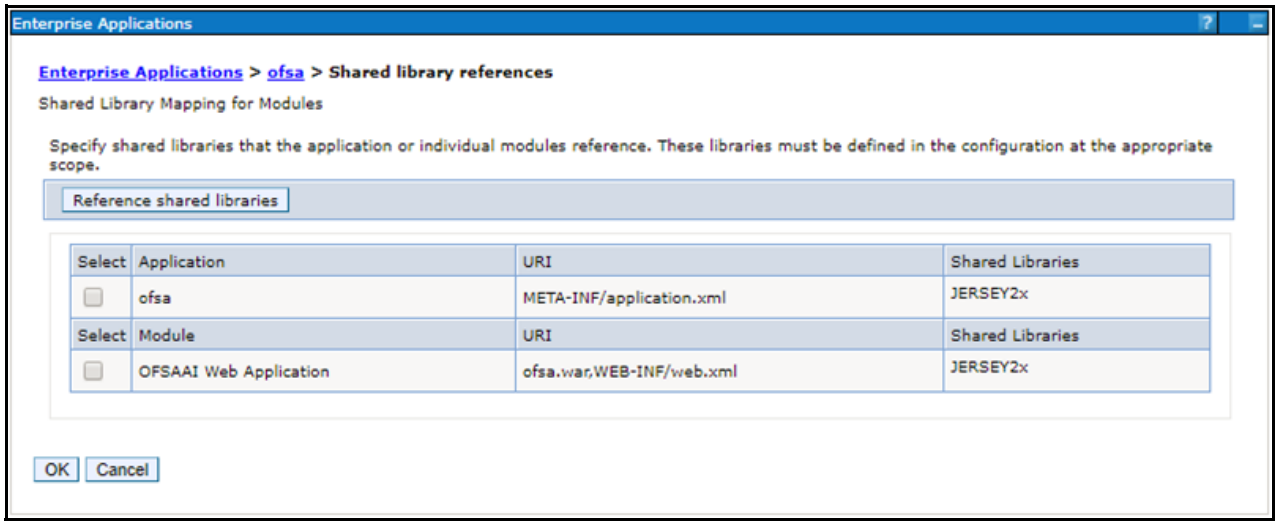
2. Enter details as shown in the following:
   a. **Name**: Enter a unique identifiable name.
   b. **Description**: Enter a valid description.
   c. **Classpath**: Enter the absolute path where the JARs related to Jersey 2.x and Jackson 2.9x are copied. These jars are available in the <OFSAA_HOME>/utility/externallib/WEB-INF/lib directory after creation of the EAR file.
3. Select **Use an isolated class loader for this library**.
4. Click **OK** to save to master configuration.
5. Select the application or module and map the shared libraries. Click **OK**. In the following illustration, ofsa is selected.



6. From the Shared Library Mapping window, move the required shared libraries from **Available** to **Selected**. In the following illustration, JERSEY2x is selected.



7. Click **OK**.
8. Similarly, select the next application or module and repeat the procedure from steps 5 to 7.



9. Disable the built-in JAX-RS via JVM property.
   a. Go to WebSphere admin console in **Servers > WebSphere Application Servers > yourServerName**.
   b. In **Server Infrastructure** section, go to **Java and Process Management > Process definition > Java Virtual Machine > Custom properties**.
   c. Add the following property:

      `com.ibm.websphere.jaxrs.server.DisableIBMJAXRSEngine=true`
10. Restart the application.

WebSphere HTTPS Configuration

Following are the steps for configuring an HTTPS Transport on WebSphere:

1. Create a profile using the Profile Creation Wizard in WebSphere.
2. Note down the https port specified during this process and use the same as 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.

WebSphere Memory Settings

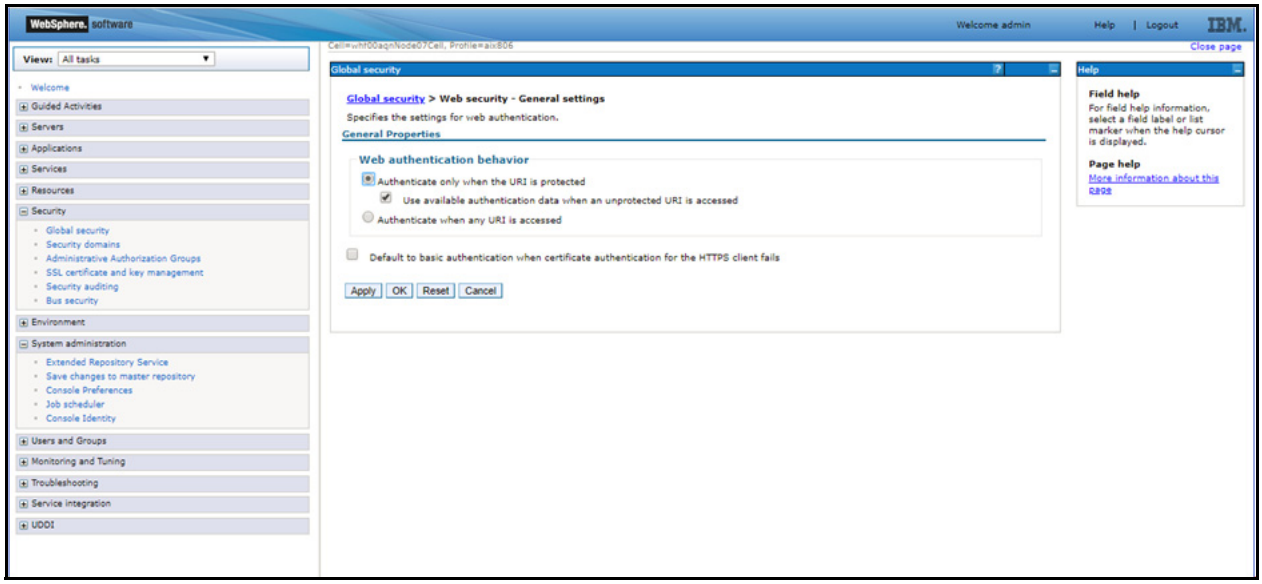
To configure the WebSphere Memory Settings:

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

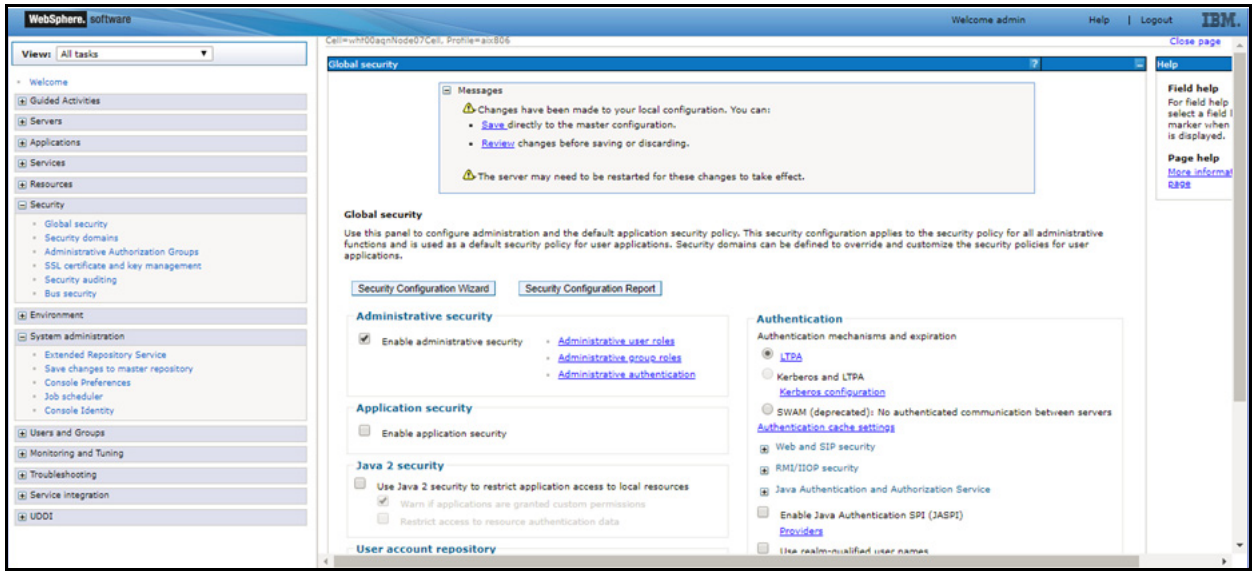
Configuring WebSphere for REST Services Authorization

Configure the following in WebSphere to enable REST API authorization by OFSAA:

1. Log on to WebSphere console with the User ID provided with the admin rights.
2. Expand Security menu in the LHS and click Global security > Web and SIP security > General settings.



3. De-select the Use available authentication data when an unprotected URI is accessed check box.
4. Click OK.



5. Click Save to save the changes to master configuration.

Configuring 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.

Configuring 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 WebLogic Application Server.

Note: For deployment on Oracle WebLogic Server 12.1.3+ (64 bit) with Java 8, download and install patch 18729264 from My Oracle Support.

This section includes the following topics:

- Creating Domain in WebLogic Server
- Delete Domain in WebLogic
- WebLogic Memory Settings
- Configuring WebLogic for REST Services Authorization

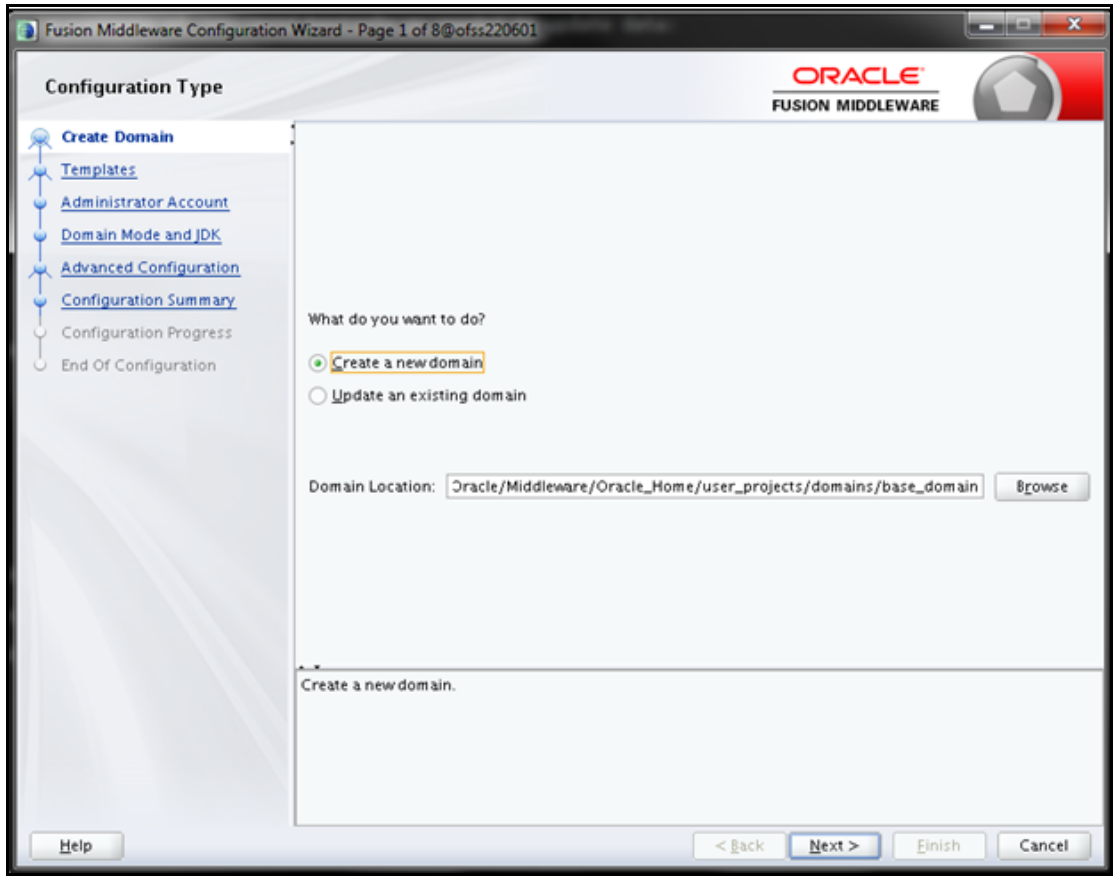
Creating Domain in WebLogic Server

To create a new domain using Configuration Wizard in WebLogic, do the following:

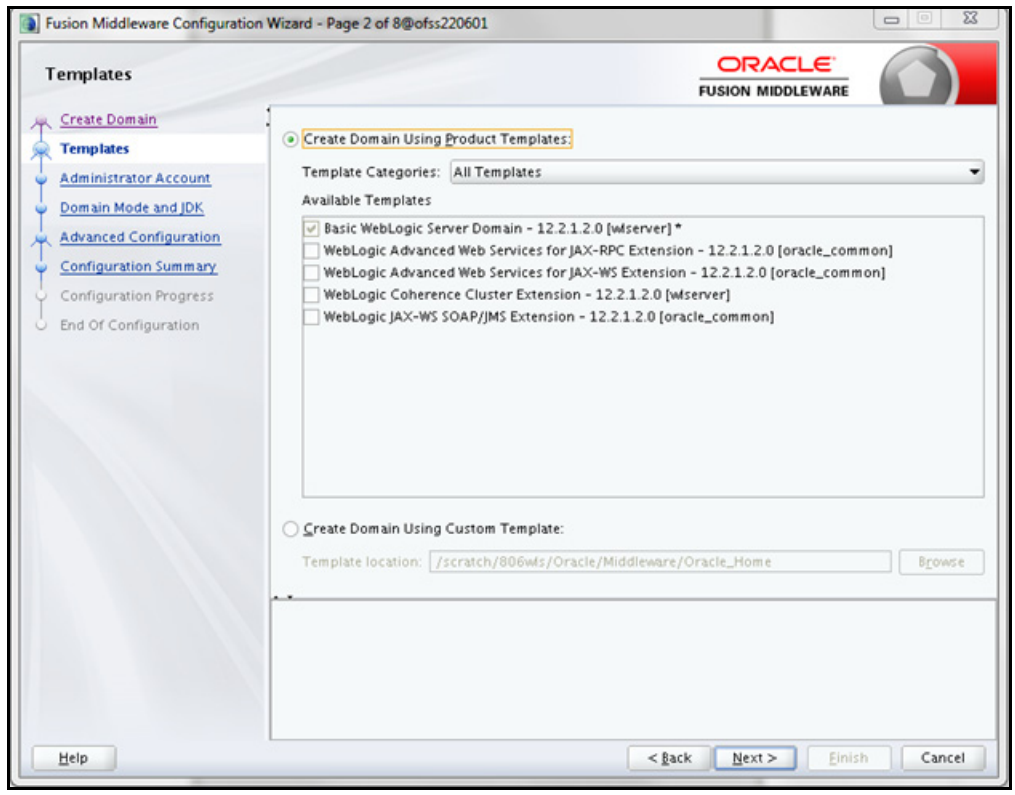
1. Navigate to the directory <WLS_HOME>/wlserver/common/bin and execute the command:

   ```
   ./config.sh
   ```

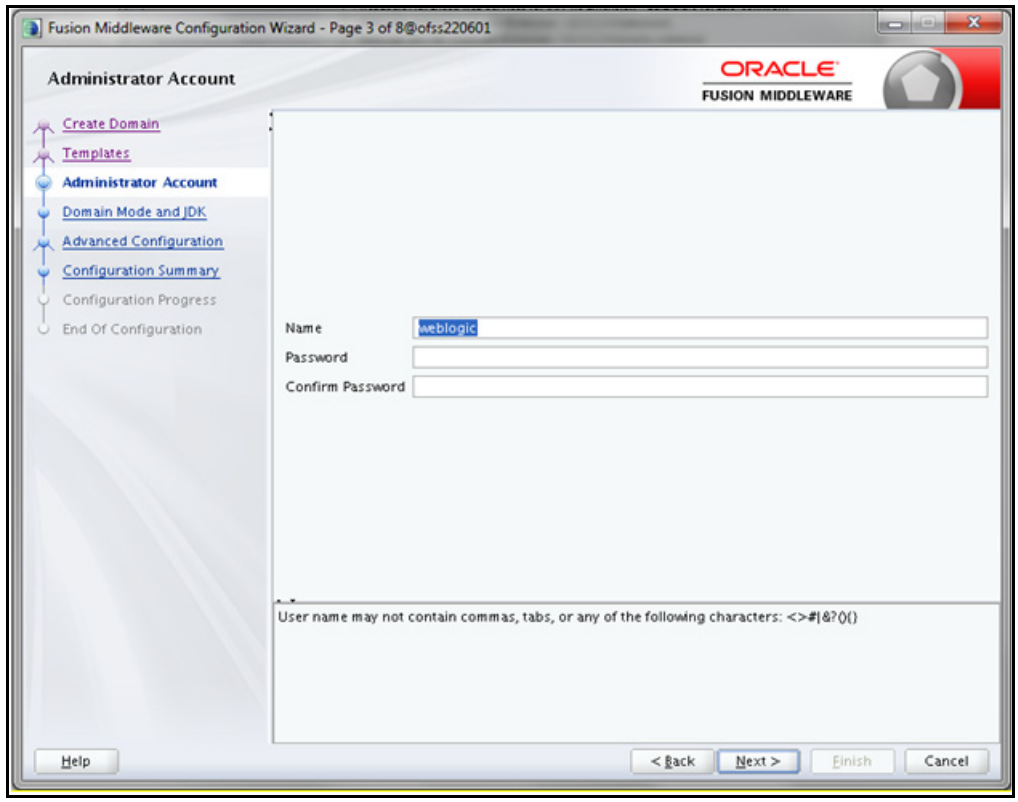
The Configuration Type window of the Configuration Wizard is displayed.



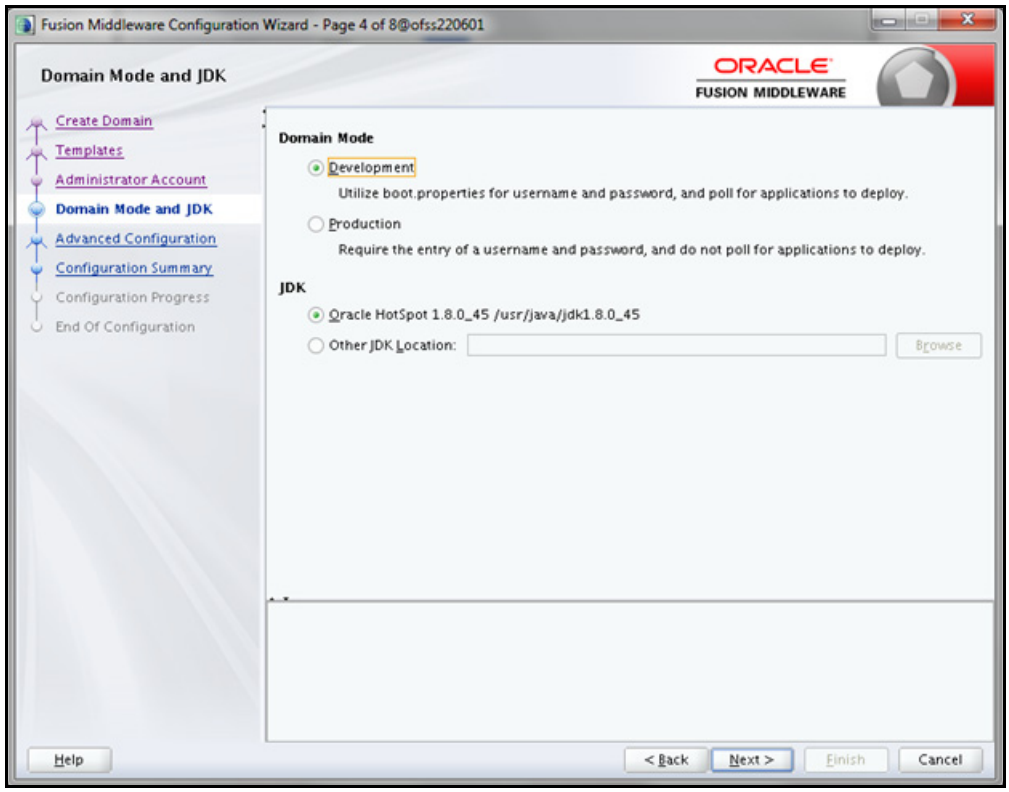
2. Select **Create a new domain** option and click **Next** to display the **Templates** window.



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

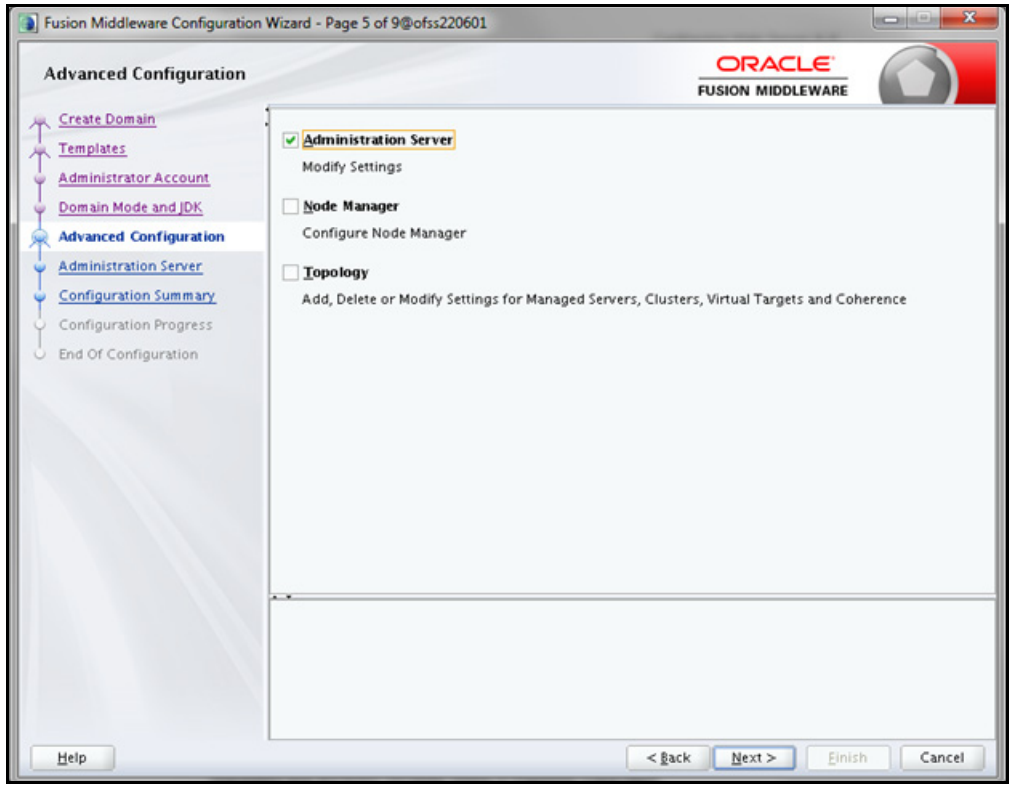


4. Enter the user name to be assigned to the administrator, the password and confirm the password. Click **Next** to display **Domain Mode and JDK** window is displayed.

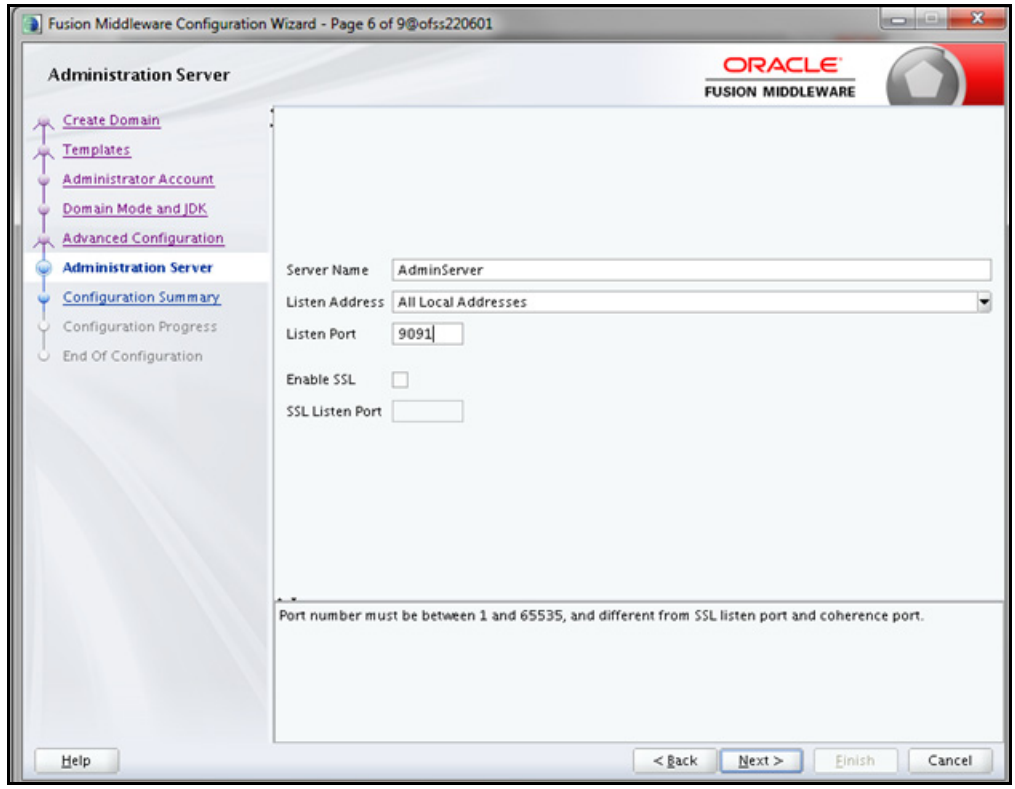


5. Select from the following options:
   - In the **Domain Mode** section, select the required mode (Development or Production).
   - In the **JDK** section, select the required option. If you select **Other JDK Location**, click **Browse**, navigate to the JDK location, and select.

Click **Next** to display the **Advanced Configuration** window.



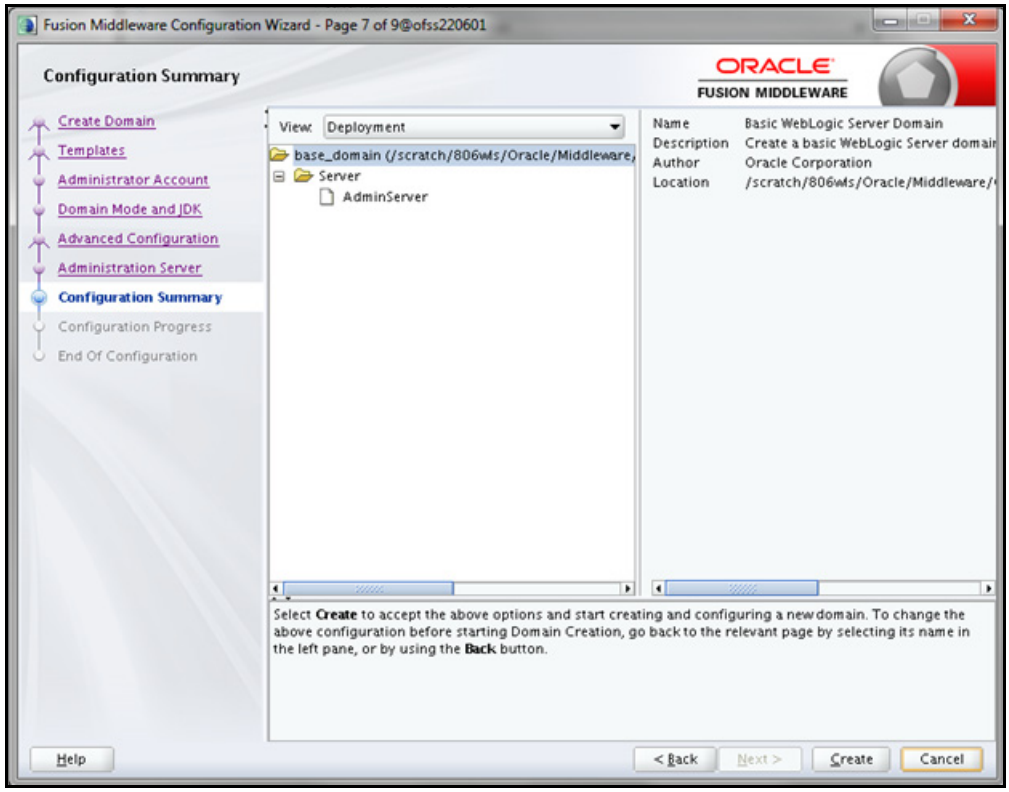
6. Select **Administration Server**. A WebLogic Server domain must have an Administration Server. You can also select **Manages Servers**, **Clusters and Machines** and **RDBMS Security Store**, if required. Click **Next** to display the **Administration Server** window.



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.

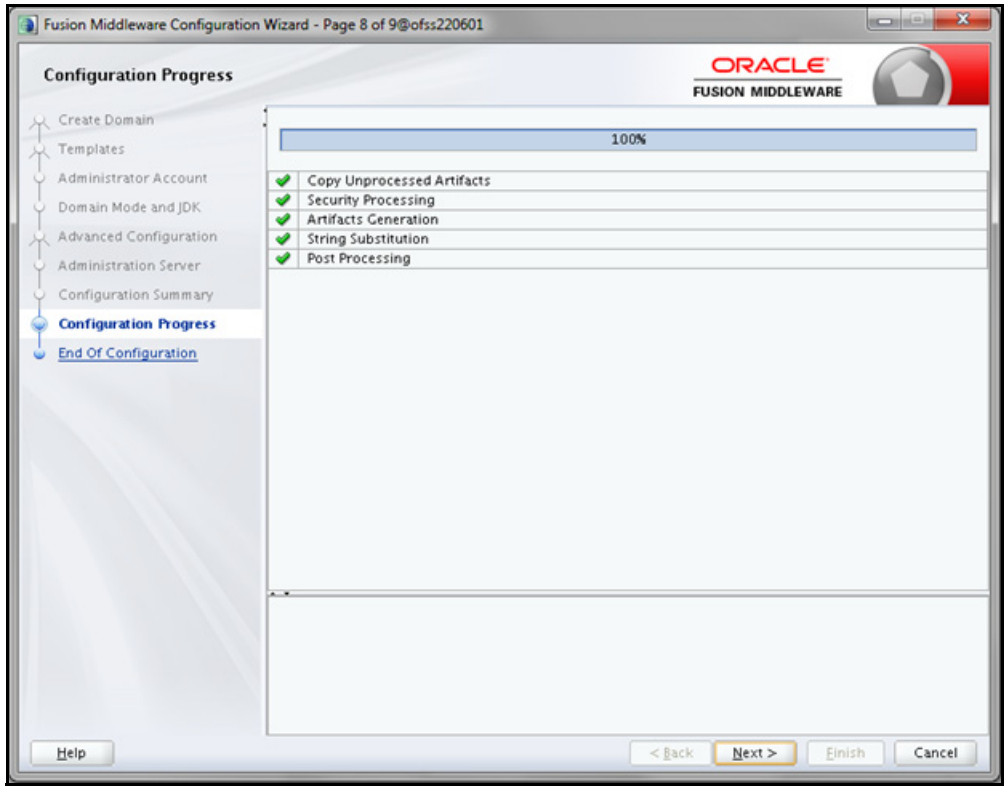
   Click **Next** to display the **Configuration Summary** window.

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.



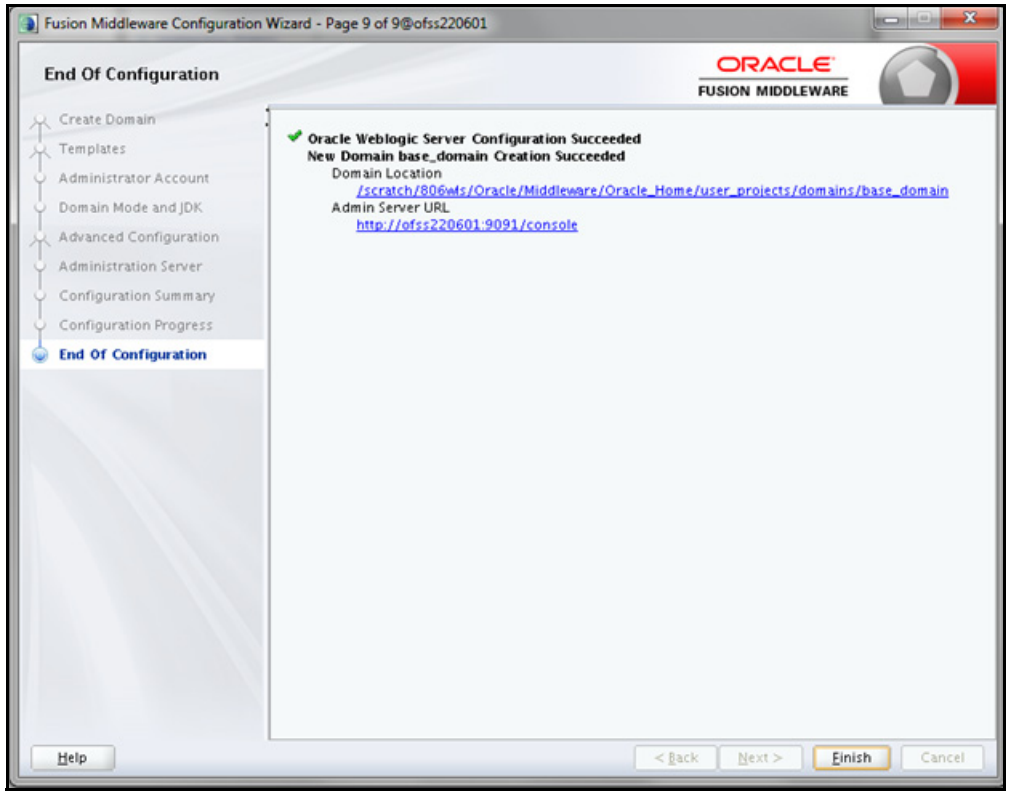
8. Verify the configuration details of the WebLogic domain and click **Create**.

The **Configuration Progress** window is displayed with the status indication of the domain creation process.



9. Click **Next** when 100% of the activity is complete.

The **End of Configuration** window is displayed



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

Note: Note down the HTTPS port specified during this process and use the same as 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

---

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

Delete Domain in WebLogic

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.

WebLogic Memory Settings

To configure the WebLogic Memory Settings:

1. Change the memory setting for Java Heap to `-Xms512m -Xmx3072m` in `setDomainEnv.sh` file, which resides in the folder *<DOMAIN_HOME>/bin* and in `CommEnv.sh` file which resides in the folder *common/bin*.

   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"
```

Configuring WebLogic for REST Services Authorization

To enable REST API authorization by OFSAA in WebLogic, perform the following steps:

1. Open the config.xml file located in the domain where OFSAA is deployed, that is *<domain_home>/config/config.xml*
2. Add the following in the security-configuration tag:

```
<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>
```

Configuring 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:

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 instructed below.

This file contains an XML tag <user> for each individual user, which will display the user name and password used by admin to log on to Tomcat, and the role names to which the admin user is associated with. For example, <user name="admin" password="admin" roles="standard-manager " />

1. Add the manager role to any one of the existing user name/ password combination as shown in the example above.
2. Use the same user-name/ password to which the manager role has been assigned to access the Tomcat Application Manager.
3. If the Tomcat server is already running, it requires a re-start after the above configuration is done.

Configure Tomcat to use JAVA 64 bit Executables

1. Navigate to the "$CATALINA_HOME/bin" folder.
2. Edit the setclasspath.sh as explained below:
3. Replace the following block of text:

```
# Set standard commands for invoking Java.
_RUNJAVA="$JRE_HOME"/bin/java
if [ "$os400" != "true" ]; then
_RUNJDB="$JAVA_HOME"/bin/jdb
```

With:

```
# Set standard commands for invoking Java.
_RUNJAVA="$JAVA_BIN"/java
if [ "$os400" != "true" ]; then
_RUNJDB="$JAVA_BIN"/jdb
```

4. If the Tomcat server is already running, it requires a re-start after the above configuration is done.

Note: In case tomcat is installed under different Unix profile, set JAVA_BIN environment variable in .profile to include the Java Runtime Environment absolute path.

For example:

```
export JAVA_BIN /usr/java6_64/jre/bin
export JAVA_BIN = /usr/java6_64/jre/bin//sparcv9
```
for Solaris Sparc.

Configure Servlet Port

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

If you need to use a different port number, you must first configure the port in the "server.xml" in the "conf" directory of Tomcat Installation directory. The following steps guide you through the configuration process:

1. Navigate to *$CATALINA_HOME/conf*. Open `server.xml` and locate the tag:
   `"Define a non-SSL HTTP/1.1 Connector on port 8080 "`
2. Against this tag, a parameter is specified 'Connector port = "8080" '. Edit this value to the new port number that will be used during the installation process.
3. Save your changes in `server.xml`.

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

SSL Port Configuration

If you need to 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 "*<Tomcat_installation_folder>/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 would be required during the installation of OFSAA Application Pack. To enable https configuration on Infrastructure, assign value 1 to "`HTTPS_ENABLE`" in `OFSAAI_InstallConfig.xml` for SILENT mode OFSAAI installation.

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

Apache Tomcat Memory Settings

To configure the Apache Tomcat Memory Settings:

1. Locate the file catalina.sh which resides in the folder *<CATALINA_HOME>/bin*.
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`.

   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
```

Configuring Tomcat for User Group Authorization and Data Mapping

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

1. Navigate to the *$CATALINA_HOME/conf* folder and open 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.

Uninstalling WAR Files in Tomcat

To uninstall WAR files in tomcat, see Uninstalling WAR Files in Tomcat.

Configuration for Axis API

This step is optional and required only if the web application server used in Apache Tomcat. If you use any other web application server, skip and proceed to next step.

Copy the `jaxrpc.jar` from the *<OFSAA Installation Directory>/axis-1_4/webapps/axis/WEB-INF/lib* and place it in under *<Tomcat Installation Directory>/lib* and restart the Tomcat Server.

Additional Configurations for Tomcat

To stop generating static content with one print statement per input line, you need to configure the `web.xml` file.

To configure `web.xml` file, perform the following steps:

1. Navigate to *tomcat/conf* folder.

2. Edit `web.xml` file as explained below:

Set the mapped file parameter to False in the servlet tag mentioned with

```
<servlet-name>jsp</servlet-name>.
<init-param>
<param-name>mappedfile</param-name>
<param-value>false</param-value>
</init-param>
```

Configuring Work Manager in Web Application Servers

Process Modelling framework requires creation of Work Manager and mapping it to OFSAA instance. This configuration is required for WebSphere and WebLogic Web Application Server types.

This section covers the following topics:

- Configuring Work Manager in WebSphere Application Server
- Configuring Work Manager in WebLogic Application Server

Configuring Work Manager in WebSphere Application Server

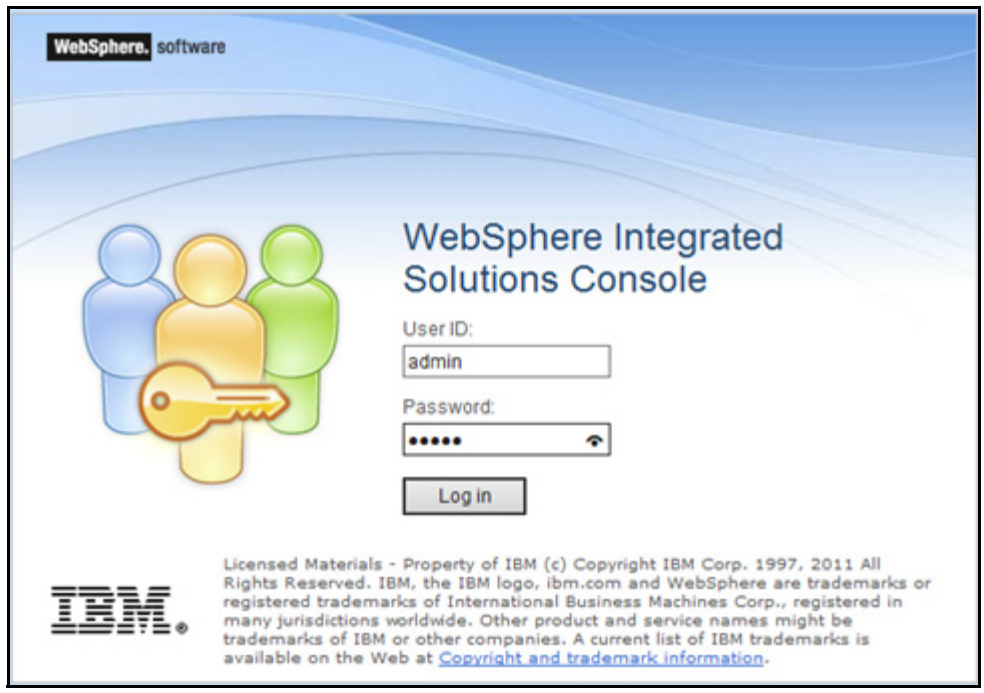
This section is applicable only when the Web Application Server type is WebSphere.

This section covers the following topics:

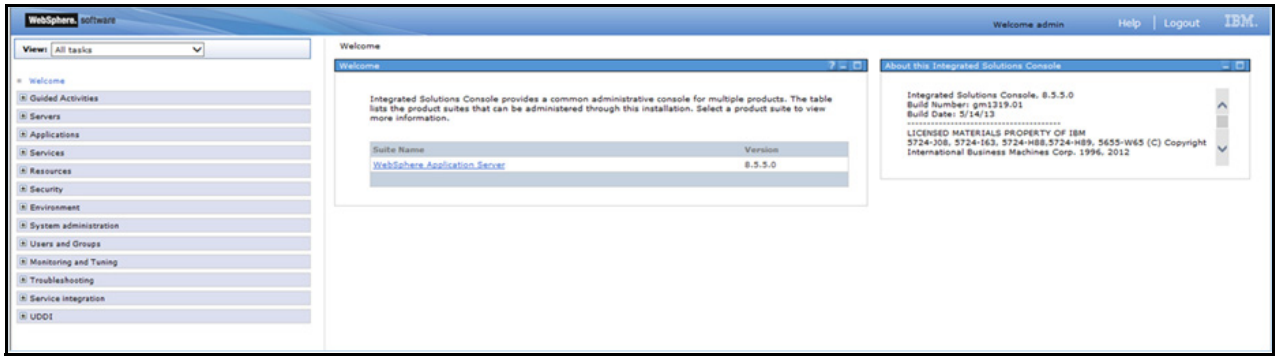
- Creating Work Manager
- Mapping Work Manager to OFSAA WebSphere Instance

Creating Work Manager

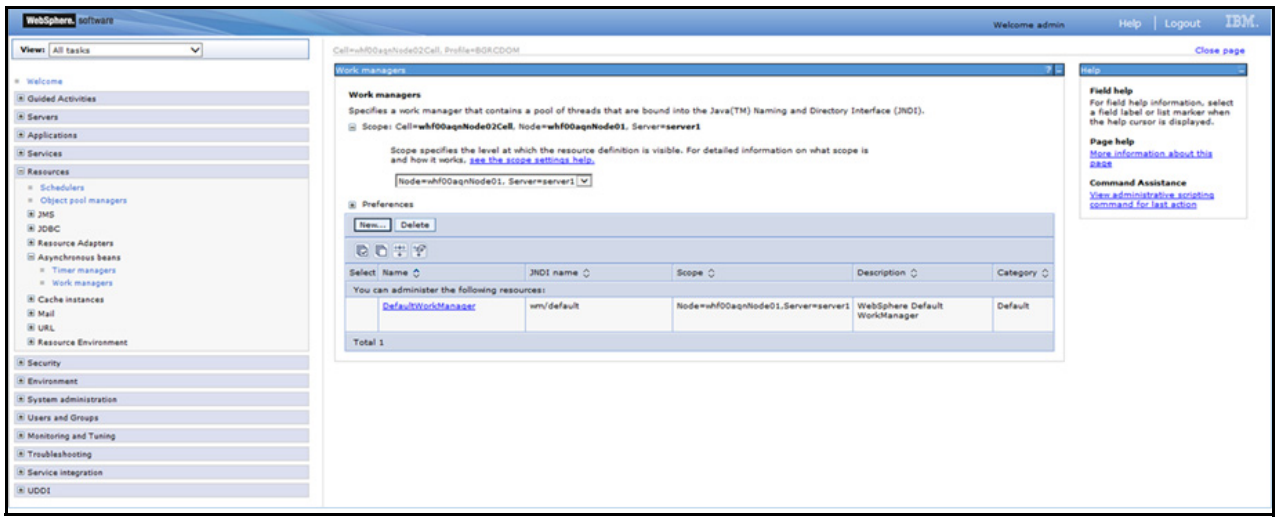
1. Open the WebSphere admin console in the browser window: http://<ipaddress>:<administrative console port>/ibm/console. (https if SSL is enabled). The Login window is displayed.



2. Login with the user id that has admin rights.



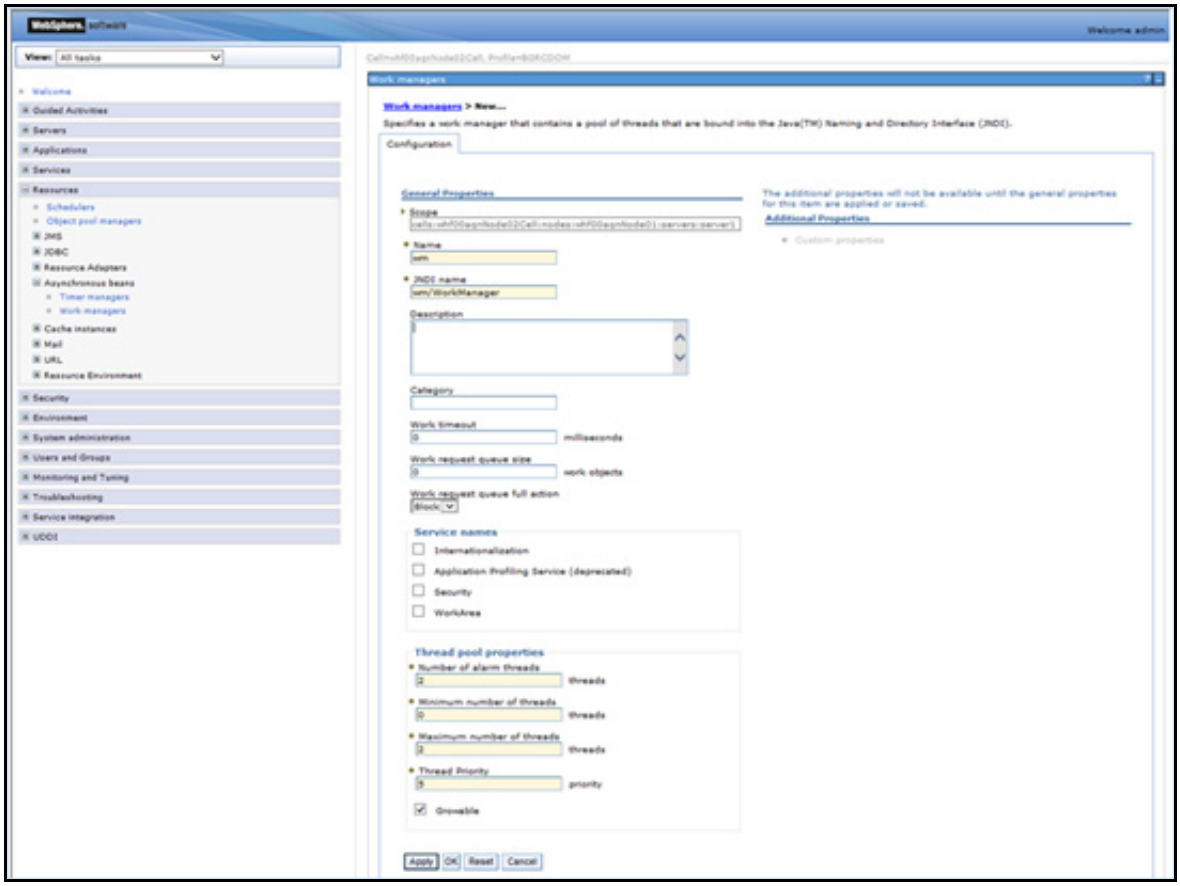
3. From the LHS menu, expand **Resources > Asynchronous beans** and select **Work Managers**.



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

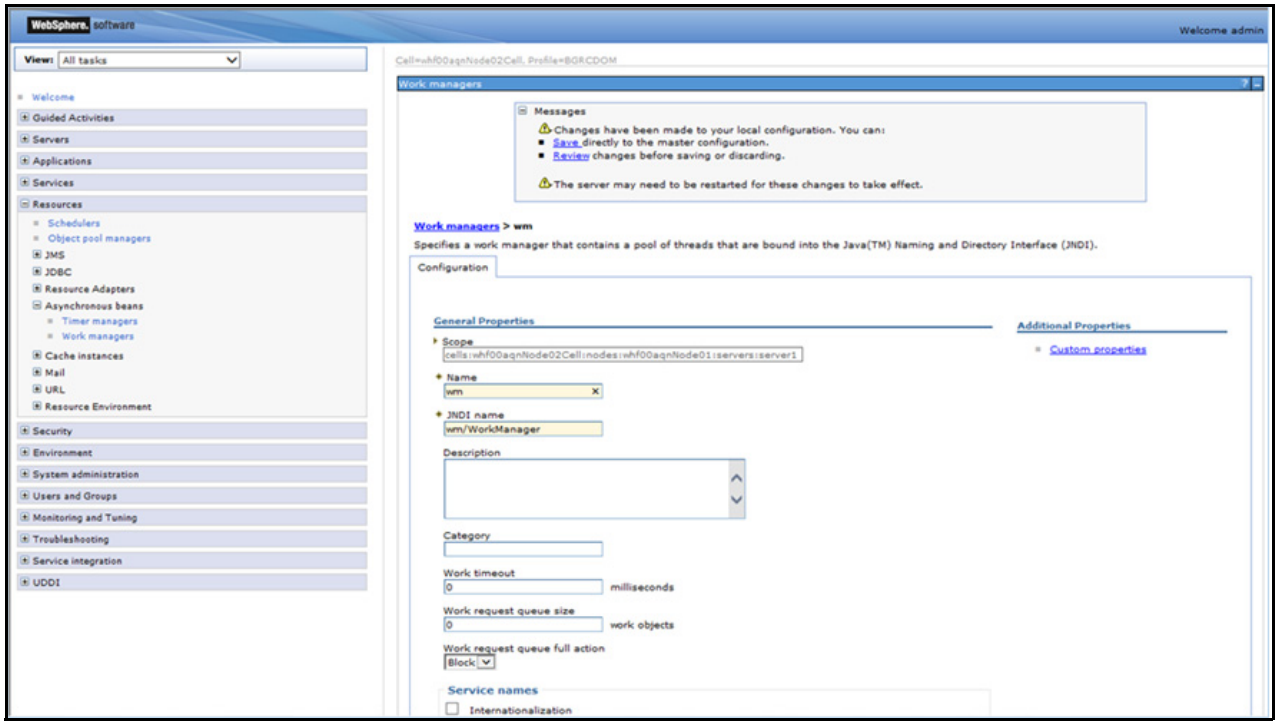
   For example, Node=whf00aqnNode01, Server=server1.

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

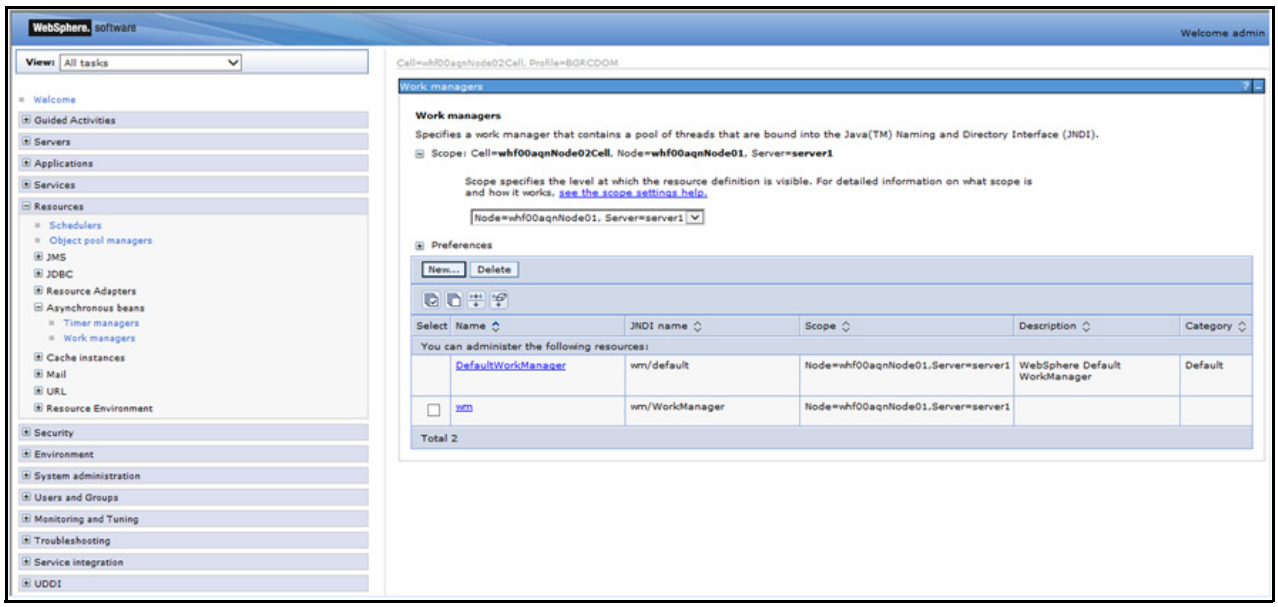


6. Enter the **Name** as 'wm' and **JNDI** name as 'wm/WorkManager ' in the respective fields.
7. Enter the **Thread pool properties**.

8. Click **Apply**.



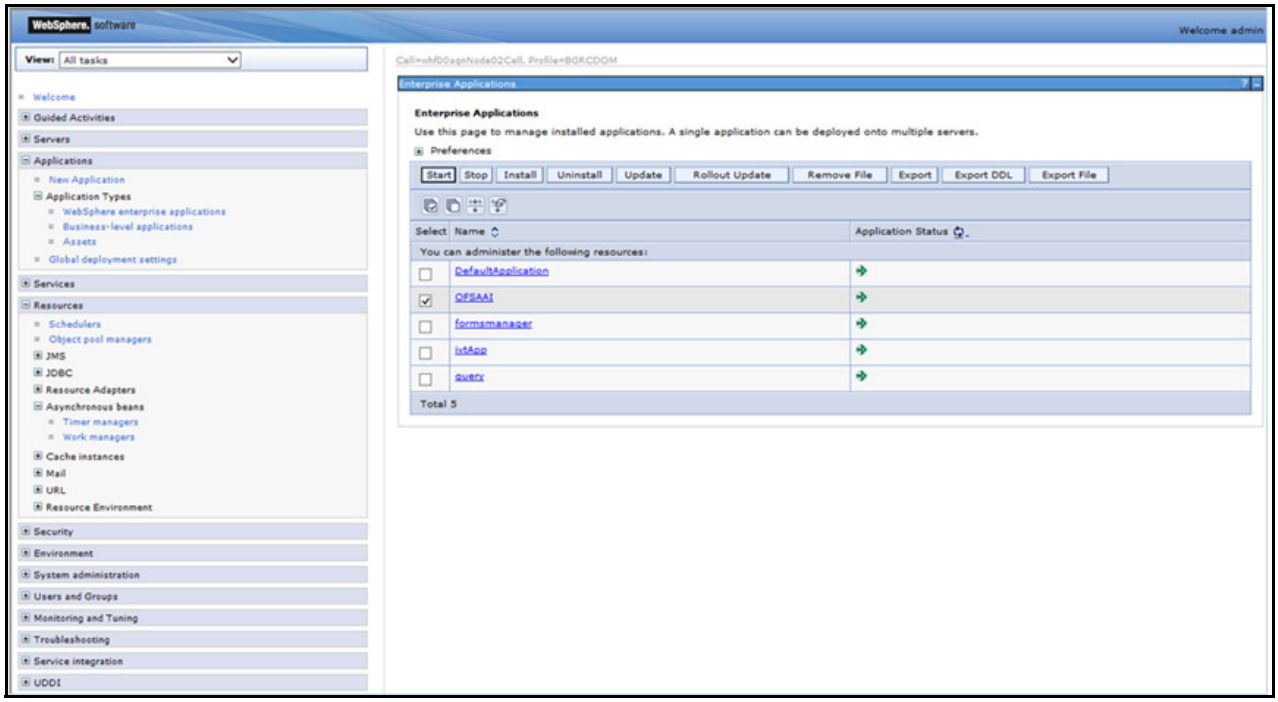
9. Click **Save**.



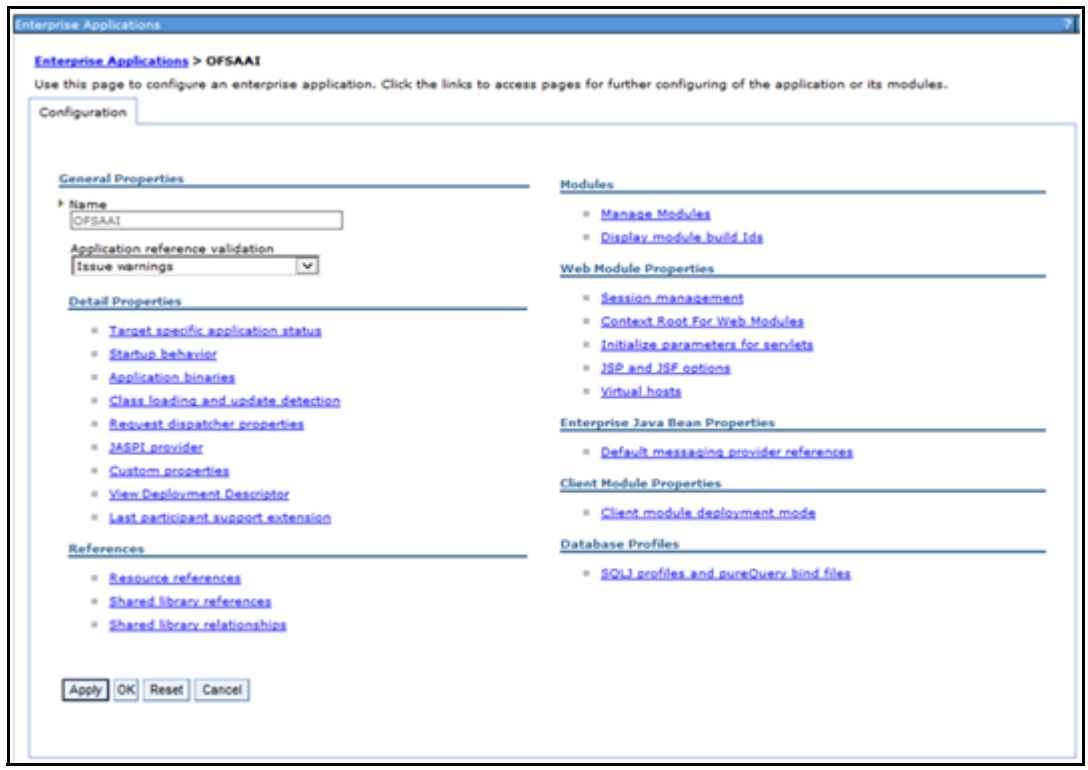
After creating work manager successfully, you have to map it to OFSAA instance.

Mapping Work Manager to OFSAA WebSphere Instance

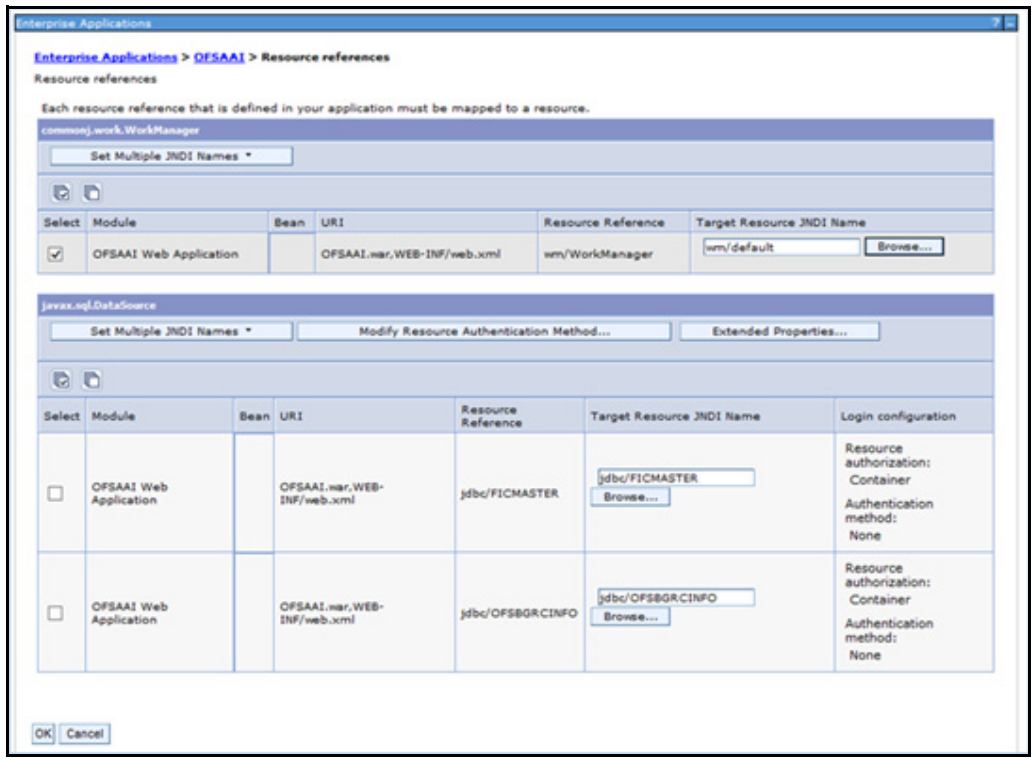
1. From the LHS menu, expand **Applications > Application Types** and select **WebSphere enterprise applications**.



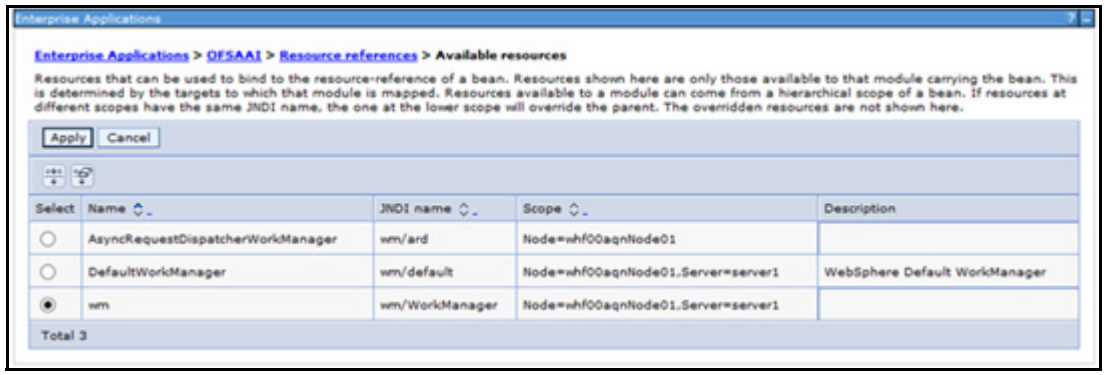
2. Click OFSAAI instance hyperlink.



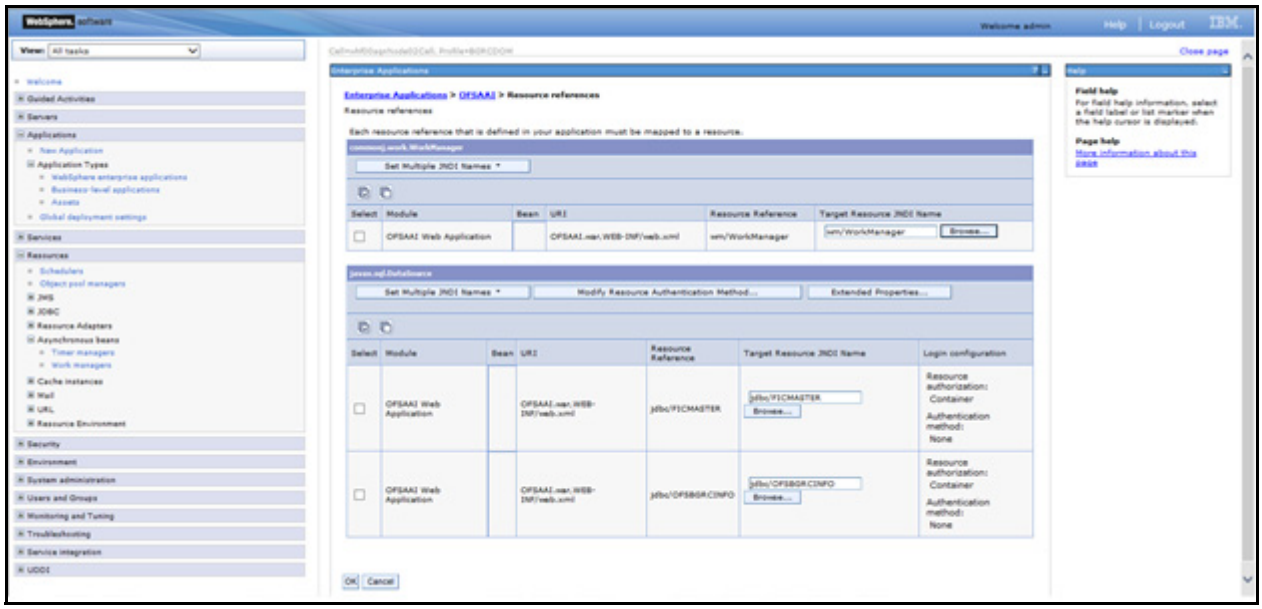
3. Click **Resource references** link under References section.



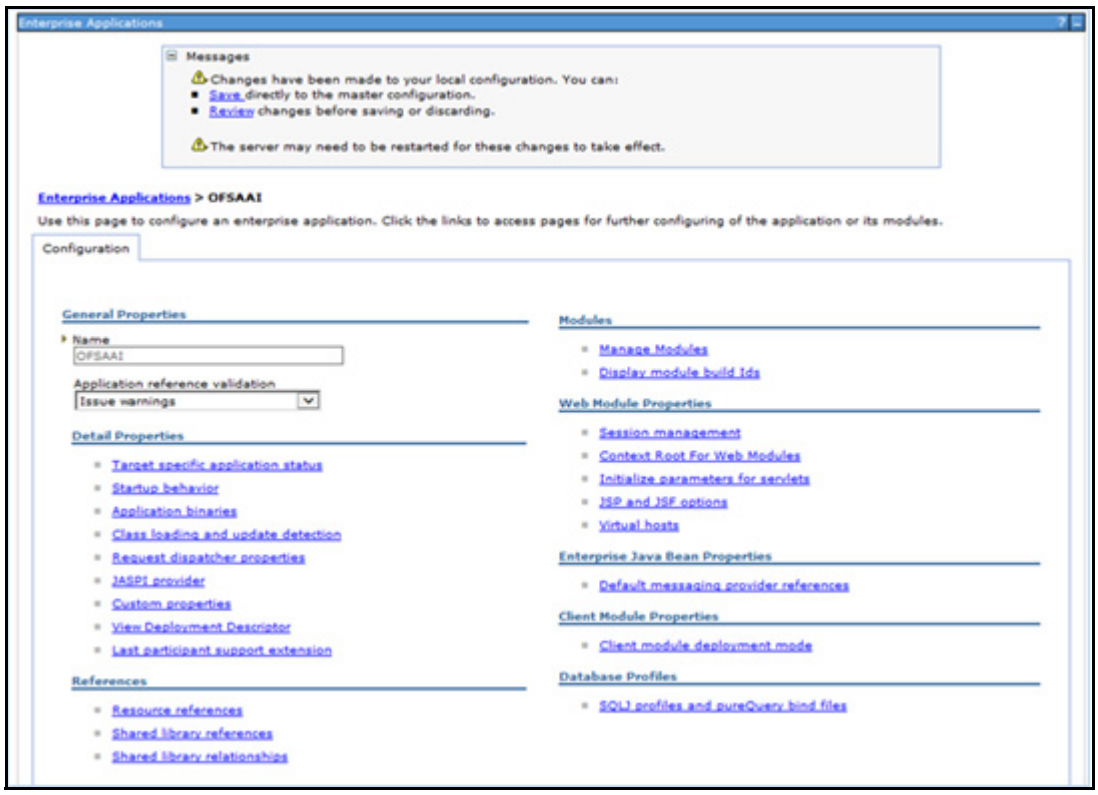
4. Click **Browse** corresponding to the Work Manager Resource Reference. The available resources are displayed.



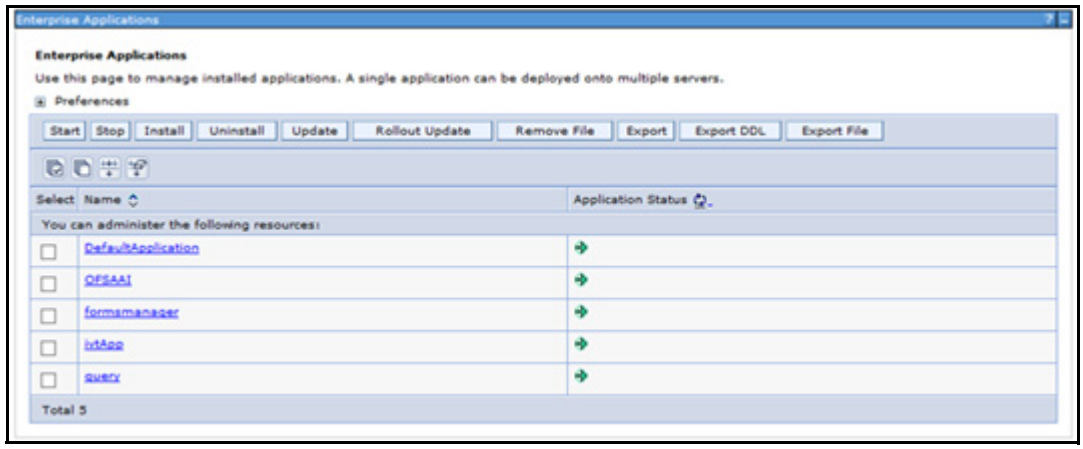
5. Select the newly created Work Manager ('wm') and click Apply.



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



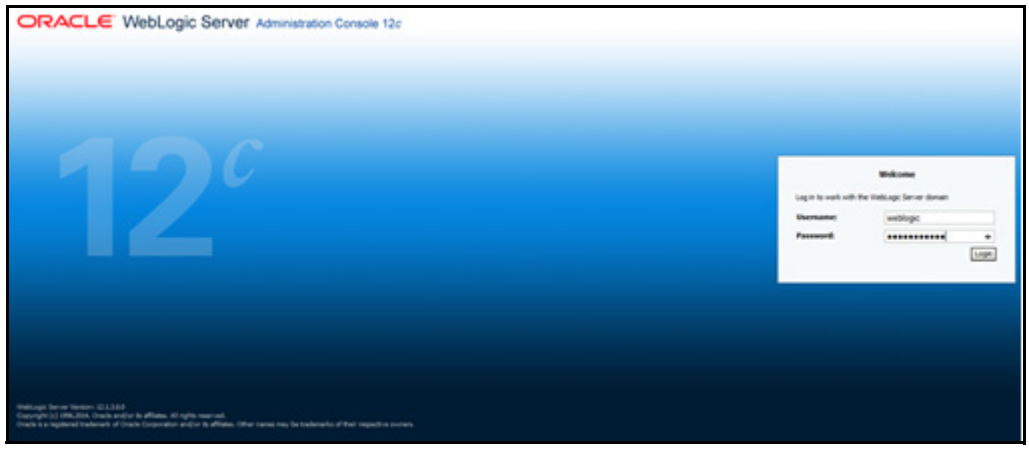
7. Click Save.



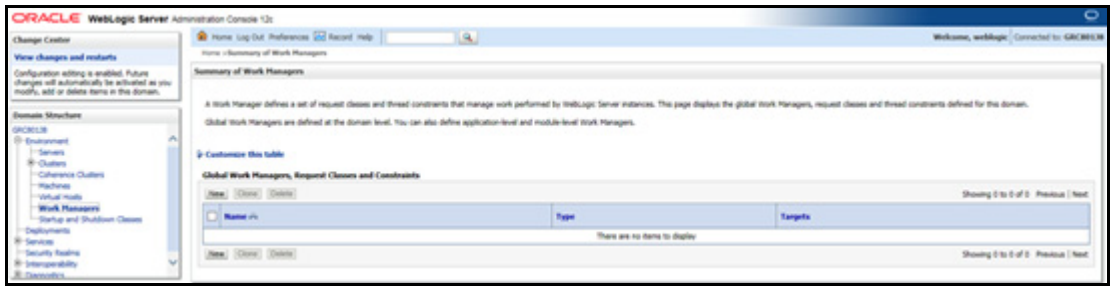
Configuring Work Manager in WebLogic Application Server

This section is applicable only when the Web Application Server type is WebLogic.

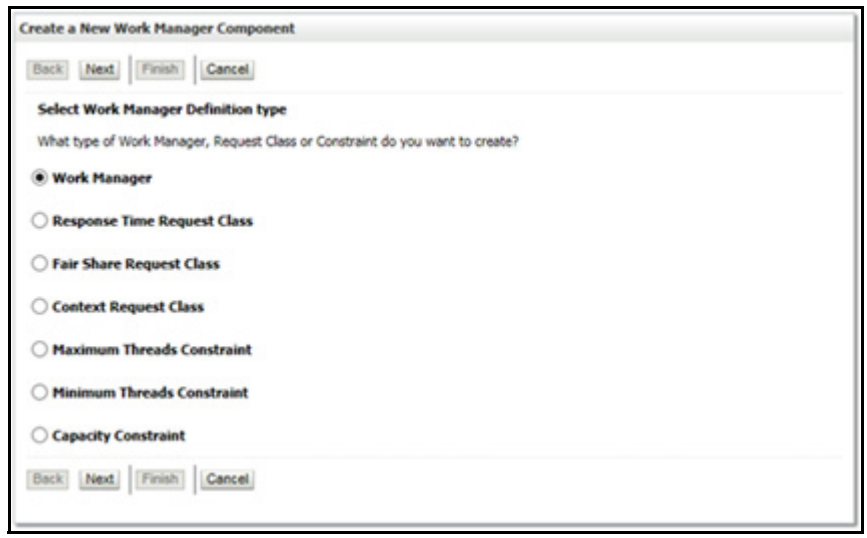
1. Open the WebLogic admin console in the browser window: http://<ipaddress>:<administrative console port>/console. (https if SSL is enabled). The Welcome window is displayed.



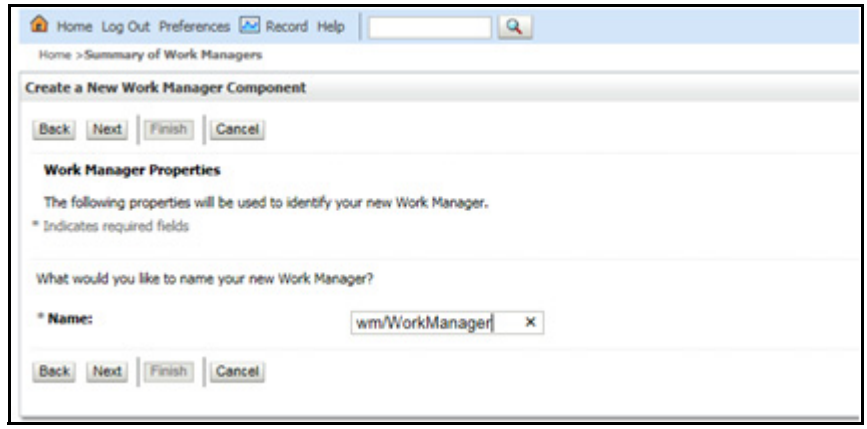
2. Login with the user id that has admin rights.
3. From the Domain Structure menu in the LHS, expand **Environment** and select **Work Managers**. The Summary of Work Managers window is displayed.



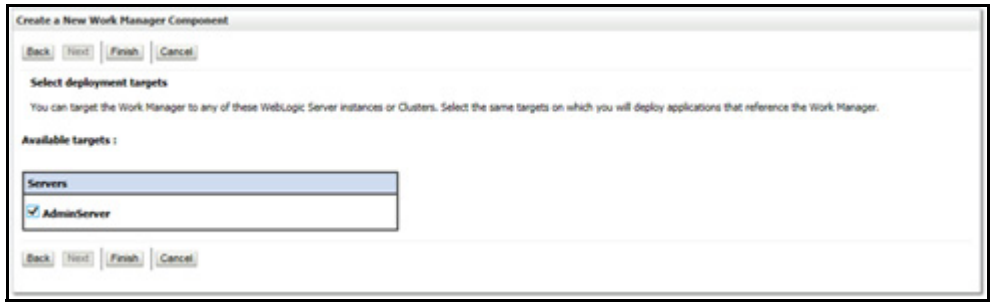
4. Click **New** to create a new work manager component.



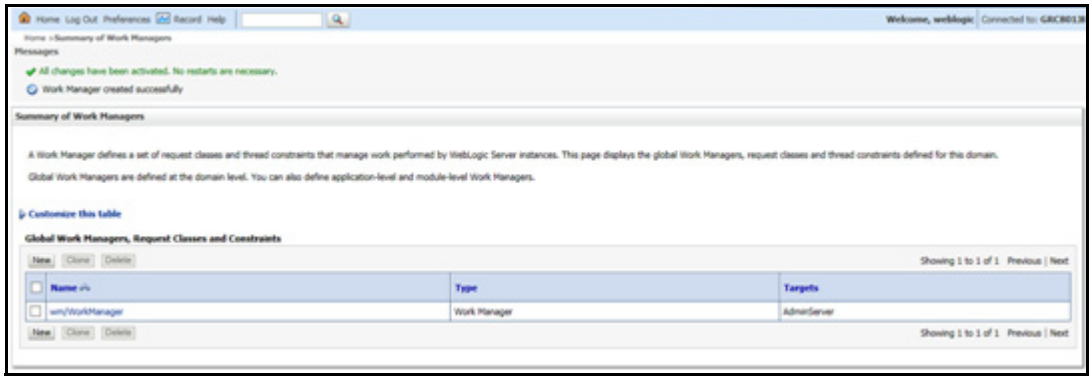
5. Select **Work Manager** and click **Next**.



6. Enter the **Name** as 'wm/WorkManager'.
7. Click **Next**.



8. Select the required deployment target and click Finish.



Creating and Deploying EAR/WAR File

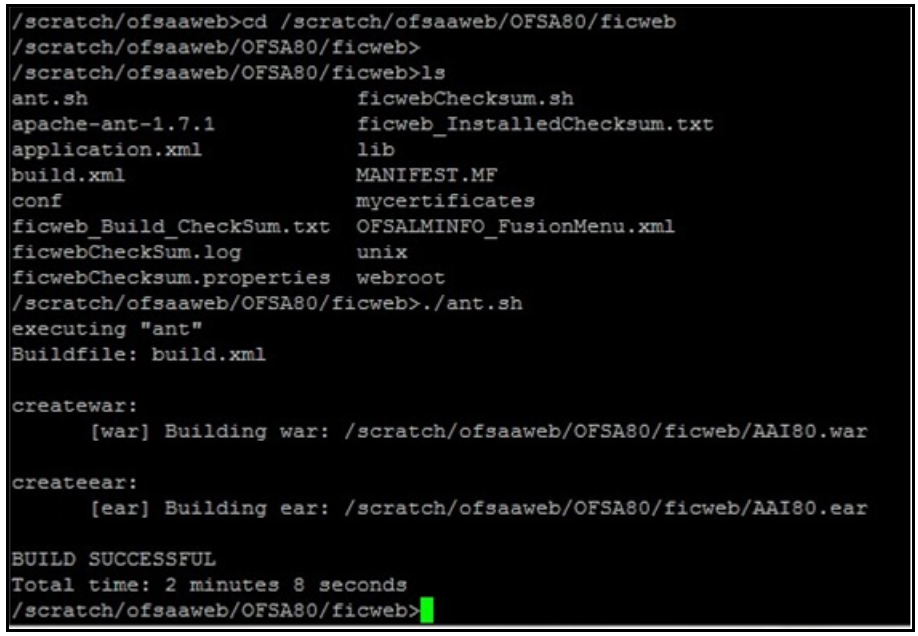
This section includes the following topics:

- Creating EAR/WAR File
- Deploying EAR/WAR File

Creating EAR/WAR File

To create EAR/WAR File, follow these steps:

1. Navigate to the *$FIC_WEB_HOME* directory on the OFSAA Installed server.
2. Execute ./ant.sh to trigger the creation of EAR/ WAR file.
3. On completion of the EAR files creation, the "BUILD SUCCESSFUL" and "Time taken" message is displayed and you will be returned to the prompt.



4. The EAR/ WAR file - <contextname>.ear/ .war - is created.

Note: The <contextname> is the name given during installation.
This process overwrites any existing version of EAR file that exists in the path.
In case of OFSAA configured on Tomcat installation, `<contextname>.war` will be created.

Deploying EAR/WAR File

This section includes the following topics:

- Deploying EAR/WAR Files on WebSphere
- Deploying EAR / WAR File on WebLogic
- Deploying WAR Files on Tomcat

Note: Ensure to clear the application cache prior to the deployment of Application Pack Web Archive. This is applicable to all Web Servers (WebSphere, WebLogic, and Tomcat). For more information, see Clearing Application Cache section.

Deploying EAR/WAR Files on WebSphere

To deploy WebSphere EAR/WAR File, follow these steps:

1. Start WebSphere Profile by navigating to the path *"/<Websphere_Installation_Directory>/IBM/WebSphere/AppServer/profiles/<Profile_Name>/bin/"* and execute the command:

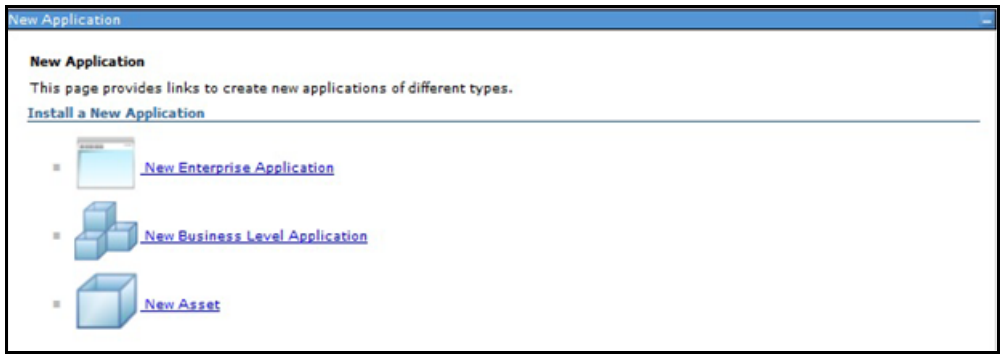
   `./startServer.sh server1`

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

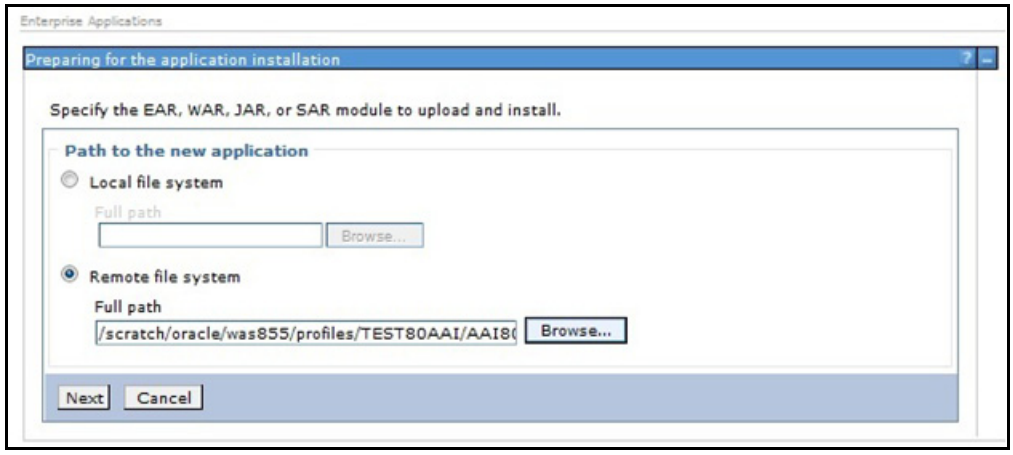
   `http://<ipaddress>:<administrative console port>/ibm/console`. (https if SSL is enabled). The Login window is displayed.

3. Enter the user credentials with admin privileges and click **Log In**.

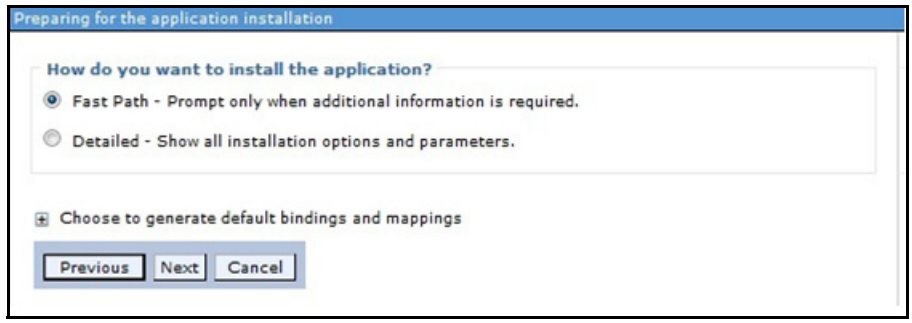
4. From the LHS menu, select **Applications** and click **New Application** to display the **New Application** window.



5. Click **New Enterprise Application** to display the **Preparing for the application installation** window.

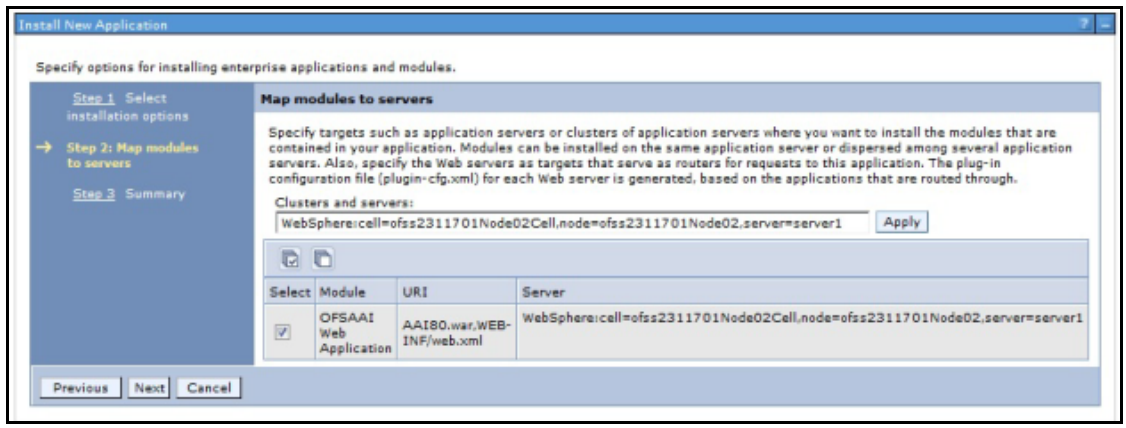


6. Select **Remote File System** and click **Browse**. Select the EAR file generated for OFSAA to upload and install. Click **Next**.

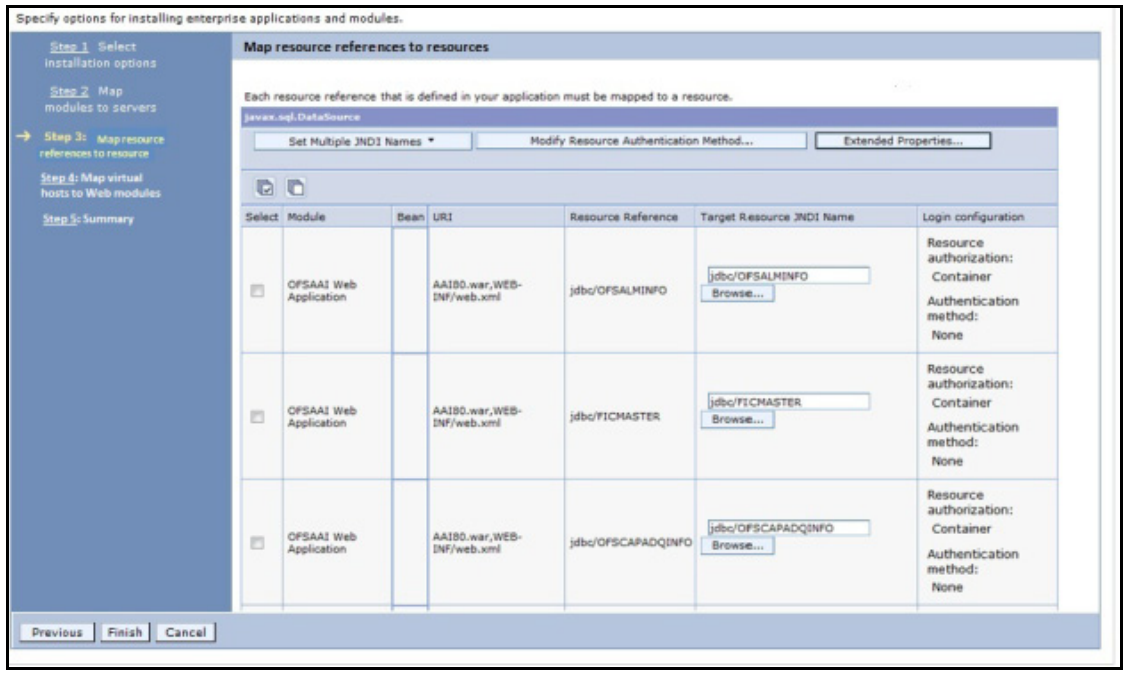


7. Select the **Fast Path** option and click **Next** to display the **Install New Application** window.

8. Enter the required information and click **Next** to display the **Map Modules to Servers** window.



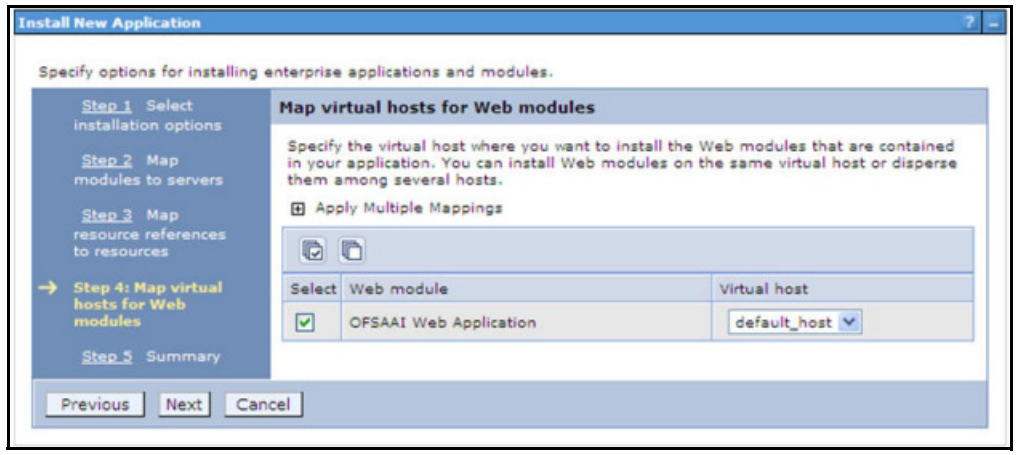
9. Select the **Web Application** and click **Next** to display the **Map Resource References to Resources** window.



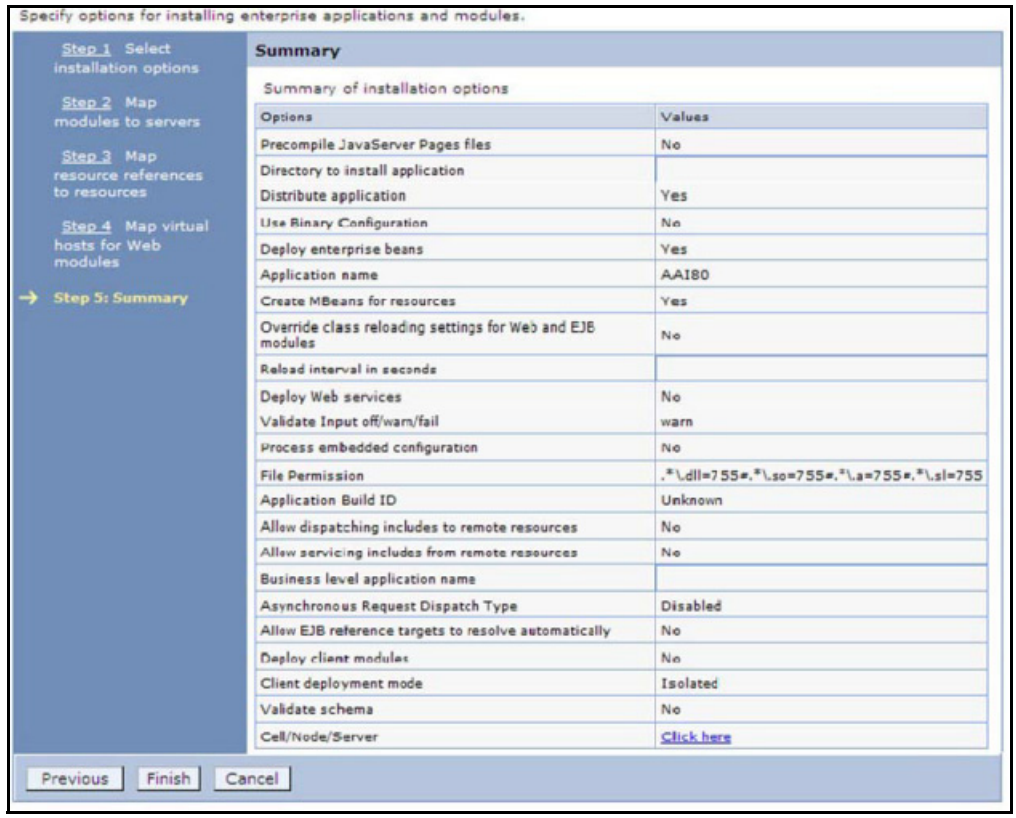
10. Map each resource defined in the application to a resource JNDI name defined earlier.
11. Click **Modify Resource Authentication Method** and specify the authentication method created earlier.

    You can specify "config" for FICMASTER resource or "atomic" for atomic resource as the authentication method.

12. Select the **OFSAAI Web Application** check box and click **Next** to display the **Map Virtual hosts for Web Modules** window.



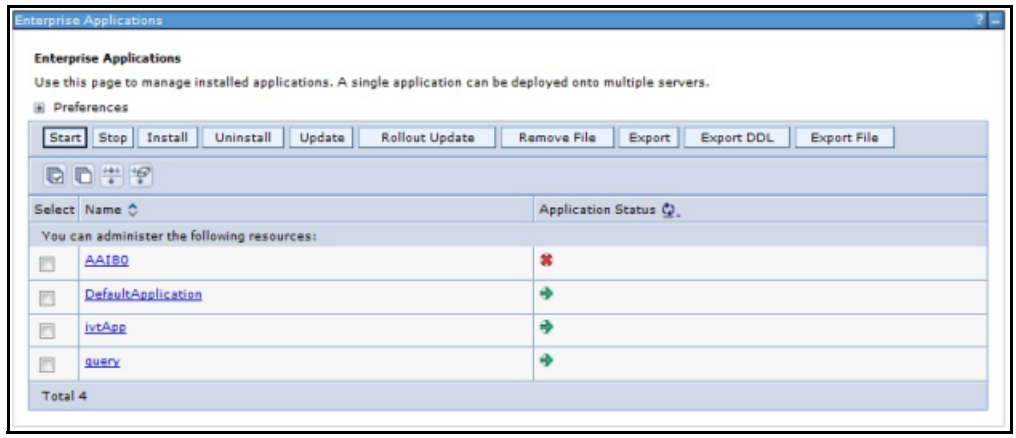
13. Select the **Web Application** check box and click **Next** to display the **Summary** page.



14. Click **Finish** and deploy the Infrastructure Application on WebSphere.
15. On successful installation, a message is displayed. Click **Save** and save the master file configuration. The details are displayed in the Master File Configuration window.

To start the application:

1. Expand **Applications > Application Type > WebSphere enterprise applications** to display the **Enterprise Applications** window.



2. Select the installed application and click Start.

Note: **<profile name>** is the profile name given while creating the WebSphere profile.
<cell name> is the cell name given during profile creation.
<contextname> is the context name given during installation.

Deploying EAR / WAR File on WebLogic

Following are the steps for deploying Infrastructure application that would be created during installation:

1. Navigate to the path <WebLogic Installation directory>/user_projects/domains/<domain name>/bin in the machine in which WebLogic is installed.
2. Start WebLogic by executing the command:

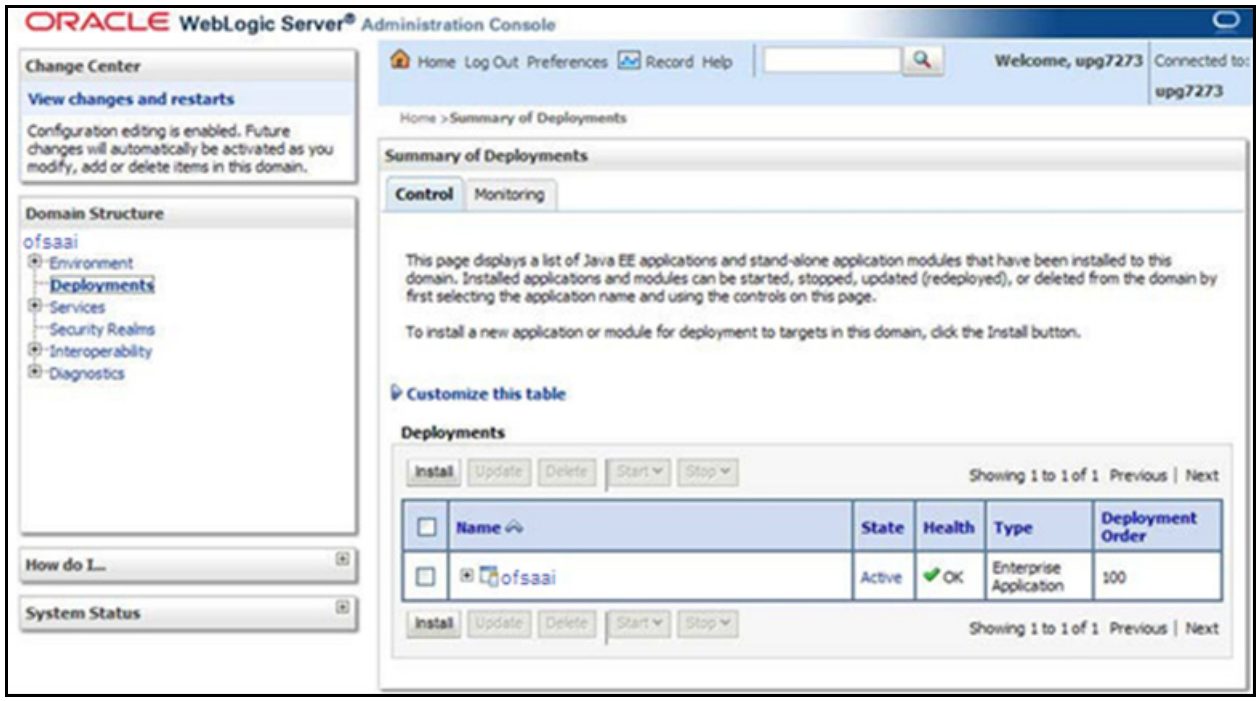
   `./startWebLogic.sh -d64 file`
3. Open the URL in the browser window: `http://<ipaddress>:<admin server port>/console`. (https if SSL is enabled). The Sign in window of the WebLogic Server Administration Console is displayed.

   Note: Ensure that you have started Infrastructure Server by executing "./reveleusstartup.sh" as mentioned in Start Infrastructure section.

   ---

4. Log on to the WebLogic Server by entering the user credentials having privileges to deploy the EAR file.

5. From the **Domain Structure** LHS menu, click **Deployments** to display the **Summary of Deployments** window.



6. Click **Install** to display the **Install Application Assistant** window.
7. Select the Exploded EAR directory after browsing to the directory where it is saved and click **Next**.

Explode EAR File

To explode EAR, follow the below steps:

1. Create the "applications" folder under domain name. For example:

   /Bea/user_projects/domains/ <Domain _name>/applications.

2. Create *<context_name>.ear* folder under "applications" folder.
3. Copy the *<$FIC_WEB_HOME/<context_name>.ear* file to *<WEBLOGIC_INSTALL_DIR>/Bea/user_projects/domains/<DOMAIN_NAME>/applications/<context_name>.ear*
4. Explode the <context_name>.ear file by executing the command:

   `jar -xvf <context_name>.ear`

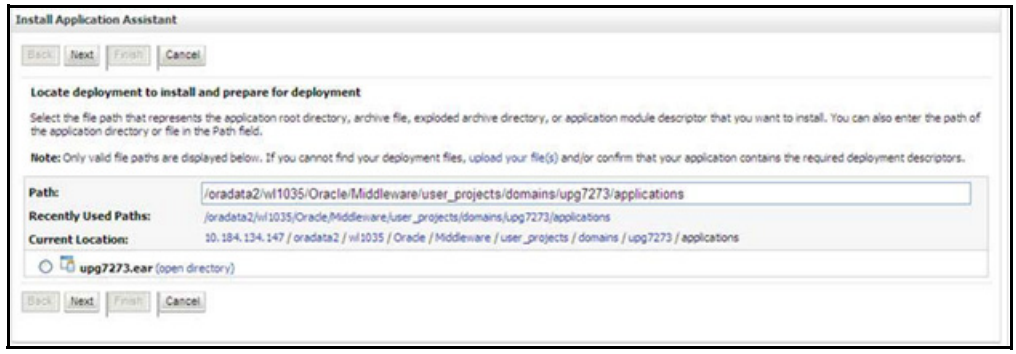
5. Delete the *<context>.ear* and *<context>.war* files (recently created) *<WEBLOGIC_INSTALL_DIR>/Bea/user_projects/domains/<DOMAIN_NAME>/applications/<context_name>.ear*
6. Create a directory *<context_name>.war* under *<WEBLOGIC_INSTALL_DIR>/Bea/user_projects/domains/<DOMAIN_NAME>/applications/<context_name>.ear*
7. Copy *<$FIC_WEB_HOME/<context_name>.war* file to *<WEBLOGIC_INSTALL_DIR>/Bea/user_projects/domains/<DOMAIN_NAME>/applications/<context_name>.ear/<context_name>.war*
8. Explode the *<context_name>.war* file by executing the following command to get the directory structure:

   `jar -xvf <context_name>.war`

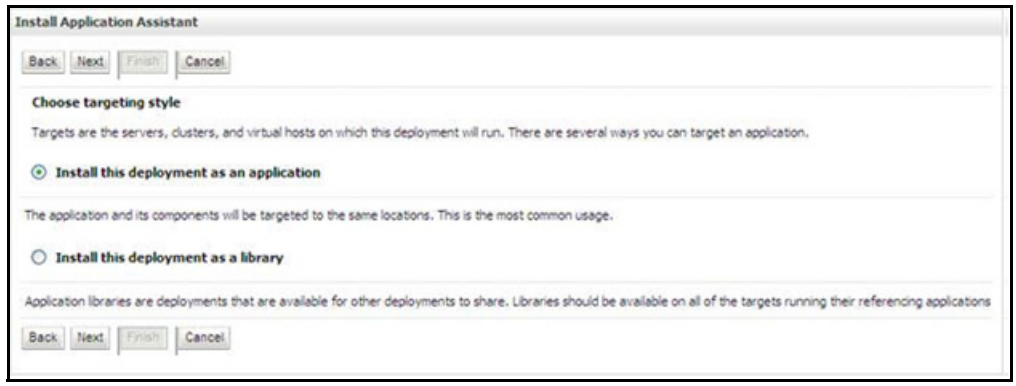
Install Application

To install the Application:

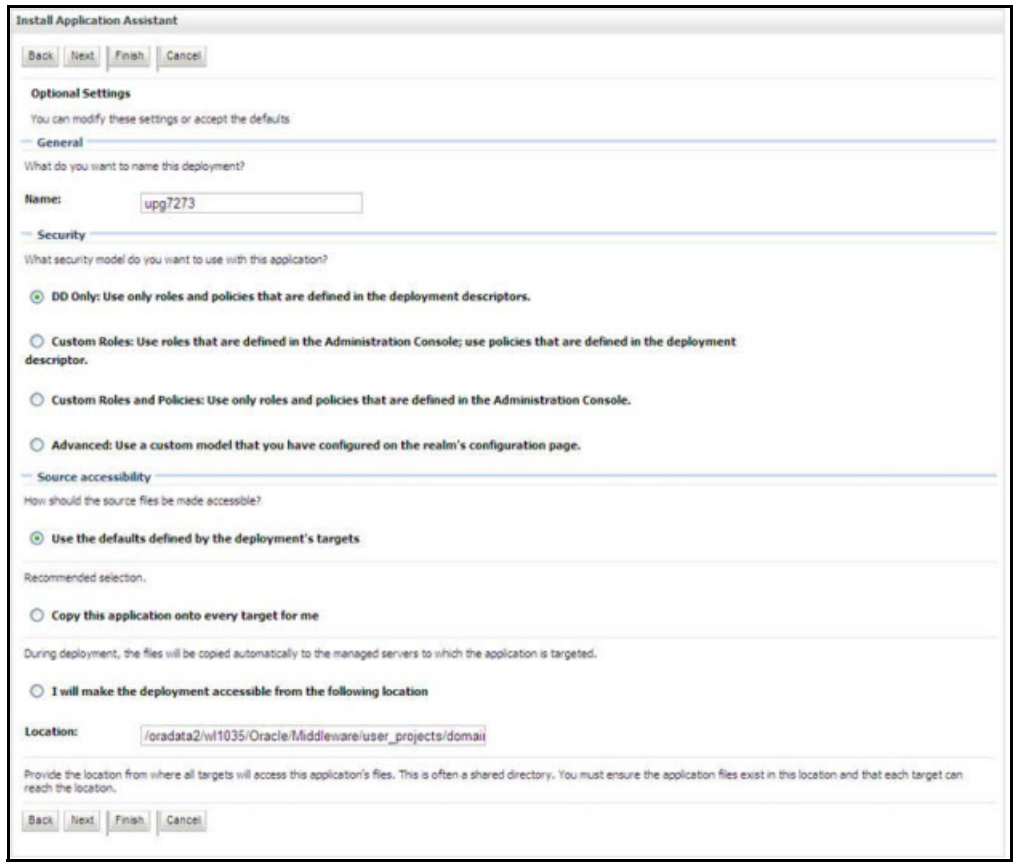
1. Open the Install Application Assistant.



2. Click **Next**.

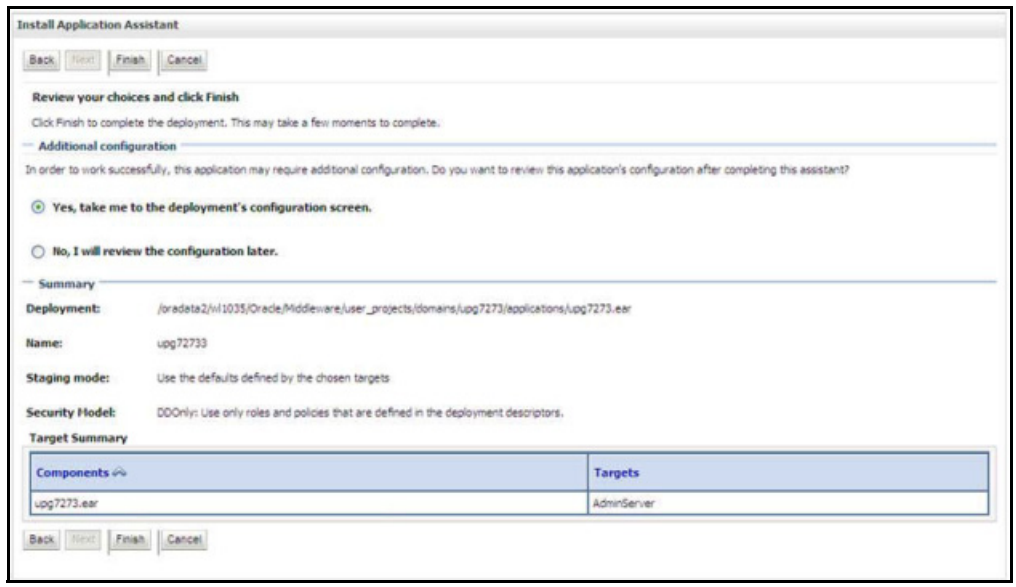


3. From the Choose targeting style section, select the **Install this deployment as an application** option and click **Next** to display the **Optional Settings** window.

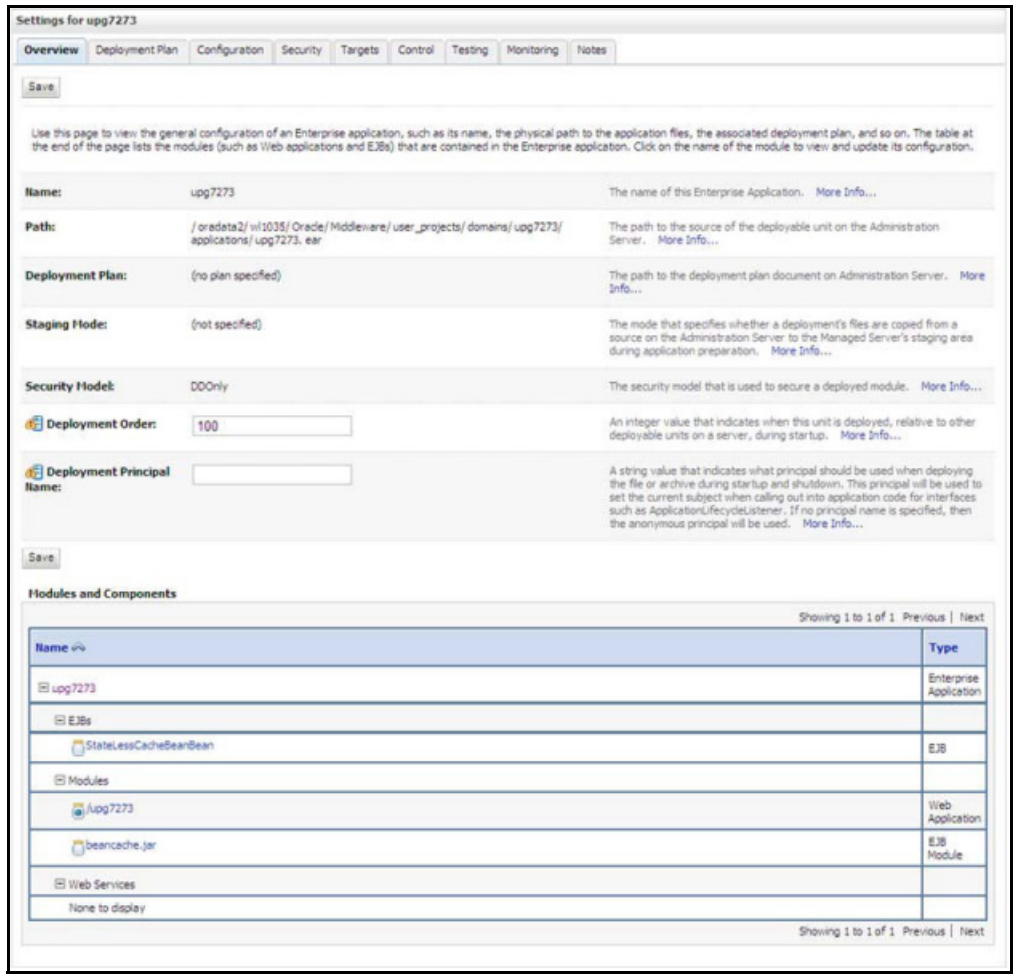


4. Enter a **Name** for the deployment if required.
5. Under the Security section, select the **DD only** option to specify that only roles and policies that are defined in the deployment descriptors should be used.
6. Select the **I will make the deployment available from the following location** option under the Source accessibility section.

7. Click **Next** to continue and display the **Deployment Summary** window.

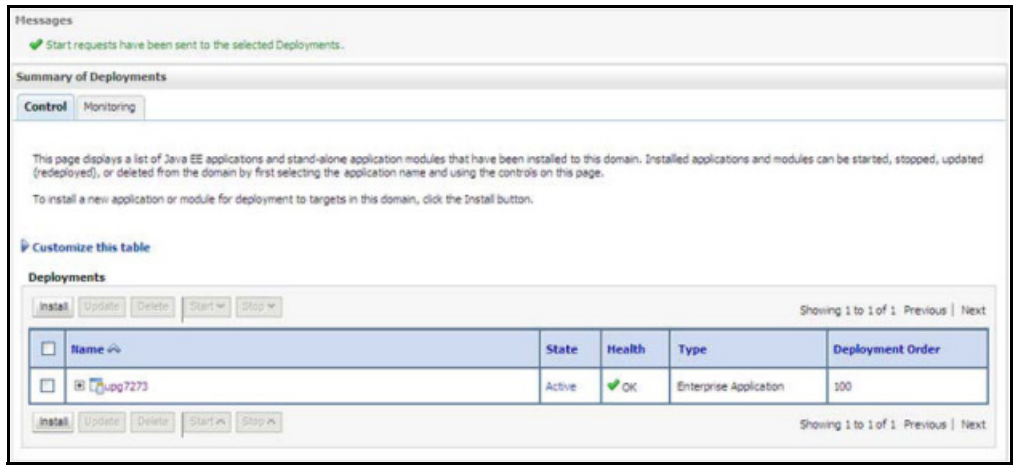


8. Select the option **Yes, take me to the deployment's configuration screen** option and click **Finish** to display the **Settings for <Deployment Name>** window.



9. Review the general configuration details of the deployment. You can also update the configuration of the deployment in this window. In the Overview tab you can view the complete deployment configuration.
10. Click **Save** to update the changes, if any.
11. From the LHS menu, click **Deployments** to display the **Summary of Deployments** window.

12. Select the newly deployed Infrastructure application and click **Start > Servicing all requests**. Ensure that the Infrastructure server is up and running.



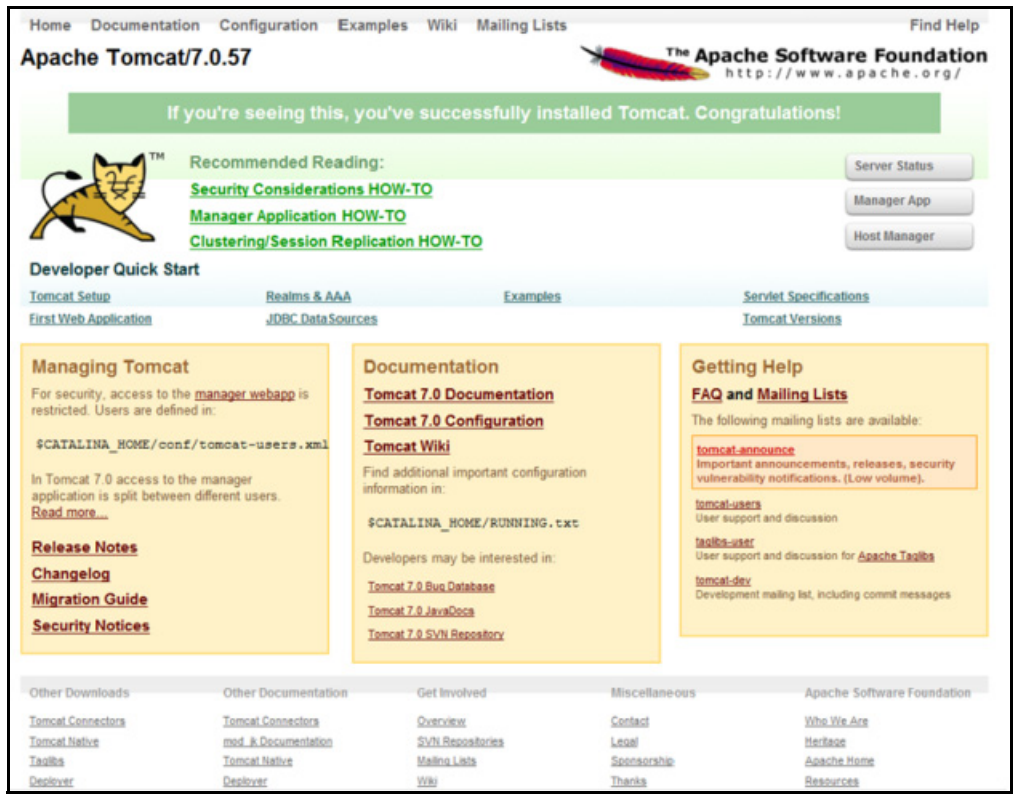
13. The **State** of the deployed application is displayed as **Active** if started successfully.

Deploying WAR Files on Tomcat

Before deploying the WAR files, ensure that the previously deployed applications of Infrastructure are uninstalled. See Uninstalling Previously Deployed WAR Files in Tomcat for the procedure to uninstall the previously deployed Infrastructure war files.

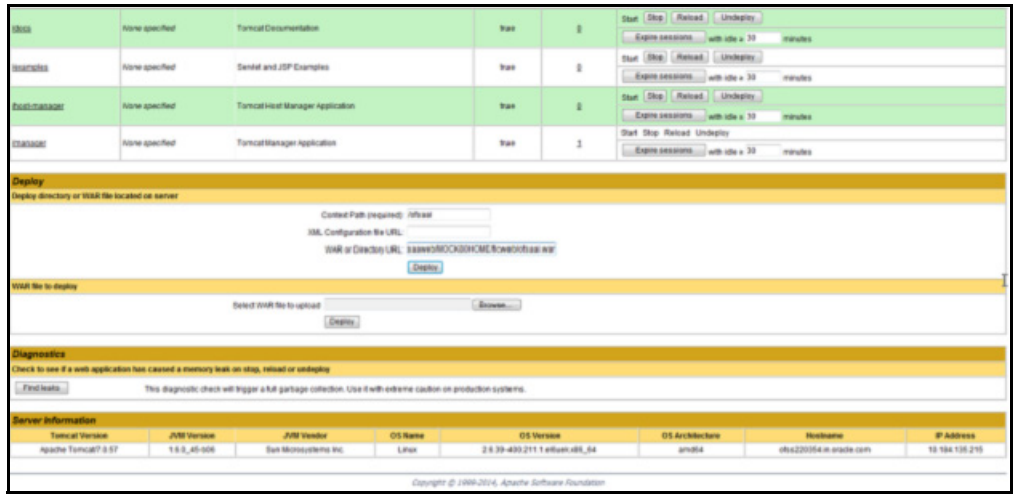
On the machine that hosts Tomcat, follow the below steps outlined to deploy Infrastructure application:

1. Copy the `<context-name>.war` from *`$FIC_WEB_HOME/<context-name.war>`* to *`<Tomcat Installation Directory>/webapps/`* directory.



2. Click **Manager App**. The Connect to dialog box is displayed.

3. Enter the User Id and Password that has admin rights and click OK. (For user creation in tomcat, see Tomcat User Administration. The **Tomcat Web Application Manager** window is displayed with the list of all the applications deployed.



4. In the Deploy section, enter the Context Path provided during the installation as "/<context-name>".
5. Enter the path where the <context-name>.war file resides (by default "*$FIC_WEB_HOME/*<context-name.war>") in the WAR or Directory URL field and click Deploy.
6. On successful application deployment, a confirmation message is displayed. Start the Tomcat server. For more information, see Starting Infrastructure Services.

Accessing the OFSAA Application

This section gives details about the steps to be performed to access OFSAA Application.

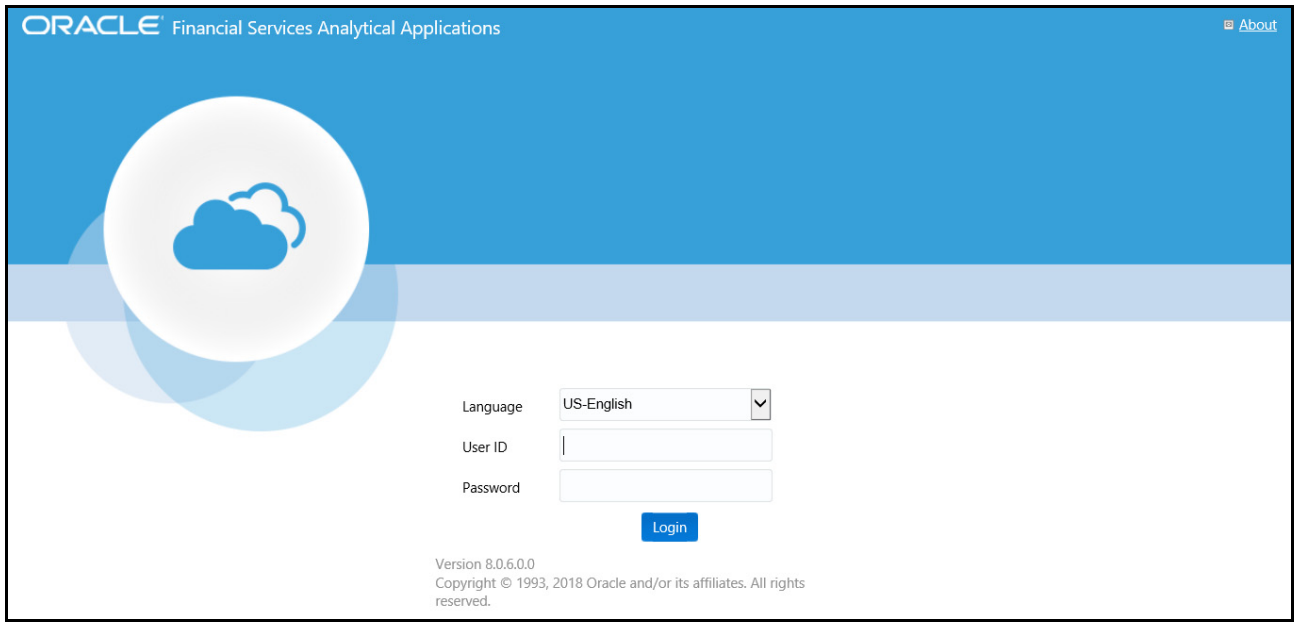
To access the OFSAA application:

1. From a your desktop, open the browser and enter the URL in below format:

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

   For example: `https://111.222.333.444:5555/ofsaa/login.jsp`

   The OFSAA login window is displayed as below:



2. With installation of every OFSAA Application Pack, there are two seeded user profiles configured in the system:
   - SYSADMN - System Administrator
   - SYSAUTH - System Authorizer

   Note: For SYSADMN and SYSAUTH, the default password is password0.

3. Login to the application using the "SYSADMN" User ID. (Note that, there is no "I" in the SYSADMN login USER ID). Enter the password that was provided during installation. On the first login, you will be prompted to change the password.

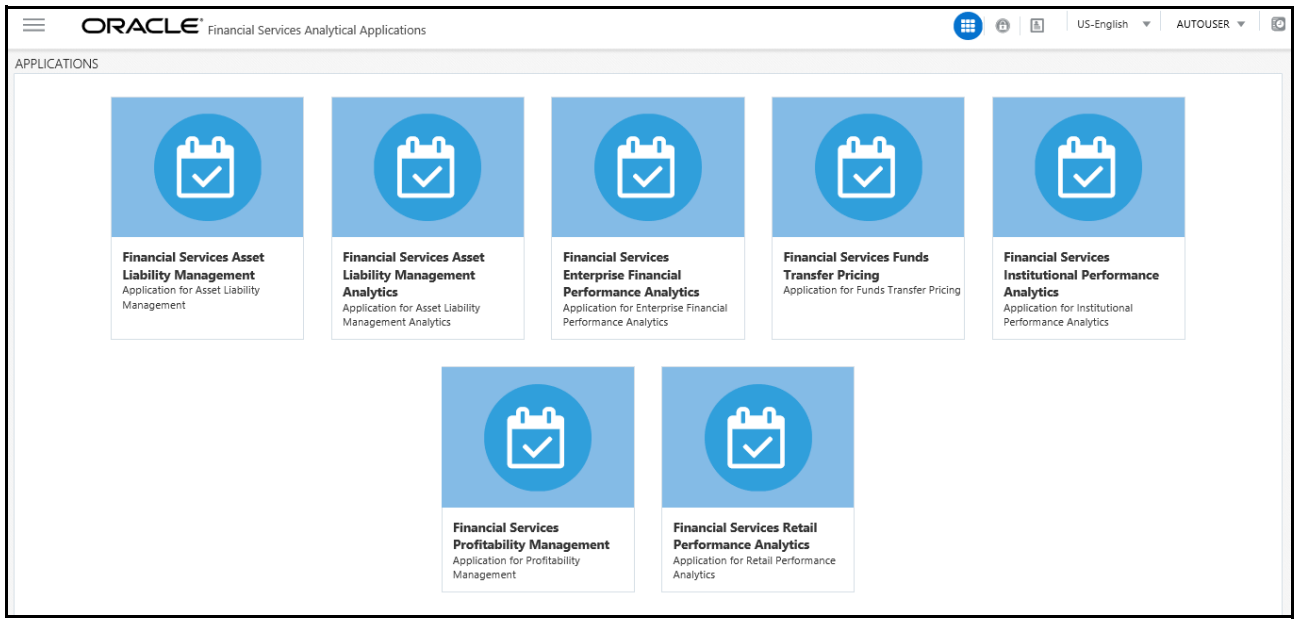
OFSAA Landing Page

This section includes the following topics:

- OFSAA Landing Page for Profitability Administrator
- Enabling a Product within an Application Pack

OFSAA Landing Page for Profitability Administrator

On successful authentication, the OFSAA Landing Page is displayed. This is a common landing page for all users until a preferred application landing page is set by the user in his preferences.



The landing page includes multiple tabs and each tab has specific links to OFSAA Infrastructure and/or Application modules. The tabs and links are displayed based on the OFSAA Application accessed and the access roles mapped to the logged in user.

Each tab contains LHS Menu and RHS Menu. The LHS Menu holds link(s) to modules in a tree structure. The RHS Menu holds link(s) to modules in a navigational panel format.

The following tabs are available in the Landing Page:

- Applications tab
- Object Administration tab
- System Configuration & Identity Management tab

Applications tab

This tab lists the various OFSAA Applications that are installed in the OFSAA setup. The Select Application drop-down list displays the OFSAA Applications, based on the logged in user and mapped OFSAA Application User Group(s). Links to related modules within Applications and Infrastructure are grouped appropriately to maintain a unified experience.

Object Administration tab

This tab lists the various OFSAA Information Domains created in the OFSAA setup. The Select Information Domain drop-down list displays the OFSAA Information Domains based on the logged in user and mapped OFSAA Application User Group(s). Links to modules that enable object traceability and migration of objects are grouped in this tab.

System Configuration & Identity Management tab

This tab lists the OFSAA Infrastructure System Configuration and Identity Management modules. These modules work across Applications/ Information Domains and hence there are no Application and Information Domain drop-down lists in this tab. Links to modules that allow the maintenance of setup installation and identity management tasks are grouped together in this tab.

Note: The navigation path differs from Application to Application. That is, based on the selected Application, the navigation varies.

For more details on how to operate on each tab, see OFSAAI User Guide available in OHC.

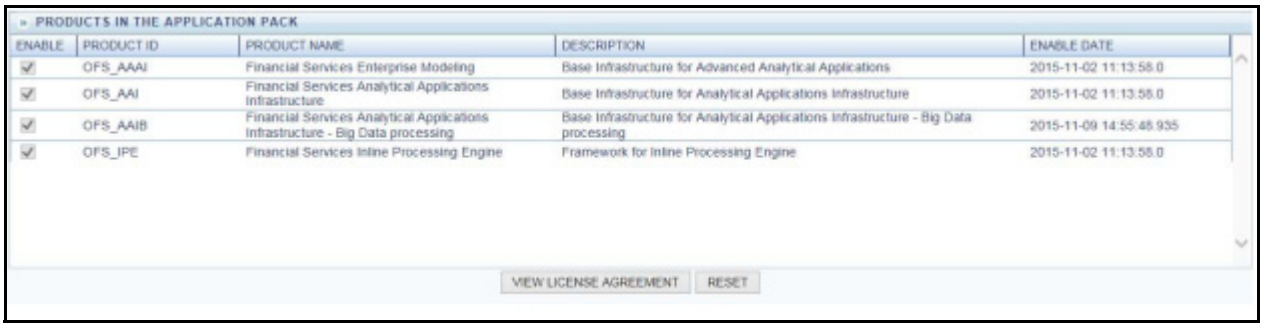
Enabling a Product within an Application Pack

You can also enable a product/ application within an application pack post installation at any point of time.

To enable a product through the application UI, follow these steps:

1. Login to the application as SYSADMN user or any user with System Administrator privileges.
2. Navigate to **System Configurations & Identity Management** tab, expand A**dministration and Configuration** and select **System Configuration**.
3. Click Manage **OFSAA Product License(s)** to display the **Manage OFSAA Product License(s)** window is displayed.

4. Select an Application pack to view the products in it. The products are displayed in the Products in the Application Pack grid.



5. Select the check box to enable a product within the Application Pack which is not enabled during installation.
6. Click **VIEW LICENSE AGREEMENT** to view the license information. The License Agreement section is displayed.

7. Select the option **I ACCEPT THE LICENSE AGREEMENT** and click **ENABLE**. A pop-up message confirmation is displayed showing that the product is enabled for the pack.

Note: To use the newly enabled product, you need to map your application users to the appropriate product specific User_Group(s) and subsequently, authorize the actions by logging in as System Authorizer.

For more information, see *Mapping/Unmapping Users* section in the Oracle Financial Services Analytical Applications Infrastructure User Guide 8.0. To identify the newly enabled product specific UserGroups/ Application Pack specific User_Groups, see the respective Application Pack specific Installation and Configuration Guide/ User Manual.

Create and Deploy the Application Pack Web Archive

On successful installation of the OFSAA Application Pack, the web archive file is automatically generated. However, you need to deploy the generated web archive file on the Web Application Server.

For identifying the location of the generated web archive file and for generating and deploying the web archive file at any time later, see Creating EAR/WAR File and Deploying EAR/WAR File sections.

Note: See the Oracle Financial Services Forms Manager User Guide for instructions on Creating and Deploying the Forms Manager Web Archive.

CHAPTER 6 – FAQS AND ERROR DICTIONARY

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

- Frequently Asked Questions
- Forms Framework FAQs
- Error Dictionary

OFSAAI installer performs all the prerequisite validation check during installation. Any errors encountered in the process is displayed with an appropriate Error Code. You can see the Error Dictionary to find the exact cause and resolution to rectify the error.This chapter includes the following topics:

Frequently Asked Questions

You can refer to the Frequently Asked Questions which has been developed with the interest to help you resolve some of the OFSAAI Installation and configuration issues. This intends to share the knowledge of problem resolution to a few of the known issues. This is not an official support document and just attempts to share the knowledge of problem resolution to a few of the known issues.

This section includes the following topics:

- OFSAAI FAQs
- Application Pack 8.0.8.0.0 FAQs

OFSAAI FAQs

What are the different components that get installed during OFSAAI?

The different components of OFSAAI are illustrated in figure in the section Components of OFSAAI.

Can the OFSAA Infrastructure components be installed on multi-tier?

No. OFSAA Infrastructure components (ficapp, ficweb, ficdb) cannot be installed on multi-tier. By default, they will be installed on single-tier. However, OFSAA Infrastructure can be deployed within the n-Tier architecture where the Database, Web Server and Web Application Server is installed on separate tiers.

Is JDK (Java Development Kit) required during installation of OFSAA? Can it be uninstalled after OFSAA installation?

JDK is not required during installation of OFSAA and only a run time is needed for details. Refer to Hardware and Software Requirements, Java Runtime Environment section.

Is JRE required during installation of OFSAA? Can it be uninstalled after OFSAAI installation?

Only JRE (Java Runtime Environment) is required during installation of OFSAA and cannot be uninstalled as the JRE is used by the OFSAA system to work.

How do I know what is the Operating system, web servers and other software versions that OFSAA supports?

Refer to OFSAA Technology Stack Matrices.

What are the different files required to install OFSAAI?

To install OFSAAI, the following files are required:

- `setup.sh.`
- `envCheck.sh`
- `preinstallcheck.sh`
- `VerInfo.txt`
- `OFSAAInfrastructure.bin`
- `validatedXMLinputs.jar`
- `MyResources_en_US.properties`
- `log4j.xml`
- `OFSAAI_PostInstallConfig.xml`
- `OFSAAI_InstallConfig.xml`
- `privileges_config_user.sql`
- `privileges_atomic_user.sql`
- `XML_Utility.jar`

What should I do if I get the following error message during installation, "Execute Permission denied"?

Please check whether all the files provided for OFSAAI installation has execute permissions.

To give execute permissions, navigate to the path OFSAAI_80000 and execute the command:

```
chmod 755
```

"Graphical installers are not."

If error resembles "Graphical installers are not supported by the VM. The console mode will be used instead..." then check whether any of the X-windows software has been installed.

Example: Hummingbird Exceed is started and configured to Graphical mode installation.

Note: Type 'xclock' from prompt and this should display clock in graphical mode.

"No Java virtual machine could be…"

If the error message reads "No Java virtual machine could be found from your PATH environment variable. You must install a VM prior to running this program", then

- Check whether "java path" is set in PATH variable. See the Installer and Installation Prerequisites section in this document.
- Check whether sufficient temporary space is available.

- Ensure that the movement of OFSAAI Installer text files to the target system is done in the Text mode so that setup.sh file does not contain control line feed characters (^M).

What should I do if I get the following error message during installation, "OracleDriver Files Not Found, Please Choose the Right Path To Continue"?

Check whether the provided path for Oracle Driver files is correct and whether the user has permissions to access the files.

What should I do if I get the following error message during installation, "User must have CREATE TABLE, CREATE VIEW, CREATE TRIGGER, CREATE INDEX, CREATE SEQUENCE, CREATE PROCEDURE" even though the oracle schema user created has the mentioned privileges?

OFSAAI installer validates the database details provided during installation, so ensure:

- Whether the oracle schema user has the required set of privileges for successful installation.
- Whether the oracle schema user has been created with quota privileges on tablespace to create database objects.
- See the Installer and Installation Prerequisites section in this document.

Installation of OFSAAI was completed successfully! What next?

Post the successful completion of OFSAAI installation, one has to perform the Post Installation steps. See Post Installation Configuration.

What is to be done when OFSAAI Installation is unsuccessful?

OFSAAI installer generates log file OFSAAInfrastructure_Install.log in the Infrastructure Installation Directory. There is also another log file created in the path configured in Log4j.xml. The logs of any of these reported, Warnings/Non Fatal Errors/Fatal Errors/Exceptions should be brought to the notice of the OFSAAI Customer Support. It is recommended not to proceed, until the reported problems are adequately addressed.

How do I completely uninstall OFSAAI?

OFSAAI can be completely uninstalled by performing the steps provided in Uninstalling OFSAA Infrastructure in the OFS AAAI Installation and Configuration Guide Release 8.0.8.0.0.

Can OFSAAI config and atomic schemas be on different databases?

OFSAAI requires both config and atomic schemas to be present on the same database instance.

How to grant privileges if a new information domain is created?

If you are creating a new information domain, provide a set of privileges (database permissions) to the new Atomic schema.

- Log into the database as sys and connect as sysdba user.
- Execute the file privileges_config_user.sql available under $FIC_HOME directory
- Enter the database schema for which you want to grant privileges.

When should I run the MLS utility?

See the Multiple Language Support (MLS) Utility section in OFSAAI Administration Guide available on OHC.

Does OFSAAI support Oracle Linux versions other than 5.5?

OFSAAI supports the Oracle Linux versions from 5.5 up to 5.10 and also from 6.0 and above.

What should I do if I get the following error message on the UNIX System terminal while executing ./setup.sh, "Insert New Media. Please insert Disk1 or type its location"?

a. Login as root user on the Unix machine where OFSAAI is getting installed.

b. Navigate to the path /etc/security/.

c. Edit the file limits.conf to add/edit a row for the UNIX user installing OFSAA:

```
<Unix User> soft nofile 9216
```

d. After saving the changes, log in as UNIX user with which OFSAAI is getting installed and execute the command:

```
ulimit -n
```

The command should return the value 9216.

How does one verify if the system environment is ready for OFSAAI installation?

To verify the 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.

See Verifying the System Environment section for additional information.

How do I know if the installation is completed successfully?

The OFSAA Infrastructure installation performs a post install health check automatically on successful installation of the product. To rerun the post install verification at a later time, perform the following steps:

a. Navigate to the path $FIC_HOME (Product Installation Directory).

b. Execute the command:

```
./piverify.sh
```

What should one do if there are any exceptions or errors in installation and how to proceed?

a. Please backup the installation logs.

b. Share the backup logs with Oracle support.

What should I do if I get the following error message during OFSAAI installation on Solaris 11 system?

"Error: OFSAAI-1108

ORA-00604: error occurred at recursive SQL level 1

ORA-01882: timezone region not found"

Or

"Time zone cannot be set as null or 'localtime' "

This happens if the time zone is not set, that is NULL or it is set as 'localtime'. Set the environment variable TZ to a valid time zone region in the .profile file. For example:

TZ=Asia/Calcutta

export TZ

What should I do if the installation process is abruptly terminated or aborted?

a. If the installation is abruptly terminated, then the installation process will be incomplete. To recover from this, follow the below steps:

b. Drop the DB objects in the config schema created by OFSAAI installation.

c. Open the .profile file and remove the entries made by the OFSAAI installation which are made between the comment statements, #Beginning of entries by OFSAA Infrastructure installation and #End of entries by OFSAA Infrastructure installation.

d. Delete the OFSAA install directory created by the OFSAAI installer.

e. Perform the OFSAAI installation again.

Does OFSAA support any other web server types, other than the ones stated in tech matrix and installation guide?

No, all the supported softwares and versions are stated in the OFSAA Technology Stack Matrices.

What should one do if the database connection from connection pool throws an error

"java.sql.SQLRecoverableException: IO Error: Connection reset"?

This happens while running several database intensive tasks in parallel. To correct this error, add the line securerandom.source=file:/dev/./urandom in the java.security configuration file available in $JAVA_HOME/jre/lib/security/ path.

Note: This needs to be configured on all the machines or VMs where the OFSAAI components are installed.

If the issue is not resolved even with the above settings, check the MTU (Maximum Transmission Unit) settings on the Linux box. For details on MTU settings and updating them, contact your system Administrator.

What should I do when I get syntax errors/file not found error messages while invoking setup.sh file from my install archive?

This could mostly happen:

- When installer was not unzipped correctly or corrupted during unzip.
- setup.sh file which resides within the install archive was not transferred in ASCII or text mode, which could have corrupted the file.

To correct this, follow the steps:

a. Copy the installer (in BINARY mode) to the system on which the OFSAA Infrastructure components will be installed.

b. Unzip the installer using the command:

```
unzip <OFSAAI_Installer>.zip
```

c. The corrupted setup.sh file would have introduced certain ^M characters into the file. You can remove ^M characters from setup.sh file by following the below steps:

i. Login to the server where the installer is copied.

ii. Navigate to the directory OFSAAI_80000.

iii. Open the setup.sh file in the vi editor using the command: vi setup.sh.

iv. Inside vi editor in Esc mode, type: %s/^M//g

Note: To enter ^M, hold the CTRL key then press V and M in succession.

v. Save the setup.sh file by typing: wq!

Does OFSAA support Oracle DB 11g Standard edition?

The OCI client and the jdbc driver does not change depending on whether it is a standard or enterprise edition. So, OFSAAI will work with standard edition as well.

We do not recommend standard edition because it will not scale and does not support partition pack, database security vault, or advanced analytics.

What should I do if I get the following error message while executing ./reveleusstartup.sh file on the UNIX System terminal "./reveleusstartup.sh: /java: Execute permission denied"?

- Ensure JAVA_BIN environment variable path is set on the "UNIX user" terminal from where the reveleusstartup.sh file is invoked.
- Ensure the .profile where the environment/ path settings are made has been executed successfully.

What happens when the OFSAAI Application Server does not proceed even after providing the system password?

Ensure that, the System Password provided when prompted should match with the "Oracle Configuration password" provided during installation. Also check whether the connection to the "configuration schema" can be established through sqlplus.

Although the OFSAAI installation has completed successfully, when OFSAAI servers are started, and the application URL is accessed, it gives an error message "the page cannot be found or displayed" or "Could not retrieve list of languages from Server. Please contact the system administrator". What should one do?

Ensure OFSAAI servers have been started and are running successfully. On the server start up parameters options, see the Starting Infrastructure Services section.

For more details on the issue, refer on to the Revappserver log in *$FIC_APP_ HOME/common/FICServer/* logs directory or the Web Server log files.

Is it necessary to provide the specified grants to the Oracle schema user before installation? If yes, can it be revoked after completion of installation?

The "Oracle schema" user requires the necessary grants specified before, during, and after the installation process. Grants provided should never be revoked as the application makes use of these grants all the time.

Can we have distributed OFSAAI Application Server for load balancing?

OFSAAI Application server can be scaled out/distributed across different JVM's (machines) based on the various services and Information Domains, in other words, Load balancing could be achieved with distribution of services.

Why do we need Ftpshare? Why is it needed on all the layers? Can we have ftpshare on another machine other than the machines where OFSAAI is installed?

Ftpshare is a Metadata Repository directory. All the Metadata related files used in Infrastructure are stored in the ftpshare directory. The ftpshare contains folders for each Information Domain, with each Information Domain folders holding Erwin, log, and scripts folder. The transfer of data among the Web, Application, and Database servers in Infrastructure takes place through FTP/SFTP.

You need to configure FTP/SFTP and enable communication between the servers by providing App server's FTP/SFTP credentials to the Web server and DB server users.

Yes, we can have ftpshare on another machine other than the machines where OFSAAI is installed.

Is it mandatory to provide the ftp/sftp password?

Yes, OFSAAI needs credentials of the user which has complete permissions on ftpshare directory, and should be able to independently login to the UNIX server.

What are the permissions required for FTPSHARE and when should I give them?

It is recommended to provide permissions on FTPSHARE in case of installations done across different machines or VMs (multi-tier installation).

In case of single tier installation, 770 permissions can be provided if the UNIX users of OFSAAI and web server belong to the same UNIX group.

And on any new file that is created in the 'ftpshare' folder of any installation layer should be granted specific/ explicit permission.

Port Change utility can be used to have the Port number modified, which are currently being used by the Infrastructure application. For more information, refer Changing IP/ Hostname, Ports, Deployed Paths of the OFSAA Instance section in OFS Analytical Applications Infrastructure Administration User Guide in OHC Documentation Library.

Are there any in-built system administration users within OFSAAI Application?

The three in-built system administration users are provided to configure and setup OFSAAI.

- SYSADMN
- SYSAUTH
- GUEST

Does OFSAAI Application support both FTP and SFTP?

OFSAAI supports both FTP and SFTP configuration.

Is it necessary to enable the FTP/SFTP services to use the OFSAAI?

Yes, enabling of FTP/SFTP services and its ports is a prerequisite step towards using the OFSAAI.

OFSAAI Configuration: Unable to save the server details?

- Ensure the input User ID, Password, and Share Name are correct.
- Ensure FTP/SFTP services are enabled.
- Have a test FTP/SFTP connection made and confirm if they are successful.

What should I do if I get the following message while creating Information Domain, "Please create a database and then create the information domain"?

Information Domain is mapped to only one Database; and thus before the creation of Information Domain, at least one database details would need to exist.

What should I do if I get the following message during startup of back-end engine message server, "ConnectToDatabase: FatalError, could not connect to the DB server"?

- Verify whether connection to the "configuration schema" can be established through sqlplus.
- Verify "configuration schema" password is modified post installation.
- Ensure oracle database alias name created for oracle instance and oracle service name are same.
- On a multi tier Installation mode, ensure TNSNAME and SID are the same in both the Application and Database Layers.

What should I do if I get the following message during the startup of back-end engine message server, "Fatal Error, failed to get user ID from LibSmsConnect"?

Ensure Reveleus.sec file exist under the $FIC_HOME/conf directory where the Database components are installed.

Does OFSAAI Application support LDAP authentication?

OFSAAI supports LDAP configuration and authentication.

Does OFSAAI support multiple languages?

Yes, OFSAAI supports multiple languages.

Does OFSAAI provide any data back-up features?

OFSAAI does not have built-in back up facility. External Storage Infrastructure is recommended for back-up.

What kind of security features does the OFSAAI provides?

OFSAAI provides security at:

- Segment Level - Users can access only the segment they are mapped to.
- Application Level - Users can perform an operation only if mapped to appropriate role and functions.

Does OFSAAI have the ability to enforce periodic password change?

OFSAAI provides configurable parameters to define number of days after which the user password would expire and then the user is forced to change the password after expiration period.

What is the password policy followed in OFSAAI?

OFSAAI enforces a minimum password length with a combination of Upper and Lower case characters and alpha-numeric strings.

Which version of Erwin Data Modeller does OFSAAI support?

The references to Data Modeler ERwin versions 70, 71, 72, 90, 92 and 96 are provided for the AAI framework to support these for backward compatibility. However, the data model-slices shipped with OFS AAAI 8.0.8.0.0 application packs with patch number **28974591** are compatible with Erwin version 9.64 only.

Does OFSAAI provide the mechanism to upload Business Data model?

OFSAAI provides two mechanisms for business data model upload:

- Easy to use GUI based Model upload mechanism to upload the Business Data Model through Unified Metadata Manager --> Import Model.
- OFSAAI also provides a model upload utility "upload.sh" for uploading the business data model through the command line parameter by executing this shell script file under the path <FIC_HOME>/ficapp/common/FICServer/bin.

See the section Run Model Upload Utility of the Oracle Financial Services Analytical Applications Infrastructure User Guide on OHC for details.

How do I apply incremental change to the existing model when the Business Data model undergoes a change?

Modified data model can be uploaded into the system and OFSAAI has the ability to compare the changes within the data model with respect to the one already present in the system and enables propagation of incremental changes in a consistent manner.

What are the different types of uploading a business data Model?

OFSAAI supports uploading of business data model from client desktop and also by picking up the data model from the server location.

Can the OFSAAI "Configuration Schema" password be modified post installation?

The OFSAAI Configuration Schema password can be modified post installation. OFSAAI application stores the password in the database and few configuration files, thus any changes to the Configuration Schema password will require updating in those files. For more information, see OFSAA Infrastructure Config Schema Password Modification.

Can the OFSAAI "Atomic Schema" password be modified?

The OFSAAI "Atomic Schema" password can be modified. OFSAAI application stores the atomic schema password in the database and few configuration files, thus any change to the atomic schema password would necessitate updating the password.

To change the Atomic Schema password, follow the steps:

- Login to OFSAA.

- Navigate to System Configuration > Database Details window. Select the appropriate connection, provide the modified password and save.
- Navigate to Unified Metadata Manager > Technical Metadata> Data Integrator > Define Sources window. Update the appropriate Source details.

If you are using Apache Tomcat as Web server:

- Update the <Context> -> Resource tag details in server.xml file from the $CATALINA_HOME/conf folder. (In case of Tomcat only Atomic <Resource> will exist).
- Login to the WebSphere Administration Console from the left side menu.
- Navigate to Resources >JDBC >Data Sources. A list of data sources will be populated on the right side.
- Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic data sources need to be modified).

If you are using WebLogic as Web server:

- Login to the WebLogic Administration Console from the left side menu.
- Under Domain Structure list box, expand the appropriate Domain and navigate to Services > JDBC >Data Sources. A list of data sources will be populated on the right side.
- Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic data sources need to be modified).

Restart the OFSAAI services

If the modified passwords are not updated, OFSAAI logs displays the message ORA-28000: the account is locked.

Does the upload of Business Data model depend on Java Memory?

Business data model upload through OFSAAI depends on the Java memory settings on the client and server machines. Java memory setting varies with the data model size and the available RAM. Contact OFSAAI support for more details.

Why do the Business Metadata Management screens (Business Processors screen) in User Interface, takes longer time to load than other screens?

The Log file in DynamicServices.xml which resides in $FIC_HOME/conf is continuously being updated/ refreshed to cache Metadata. This can be observed when you are starting reveleusstartup.sh and if any of the log file (Ex: `SMSService.log`) in `DynamicServices.xml` is being continuously refreshed for longer time.

By default, the Metadata Log file cache size is set to 1000. If the log is being updated beyond this limit, retrospectively the preceding entries are overwritten. For example, the 1001th entry is overwritten by deleting the first entry. This results in the application screen taking a longer time to load.

Increase the cache size limit in Dynamicservices.xml located at <FIC_HOME>/conf, depending on the currently logged count for the specific Metadata.

- Generate the Log report by executing the below query in config schema.

```
select count(1), t.metadata_name, m.dsn_id
from metadata_master m, metadata_type_master t
where m.metadata_type = t.metadata_type
group by t.metadata_name, m.dsn_id
```

- The above query returns a list of codes with their respective Metadata count. You can see "metadata_type_master" table to identify the Metadata name.
- View the log report to identify the Metadata which is being updated/refreshed beyond the specified cache size limit. Accordingly increase the cache size limit in Dynamicservices.xml depending on the currently logged count for the specific Metadata.

  For example, if the "MEASURE_CACHE_SIZE" is set to 1000 and total measure reported in log is 1022, increase the limit to 2000 (approximately).
- Restart Reveleus/OFSAAI servers (Web and APP) and check the issue.

What should I do if I get OutOfMemoryError while deploying EAR file in WebSphere application server?

The Java memory needs to be increased in ejbdeploy.sh file which is present under <WebSphere Install directory>/AppServer/deploytool/itp. For example,

```
$JAVA_CMD \
-Xbootclasspath/a:$ejbd_bootpath \
Xms256m -Xmx1024m \
```

What configurations should I ensure if my data model size is greater than 2GB?

In order to upload data model of size greater than 2GB in OFSAAI Unified Metadata Manager- Import Model, you need to configure the required model size in struts.xml file available in the path $FIC_WEB_HOME/webroot/WEB-INF/classes.

Note: The size requirements have to be always specified in bytes.

For example, if you need to configure for model size of 2.5GB, then you can approximately set the max size to 3GB (3221225472 bytes) as indicated below, in order to avoid size constraints during model upload.

```
<constant name="struts.multipart.maxSize" value="3221225472"/>
```

After configuring `struts.xml` file, generate the application EAR/WAR file and redeploy the application onto your configured web application server. For more information on generating and deploying EAR / WAR file, see Creating EAR/WAR File and Deploying EAR/WAR File sections.

What should I do if my Hierarchy filter is not reflecting correctly after I make changes to the underlying Hierarchy?

In some cases, the Hierarchy Filters do not save the edits correctly if the underlying Hierarchy has been changed. This can occur in hierarchy maintenance, where you have moved a member to another hierarchy branch, and that member was explicitly selected in the Filter and is now a child of a node which is already selected in the Filter.

See the Support Note for the workaround.

How do you turn off unused information domains (infodoms) from cache?

Follow the below steps to turn off unused infodoms from cache:

- Navigate to $FIC_HOME/conf in the APP layer of your OFSAAI installation.
- In the DynamicServices.xml file, identify the section for <Service code="20">.

- Modify the value of parameter CACHE_ON_STARTUP to 0 (default is 1).
- Repeat the same in the WEB layer too. Generate the application EAR/WAR file and redeploy the application onto your configured web application server. For more information on generating and deploying EAR / WAR file, see Configuring Web Application Servers.
- Restart the OFSAAI Services (APP and WEB). For more information, see Start/Stop OFSAA Infrastructure Services.

Note: This setting will cache the Infodom Metadata only for the infodoms that get accessed upon user login. Infodoms which do not get accessed, will not be cached.

Sample code is pasted below:

```
<SERVICE CODE="20"
CLASS="com.iflex.fic.metadata.services.MetadataServiceProvider" NAME="BMD"
SERVERID="DEFAULT" PATH=" " LOGGERNAME="UMMLOGGER" LOGGERLEVEL="10">
   <PARAMETERS>
      <PARAMETER NAME="CACHE_ON_STARTUP" VALUE="0" />
      <PARAMETER NAME="BACKUP_XML" VALUE="1" />
      <PARAMETER NAME="MAX_BACKUP_XML" VALUE="2" />
      <PARAMETER NAME="PC_NONBI_BI_SWITCH" VALUE="2048" />
      <PARAMETER NAME="HIERARCHY_NODE_LIMIT" VALUE="2000" />
      <PARAMETER NAME="ALIAS_CACHE_SIZE" VALUE="1000" />
      <PARAMETER NAME="DATASET_CACHE_SIZE" VALUE="2000" />
      <PARAMETER NAME="MEASURE_CACHE_SIZE" VALUE="2000" />
      <PARAMETER NAME="HIERARCHY_CACHE_SIZE" VALUE="2000" />
      <PARAMETER NAME="DIMENSION_CACHE_SIZE" VALUE="2000" />
      <PARAMETER NAME="HIERARCHYATTRIBUTE_CACHE_SIZE" VALUE="1000" />
      <PARAMETER NAME="CUBE_CACHE_SIZE" VALUE="1000" />
      <PARAMETER NAME="RDM_CACHE_SIZE" VALUE="1000" />
      <PARAMETER NAME="BUSINESSPROCESSOR_CACHE_SIZE" VALUE="2000" />
      <PARAMETER NAME="DERIVEDENTITY_CACHE_SIZE" VALUE="1000" />
      <PARAMETER NAME="LOG_GET_METADATA" VALUE="false" />
      <PARAMETER NAME="METADATA_PARALLEL_CACHING" VALUE="0" />
   </PARAMETERS>
</SERVICE>
```

Can I install an Application Pack on an existing Atomic schema/ Information Domain created manually?

No, you cannot install an Application Pack on existing Atomic schema/Information Domain created manually. Application Packs can be installed only on Atomic Schemas/Information Domain created using schema creator utility and/ or the Application Pack installer.

What should I do if I get the following exception while trying to view the model outputs in Model Outputs screen, "Exception ->Local Path/STAGE/Output file name (No such file or directory)"?

Ensure you have created a folder "STAGE" under the path mentioned as "Local Path" in the web server details screen. This folder needs to be created under the local path on every node, in case of web application server clustering.

What should I do if I get the following exception during OFSAA services startup, "Exception in thread "main" java.lang.UnsatisfiedLinkError: net (Not a directory)"?

Ensure the JRE referred in .profile is not a symbolic link. Correct the path reference to point to a physical JRE installed.

What is the optimized memory settings required for "New" model upload?

The following table lists the optimized memory settings required for "New" model upload.

Upload Options	Size of Data Model XML File	X_ARGS_APP ENV Variable in OFSAAI APP Layer
Pick from Server	106 MB	“-Xms1024m -Xmx1024m
	36 MB	“-Xms2048m -Xmx2048m
	815 MB	“-Xms4096m -Xmx4096m
	1243 MB	“-Xms6144m -Xmx6144m
Model Upload Utility	106 MB	“-Xms1024m -Xmx1024m"-Xms2048m -Xmx2048m
	336 MB	“-Xms4096m -Xmx4096m
	815 MB	“-Xms4096m -Xmx4096m
	1243 MB	“-Xms6144m -Xmx6144m
Save New Erwin File In Server	106 MB	“-Xms1024m -Xmx1024m
	336 MB	“-Xms2048m -Xmx2048m
		“-Xms4096m -Xmx4096m
		“-Xms6144m -Xmx6144m

What is the resolution if I get the error - ORA 01792 maximum number of columns in a table or view is 1000 during T2T execution?

You should apply the below patch set from Oracle. Applicable only for 12c.

https://support.oracle.com/epmos/faces/DocumentDisplay?id=1937782.1

I did not enable OFS Inline Processing Engine Application license during the installation. However, I have enabled it post installation, using the Manage OFSAA Product License(s) in the Admin UI. Are there any other additional configurations that I need to do?

Yes. Follow the instructions explained in the OFS Inline Processing Engine Configuration Guide available on OHC.

I get an error when I try to build an Oracle OLAP cube. What should I do?

Execute the below grant on the appropriate ATOMIC schema

```
grant olap_user to &database_username
```

How do you turn off unused Information Domains (Infodoms) from caching?

Follow these steps to turn off unused infodoms from caching:

- Navigate to *$FIC_HOME/conf* in the APP layer of your OFSAAI installation.
- In the `DynamicServices.xml` file, identify the section for <Service code="20">.
- Modify the value of parameter `CACHE_ON_STARTUP` to 0 (default is 1).
- Repeat the same in the WEB layer too. Generate the application EAR/WAR file and redeploy the application onto your configured web application server. For more information on generating and deploying EAR / WAR file, see Creating EAR/WAR File and Deploying EAR/WAR File sections.
- Restart the OFSAAI Services (APP and WEB). For more information, see the Start/Stop OFSAA Infrastructure Services section.

Note: This setting will cache the Infodom Metadata only for the infodoms that get accessed upon user login. Infodoms which do not get accessed, will not be cached.

Sample code is pasted below:

```
<SERVICE CODE="20"
CLASS="com.iflex.fic.metadata.services.MetadataServiceProvider" NAME="BMD"
SERVERID="DEFAULT" PATH=" " LOGGERNAME="UMMLOGGER" LOGGERLEVEL="10">
    <PARAMETERS>
        <PARAMETER NAME="CACHE_ON_STARTUP" VALUE="0" />
        <PARAMETER NAME="BACKUP_XML" VALUE="1" />
        <PARAMETER NAME="MAX_BACKUP_XML" VALUE="2" />
        <PARAMETER NAME="PC_NONBI_BI_SWITCH" VALUE="2048" />
        <PARAMETER NAME="HIERARCHY_NODE_LIMIT" VALUE="2000" />
        <PARAMETER NAME="ALIAS_CACHE_SIZE" VALUE="1000" />
        <PARAMETER NAME="DATASET_CACHE_SIZE" VALUE="2000" />
        <PARAMETER NAME="MEASURE_CACHE_SIZE" VALUE="2000" />
        <PARAMETER NAME="HIERARCHY_CACHE_SIZE" VALUE="2000" />
        <PARAMETER NAME="DIMENSION_CACHE_SIZE" VALUE="2000" />
        <PARAMETER NAME="HIERARCHYATTRIBUTE_CACHE_SIZE" VALUE="1000" />
        <PARAMETER NAME="CUBE_CACHE_SIZE" VALUE="1000" />
```

```
        <PARAMETER NAME="RDM_CACHE_SIZE" VALUE="1000" />
        <PARAMETER NAME="BUSINESSPROCESSOR_CACHE_SIZE" VALUE="2000" />
        <PARAMETER NAME="DERIVEDENTITY_CACHE_SIZE" VALUE="1000" />
        <PARAMETER NAME="LOG_GET_METADATA" VALUE="false" />
        <PARAMETER NAME="METADATA_PARALLEL_CACHING" VALUE="0" />
    </PARAMETERS>
</SERVICE>
```

"While creating an Excel Mapping, after specifying the excel worksheet, the target table, and mapping each column in the worksheet to a target table, I click SAVE and nothing happens. But when I click CANCEL, a message pops up informing me that all changes will be discarded", what is to be done.

Check if the excel mapping creation is done using I.E 8 with JRE 1.4 plug in enabled on machine. If so, upgrade the JRE plug in to 1.7+.

Can Multiple OFSAA Infrastructure instances share the same config schema?

No, only one OFSAA environment can be installed using one config schema.

Can Atomic schema be shared?

Yes, it can be shared between two OFSAA instances.

While setting a firewall, which ports should be opened for communication between the Web Server (Apache HTTP Server/ Oracle HTTP Server/ IBM HTTP Server) and the Web Application Server (WebSphere/ WebLogic/ Tomcat) for OFSAAI to operate properly?

The OFSAA Servlet port which is same as Web server port should be open. Also the web application port should be open.

Can I modify the NLS_LENGTH_SEMANTICS to BYTE from CHAR for the Database where older versions of OFSAA is Installed?

Yes, NLS_LENGTH_SEMANTICS can be modified to BYTE from CHAR if you are not intending to use multi language support.

Can I install already installed application in a different infodom?

No, it is not possible to install the same application in two different infodoms.

How can I configure the OFSAA application for High Availability?

OFSAA can have active-passive high availability. For more details, see the Configuration for High Availability- Best Practices Guide.

I want to configure OFSAA for High Availability that is WebLogic cluster on which OFSAA.ear is deployed and cluster OFSAAI processes (such as Reveleus etc) are running. Is this a supported configuration?

High Availability is available for WebLogic cluster and DB level as active-active, but is not available on the application side. OFSAA can have active-passive high availability. For more details, see Configuring OFSAA in Clustered Environment Guide.

During OFSAA installation should I provide web application server's IP /Hostname and port or web server's IP/ Hostname and port, if the Apache HTTP Server/ Oracle HTTP Server/ IBM HTTP Server are configured?

If the web server is configured, you should enter the Web Server IP Address/Hostname and Port details during OFSAA installation. Here the Servlet port should be same as the Web Server port.

If Web Server is not configured, the Web Application Server's IP Address/ Hostname and Port is required during the installation process. Here the Servlet port should be same as the Web application Server port.

Is "ReveleusAdminConsoleAgent" applicable for OFSAAI 8.0.8.0.0 and higher versions?

No, ReveleusAdminConsoleAgent is not applicable starting OFSAAI 7.3.3.0.0. There is a change in the way agentservers are managed through AGENTSTARTUP.SH & AGENTSHUTDOWN.SH.

What should I do when the message server process does not open and I get the following error message, "CI18NProvider::CI18NProvider, Error, unable to connect to the config database"?

This error is displayed due to the following reasons:

- The Config Schema password is already expired.
- If the config schema password is going to expire soon and the message like "ORA-28002: the password will expire within 6 days" displays while connecting to config schema through sqlplus.
- The Config schema password is Modified.

To resolve the error, re-set the config schema password to the old password. Else, if the config schema password is modified to something else then follow the below steps:

- Delete the $FIC_HOME/conf/Reveleus.SEC file.
- Shutdown the OFSAAI App service: cd $FIC_APP_HOME/common/FICServer/bin ./stopofsaai.sh
- Shutdown the OFSAAI App service: cd $FIC_APP_HOME/common/FICServer/bin ./stopofsaai.sh
- Start the Infrastructure Server in foreground directly on the server or through XWindows software using the command: ./startofsaai.sh
- Enter System Password.
- Enter the new Config schema password. The service starts and initializes if it is able to successfully connect to the DB and generates the Reveleus.SEC file.
- Post successful startup of the service, if required, the Infrastructure server may be shut down and restarted in the background using nohup mode.

What is the mechanism of Log File sizing and backup?

OFSAAI Log files created under *$FIC_APP_HOME/common/FICServer/logs & <OFSAAI_DEPLOYED_AREA>/<CONTEXT.war>/logs* is configurable in `RevLog4jConfig.xml`.

The default size of the log files (MaxFileSize) is set to max 5000kb & number of max backup log files (MaxBackupIndex) retained is set to 5, both of which are configurable. Increasing these parameters to a higher value should depend on the server HW configurations and may reduce the performance.

To configure the Logs file size on OFSAA Application server, follow these steps:

- Navigate to $FIC_HOME/conf where OFSAA is installed.
- Edit the following parameters in the file RevLog4jConfig.xml

```
<param name="file" : Enter the path where the Logs are to be generated.
```

```
<param name="MaxFileSize" : Provide the required file size.
<param name="MaxBackupIndex" : Provide the required number of backup files to be
created.
Example:
<appender name="REVSERVERAPPENDER" class="org.apache.log4j.RollingFileAppender">
<param name="file" value="$FIC_HOME/ficapp/common/FICServer/logs/RevAppserver.log"/
>
<param name="Append" value="true" />
<param name="MaxFileSize" value="5000kb" />
<param name="MaxBackupIndex" value="5" />
<layout class="org.apache.log4j.PatternLayout">
<param name="ConversionPattern" value="[REVELEUSLOG] %m%n"/>
</layout>
</appender>
```

To configure the Deployed area logs file, follow these steps:

- Navigate to <EAR/WAR Deploy area>/conf folder.
- Repeat step 2 from the above section.

Can we modify the Log file path?

Yes, Log file path is configurable, it can be configured in RevLog4jConfig.xml.default log file path (file) is set by the installer. This can be configured to another path.

Can I point the environment with HTTP enabled to HTTPS after installation and vice versa?

Follow these steps:

- Create SSL related certificates and import to respective servers.
- Enable SSL on a desired Port (example 9443) on your existing and already deployed web application servers.
- Replace the protocol as https and new ssl port (FIC_SERVLET_PORT) configured and in all the URLs specified on below files:

  ```
  $FIC_HOME/ficapp/common/FICServer/conf/FICWeb.cfg and $FIC_HOME/ficweb/webroot/
  conf/FICWeb.cfg
  $FIC_HOME/ficapp/icc/conf/WSMREService.properties
  $FIC_HOME/ficweb/webroot/conf/ModelExecution.properties
  $FIC_HOME/ficdb/conf/MDBPublishExecution.properties
  $FIC_HOME/ficdb/conf/ObjAppMap.properties
  $FIC_HOME/utility/Migration/conf/WSMigration.properties
  $FIC_HOME/utility/WSExecution/conf/WSExecution.properties
  $FIC_HOME/EXEWebService/WebSphere/ROOT/WEB-INF/wsdl/EXEWebServiceImpl.wsdl
  $FIC_HOME/EXEWebService/Tomcat/ROOT/WEB-INF/wsdl/EXEWebServiceImpl.wsdl
  $FIC_HOME/EXEWebService/weblogic/ROOT/WEB-INF/wsdl/EXEWebServiceImpl.wsdl
  ```

- Replace XML attribute/Node values as specified on below files:

  ```
  $FIC_HOME/ficweb/webroot/WEB-INF/web.xml
  ```

```
FIC_WEBSERVER_PORT=9443

FIC_WEBPROTOCOL=https

$FIC_HOME/conf/LookUpServices.xml and $FIC_HOME/ficweb/webroot/conf/
LookUpServices.xml

PORT="9443" PROTOCOL="https:"
```

- Login to config schema and execute below SQL command to replace protocol and SSL port.

```
SQL> update configuration cn set cn.paramvalue='9443' where
cn.paramname='SERVLET_ENGINE_PORT';

SQL> update configuration cn set
cn.paramvalue=replace(cn.paramvalue,'http:','https:') where
cn.paramname='FormsManagerCacheReload';

SQL> update web_server_info ws set ws.servletport='9443',ws.servletprotocol='https';
```

- Create EAR/WAR file and Re-Deploy.

What should I do if the sliced data model upload takes a long time to complete?

If the Metadata cache size is set to a lower value than the actual count of each Metadata type (hierarchy, dataset, dimension etc), then it gets into performance degrade issues. We have to increase the cache size for each Metadata type according to the count in the environment.

Following are the parameters in DynamicServices.xml to be configured depends on the Metadata count in your environment.

```
<PARAMETER NAME="HIERARCHY_NODE_LIMIT" VALUE="2000"/>

<PARAMETER NAME="ALIAS_CACHE_SIZE" VALUE="1000"/>

<PARAMETER NAME="DATASET_CACHE_SIZE" VALUE="2000"/>

<PARAMETER NAME="MEASURE_CACHE_SIZE" VALUE="3000"/>

<PARAMETER NAME="HIERARCHY_CACHE_SIZE" VALUE="2000"/>

<PARAMETER NAME="DIMENSION_CACHE_SIZE" VALUE="2000"/>

<PARAMETER NAME="CUBE_CACHE_SIZE" VALUE="1000"/>

<PARAMETER NAME="BUSINESSPROCESSOR_CACHE_SIZE" VALUE="2000"/>

<PARAMETER NAME="DERIVEDENTITY_CACHE_SIZE" VALUE="1000"/>
```

Metadata count can be derived based on the following queries:

```
select count(1) from metadata_master where metadata_version=0 --- for all metadata

select count(1) from metadata_master where metadata_version=0 and metadata_type=1 -
-- for measure

select count(1) from metadata_master where metadata_version=0 and metadata_type=2 -
-- for Dimension

select count(1) from metadata_master where metadata_version=0 and metadata_type=3 -
-- for HCY

select count(1) from metadata_master where metadata_version=0 and metadata_type=4 -
-- for DATASET

select count(1) from metadata_master where metadata_version=0 and metadata_type=59 -
-- for BP's

select count(1) from metadata_master where metadata_version=0 and metadata_type=54 -
-- for Alias
```

```
select count(1) from metadata_master where metadata_version=0 and metadata_type=5 --
-- for CUBES

select count(1) from metadata_master where metadata_version=0 and metadata_type=856
--- for Derived Entity
```

For LDAP authentication, which server connects with the LDAP server, the Application server (where ofsaai is installed), or Web Application server (where EAR is deployed)?

For LDAP authentication, the Application server (ficapp) connects with the LDAP server.

The LDAP server in the setup listens on secure protocol ldaps (port 636). I have the root certificate of the LDAP server for SSL, and would like to know where to offload this certificate?

You need to import the certificate into the JDK/JVM used by Reveleus server in ficapp layer.

How to relocate FTPSHARE folder?

You can run the `PortC.jar` utility. For more details, refer Changing IP/ Host-name, Ports, Deployed Paths of the OFSAA Instance section in the OFSAAI Admin Guide available on OHC.

What should I do when an entity containing many attributes (>100 columns) is selected as Source entity and the Data Mapping (T2T definition) save operation takes longer than expected with the hourglass in the UI continuously rotating?

The workaround is:

- Locate the web server deployed area webroot/conf/excludeURLList.cfg file.
- Modify the following entries:

  `[SQLIA]./dataIntegrator/ to [ALL]./dataIntegrator/`

  `[SQLIA]./ETLExtractionServlet to [ALL]./ETLExtractionServlet`
- Save the changes and restart the web server.
- Re-save the definition.

Application Pack 8.0.8.0.0 FAQs

What is an Application pack?

An Application Pack is suite of products. For more information, see About Oracle Financial Services Analytical Applications (OFSAA) Pack.

Can I get a standalone installer for OFSAAI 8.0?

No. AAI is part of every application pack and installs automatically.

How does OFSAA 8.0 Application pack relate to OFSAA 7.x series?

8.0 is a new major release consolidating all products from OFSAA product suite.

Can existing OFSAA 7.x customers upgrade to OFSAA 8.0 Application Pack?

There is no upgrade path available. However, we will have migration kit / path for every product to 8.0 application pack. Further details will be available with Oracle Support.

Does OFSAA 8.0 Application pack UPGRADE's automatically existing environments?

No. Refer Point 5. OFSAA 8.0 application pack has to be installed in an new environment and subsequently migration path / migration kit needs to be run to migrate from 7.x to 8.0. Please note we will have migration path only from the previously released version of OFSAA products.

Where can I download OFSAA 8.0 Application Pack?

You can download the OFSAAI 8.0 Application Pack from Oracle Software Delivery Cloud (OSDC).

What are the minimum system and software requirements for OFSAA 8.0 Application Pack?

See the installation guide section Hardware and Software Requirements section.

Is my environment compatible with OFSAA 8.0 Application Pack?

Environment Check utility performs the task. It is part of install and can also be run separately.

Does OFSAA 8.0 Application Pack is support all Operating systems?

LINUX, AIX, SOLARIS 10, 11. See the Technology Matrix for the technology matrix that OFSAA suite products are/ will be qualified on.

How can I install OFSAA 8.0 Application Pack?

See the Oracle Financial Services Advanced Analytical Infrastructure Installation and Configuration Guide published in OHC for the application pack installers.

Does this installation require any Third party Software?

Oracle Financial Services Advanced Analytical Infrastructure Installation And Configuration Guide published in OHC lists the third party software that needs to be installed.

What languages are supported during OFSAA 8.0 Application Pack installation?

US English is the language supported.

Does OFSAA 8.0 Application Pack support Multi tier Installations?

OFSAA 8.0 does single tier installation. For more information see the OFSAAI FAQs section.

Does this Application Pack validate all Prerequisites required for this installation i.e., Memory, Disk Space etc.?

Yes. The prerequisite checks are done by the respective application pack installer.

What happens if it aborts during installation of any application with in Application pack?

You must restore the system and re-trigger the installation.

Does this Application pack 'Rolls Back' if any of application installation fails due to errors?

Rollback of installation is not supported.

Does the Application pack installs all applications bundled?

All application pack file system files are installed but there is an option to enable the licensed products.

How can I re-install any of the Application Pack?

You can re-trigger if there is a failure.

Does Application pack allow enabling / disabling any of the applications installed?

Yes. You cannot disable once the product is enabled in an environment.

I have installed one application in an Application pack and can I install any of new applications within the Application pack later point of time?

No, installation of additional applications is not required. If you wish to add an application later, you can enable the application at that time.

How many OFSAA Infrastructures can be installed in a single server?

There is no issue in installing separate OFSAAI installations, each with their own BSP installations and separate associated database instances and separate Web Server installations on the same server as long as adequate memory is allocated for each instance and as long as each OFSAAI installation is installed using a separate UNIX user and profile. Care should be taken if running multiple OFSAAI installations on a single server. Adequate memory will be required for each installation as several OFSAAI processes (model upload, DEFQ services, etc) take significant amounts of memory. So it depends on your server memory.

Is it possible to Install OFSAA 8.0 Application pack on any one of the existing 'Infodom' where another OFSAA 8.0 application is installed?

Yes. However, the Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack are the exceptions. They need to be installed in a different INFODOM.

Can I select an Infodom in Application pack during installation?

Yes. You can select or change the required infodom.

Can I install all Application Packs in a 'Single Infodom'?

Yes. But Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack are the exceptions. They need to be installed in a different INFODOM.

Is it possible to install applications on different Infodom within the Application pack? (That is if you want to install LRM & MR in two infodoms)

Applications within application pack have to be installed in the same information domain in the same environment.

How many Infodoms can be created over a single OFSAA Infrastructure of 8.0.1.0.0?

You can install only one infodom during installation. But after installation, you can create multiple infodoms.

Does 'Data Model' bundled is Application pack Specific or Specific to individual application?

A merged data model for all applications within the application pack is bundled and uploaded.

Is it possible to install OFS Enterprise Modeling in later point of time?

OFS Enterprise Modeling is a separate product and can be enabled as an option later from any application pack that bundles Enterprise Modeling.

Does Application pack create sandbox automatically for the required applications?

Yes, Sandbox creation is part of application install process.

Are upgrade Kits available for individual applications or the complete Application Pack?

Maintenance Level (ML) Release / Minor Release upgrades are available across all applications.

Can I upgrade AAI only?

Yes, you can upgrade AAI alone.

Can I upgrade one application within the Application Pack? (For example, I want to upgrade LRM in the Treasury Application pack, but not MR.)

No. Not possible Upgrade is applied across packs.

Is it possible to uninstall any Application from the Application pack?

No, it is not possible to uninstall any Application from the Application Pack.

Can I uninstall entire Application Pack?

No, you cannot uninstall the Application Pack.

Is it possible to uninstall only application and retain AAI in the installed environment?

No, you cannot uninstall only the application and retain AAI in the installed environment.

Can I uninstall entire Application Pack?

No, you cannot uninstall the Application Pack.

Is it possible to uninstall only application and retain AAI in the installed environment?

No, you cannot uninstall only the application and retain AAI in the installed environment.

Does Application Pack contain all Language Packs supported?

Language Packs need to be installed on 8.0 application packs.

Can I install an Application Pack over another Application Pack (that is same infodom or different infodom)?

Yes, you can install an Application Pack over another Application Pack in the same information domain or different information domain. But Behavior Detection Application Pack and Compliance Regulatory Reporting Application Pack, Asset Liability Management Application Pack and Profitability Application Pack are the exceptions. They need to be installed in a different INFODOM.

Can I use an existing manually created schema as information domain for application pack installation?

No. Schemas required by OFSAA applications have to be created using Schema Creator Utility.

Does OFSAA 8.0 support on WebLogic 10.3.6 with Oracle 12c?

Yes, OFSAA 8.0 will support on WebLogic 10.3.6 with Oracle 12c. WebLogic 10.3.6 supports oracle 12c with some additional configurations. See the link http://docs.oracle.com/cd/E28280_01/web.1111/e13737/ds_12cdriver.htm#JDBCA655 for additional configurations.

What should I do if I get the following error message while running the schema creator utility, "HostName in input xml is not matching with the local hostname"?

One possible reason could be the machine is configured for zonal partitioning. Ensure all the known IP Addresses of the machine are present in the /etc/hosts file.

What are the Java versions supported in OFS BSP version 8.0.8.0.0?

OFS BSP supports 1.7.x and 1.8.x.

Is this release of the OFS BSP version 8.0.8.0.0 supported on Java 8?

Yes. To install this release of the OFS BSP version 8.0.8.0.0 on Java 8. For more information, refer to specific notes mentioned in the sections Installer and Installation Prerequisites, Configurations Supported for Java 8, Configuring the Schema Creator Utility, , Silent Mode Installation.

Forms Framework FAQs

What should I do when I have large volume of data to be exported?

It is recommended to use BIP reports or OBIEE reports if you have to export large volume of data.

How do I export the columns added to the grid by Field Chooser option?

Perform Grid Export operation to export the columns added to the grid by Field Chooser option.

'Expand All/ Collapse All' button is not visible in the Hierarchy Browser window. What should I do?

Expand All/ Collapse All button is enabled only if the number of hierarchy nodes is less than 50. If it is more than that, it is considered as large hierarchy and the data will be fetched dynamically when you expand each node.

Error Dictionary

This contents of this section has been created with the interest to help you resolve the installation issues if any. There is a compilation of all the possible errors that might arise during the installation process with the possible cause and the resolution to quickly fix the issue and proceed further with the installation.

This section includes the following topics:

Accessing Error Dictionary

Instead of scrolling through the document to find the error code, you can use the pdf search functionality. In the "Find" dialog available in any of the Adobe Acrobat version that you are using to view the pdf document, follow the below instructions to quickly find the error resolution.

1. With the Installation pdf open, press Ctrl+F or select Edit > Find.
2. The Find dialog is displayed as indicated.
3. Enter the error code that is displayed on screen during Infrastructure installation.
4. Press Enter. The search results are displayed and highlighted as indicated below.

View the details of the issues, its cause, and resolution specific to the error code. Repeat the step to find an answer to any other errors that you notice during installation. If you are not able to resolve the issue even after following the steps provided in resolution, you can contact support.oracle.com along with log files and appropriate screen shots.

Error Code Dictionary

Error Code	Cause	Resolution
OFSAAI-1001	Unix shell is not "korn" shell.	Change the shell type to "korn". Use chsh UNIX command to change SHELL type. Shell type can also be changed by specifying shell path for the Unix user in /etc/passwd file. **Note:** chsh command is not available in Solaris OS.
OFSAAI-1002	No proper arguments are available.	Provide proper arguments. Invoke Setup.sh.
OFSAAI-1004	File .profile is not present in $HOME.	Create .profile in $HOME, i.e. in the home directory of user.
OFSAAI-1005	File OFSAAInfrastructure.bin is not present in current folder.	Copy OFSAAInfrastructure.bin into installation kit directory.
OFSAAI-1006	File CustReg.DAT is not present in current folder.	Copy CustReg.DAT into installation kit directory.

Error Code	Cause	Resolution
OFSAAI-1007	File OFSAAI_InstallConfig.xml is not present in current folder.	Copy OFSAAI_InstallConfig.xml into installation kit directory.
OFSAAI-1008	File validateXMLInputs.jar is not present in current folder.	Copy validateXMLInputs.jar into installation kit directory.
OFSAAI-1009	File log4j.xml is not present in current folder.	Copy log4j.xml into installation kit directory.
OFSAAI-1010	Unknown error occurred.	Make sure to provide proper argument to the Setup.sh file.
OFSAAI-1011	XML validation failed.	Check InfrastructurePreValidations.Log for more details.
OFSAAI-1012	Property file with locale name does not exist.	Copy MyResources_en_US.properties to the setup kit directory and keep en_US in LOCALE tag of OFSAAI_InstallConfig.xml.
OFSAAI-1013	File OFSAAI_InstallConfig.xml/ OFSAAI_PostInstallConfig.xml not found.	Copy OFSAAI_InstallConfig.xml/ OFSAAI_PostInstallConfig.xml to the setup kit directory.
OFSAAI-1014	XML node value is blank.	Make sure all node values except SMTPSERVER, PROXYHOST, PROXYPORT, PROXYUSERNAME, PROXYPASSWORD, NONPROXYHOST, or RAC_URL are not blank.
OFSAAI-1015	XML is not well formed.	Execute the command dos2unix OFSAAI_InstallConfig.xml to convert plain text file from DOS/MAC format to UNIX format. or Make sure that OFSAAI_InstallConfig.xml is valid. Try to open the file through Internet Explorer for a quick way to check validity. If it is not getting opened, create new OFSAAI_InstallConfig.xml using the XML_Utility.jar.
OFSAAI-1016	User installation directory contain blank spaces.	Provide an installation path that does not contain spaces. Check the tag USER_INSTALL_DIR in OFSAAI_InstallConfig.xml file. This path should not contain any spaces.
OFSAAI-1017	User installation directory is invalid.	Provide a valid installation path. Check if you are able to create the directory mentioned in USER_INSTALL_DIR tag value of OFSAAI_InstallConfig.xml file.

APPENDIX A – ADDITIONAL CONFIGURATION

The following topics provide detailed module specific post installation configurations.

This appendix includes the following topics:

Configuring FTP/SFTP

This section details about the configurations required for FTP/SFTP.

Adding FTP/SFTP Configuration for File Transfer

In OFSAA, certain modules require 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. Login 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)?
4. This will add an entry into the "known_hosts" file.
5. A confirmation message is displayed:

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

Setting Up SFTP Private Key

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

To generate private key, enter the commands as shown:

```
ofsaapp@OFSASERVER:~> 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
```

In case, you are generating SFTP Private key for Hive server, append the content of */home/ofsaapp/.ssh/id_rsa.pub* to Hiveserver authorized_keys file located at *$HOME_DIR_HIVE/.ssh* folder.

Ensure the following permissions exist for the given folders:

- Permission of .ssh should be 700
- Permission of .ssh/authorized_keys should be 640
- Permission of .ssh/id_rsa should be 400
- Permission of Unix user created should be 755

Configuration for Dimension and Hierarchy Management

These configuration changes are applicable when Dimension Management features provided in OFSAAI are used. You can open AMHMConfig.properties file present in the $FIC_WEB_HOME/webroot/conf directory to set the properties for the following:

This section includes the following topics:

- Configure Member Deletion
- Configure Attribute Default Date Format
- Configure Members Reverse Population
- Configure Hierarchy Reverse Population
- Configure Maximum Levels allowed in Hierarchies
- Configure Node Limit for a Hierarchy Tree

Configuration for Dimension and Hierarchy Management has to be done only after the application/solution installation is done. The properties specific to Information Domain are:

- $INFODOM$=<Name of the Information Domain>
- $DIMENSION_ID$=<Dimension ID for which the property to be set>

Configure Member Deletion

This property should be set to allow the user to delete the Members for the Dimension.

Value	Code	Example
# Member Deletion Configuration - VALUE- Y/N	MEMBER_DEL-$INFODOM$-$DIMENSION_ID$=$VALUE$	MEMBER_DEL-ORAFUSION-1=Y

Configure Attribute Default Date Format

This property should be set to display the Default Date Format for Date type Attribute in Attributes window.

Value	Code	Example
# Attribute Default Date Format - DB_DATE_FORMAT:DD-MON-YYYY	ATTR_DEF_DATE_FORMAT-$INFODOM$=DB_DATE_FORMAT	ATTR_DEF_DATE_FORMAT-ORAFUSION=DD/MON/YYYY

Configure Members Reverse Population

This property should be set for reverse population of Members for the Dimensions in required Information Domains.

Value	Code	Example
# Members Reverse population - VALUE- Y/N	MEMBER_REVERSE_POP-$INFODOM$-$DIMENSION_ID$=$VALUE$	MEMBER_REVERSE_POP-ORAFUSION-1=Y

Configure Hierarchy Reverse Population

This property should be set for reverse population of Hierarchies for the Dimensions in required Information Domains.

Value	Code	Example
#Hierarchy Reverse population - VALUE- Y/N	HIERARCHY_REVERSE_POP-$INFODOM$-$DIMENSION_ID$=$VALUE$	HIERARCHY_REVERSE_POP-ORAFUSION-1=Y

Configure Maximum Levels allowed in Hierarchies

This property is required to set the maximum levels allowed to build the Hierarchies tree structure.

Value	Code	Example
#Hierarchy Maximum level allowed for the hierarchy in particular Information Domain - VALUE - Integer number	MAX_DEPTH-$INFODOM$=$VALUE$	MAX_DEPTH-FUSION=15

Hierarchies greater than 15 levels are not supported within OFSAA EPM applications (ALM, FTP, PFT, and HM). If the hierarchy data contains more than 15 levels, OFSA_IDT_ROLLUP will not be populated. The number of hierarchy levels allowed for OFSAA EPM key dimensions must be less than or equal to 15.

- If the Hierarchy Reverse Population setting is set to "Y" and more than 15 levels exist in the data, then the following alert is displayed "The number of levels exceeds the limit".
- If the maximum level allowed setting is set greater than 15 and Hierarchy Reverse Population is set to "Y", then following error is displayed "Error occurred in Reverse Populating the hierarchy".

Configure Node Limit for a Hierarchy Tree

This property is required to display the Hierarchy as a small or a large hierarchy. If the tree node limit exceeds the set limit, the Hierarchies are treated as large Hierarchy.

Value	Code	Example
#Tree node limit for the hierarchy - Values is Integer number	TREE_NODE_LIMIT=$VALUE$	TREE_NODE_LIMIT=30

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 below. These settings are base minimum and has to be incremented considering the deployment metrics into account. The increments are usually handled in multiples of 128mb for heap and 64mb for stack.

Infrastructure Application Server Memory Settings

You can configure the Infrastructure Application Memory settings as follows:

1. Locate .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"

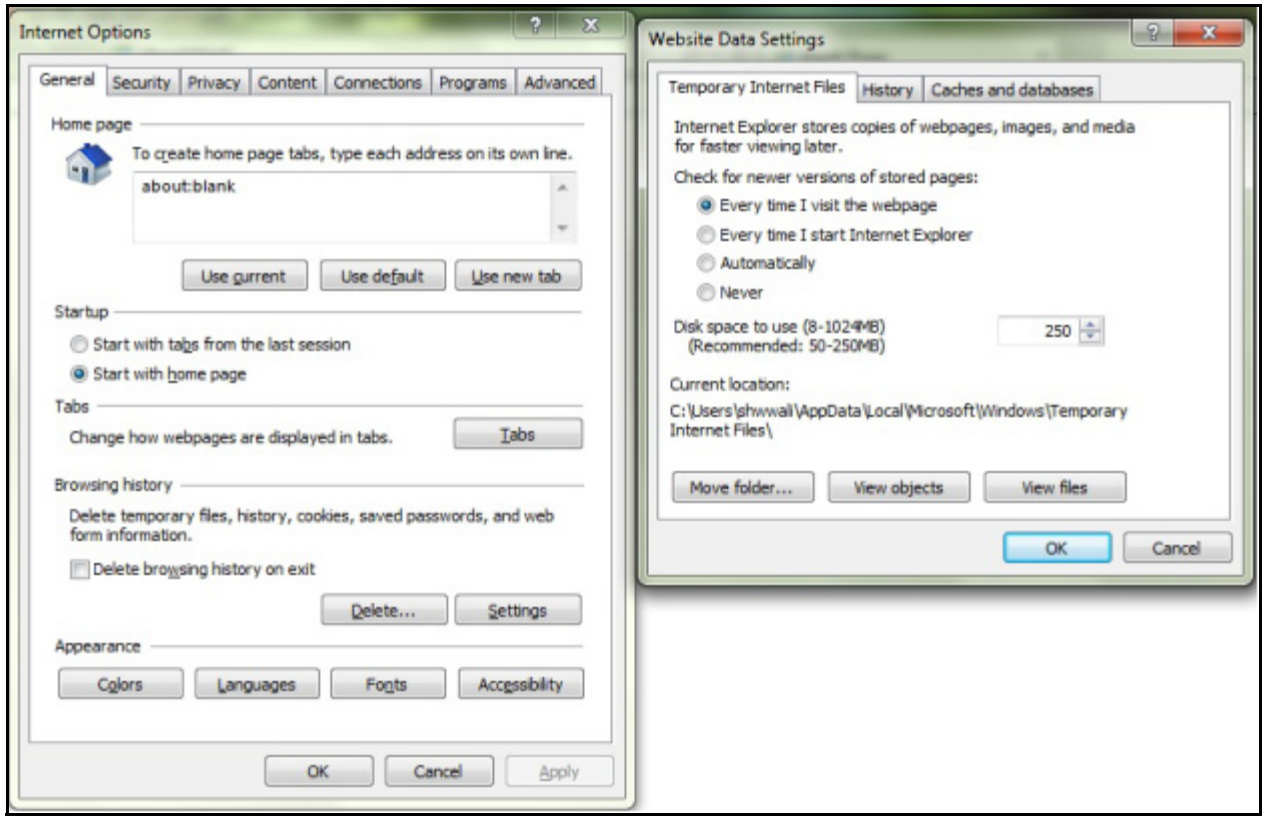
X_ARGS_RLEXE="-Xms1g -Xmx1g -XX:+UseAdaptiveSizePolicy -XX:MaxPermSize=512M
XX:+UseParallelOldGC -XX:+DisableExplicitGC"

Internet Explorer Settings

Note: OFSAAI supports only default zoom setting in Internet Explorer, that is, 100%. Cookies should be enabled.

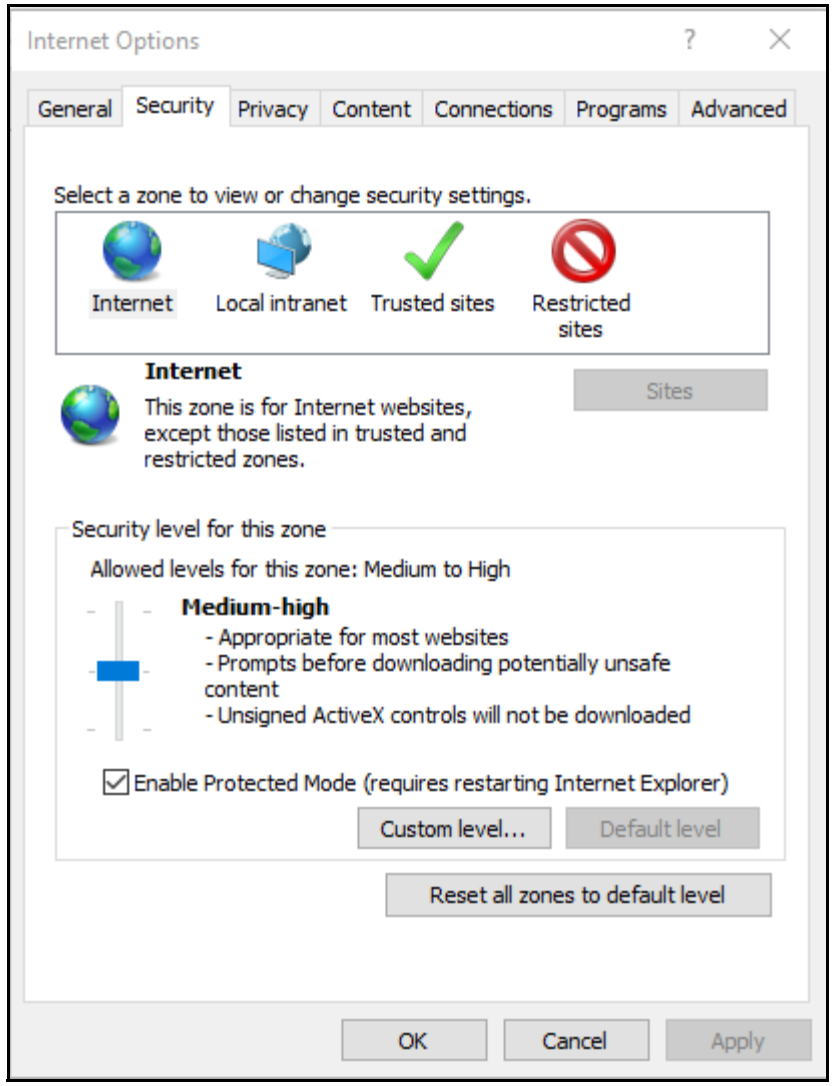
The following browser settings have to be specified at every client machine prior to accessing the Infrastructure application:

1. Open Internet Explorer. Select Tools > Internet Options. The Internet Options window is displayed.
2. Click the Settings button. The Settings window is displayed.
3. Select the option Every time I Visit the webpage and click OK.



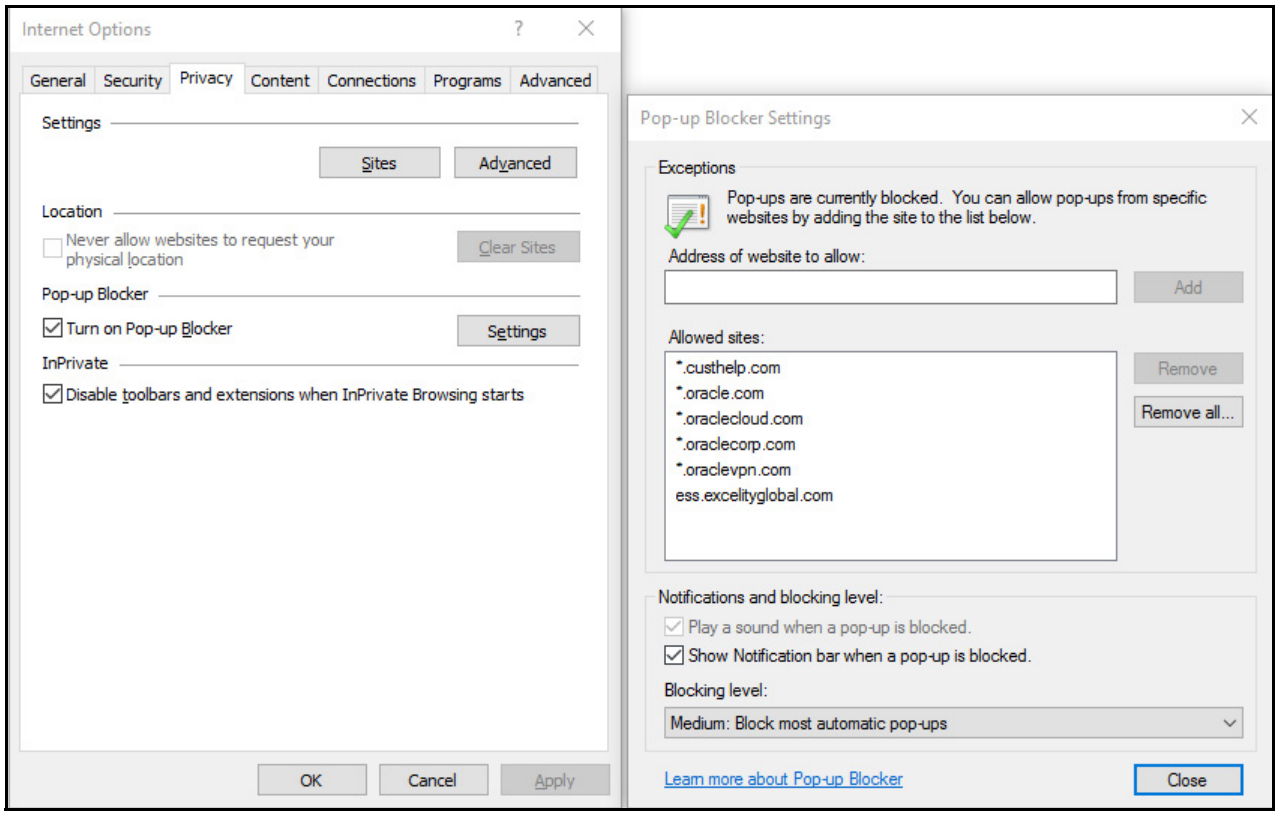
4. In the Internet Options window, select the **Security** tab and select the **Internet option** under **Select a zone to view or change the security** settings.

5. Click **Default Level** under **Security level for this zone**.



6. Click **OK** to save.

7. In the **Internet Options** window, select the **Privacy** tab and select the **Turn on Pop-up Blocker** option under **Pop-up Blocker** settings.



8. Click **Settings**. The Pop-up Blocker Settings window is displayed.
9. Enter the URL of the OFSAA Application in the **Address of Website to Allow:** field.
10. Click **Add**. The OFSAA URL is displayed in the **Allowed Sites** section.
11. Click **Close**.
12. Click **OK** in the Internet Options window.

Retrieving Patch Information

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

1. Login 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/ Platform.

OLAP Data Server Configuration

This section is applicable if you are using the OLAP feature of OFSAAI.

The following parameters must be set to ensure that the system limitations are not exceeded at any stage. The values for these OS parameters should be specified based on the expected load at each implementation site.

Example:

Process Memory Limit

Max Thread Stack Size

Max Number of Threads per Process

- Sort Buffer settings: This must be set at the Essbase application level appropriate to the anticipated load.
- Shutdown and Restart: During shutdown of OFSAAI Server that has an instance of Data Services that is communicating with an OLAP Data Server, it is imperative to ensure that the cleanup of the old instance is completed on the OLAP Data Server before restarting the OFSAAI Server. Pause for a period of time based on the load the system was subjected to, before restarting the Data Services subsystem.

Changing IP/ Host name, Ports, Deployed Paths of the OFSAA Instance

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

OFSAAI Setup Information Fetching Tool

Executing the SetupInfo.jar file available in the FIC_HOME path will help you retrieve the related information about the OFSAAI Set up such as Operating System Name and version, Database Type and Version, OFSAAI architecture, Log file locations and so on.

To execute `SetupInfo.jar` in console:

1. Navigate to the path *`$FIC_HOME`*.
2. Enter the command:

   ```
   java -jar SetupInfo.jar
   ```

   After execution, the output file location is displayed in the console.

Encryption Changer

This utility helps you to regenerate the new AESCryptKey.ext file and encrypt all the encrypted values of the OFSAAI setup according to the new key.

To execute `EncryptC.jar` in console:

1. Navigate to the path $FIC_HOME.
2. Enter the command:

   ```
   java -jar EncryptC.jar
   ```

3. A confirmation message is displayed after execution.

Once executed, you need to create and deploy the EAR / WAR file depending on the configured Web Application Server. For more information, see Creating EAR/WAR File and Deploying EAR/WAR File sections.

Infrastructure LDAP Configuration

For more information on LDAP configuration, see the OFS Analytical Applications Infrastructure Administration User Guide.

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 configuration steps given below are to be done only if you are using the Web Services feature of OFSAAI.

Configure DynamicWSConfig.xml File

For each third party web service that needs to be accessed using the OFSAAI Web services framework and the operations to be invoked, corresponding entries are to be made in the `DynamicWSConfig.xml` template file.

The variable `<WebServer>` denotes any one of the application server, i.e. WebSphere, WebLogic, or Tomcat.

The `DynamicWSConfig.xml` file will be available in the *`<OFSAAI Installation Directory>/EXEWebService/<WebServer>/ROOT/conf`* directory. This file can be placed in any directory that is accessible by the application and this location must be specified in the web.xml file, as `WSCONFIGFILE` parameter.

The `DynamicWSConfig.xml` template file will be in *`<WebServer Deployment Path>/ EXEWebService.ear/EXEWebService.war/conf`* directory.

This template is given below:

```
<XML>
    <WEBSERVICES>
    <WEBSERVICE CODE="$CODE"
    ENDPOINT="$ENDPOINT" TARGETNAMESPACE="$TARGETNAMESPACE"
    XMLNS_XSD="$XMLNS_XSD" ENCODINGSTYLE="$ENCODINGSTYLE"
    SERVICENAME="$SERVICENAME" PORTTYPENAME="$PORTTYPENAME"
    SESSION_MAINTAIN_PROPERTY="$SESSION_MAINTAIN_PROPERTY"
    USERNAME="$USERNAME"
    PASSWORD="$PASSWORD" STYLE="$WEBSERVICESTYLE"
    STUBIMPLEMENTATION="$STUBIMPLEMENTATION">
    <OPERATION CODE="$CODE"
    NAME="$NAME"
    SOAPACTION="$SOAPACTION"
    STYLE="$STYLE"
```

```
PACKAGENAME="$PACKAGENAME">
<INPUT ORDER="$ORDER"
PARAMNAME="$PARAMNAME"
ARGTYPE="$ARGTYPE"
CLASSNAME="$CLASSNAME"/>
<OUTPUT PARAMNAME="$PARAMNAME"
RETURNTYPE="$RETURNTYPE"
CLASSNAME="$CLASSNAME"/>
</OPERATION>
</WEBSERVICE>
</WEBSERVICES>
</XML>
```

The `DynamicWSConfig.xml` has the placeholders as tabulated below. These have to be updated depending on the web service chosen and the mode of accessing it. For each Web service to be accessed, the entire web service tag in the `DynamicWSConfig.xml` file must be repeated. The placeholders tabulated below should be set in accordance to the parameters published in the third party wsdl files (web-services) to be accessed. The stub class specified must implement the "`com.iflex.Oracle Reveleus.execution.webservice.EXEWebIF`" interface.

Attributes for WEBSERVICE tag

Placeholder	Description
$CODE	Unique number within the xml file and cannot be 999 or 0.
$ENDPOINT	soap: address location in the wsdl: service name tag of the wsdl file.
$TARGETNAMESPACE	The attribute value for the targetNamespace of the wsdl: definitions tag.
$XMLNS_XSD	The attribute value for the xmlns:s of the wsdl:definitions tag.
$ENCODINGSTYLE	The attribute value for the xmlns:soapenc of the wsdl:definitions tag.
$SERVICENAME	Name of the service found under the wsdl:service name tag of the wsdl file.
$PORTTYPENAME	wsdl port type name as mentioned in the wsdl file.
$SESSION_MAINTAIN_PROPERTY	This could be given as "" also.
$USERNAME	User name to access the web services. Enter "" if no user name is required.
$PASSWORD	Password to access the web services. Enter "" if no password is required.
$WEBSERVICESTYLE	This can take either "rpc" in case of DII mode of invoking web services or "stub" in case of static mode. This is a mandatory parameter.
$STUBIMPLEMENTATION	Fully qualified class name (package name.classname).

Attributes for OPERATION tag

Ensure that the "operation tag attributes" are repeated for each of the operation tags.

Placeholder	Description
$CODE	Should be unique within the Web service tag.
$NAME	The name of the Function that is to be called by the wsdl file.
$SOAPACTION	The URL for the Operation to access. This is associated with the Operation tag of the wsdl file.
$STYLE	This can take "rpc" if the web services invoking is in DII mode or "stub" if it is in static mode. This is a mandatory parameter.
$PACKAGENAME	Represents the JAXB package of input object.

Attributes for INPUT tag

Placeholder	Description
$ORDER	The sequential number of the INPUT tag. Should start from 0. This is in line with the input order of the arguments that the API accepts which is called by this operation.
$PARAMNAME	Input parameter name to be called by the wsdl file.
$ARGTYPE	Input Parameter Data Type. If the input argument type is complex object, specify $ARGTYPE as "xmlstring".
$CLASSNAME	Represents class name of input object parameter.

Attributes for OUTPUT tag

Placeholder	Description
$PARAMNAME	Output parameter name to be returned by the web service.
$RETURNTYPE	Output parameter Data Type. If the web service response is a complex object, then specify $RETURNTYPE as "object".
$CLASSNAME	Represents class name of output object parameter.

web.xml Entries

This step is optional and required only if the web application server used is Tomcat. In case of any other application server, skip and proceed with next step.

1. Navigate to *$FIC_HOME/webroot/WEB-INF/* and edit the web.xml file. Set parameter value DOCSERVICEAPP to EXEWebServiceAXIS.
2. Navigate to *<OFSAAI Installation Directory>/EXEWebService/<WebServer>/ROOT/WEB-INF/* and edit the web.xml file as explained below.

Note: In case of Java 7 when WebLogic is used as web application server replace following line of *<OFSAAI Installation Directory>/EXEWebService/Weblogic/ROOT/WEB-INF/web.xml* file that is

```
<?xml version='1.0' encoding='UTF-8'?>
<web-app id="WebApp_ID" version="3.0"
xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_3_0.xsd" metadata-complete="true">
```

with

```
<?xml version='1.0' encoding='UTF-8'?>
<web-app xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

Entry for WSConfig File

The WSCONFIG file (DynamicWSConfig.xml) is available in the *<WebServer Deployment Path>/EXEWebService.ear/EXEWebService.war/conf* directory. This file can be placed in any directory that is accessible by the application.

The path where the WSCONFIG file is placed must be specified in place of *$WSCONFIGFILELOCATION$* in the below block of text in web.xml.

```
<context-param>
    <description>WebServices Configuration File</description>
    <param-name>WSCONFIGFILE</param-name>
    <param-value>$WSCONFIGFILELOCATION$</param-value>
    <!--Specify the Location of DynamicWSConFig.xml-->
</context-param>
```

Proxy Settings

Replace the following <param-value> given in bold in the following block of text in web.xml file, with appropriate values.

If no values are required, leave the <param-value> blank.

```
<context-param>
   <description>http Proxy Host</description>
   <param-name>http.proxyHost</param-name>
   <param-value>$PROXYHOST$</param-value>
   <!-- Specify the IP address or hostname of the http proxy server-->
</context-param>
<context-param>
   <description>http Proxy Port</description>
   <param-name>http.proxyPort</param-name>
   <param-value>$PROXYPORT$</param-value>
   <!--Port Number for the Proxy Server-->
</context-param>
<context-param>
   <description>http proxy UserName</description>
   <param-name>http.proxyUserName</param-name>
   <param-value>$PROXYUSERNAME$</param-value>
   <!-- User ID To get authenticated by proxy server-->
</context-param>
<context-param>
   <description>http proxy Password</description>
   <param-name>http.proxyPassword</param-name>
   <param-value>$PROXYPASSWORD$</param-value>
   <!-- User Password To get authenticated by proxy server-->
</context-param>
<context-param>
   <description>http non-ProxyHosts</description>
   <param-name>http.nonProxyHosts</param-name>
   <param-value>$NONPROXYHOST$</param-value>
   <!--Hosts for which the proxy settings should get by-passed (Note: Separate them by
   "|" symbol) -->
</context-param>
```

OFSAAI Home Entry

This entry should point to the Application layer / Web layer of the OFSAAI installation and should be accessible.

Replace `$FIC_HOME$` in the following block of text in `web.xml` with <*WebServer Deployment Path*>/*EXEWebService.ear*/`EXEWebService.war`.

```
<context-param>
    <description>OFSAAI Web Home</description>
    <param-name>FIC_HOME</param-name>
    <param-value>$FIC_HOME$</param-value>
    <!--OFSAAI Installation Folder-->
</context-param>
<context-param>
    <description>OFSAAI Web Home</description>
    <param-name>FIC_PHYSICAL_HOME</param-name>
    <param-value>$FIC_HOME$</param-value>
    <!--OFSAAI Installation Folder-->
</context-param>
```

DynamicWSConfig.xml

For each third party web service that needs to be accessed using the OFSAAI Web services framework, and the operation to be invoked, make corresponding entries into this file. This file is to be placed in the location that is specified in the web.xml, as `WSCONFIGFILE` parameter.

Deploy OFSAAI Web Services

You can deploy OFSAAI Web Services separately if you had not configured OFSAAI Web Services as part of the installation.

1. Complete the manual configuration of OFSAAI Web Services.
2. Navigate to *<OFSAAI Installation Directory>/EXEWebService/<WebServer>* and execute the command:

   ```
   ./ant.sh
   ```
3. This will trigger the EAR/WAR file creation, which is required for the deployment.
4. Deploy the generated EXEWebService.EAR/EXEWebService.WAR file into the Web Server.

If you have already configured OFSAAI Web Services as part of the installation, deploy the generated EXEWebService.EAR/ EXEWebService.WAR file into the OFSAAI Deployment area in Web Server profile.

Configuration to Enable Parallel Execution of DML Statements

A configuration file, `OracleDB.conf` has been introduced to accommodate any configurable parameter related to operations on 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 which 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.

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 mail server in the `"NotificationConfig.cfg"` file which resides in the path *`$FIC_APP_HOME/common/FICServer/conf`*.

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

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

Parameter	Description
SMTP_SERVER_IP	Specify the host name or IP address of 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 SMTP server requires the client to be authenticated, otherwise set to 'false'.
SMTP_USERNAME	Username required for logging into SMTP server, if authentication is not required use a dummy value.
SMTP_PASSWORD	Password required for logging into SMTP server, if authentication is not required use a dummy value.
SMTP_MAILID	If the Messages has to go from a Particular ID that ID need to be added. Exchange server forces you set a valid ID that is there in the exchange server (Based on Security settings).

Ensure that the authorized User details are included in **Administration > Security Management > User Administrator > User Maintenance** window.

Clearing Application Cache

This is applicable to all Web Servers (i.e. WebSphere, WebLogic, and Tomcat).

Prior to the deployment of Infrastructure or Application Service Packs / One-off patches, navigate to the following path depending on the Web Server configured and clear the cache:

- **Tomcat**: *<Tomcat installation folder>/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>*

Configuring Password Changes

This section explains about how to modify the OFSAA Infrastructure Config Schema and Atomic Schema passwords.

OFSAA Infrastructure Config Schema Password Modification

To change the Config Schema password, perform the following steps:

1. Change the Config schema User Password in the database.
2. Delete the $FIC_HOME/conf/Reveleus.SEC file.
3. Shutdown the OFSAAI App service:

   ```
   cd $FIC_APP_HOME/common/FICServer/bin
   ./stopofsaai.sh
   ```

4. Start the Infrastructure Server in foreground directly on the server or through X-Windows software using the command:

   ```
   ./startofsaai.sh
   ```

   At the prompt, enter System Password. Enter the "new Config schema" password. The service will start and initialize itself if it is able to successfully connect to the DB.

5. Post successful startup of the service, if required, the Infrastructure server may be shut down and restarted in the background using nohup mode.

OFSAA Infrastructure Atomic Schema Password Modification

To change the Atomic Schema password, perform the following steps:

1. Change the Atomic schema User Password in the database.
2. Login to the application from the browser using SYSADMN account or any user id, which has System Administrator role mapped.
3. Navigate to System Configuration > Database Details window. Modify the password as explained in the following steps:

- From the Database Master window, select the connection whose password you want to modify and click button from the tool bar.
- Click button corresponding to the Alias Name. The Alias Details window is displayed.
- Modify the password in the Auth String field.

4. If you are using Apache Tomcat as Web server, update the <Context> -> Resource tag details in Server.xml file from the $CATALINA_HOME/conf folder. (In case of Tomcat only Atomic <Resource> will exist).
5. If you are using WebSphere as Web server:
   a. Login to the WebSphere Administration Console, from the left side menu.
   b. Navigate to Resources >JDBC >Data Sources. A list of data sources will be populated on the right side.
   c. Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic data sources will need to be modified).
6. If you are using WebLogic as Web server:
   a. Login to the WebLogic Administration Console, from the left side menu.
   b. Under Domain Structure list box, expand the appropriate Domain and navigate to Services > JDBC >Data Sources. A list of data sources will be populated on the right side.
   c. Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic data sources need to be modified).
7. Restart the OFSAAI services.

Configuring Java Virtual Machine

While running several database intensive tasks in parallel, fetching the database connection from 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 needs to be configured on all the machines or virtual machines where the OFSAAI database components (ficdb layer) are installed.

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 undergone a change 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 folders download, upload, TempDocument and Temp in the local path of Web application server and provide Read/Write permission.
   - To find the exact location, execute the following query in CONFIG schema:

     ```
     select localpath from web_server_info
     ```
   - To create folders with Read/Write permission, execute the command:

     ```
     mkdir -m 777 download upload TempDocument Temp
     ```
2. Create DocStorage folder in the FTPSHARE location of APP tier and provide Read/Write permission.

- To find the exact location, execute the query in CONFIG schema:

  ```
  select ftpdrive from app_server_info
  ```

- To create folder with Read/Write permission, execute the command:

  ```
  mkdir -m 775 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 to 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 *`$FIC_HOME/EXEWebService/<WEBSERVER_TYPE>`* directory of WEB tier and type `./ant.sh`. This triggers the creation of EAR/WAR file `EXEWebService.ear/.war`. The EAR/WAR file `EXEWebService.ear/.war` will be created in *`$FIC_HOME/EXEWebService/<WEBSERVER_TYPE>`* directory of WEB tier. Redeploy the generated EAR/WAR file onto your configured web application server.

APPENDIX A - CLONING OF AN OFSAA INSTANCE

There is a consistent need for a faster and effective approach of replicating an existing OFSAA instance for further project developments, that is, setting up OFSAA instances that are exact copies of the current OFSAA instance. For more information on cloning, see OFSAA Cloning Reference Guide.

APPENDIX A - MIGRATION FOR EXCEL UPLOAD

This appendix provides detailed instructions to migrate for excel upload.

Prerequisites

The following are the prerequisites for migration:

- Data model in ATOMIC schemas should be same on the source and target setups.
- OFS AAI (platform) patch level version should be same on the source and target setups.
- PL/SQL Developer to connect and query the database.
- WinSCP to connect and access server file system.

Migration for Excel Upload

To migrate, follow these steps:

1. Open PL/SQL Developer and log in to the source setup's configuration (CONFIG) schema by entering the appropriate username and password.
2. In a new SQL window query the data of table EXCEL_MAPPING_MASTER.
3. Open a new session in PL/SQL developer and log in to the target setup's configuration (CONFIG) schema by entering the appropriate username and password.
4. Insert the records from Step 1 above in to this table.
5. In V_INFODOM column of EXCEL_MAPPING_MASTER table update the infodom name with the target infodom name.

   Note: If all the mappings can work out of the single target Infodom, update same Infodom value across all rows. If only few mappings will work out of the target infodom, update the infodom value for selective records. Excel upload mappings will work only if the target infodom has same data model entities as used in the mappings defined on source setup.

   ---

6. Update V_CREATED_BY column with the name of any user present in the target setup that has appropriate roles to perform Excel Upload tasks.

   Note: It is mandatory to update values for V_INFODOM and V_CREATED_BY columns.

   ---

7. Open WinSCP and login a new session by entering the host name, port number, user name and password to access the source setup.
8. Navigate to the folder referred as FTPSHARE.

9. Copy the excel-entity mapping xml file(s) which are located in this folder according to their folder structure on to your desktop. For example: */ftpshare /STAGE/ExcelUpload/$SOURCE_INFODOM_NAME/$EXCEL_FILE_NAME.xml*

Note: Actual file name of Excel Sheet is mentioned in the V_EXCEL_NAME column of EXCEL_MAPPING_MASTER table.

---

10. Copy the excel templates (.xls/ .xlsx) file(s) which are located in this folder according to their folder structure on to your desktop. For example: /ftpshare/STAGE/ExcelUpload/TEMPLATE/*.xls or *.xlsx

---

Note: Ignore this step if files are not present at the location.

---

11. Login a new session in WinSCP by entering the host name, port number, user name and password to access the target setup.
12. Copy the xml file(s) from Step3 to the below location in the target setup. For example: */ftpshare/STAGE/ExcelUpload/$TARGET_INFODOM_NAME/$EXCEL_FILE_NAME.xml*

Note: $TARGET_INFODOM_NAME should be target setup infodom in which you have uploaded the appropriate data model and the name should be same as the V_INFODOM column value updated in EXCEL_MAPPING_MASTER table.

---

13. Copy the xls/ xlsx file(s) from Step 3 to the below location in target setup. For example: /ftpshare/STAGE/ExcelUpload/TEMPLATE/*.xls or *.xlsx

---

Note: Ignore this step if files are not present at the location.

APPENDIX A - REMOVING OFSAA

This chapter includes the following sections:

Uninstalling OFSAA Infrastructure

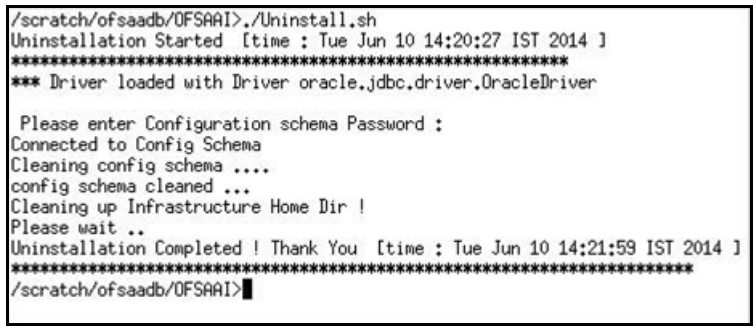
This section will guide you through the necessary steps to uninstall the OFSAA Infrastructure product.

Before you start the un-installation process, ensure that no open connections exist to the OFSAA Infrastructure Config and Atomic Schemas and Infrastructure services are brought down.

To uninstall OFSAA Infrastructure:

1. Log in to the system as non-root user.
2. Navigate to the $FIC_HOME directory and execute the command:

   ```
   ./Uninstall.sh
   ```
3. Enter the password for OFSAAI Configuration Schema when prompted as shown in the following figure.



Note: Uninstallation does not remove the Infrastructure application from the Web Application Server. This has to be done manually.

The entries in the .profile file will have to be removed manually.

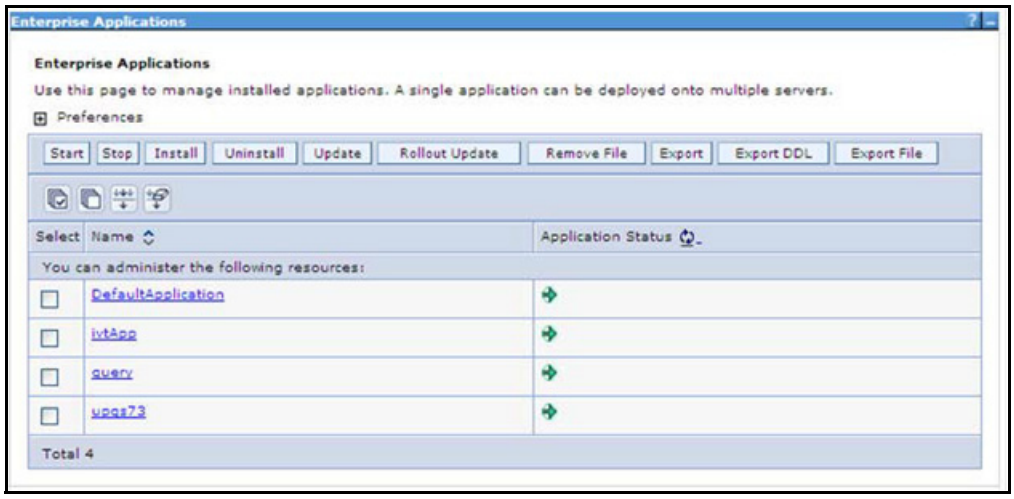
The files/ folders under the file system staging area (ftpshare) have to be deleted manually.

All the Database objects from Atomic Schemas have to be dropped manually.

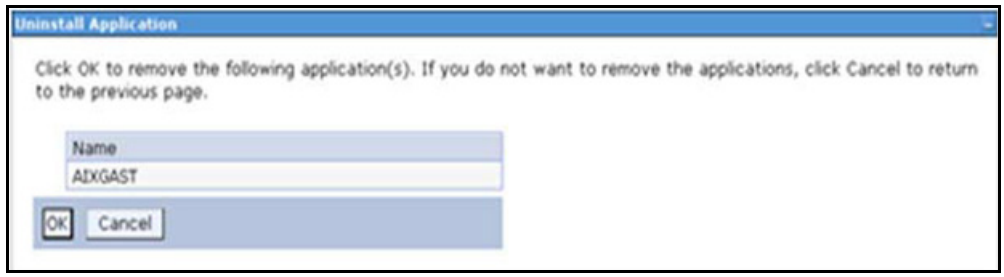
Uninstalling EAR Files in WebSphere

Following are the steps to uninstall any previously deployed application:

1. Open the URL in the browser window: http://<ipaddress>:<Administrative Console Port>/ibm/console (https if SSL is enabled). The Login window is displayed.
2. Login with the user id that has admin rights.
3. Expand Applications > Application Types > WebSphere enterprise applications from the LHS. The Enterprise Applications window is displayed with all the deployed applications.



4. Select the check box adjacent to the application to be uninstalled and click **Stop**.
5. Click **Uninstall** to display the Uninstall Application window.

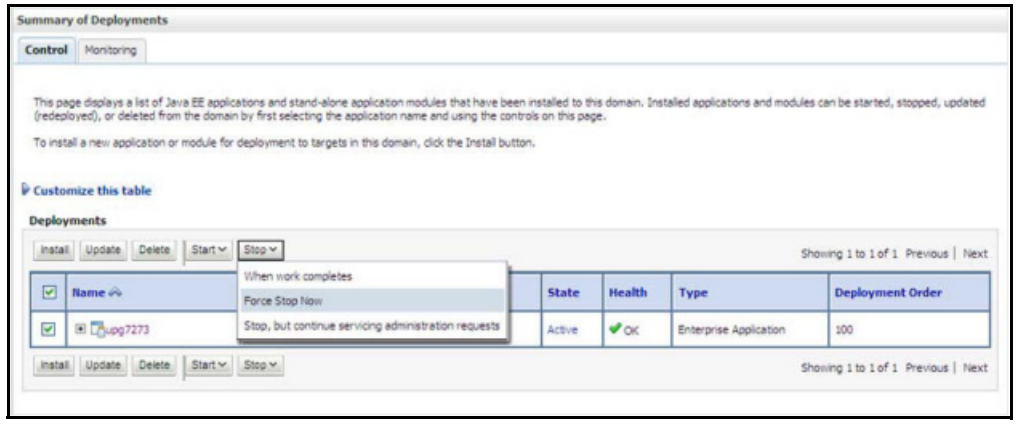


6. Click **OK** to confirm.
7. Click **Save** to save the master file configuration.

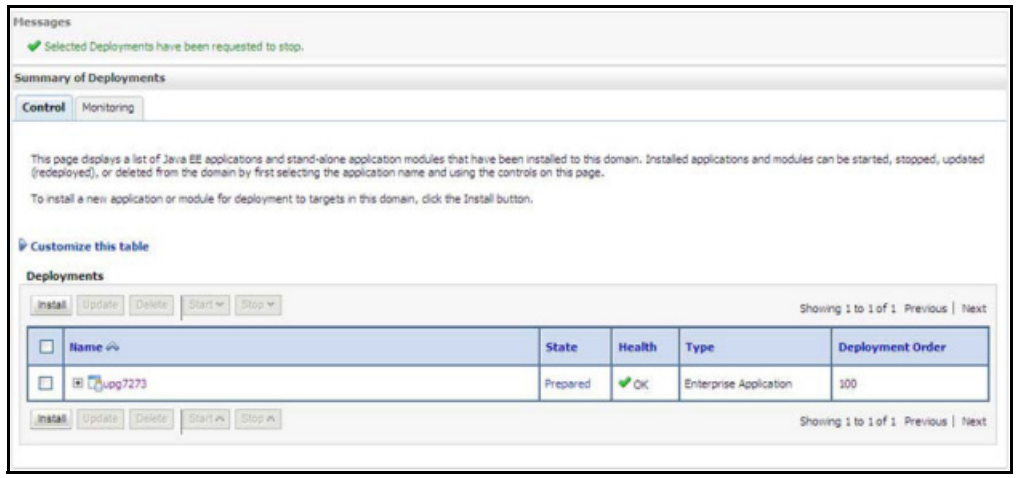
Uninstalling EAR Files in WebLogic

On the machine that hosts WebLogic, perform the following steps to uninstall any previously deployed application:

1. Open the URL in the browser window: http://<ipaddress>:<admin server port>/console (https if SSL is enabled). The Login window of the WebLogic Server Administration Console is displayed.
2. Login with the WebLogic user credentials having administrator privileges.
3. From the Domain Structure LHS menu, click Deployments to display the Summary of Deployments screen.



4. Select the check box adjacent to the application to be uninstalled and click **Stop > Force Stop Now**.
5. Click **Yes** in the confirmation dialog to stop the selected deployment.



6. Select the check box adjacent to the application and click **Delete** to delete the selected deployment.
7. Click **Yes** in the confirmation dialog to remove the selected deployment from the domain configuration.

Uninstalling WAR Files in Tomcat

On the machine that hosts Tomcat, perform the following steps to uninstall any previously deployed application:

1. Comment out Context path section from server.xml file in $CATALINA_HOME/conf directory to avoid conflict during undeploy and re-deploy of the WAR file.

   Place comment <!-- --> in between the context path section. For example:

   ```
   <!--
   <Context path ="/pr2test" docBase="/home/perfuser/tomcat-7.0.19/webapps/pr2test"
   debug="0" reloadable="true" crossContext="true">
   <Resource auth="Container"
   name="jdbc/PR2ATM"
   type="javax.sql.DataSource"
   driverClassName="oracle.jdbc.driver.OracleDriver"
   username="pr2atm"
   password="pr2atm"
   url="jdbc:oracle:thin:@10.184.74.99:1521:PERFTEST"
   maxActive="100"
   maxIdle="30"
   maxWait="10000"/>
   </Context>
   -->
   ```

   Restart the Tomcat service by doing the following:

   a. Login to the "Unix server" through a terminal emulator.
   b. Navigate to *$catalina_home/bin* directory.
   c. Stop the tomcat services using the following command:

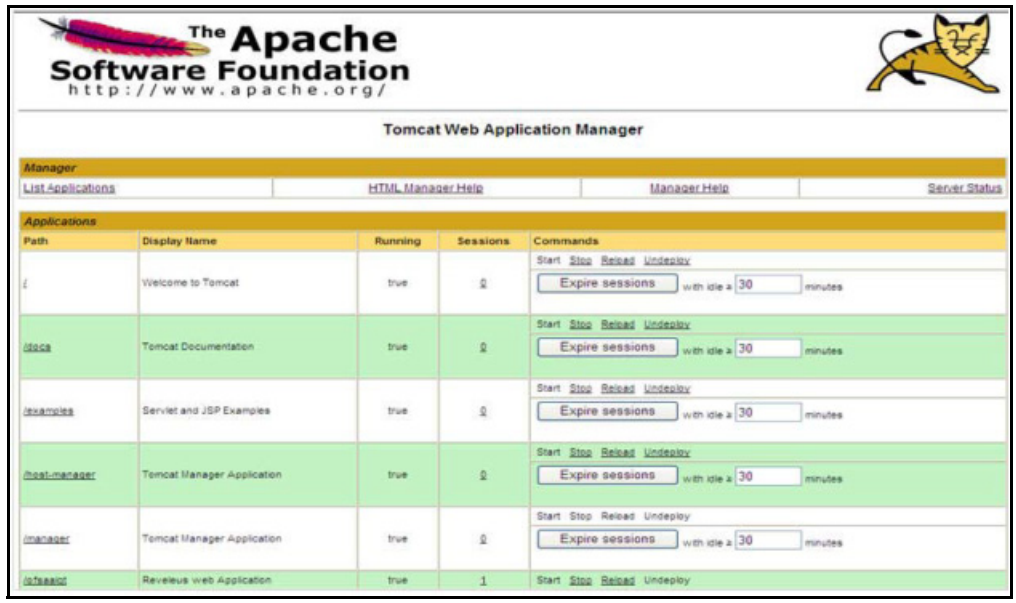
      ```
      ./shutdown.sh
      ```

   d. Start the tomcat services using the following command:

      ```
      ./startup.sh
      ```

2. Open the URL in a browser window: http://<IP address>:<Tomcat server port>. (https if SSL is enabled). The Tomcat home window is displayed.
3. Click the **Manager App**. The Connect to window is displayed.

4. Login with the user credentials having admin rights. The Tomcat Web Application Manager window is displayed with the list of all applications deployed in Tomcat.



5. Click the **Undeploy** link against the deployed Infrastructure application. A confirmation message is displayed on the application /Infrastructure being uninstalled.

APPENDIX A - UPGRADING AN EXISTING OFSAA 8.0.X JAVA 7 INSTANCE TO JAVA 8

This appendix explains the configurations required to upgrade an existing OFSAA 8.0.x Java 7 instance to Java 8. It consists of the following topics:

Prerequisites

The following are the prerequisites for upgrading OFSAA 8.0.x Java 7 instance to Java 8:

- Java 8 should be installed on the OFSAA server and Web Application Server.
- Oracle WebLogic Server should be 12.1.3.0 or above. Download and install patch **18729264** from http://support.oracle.com/.

Note: IBM WebSphere 8.5.x (Full Profile) on Java 8 is not available.

Steps for upgrading OFSAA 8.0.x Java 7 instance to Java 8

To upgrade OFSAA 8.0.x Java 7 instance to Java 8, follow these steps:

1. Configure Web Application Server to Java 8. For more information, see Configuring Web Application Server.
2. Configure the OFSAA instance to Java 8. For more information, see OFSAA Generic Configurations. For a newly installed Web Application Server, see OFSAA Configurations for New Web Application Server Installation.
3. Restart the OFSAA services. For more information, see Start/Stop OFSAA Infrastructure Services section.
4. Generate the application EAR/WAR file and redeploy the application onto your configured web application server. For more information on generating and deploying EAR / WAR file, see Creating EAR/WAR File and Deploying EAR/WAR File sections.

Web Application Server Configurations

This section describes the changes to be made in the Web Application Server. Following are the two options to perform Web Application Server Configurations which are listed as follows:

- Upgrade the existing Web Application Server installation to Java 8
- Install a new instance of the Web Application Server with Java 8

This section consists of the following topics:

Oracle WebLogic Server Updates

Perform the following configurations to upgrade the existing WebLogic server instance to Java 8:

1. Navigate to <WLS_HOME>/Middleware/Oracle_Home/wlserver.
2. Edit the `product.properties` file. Set `JAVA_HOME`, `WLS_JAVA_HOME`, `JAVAHOME` properties to the new Java path and `java.vm.version` to the new Java version. For example:

   ```
   JAVA_HOME=/usr/java/jre1.8.0_45
   WLS_JAVA_HOME=/usr/java/jre1.8.0_45
   JAVAHOME=/usr/java/jre1.8.0_45
   java.vm.version=1.8.0_45
   ```

3. Navigate to *<WLS_HOME>/Middleware/Oracle_Home/user_projects/domains/<domain>/bin*. Update `SUN_JAVA_HOME`, `DEFAULT_JAVA_HOME`, `JAVA_HOME` in the `setDomainEnv.sh` file to point to the new Java path. For example:

   ```
   SUN_JAVA_HOME="/usr/java/jre1.8.0_45"
   DEFAULT_SUN_JAVA_HOME="/usr/java/jre1.8.0_45"
   JAVA_HOME="/usr/java/jre1.8.0_45"
   ```

4. Clear the Application cache. Navigate to the following path and delete the files:

   <Weblogic installation location>/domains/<Domain name>/servers/<Server name>/tmp/_WL_user/<Application name>/qaelce/jsp_servlet

If you want to install a new instance of the Oracle WebLogic Server, follow these steps:

1. Install Oracle WebLogic Server 12.1.3.x on Java 8.
2. Perform the configurations for the newly installed WebLogic server. For more information, see Configure Resource Reference in WebLogic Application Server.

Note: While creating WebLogic Domain, the Listen Port should be set same as that of the existing Domain. Note down the new Domain path to perform OFSAA Configurations.

Apache Tomcat Server Updates

Perform the following configurations to upgrade the existing Apache Tomcat Server from Java 7 to Java 8:

1. Login to the Apache Tomcat Server as a non-root user.
2. Edit the `user.profile`. Update the value for `JAVA_HOME` from JRE 1.7 to JRE 1.8. For Example:
   `JAVA_HOME=/usr/java/jre1.8.0_45`
3. Clear the Application cache. Navigate to the following path and delete the files:
   <Tomcat installation folder>/work/Catalina/localhost/<Application name>/org/apache/jsp

If you wish to install a new instance of the Apache Tomcat Server, follow these steps:

1. Install Apache Tomcat Server 8 with Java 8.
2. Perform the configurations for the newly installed Tomcat server. For more information, see Configure Resource Reference in Tomcat Application Server.

Note: Update the Connector Port in */apache-tomcat-8.0.21/conf/server.xml* file to that of the existing Tomcat instance. Note down the new deployment path to perform OFSAA Configurations.

OFSAA Generic Configurations

User .profile Settings

Perform the following configurations:

1. Login to the OFSAA Server as a non-root user.
2. Edit the user .profile. Update the value for PATH variable from JRE 1.7 to JRE 1.8. For Example,
   ```
   PATH=/usr/java/jre1.8.0_45/jre
   JAVA_BIN=/usr/java/jre1.8.0_45/jre/bin
   LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/java/jre1.8.0_45/jre/lib/amd64/server
   ```

OFSAA Configurations for New Web Application Server Installation

This configuration is required only if you have freshly installed Oracle WebLogic 12.1.3 or Apache Tomcat Server 8.0. Follow these steps:

1. Modify the following parameters in the Configuration table present in the Config Schema with the new Domain Path in case of WebLogic or with the new deployment path in case of Tomcat:
   - `DeFiHome`
   - `REV_IMG_PATH`
   - `EMBEDDED_JSP_JS_PATH`
2. Login to the OFSAA Server as a non-root user.
3. Navigate to *`$FIC_HOME/ficweb/webroot/WEB_INF`* and update the following parameters in the `web.xml` file with the new Domain path in case of WebLogic or with the new deployment path in case of Tomcat:
   - `FIC_PHYSICAL_HOME_LOC`
   - `FIC_HOME`
   - `ICC_SERVLET_LOG_FILE`
4. Navigate to $FIC_HOME/ficweb/webroot/conf and update the Domain path in case of WebLogic or with the new deployment path in case of Tomcat:
   - `OFSAALogger.xml`
   - `MDBLogger.xml`
   - `RevLog4jConfig.xml`
   - `RFDLogger.xml`
   - `ExportLog4jConfig.xml`
   - `RFDLogger.xml`
   - `PR2Logger.xml`

APPENDIX A - JDBC JAR FILES

The ojdbc<version>.jar file should be copied based on Database and Java version. Refer to the following table for details:

Oracle Database version	JDK/JRE Version supported	JDBC Jar files specific to the release
12.1 or 12cR1	JDK 8, JDK 7 and JDK 8	ojdbc7.jar for JDK 7/JDK 8
11.2 or 11gR2	JDK 7 supported in 11.2.0.3 and 11.2.0.4	ojdbc6.jar for JDK 7

APPENDIX A - CONFIGURING APPLICATION PACK XML FILES

OFS_BSP_PACK.xml

The `OFS_BSP_PACK.xml` file holds details on the various products that are packaged together in OFS BSP.

This section details the various tags/ parameters available in the file and the values that need to be updated. Prior to installing the OFS BSP in SILENT mode, it is mandatory to update this 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>8.0.0.0.0</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>8.0.0.0.0</VERSION>
        </APP>
        <APP>
                <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_PFT</APP_ID>
                <APP_NAME>Financial Services Profitability Management</APP_NAME>
                <APP_DESCRIPTION>Application for Profitability Management</APP_DESCRIPTION>
                <VERSION>8.0.0.0.0</VERSION>
        </APP>
        <APP>
                <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_FTP</APP_ID>
                <APP_NAME>Financial Services Funds Transfer Pricing</APP_NAME>
                <APP_DESCRIPTION>Application for Funds Transfer Pricing</APP_DESCRIPTION>
                <VERSION>8.0.0.0.0</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>8.0.0.0.0</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>8.0.0.0.0</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>8.0.0.0.0</VERSION>
        </APP>
</APP_PACK_CONFIG>
```

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
APP_PACK_ID	Unique Application Pack Identifier	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.
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 remove these tags.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
APP_ID	Unique Application Identifier	Y	Unique Seeded Value	Do not modify this value.
APP_ID/ PREREQ	Prerequisite Application/ Product	Y	Unique Seeded Value	For most applications Infrastructure would be the prerequisite set. For certain other applications, an appropriate Application ID would be set. Do not modify this value.
APP_ID/ DEF_SEL_FLAG	Default Selected Flag	Y	Default - YES	In all Application Packs, Infrastructure would have this value set to "YES". Do not modify this value.
APP_ID/ ENABLE	Enable Application/ Product	YES if installing in SILENT mode.	Default - YES for Infrastructure NO for Others Permissible - YES or NO	Set this attribute-value to YES against every APP_ID which is licensed and should be enabled for use. **Note:** Application/ Product once enabled cannot be disabled. However, Application/ Product not enabled during installation can be enabled later through the Administration UI.
APP_NAME	Unique Application/ Product Name	Y	Unique Seeded Value	Do not modify this value.
APP_DESCRIPTION	Unique Application/ Product Name	Y	Unique Seeded Value	Do not modify this value.
VERSION	Unique release version	Y	Unique Seeded Value	Do not modify this value.

Configuring OFS_BSP_SCHEMA_IN.xml

Creating database schemas, objects within schemas and assigning appropriate grants are the primary steps in the installation process of OFSAA Applications. The `OFS_BSP_SCHEMA_IN.xml` file contains details on the various application schemas that should be created prior to the Application Pack installation.

Note: This file should be configured only if OFS BSP installation for **RDBMS ONLY** target.

The following table gives details about the various tags/ parameters available in the file and the values that need to be updated. Prior to executing the schema creator utility, it is mandatory to update this file.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<APP_PACK_ID>	Seeded unique ID for the OFSSAA Application Pack	Y	Seeded	Do not modify this value.

<JDBC_URL>	Enter the JDBC URL.
	Note: You can enter RAC/ NON-RAC enabled database connectivity URL.
		Y	Example:
			`jdbc:oracle:thin:@<DBSERVER IP/HOST/IP>:<PORT>:<SID>`
			or
			`jdbc:oracle:thin:@//[HOST][: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/service1`
			or
			`jdbc:oracle:thin:@//dbshost.server.com:1521/scan-1`
			or
			`jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost1.server.com)(port=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost2.server.com)(PORT=1521))(LOAD_ BALANCE=yes)(FAILOVER=yes))(CONNECT_DATA=(SERVICE_NAME=service1)))`
				Ensure to add an entry (with SID/ SERVICE NAME) in the tnsnames.ora file on the OFSAA server. The entry should match with the SID/ SERVICE NAME
				used in the JDBC URL.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<JDBC_DRIVER>	By default this driver name is seeded. **Note:** Do not edit this attribute value.	Y	Example: oracle.jdbc.driver.OracleDriver	Only JDBC Thin Driver is supported. Do not modify this value.
<HOST>	Enter the Host name/ IP Address of the system on which you are installing the OFSAA components.	Y	Host Name/ IP Address	
<SETUPINFO>/ PREFIX_SCHEMA_NAME	Identifies if the value specified in <SETUPINFO>/ NAME attribute should be prefixed to the schema name.	N	YES or NO	Default value is YES.
<SETUPINFO>/ NAME	Enter the acronym for the type of implementation. This information will be displayed in the OFSAA Home Page. **Note:** On executing the schema creator utility, this value will be prefixed with each schema name. For example: dev_ofsaaconf, uat_ofsaatm.	Y	Accepts strings with a minimum length of two and maximum of four. Example: DEV, SIT, PROD	This name would appear in the OFSAA Landing Page as "Connected To: xxxx". The schemas being created would get this prefix. For example, dev_ofsaaconf, uat_ofsaaconf, etc.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<PASSWORD>/ DEFAULT*	Enter the password if you want to set a default password for all schemas. **Note:** You also need to set APPLYSAMEFOR ALL 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.	
<PASSWORD>/ APPLYSAMEF ORALL	Enter as Y if you want to apply the password specified in DEFAULT attribute for all the schemas. If you enter as N, you need to provide individual passwords for all schemas. **Note:** In case you have entered Y in APPLYSAMEFOR ALL attribute and also have specified individual passwords for all the schemas, then the specified individual passwords will take precedence.	Y	Default - N Permissible - Y	**Note:** Setting this attribute value is mandatory, if DEFAULT attribute is set.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<SCHEMA>/ TYPE	The different types of schemas that are supported in this release are ATOMIC, CONFIG, SANDBOX, and ADDON. By default, the schemas types are seeded based on the Application Pack. **Note:** Do not edit this attribute value.	Y	ATOMIC/CONFIG/SANDBOX/ ADDON **Note:** SANDBOX and ADDON schemas are not applicable for OFS BSP Application Pack.	Only One CONFIG schema can exist in the file. This schema identifies as the CONFIGURATION schema that holds the OFSAA setup detains and other Metadata information. Multiple ATOMIC/ SANDBOX/ADDON schemas can exist in the file. ATOMIC schema refers to the Information Domain schema. SANDBOX schema refers to the SANDBOX schema. ADDON schema refers to other miscellaneous schema (not applicable for this Application Pack). **Note:** The OFS BSP supports only one Atomic Schema.
<SCHEMA>/ NAME	By default, the schema names are seeded based on the Application Pack. You can edit the schema names if required. **Note:** The Schema Name will have a prefix of the SETUPINFO/ NAME attribute. SCHEMA NAME must be 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 allowed except underscore '_'.	SETUPOINFO/NAME attribute value would be prefixed to the schema name being created. For example, if name is set as 'ofsaatm' and setupinfo as 'uat', then schema being created would be 'uat_ofsaatm'. NAME should be same where APP_GRP=1 for all SCHEMA tags (Not applicable for this Application Pack).

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<SCHEMA>/ PASSWORD	Enter the password of the schema to be created. **Note:** If this attribute is left blank, then the password specified in the <PASSWORD>/ DEFAULT attribute is applied as the Schema Password.	N	The maximum length allowed is 30 characters. Special characters are not allowed.	**Note:** You need to mandatorily enter the password if you have set the <PASSWORD>/ APPLYSAMEFORALL attribute as N.
<SCHEMA>/ APP_ID	By default, the Application ID is seeded based on the Application Pack. **Note:** Do not edit this attribute value.	Y	Unique Seeded Value	Identifies the Application/ Product for which the schema is being created. Do not modify this value.
<SCHEMA>/ DEFAULTTABLESPACE	Enter the available default tablespace for DB User. **Note:** If this attribute is left blank, then USERS is set as the default tablespace.	N	Default - USERS Permissible - Any existing valid tablespace name.	Modify this value to associate any valid tablespace with the schema.
<SCHEMA>/ TEMPTABLESPACE	Enter the available temporary tablespace for DB User. Note: If this attribute is left bank, TEMP is set as the default tablespace.	N	Default - TEMP Permissible - Any existing valid temporary tablespace name.	Modify this value to associate any valid tablespace with the schema.

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<SCHEMA>/ QUOTA	Enter the quota to be set on DEFAULTTABLESPACE attribute for the schema/ user. By default, the quota size is set to 500M. Minimum: 500M or Unlimited on default Tablespace.	N	Example: 600M/ m 20G/ g UNLIMITED/ 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	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		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 table.
<ADV_SEC_OPTIONS>/TDE	Tag to enable/ disable TDE.	N	Default is FALSE. To enable TDE, set this to TRUE.	Ensure this tag is not commented if you have uncommented <ADV_SEC_OPTIONS>
<ADV_SEC_OPTIONS>/ DATA_REDACT	Tag to enable/ disable Data Redaction feature.	N	Default is FALSE. To enable DATA_REDACT, set this to TRUE	Ensure this tag is not commented if you have uncommented <ADV_SEC_OPTIONS>

Tag Name/ Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<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 following the table. Note: When TDE is TRUE in ADV_SEC_OPTIONS, then it is mandatory for the <TABLESPACES> tag to be present in the xml file.
<TABLESPACE>/ NAME	Logical Name of tablespace to be created.	Y		Name if specified should 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 will be the actual name of the TABLESPACE.
<TABLESPACE>/ DATAFILE	Specifies the location of the data file on the server	Y	NA	Enter the absolute path of the file to be created.
<TABLESPACE>/ AUTOEXTEND	Specifies if the tablespace should 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.
<TABLESPACE>/ ENCRYPT	Specifies if the tablespace(s) should 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 to enabling Transparent Data Encryption (TDE) on the Database Server.

Example: (The following snippet shows that TDE is enabled and hence the tablespace has been shown with encryption **ON**.)

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

APPENDIX A - CONFIGURING OFSAAI_INSTALLCONFIG.XML FILE

To configure the `OFS_InstallConfig.xml` file:

1. Navigate to *`OFS_BSP_PACK/OFS_AAI/conf/`* folder.
2. Open the file `OFSAAI_InstallConfig.xml` in text editor.
3. Configure the OFSAAI_InstallConfig.xml as mentioned in the below table:

You need to manually set the `InteractionVariable` parameter values as mentioned in the table. If a value is not applicable, enter NA and ensure that the value is not entered as NULL.

InteractionVariable Name	Significance and Expected Value	Mandatory
<Layer name="GENERAL">		
InteractionGroup name=”WebServerType”		
WEBAPPSERVERTYPE	Identifies the web application server on which the OFSAA Infrastructure web components would be deployed. The below numeric value should be set depending on the type: Apache Tomcat = 1 IBM WebSphere Application Server = 2 Oracle WebLogic Server = 3 For example, <InteractionVariable name="WEBAPPSERVERTYPE">3</InteractionVari able>	Yes
InteractionGroup name=”OFSAA Infrastructure Server Detaills”		
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 should be NA. For example, <InteractionVariable name="DBSERVER_ IP">14.15.16.17</InteractionVariable> or <InteractionVariable name="DBSERVER_ IP">dbhost.server.com</InteractionVariable>	Yes
InteractionGroup name=”Database Details”		
ORACLE_SID/ SERVICE_NAME	Identifies the Oracle DB Instance SID or SERVICE_NAME Note: The Oracle_SID value should be exactly the same as it is mentioned in JDBC_URL. For example, <InteractionVariable name="ORACLE_SID/ SERVICE_ NAME">ofsaser</InteractionVariable>	Yes

InteractionVariable Name	Significance and Expected Value	Mandatory
ABS_DRIVER_PATH	Identifies the directory where the JDBC driver (ojdbc<version>.jar) exists. This would typically be the $ORACLE_HOME/jdbc/lib For example, <InteractionVariable name="ABS_DRIVER_ PATH">">/oradata6/revwb7/oracle </InteractionVariable> Note: See JDBC Jar Files for identifying the correct "ojdbc<version>.jar" version to be copied.	Yes
InteractionGroup name=”OLAP Detail'		
OLAP_SERVER_ IMPLEMENTATION	Identifies if the OFSAA Infrastructure OLAP component needs to be configured depending on whether you intend to use the OLAP feature. The below numeric value should be set depending on the choice: YES - 1 NO - 0	No
Note: If value for OLAP_SERVER_IMPLEMENTATION is set to 1, it checks for following environment variables are set in .profile: ARBORPATH, HYPERION_HOME and ESSBASEPATH.		
InteractionGroup name=”SFTP Details”		
SFTP_ENABLE	Identifies if the SFTP (Secure File Transfer Protocol) feature is to be enabled. The below numeric value should be set depending on the choice: SFTP - 1 FTP - 0	Yes
Note: The default value for SFTP_ENABLE is 1, which signifies that SFTP will be used. Oracle recommends using SFTP instead of FTP because SFTP is considered more secure. However, a client may choose to ignore this recommendation and to use FTP by setting SFTP_ENABLE to 0. You can change this selection later by using the OFSAAI administration interface. Set SFTP_ENABLE to -1 to configure ftpshare and weblocal path as local path mounted for OFSAAI server.		
FILE_TRANSFER_POR T	Identifies the port used for the file transfer service. The default value specified is 22 (SFTP). Specify value as 21 or any other PORT value if value for SFTP_ENABLE is 0. For example, <InteractionVariable name="FILE_TRANSFER_ PORT">21</InteractionVariable>.	Yes
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

InteractionVariable Name	Significance and Expected Value	Mandatory
InteractionGroup name=”OFSAA Infrastructure Communicating ports" **Note:** The below ports are used internally by the various OFSAA Infrastructure services. The default values mentioned below are set in the installation. If you intend to specify a different value, update the parameter value accordingly and ensure this port value is in the range of 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 value for HTTPS_ENABLE is set to 1, ensure you have a valid certificate available from a trusted CA and the same is configured on your web application server. For more details on configuring your setup for HTTPS.		
HTTPS_ENABLE	Identifies if the UI should be accessed using HTTP or HTTPS scheme. The default value set is 0. The below numeric value should be set depending on the choice: YES - 1 NO - 0 For example, <InteractionVariable name="HTTPS_ENABLE">0</InteractionVariable>	Yes
WEB_SERVER_IP	Identifies the HTTP Server IP/ Host name or Web Application Server IP/ Host name, to be used for accessing the UI. This IP would typically be the HTTP Server IP. If no separate HTTP Server is available, the value should 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

InteractionVariable Name	Significance and Expected Value	Mandatory
WEB_SERVER_PORT	Identifies the Web Server Port. This would typically be 80 for non SSL and 443 for SSL. If no separate HTTP Server exists, the value should be the port configured for Web Server. Note: The port value will not be accepted as 80 if HTTPS_ENABLE is 1 and as 443, if HTTPS_ENABLE is 0. For example, <InteractionVariable name="WEB_ SERVER_PORT">80</InteractionVariable>	No
CONTEXT_NAME	Identifies the web application context name which will be used to build the URL to access the OFSAA applications. The context name can be identified from a URL as below: <scheme>://<host>:<port>/<context-name>/lo gin.jsp Sample URL: https://myweb:443/ofsaadev/login.jsp For example, <InteractionVariable name="CONTEXT_ NAME">ofsaadev</InteractionVariable>	Yes
WEBAPP_CONTEXT_P ATH	Identifies the absolute path of the exploded .ear file on the web application server. For Tomcat, specify the Tomcat directory path till /webapps, such as /oradata6/revwb7/tomcat/webapps/. For WebSphere, enter the WebSphere path as <WebSphere profile directory>/installedApps/ <NodeCellName>. For example, /data2/test//WebSphere/AppServer/profiles/ <Profile_ Name>/installedApps/aix-imfNode01Cell. Where aix-imf is Host name. For WebLogic, provide the WebLogic home directory path as /<WebLogic home directory path>/bea/wlserver_10.3 Note: For WebLogic, value specified for this attribute is ignored and value provided against attribute WEBLOGIC_DOMAIN_HOME is considered.	Yes
WEB_LOCAL_PATH	Identifies the absolute path to any directory on the web application server that can hold temporary files being uploaded as part of the applications usage. User can set this in FTPSHARE location to avoid the confusion. Note: In case of a clustered deployment, ensure this path and directory is same on all the nodes.	Yes

InteractionVariable Name	Significance and Expected Value	Mandatory
InteractionGroup name="Weblogic Setup Details"		
WEBLOGIC_DOMAIN_HOME	Identifies the WebLogic Domain Home. Specify the value only if WEBSERVERTYPE is set as 3 (WebLogic). For example, <InteractionVariable name="WEBLOGIC_DOMAIN_ HOME">/home/weblogic/bea/user_ projects/domains/mydomain </InteractionVariable>	Yes. Specify the value only if WEBSERVERTYPE is set as 3 (WebLogic)
InteractionGroup name="OFSAAI FTP Details"		
OFSAAI_FTPSHARE_PATH	Identifies the absolute path to the directory identified as file system stage area. Note: The directory should exist on the same system on which the OFSAA Infrastructure is being installed (can be on a separate mount). The user mentioned in APP_SFTP_USER_ID parameter below should have RWX permission on the directory. For example, <InteractionVariable name="APP_FTPSHARE_PATH">">/oradata6/revwb7/ftpshare</InteractionVariable>	Yes
OFSAAI_SFTP_USER_ID	Identifies the user who has RWX permissions on the directory identified under parameter APP_FTPSHARE_PATH above.	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 password will be prompted for the user <OFSAAI_SFTP_USER_ ID> for authentication. For more information on generating SFTP Private key, see the Setting 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 OFSAAI_SFTP_PRIVATE_KEY value is given and this is kept as NA, then it is assumed as empty passphrase.	No

InteractionVariable Name	Significance and Expected Value	Mandatory
InteractionGroup name="Hive Details" The default value set for the interaction variables under this group is set as NA. These are required only for Hive Configuration.		
HIVE_SERVER_PORT	Identifies the port used for the file transfer service. The default value set is 22 (SFTP). Set this value as 21 for FTP. For example, InteractionVariable name="HIVE_SERVER_PORT">22</ InteractionVariable>	Yes, only for HIVE Configuration
HIVE_SERVER_FTPDRIVE	Identifies the absolute path to the directory identified as file system stage area of HIVE server. For example, InteractionVariable name="HIVE_SERVER_FTPDRIVE">/scratch/ofsaa/ftpshare</InteractionVariable>	Yes, only for HIVE Configuration
HIVE_SERVER_FTP_USERID	Identifies the user who has RWX permissions on the directory identified under the preceding parameter HIVE_SERVER_FTPDRIVE. For example, InteractionVariable name="HIVE_SERVER_FTP_USERID">ofsaa</ InteractionVariable>	Yes, only for HIVE Configuration
HIVE_SERVER_FTP_PROTOCOL	If the HIVE_SERVER_PORT is 21, then set value as FTP, else set it as SFTP. For example, InteractionVariable name="HIVE_SERVER_FTP_PROTOCOL">SFTP</ InteractionVariable>	Yes, only for HIVE Configuration

APPENDIX A - CONFIGURING RESOURCE REFERENCE IN WEB APPLICATION SERVERS

This appendix includes the following topics:

Configure Resource Reference in WebSphere Application Server

This section is applicable only when the Web Application Server is WebSphere.

This section includes the following topics:

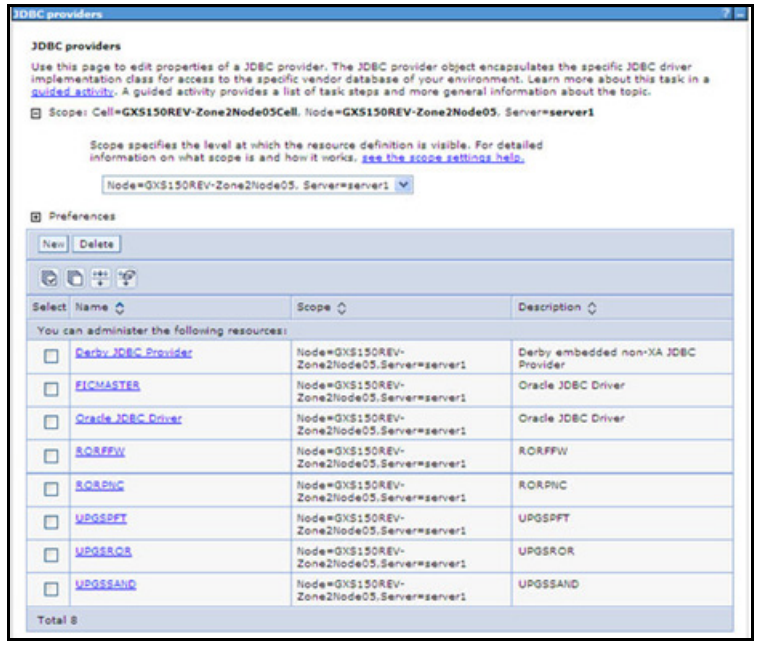
Create JDBC Provider

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

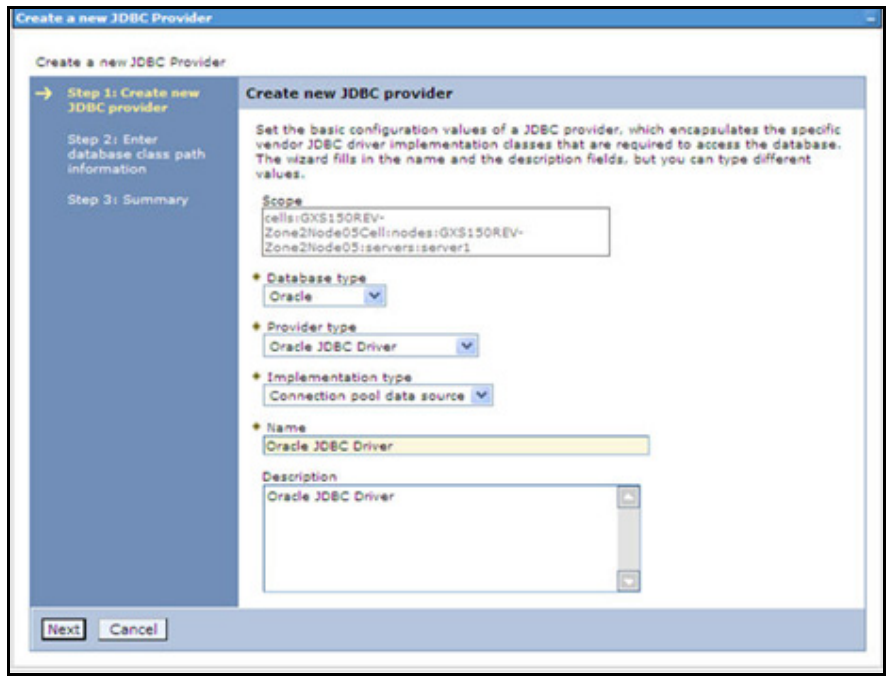
   `http://<ipaddress>:<administrative console port>/ibm/console`. (https if SSL is enabled). The Login window is displayed.

2. Login with the user ID that has admin rights.

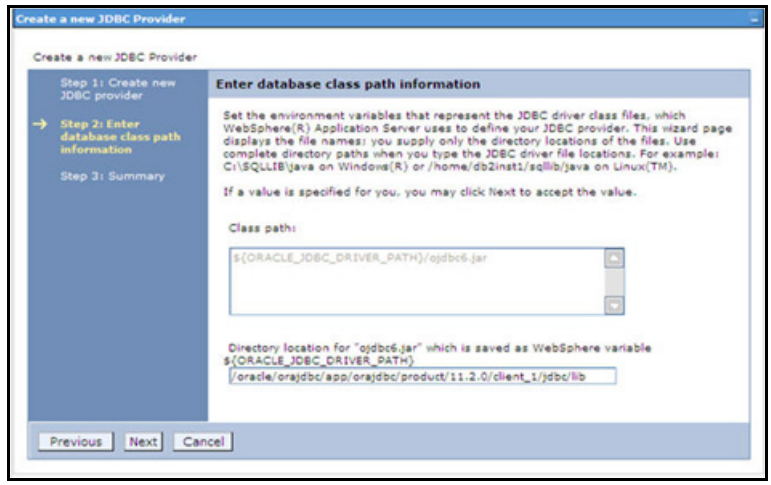
3. Expand the Resources option in the LHS menu and click JDBC > JDBC Providers to display the JDBC Providers window.



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



6. Enter the following details:
   - Database Type - Oracle
   - Provider Type- Oracle JDBC Driver
   - Implementation Type- Connection pool data source
   - Name- The required display name for the resource
   - Description - The optional description for the resource
7. Click **Next**.



8. Specify the directory location for "ojdbc<version>.jar" file. Ensure that you do not use the trailing slash file separators.

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

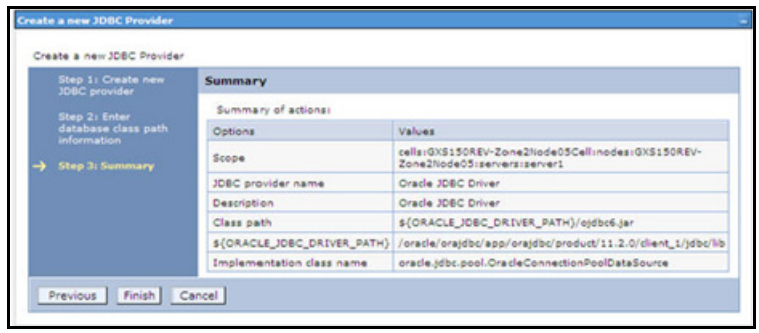
   - Oracle Database 11g Release 2 (11.2.0.4) JDBC Drivers
   - Oracle Database 12c Release 1 (12.1.0.1) JDBC Drivers

   Once downloaded, you need to copy the file in the required folder on the server.

Note: See JDBC Jar Files for identifying the correct ojdbc<version>.jar version to be copied.

After dowloading, you need to place the file in the required folder in your system. While creating the JDBC Provider, ensure that the path to the jar file in the folder is specified in the **Classpath** field in the previous window.

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



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

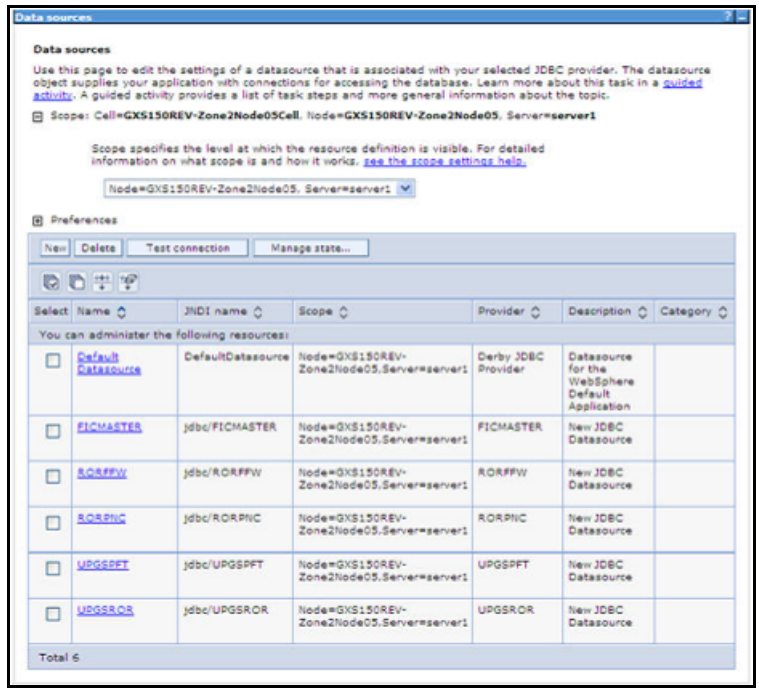
Create Data Source

The steps given below are applicable for both CONFIG and ATOMIC data source creation.

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

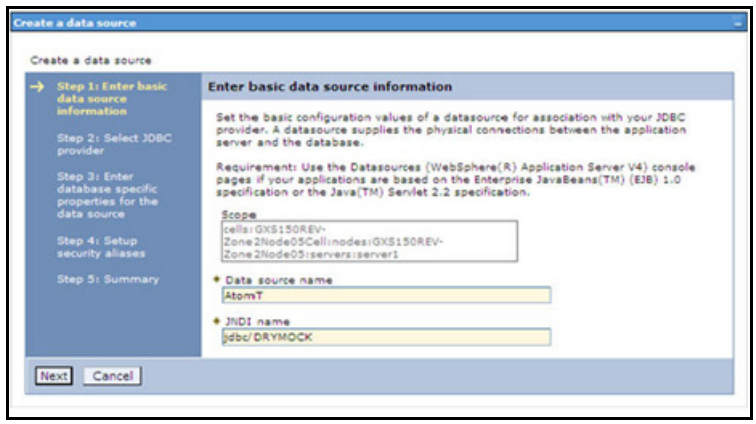
   `http://<ipaddress>:<administrative console port>/ibm/console`. (https if SSL is enabled). The Login window is displayed.

2. Login with the user id that has admin rights.
3. Expand the **Resources** option in the LHS menu and click **JDBC > Data sources** option to display the **Data sources** page.



4. Select the **Scope** from the drop down list. Scope specifies the level at which the resource definition is visible.

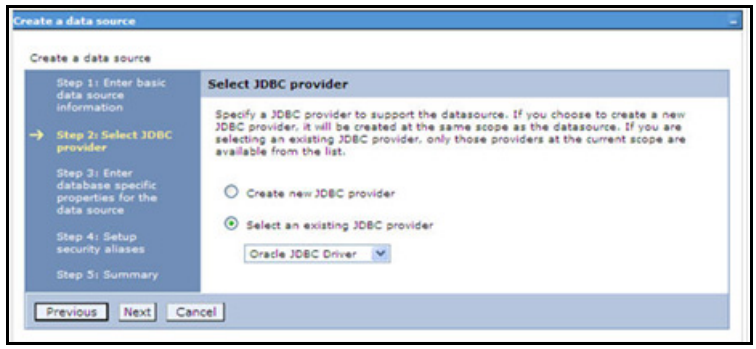
5. Click **New** to display the **Create a Data Source** window.



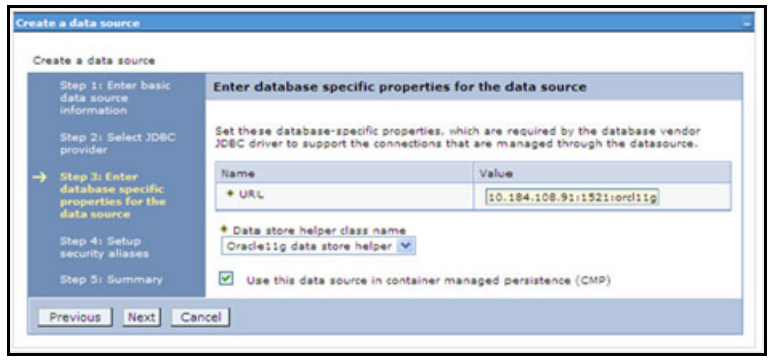
6. Specify the **Data Source name** and **JNDI name** for the new "Data Source".

   The **JNDI** and **Data Source name** are case sensitive. Ensure that JNDI name is same as the "Information Domain" name.

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



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



9. Specify the database connection URL.

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

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

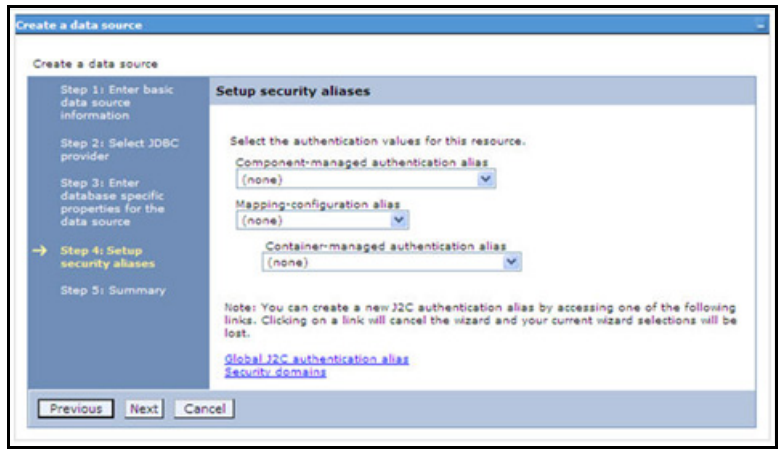
Note: For RAC configuration, provide the RAC URL specified during installation.

For Example:

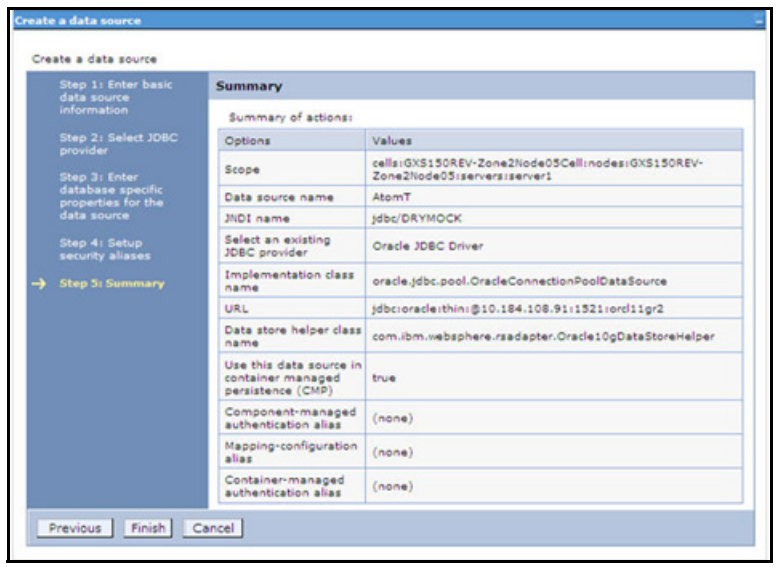
```
jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=10.11.12.13)
(port=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=10.11.12.14)(PORT=1521))(LOAD_BALANCE=no)(FAI
LOVER=yes))(CONNECT_DATA=(SERVICE_NAME=pqadb)))
```

---

11. Click **Next**.



12. 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.



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

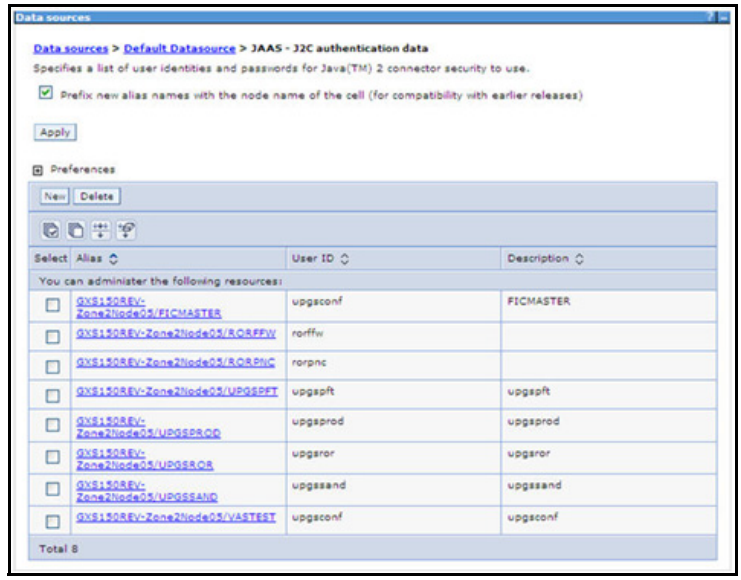
13. You must create another Data source by following the above procedure with jdbc/FICMASTER as JNDI name pointing to the "configuration schema" of Infrastructure.

J2C Authentication Details

The steps given below are applicable for creating both config and atomic J2C Authentication.

To create J2C Authentication details:

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



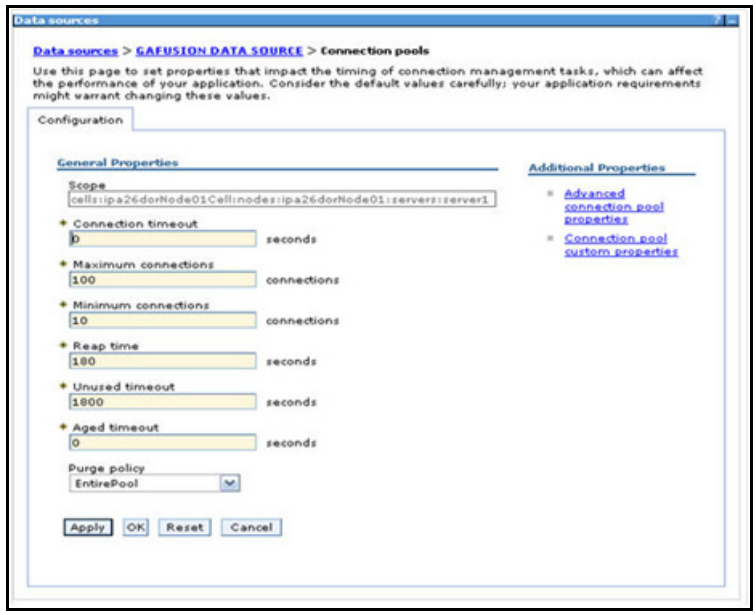
2. Click **New** under the **Preferences** section.

3. Enter the Alias, User ID, Password, and Description. Ensure the following:
   - 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 specify 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.

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** page.
2. Click the newly created Data Source `$DATA_SOURCE$` and navigate to the path **Data sources > $DATA_SOURCE$ > Connection pools**.



3. Set the values for the following:
   - **Connection timeout** to 0 seconds
   - **Maximum connections** to 100 connections
   - **Minimum connections** to 10 connections

   You can also define **Reap Time**, **Unused Timeout**, and **Aged Timeout** as required.

Configure Resource Reference in WebLogic Application Server

This section is applicable only when the Web Application Server is WebLogic.

This section includes the following topics:

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

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

For a Non RAC Database instance, Generic Data Source has to be created. For more information, see Create Data Source.

For a RAC Database instance, Gridlink Data Source has to be created. For more information, see Create GridLink Data Source.

When Load Balancing/Fail over is required, Multi Data Source has to be created. For more information, see Configure Multi Data Sources.

Create Data Source

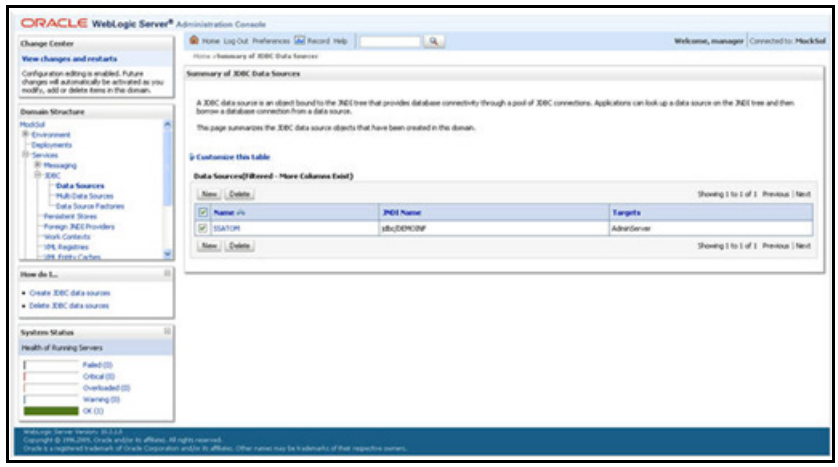
The steps given below are applicable for both config and atomic data source creation.

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.

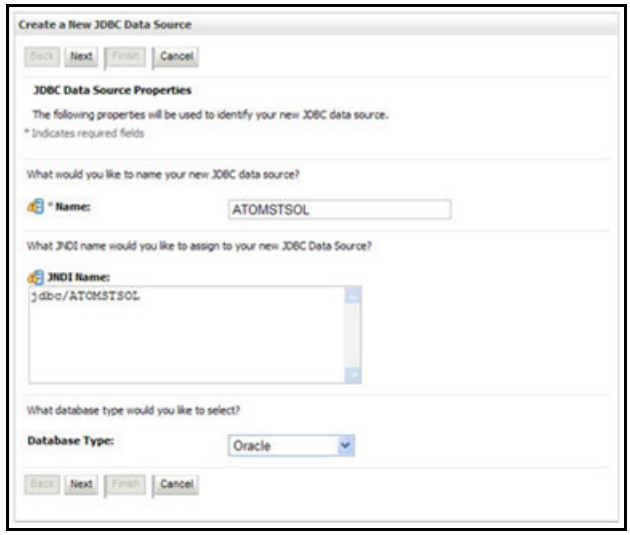
2. Login with the Administrator Username and Password.

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



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

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



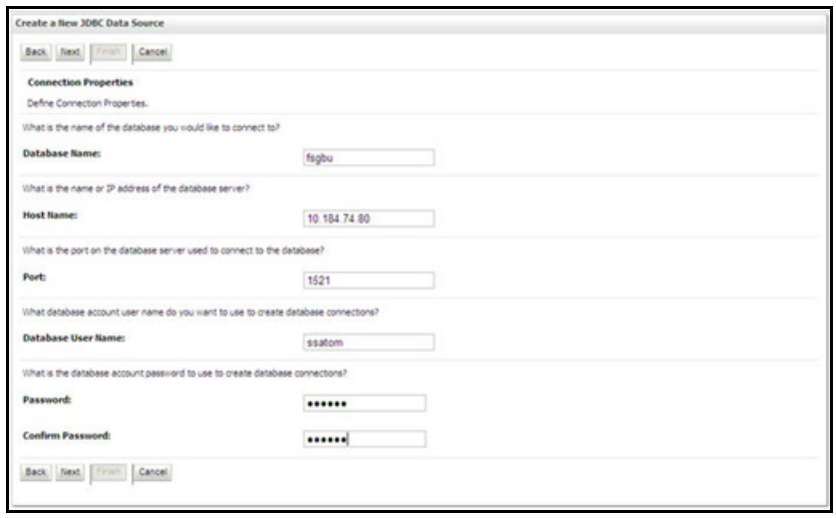
5. Enter JDBC data source **Name**, **JNDI Name**, and select the **Database Type** from the drop-down list. Click **Next**.

   Ensure the following:

   - The JNDI Name field should be in the format "jdbc/informationdomain"
   - Same steps needs to be followed to create a mandatory data source pointing to the "configuration schema" of infrastructure with jdbc/FICMASTER as JNDI name.
   - JNDI Name is the same as mentioned in web.xml file of OFSAAI Application.
   - Required "Database Type" and "Database Driver" should be selected.

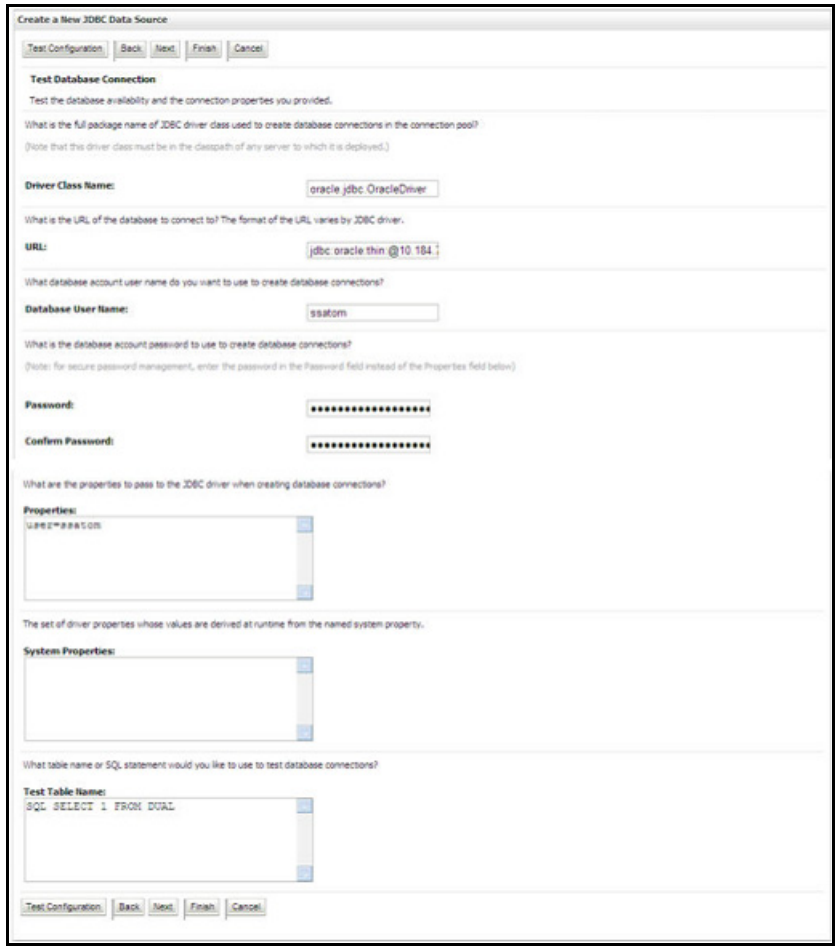
6. Select the **Database Driver** from the drop-down list. You need to select the Database Driver depending on database setup, that is, with or without RAC. Click **Next**.

7. Select the **Supports Global Transactions** checkbox and the **One-Phase Commit** option.
8. Click **Next** to display the **Connection Properties** window.



9. Enter the required details such as the **Database Name**, **Host Name**, **Port**, **Oracle User Name**, and **Password**.

10. Click **Next** to display the **Test Database Connection** window.



11. Verify the details and click **Test Configuration** and test the configuration settings.

    A confirmation message is displayed stating "Connection test succeeded."

12. 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" to be specified for data source with "FICMASTER" as "JNDI" name should be the Oracle user ID created for the CONFIG schema.

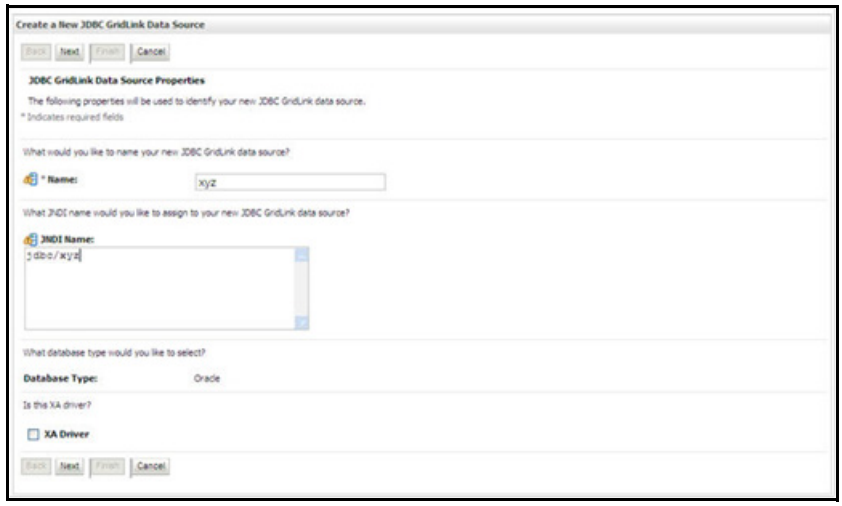
---

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

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

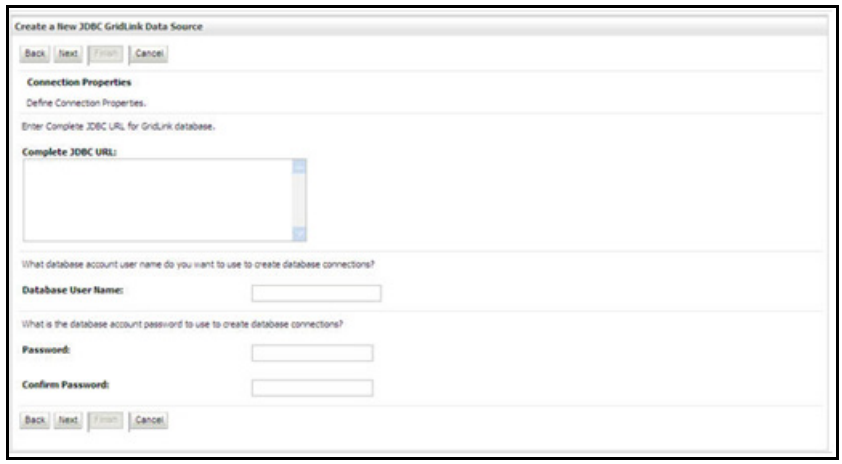
Create GridLink Data Source

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



1. Enter Data Source **Name**, and **JNDI Name**.

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



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

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.

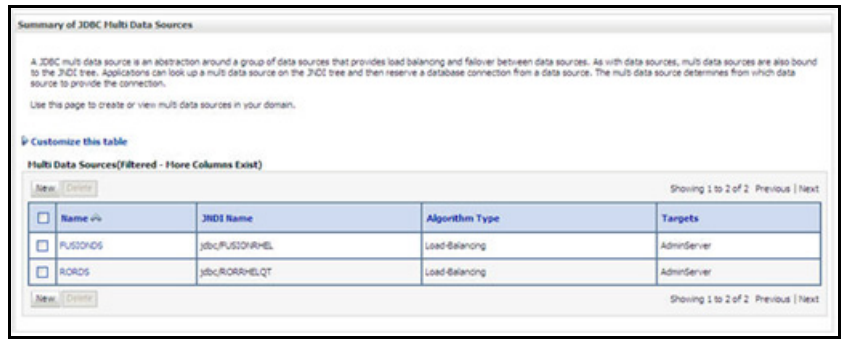
When the database used is Oracle RAC (Real Application Clusters) which allows Oracle Database to run across a set of clustered servers, then group of data sources can be created for instances running on a set of clustered servers and a JDBC multi data source can be created so that applications can look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



4. Click New to display the New JDBC Multi Data Source screen.

Note: Ensure that the Data Sources which needs to be added to new JDBC Multi Data Source has been 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 has to be specified in the format jdbc/infodomname.

JNDI Name of the Data Sources that will be added to new JDBC Multi data source should be different from the JNDI name specified during Multi Data Source.

Same steps needs to be followed to create a mandatory data source pointing to the "configuration schema" of infrastructure with jdbc/FICMASTER as JNDI name for Data Source.

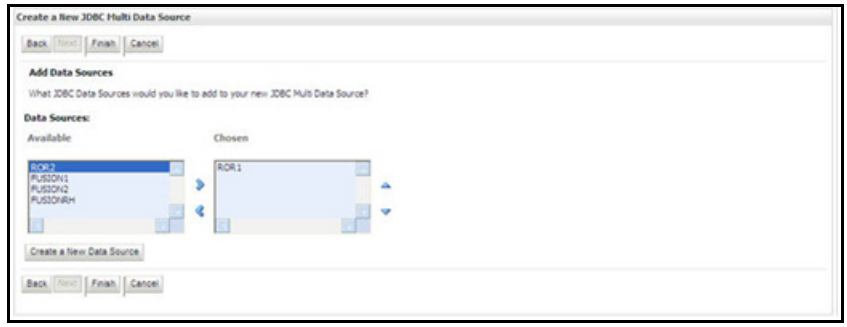
Same steps needs to be followed to create a mandatory data source pointing to the "configuration schema" of infrastructure with jdbc/FICMASTER as JNDI name for Data Source.

JNDI Name provided in multi data source should be the same name that will be mentioned in the web.xml file of OFSAAI Application.

You can select the Algorithm Type as Load-Balancing.

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

7. Select the type of data source which will be added to new JDBC Multi Data Source. Click **Next**.

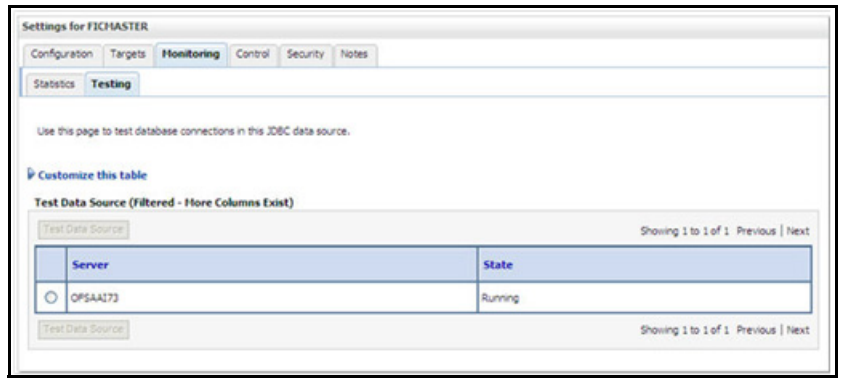


8. Map the required Data Source from the Available Data Sources. Click **Finish**.

   The New JDBC Multi Data Source is created with added data sources.

Advanced Settings for Data Source

1. Click the new Data Source from the **Summary of JDBC Data Sources** window. The **Settings for <Data Source Name>** window is displayed.
2. Select the **Connection Pooling** tab given under **Configuration**.
3. Go to the **Advanced** option at the bottom of the page, and check the **Test Connection of Reserve** checkbox (Enables Weblogic Server to test a connection before giving it to a client).
4. To verify if the data source is valid, select "Data Source name". For example, FICMASTER.



5. Select the server and click **Test Data Source**.

   A message is displayed indicating that the test was successful.
6. Once the "Data Source" is created successfully, the following messages are displayed:
   - All changes have been activated. No restart is necessary.
   - Settings updated successfully.

   If not, follow the steps given above to recreate the data source.

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. 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 values for Initial Capacity to 10, Maximum Capacity to 100, Capacity Increment by 1, Statement Cache Type to LRU, and Statement Cache Size to 10.
3. Click **Save**.

Configure Resource Reference in Tomcat Application Server

This section is applicable only when the Web Application Server is Tomcat.

This section includes the following topics:

- Create Data Source
- JDBC Connection Pooling
- Class loader Configuration for Apache Tomcat

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

Note: See JDBC Jar Files for identifying the correct `ojdbc<version>.jar` version to be copied.

Create Data Source

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

Note: The User-IDs for configuration/ atomic schemas have the prefix of setupinfo depending on the value set for `PREFIX_SCHEMA_NAME` in `<<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 was mentioned as `ofsaaconf`, then the actual schema created in the database would be 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>
```

The <Resource> tag must be repeated for each Information Domain created. After the above configuration, the "WAR" file has to be created and deployed in Tomcat.

JDBC Connection Pooling

To define the JDBC connection pooling, do the following:

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

   Note: Refer to JDBC Jar Files for identifying the correct "ojdbc<version>.jar" version to be copied.

2. Edit the server.xml present under the path *$TOMCAT_DIRECTORY/conf/* with the below changes, which are 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"
    maxActive="100"
    maxIdle="30"
    maxWait="10000"
    removeAbandoned="true" removeAbandonedTimeout="60"
    logAbandoned="true"/>
</Context>
```

Note the following:

- $APP_DEPLOYED_PATH$ should be replaced by OFSAAI application deployed path.
- $INFODOM_NAME$ should be replaced by Infodom Name.
- $ATOMICSCHEMA_USERNAME$ should be replaced by Atomic schema database user name.
- $ATOMICSCHEMA_PASSWORD$ should be replaced by Atomic schema database password.
- $JDBC_CONNECTION_URL should be replaced by JDBC connection string jdbc:Oracle:thin:<IP>:<PORT>:<SID>. For example, jdbc:oracle:thin 10.80.50.53:1521:soluint
- The User-IDs for configuration/ atomic schemas have the prefix of setupinfo depending on the value set for PREFIX_SCHEMA_NAME in <<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 was mentioned as ofsaaconf, then the actual schema created in the database would be DEV_ofsaaconf.

Class loader Configuration for Apache Tomcat

Edit the server.xml available in *$TOMCAT_HOME/conf/* folder.

Add tag <Loader delegate="true" /> within the <Context> tag, above the <Resource> tag. This is applicable only when the web application server is Apache Tomcat 8.

This configuration is required if Apache Tomcat version is 8.

APPENDIX A - POST DEPLOYMENT CONFIGURATION

This chapter covers the following topics:

Logging as System Administrator

Post installation, the first login into Infrastructure is possible only for a System Administrator through user id "sysadmn". This ID is created at the time of installation with the password provided during installation. Enter login id "sysadmn" and password that was provided during installation. Click Login.

System Administrator

System Administration refers to a process of managing, configuring, and maintaining confidential data in a multi-user computing environment. System Administration in Security Management involves creating functions, roles, and mapping functions to specific roles. System Administration also involves maintaining segment information, holiday list, and restricted passwords to ensure security within the Infrastructure system.

You can access System Administrator in LHS menu of Security Management. The options available under System Administrator are:

- Function Maintenance
- Role Maintenance
- Segment Maintenance
- Holiday Maintenance
- Restricted Passwords

Function Maintenance

A function in the Infrastructure system defines the privileges to access modules or components and to define or modify Metadata information associated. Function Maintenance allows you to create functions for users to ensure only those functions are executed which are specific to the user's role.

You can access Function Maintenance by expanding **System Administrator** section within the tree structure of LHS menu. The Function Maintenance window displays the function details such as Function Code, Function Name, Description, and the number of Roles Mapped to the function. The Function Maintenance window also facilitates you to view, create, modify, and delete functions within the system.

You can also make use of Search and Pagination options to search for a specific function or view the list of existing functions within the system.

Role Maintenance

A role in the Infrastructure system is a collection of functions defined for a set of users to execute a specific task. You can create roles based on the group of functions to which users are mapped.

You can access Role Maintenance by expanding System Administrator section within the tree structure of LHS menu. The Role Maintenance window displays the role details such as Role Code, Role Name, Role Description, and the number of Users Mapped to the role. The Role Maintenance window also facilitates you to view, create, modify, and delete roles within the system.

You can also make use of Search and Pagination options to search for a specific role or view the list of existing roles within the system.

Segment Maintenance

Segment is used to control access rights on a defined list of objects. It is mapped to an information domain.

Segment Maintenance in the Infrastructure system facilitates you to create segments and assign access rights. You can have different segments for different Information Domains or same segments for different Information Domains.

User scope is controlled by segment/ folder types with which the object is associated.

- Objects contained in a public folder will be displayed irrespective of any user.
- Objects contained in a shared folder will be displayed if user belongs to a user group which is mapped to an access type role with the corresponding folder.
- Objects contained in a private folder will be displayed only to the associated owner.

You can access Segment Maintenance by expanding System Administrator section within the tree structure of LHS menu. The Segment Maintenance window displays a list of available segments with details such Domain, Segment Code, Segment Name, Segment Description, Segment/Folder Type, Owner Code, and the number of Users Mapped to the segment. You can view, create, modify, and delete segments within the Segment Maintenance window.

You can also make use of Search and Pagination options to search for a specific role or view the list of existing roles within the system.

Holiday Maintenance

Note: As part of OFSAAI 7.3.3.0.0 release, this feature will not be available if Authentication is configured to SSO Authentication and SMS Authorization.

Holiday Maintenance facilitates you to create and maintain a schedule of holidays or non-working days within the Infrastructure system. On a holiday, you can provide access to the required users and restrict all others from accessing the system from the User Maintenance window.

You can access Holiday Maintenance by expanding System Administrator section within the tree structure of LHS menu. The Holiday Maintenance window displays a list of holidays in ascending order. In the Holiday Maintenance window you can create and delete holidays.

Restricted Passwords

Note: As part of OFSAAI 7.3.3.0.0 release, this feature will not be available if Authentication Type is selected as SSO Authentication and SMS Authorization from System Configuration> Configuration.

Restricted Passwords facilitates you to add and store a list of passwords using which users are not permitted to access the Infrastructure system.

You can access Restricted Passwords by expanding System Administrator section within the tree structure of LHS menu. The Restricted Passwords window displays a list of restricted passwords and allows you to add and delete passwords from the list.

You can also make use of Search and Pagination options to search for a specific password or view the list of existing passwords within the system. For more information, refer Pagination and Search & Filter.

Note: While searching for any pre-defined restricted password, you have to key in the entire password.

Creating Application Users

Create the application users in the OFSAA setup prior to use.

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

For more information refer user creation section from the Oracle Financial Services Analytical Applications Infrastructure User Guide.

Mapping Application User(s) to User Group

Starting the OFSAA 8.0 release, with installation of OFS BSP, pre-configured application user groups are seeded. These user groups are unique to every OFSAA Application Pack and have application roles pre-configured.

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 on seeded User Groups, refer to Create and Deploy the Application Pack Web Archive.

Change ICC Batch Ownership

All the seeded Batches in BSP Applications Pack will be automatically assigned to SYSADMN user during Installation. If one user who wants to see the Batches in Batch Maintenance Menu, He needs to execute the following Queries in Config Schema of the Database.

Syntax:

```
begin
AAI_OBJECT_ADMIN.TRANSFER_BATCH_OWNERSHIP ('fromUser','toUser','infodom');
end;
OR
begin
AAI_OBJECT_ADMIN.TRANSFER_BATCH_OWNERSHIP ('fromuser','touser');
end;
```

Where from User indicates the user who currently owns the batch, to User indicated the user to which the ownership has to be transferred. Infodom is optional parameter, if specified the ownership of batches pertaining to that Infodom will be changed.

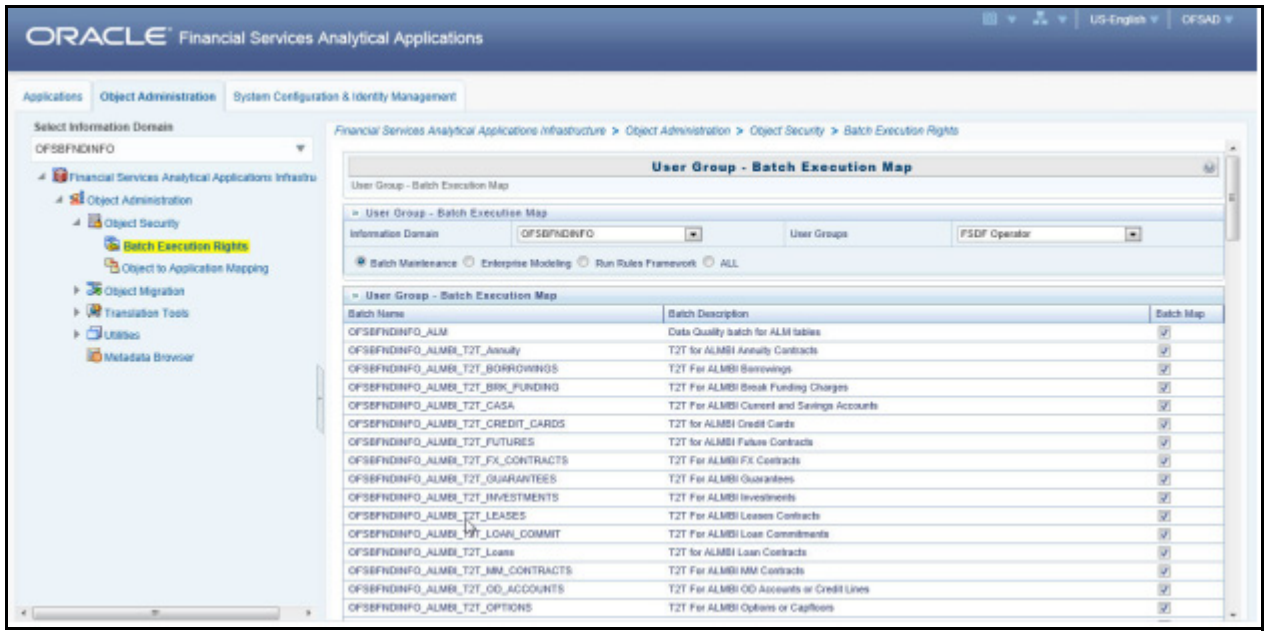
Example:

```
begin
AAI_OBJECT_ADMIN.TRANSFER_BATCH_OWNERSHIP ('SYSADMN','BSPOP','OFSBSPINFO');
end;
```

Mapping ICC Batch Execution Rights to User

Login as SYSADMN and navigate to **Identity Management > System Administrator > Function-Role Map**. Map the User-Batch Execution Mapping Screen function to RLBSPADMIN role.

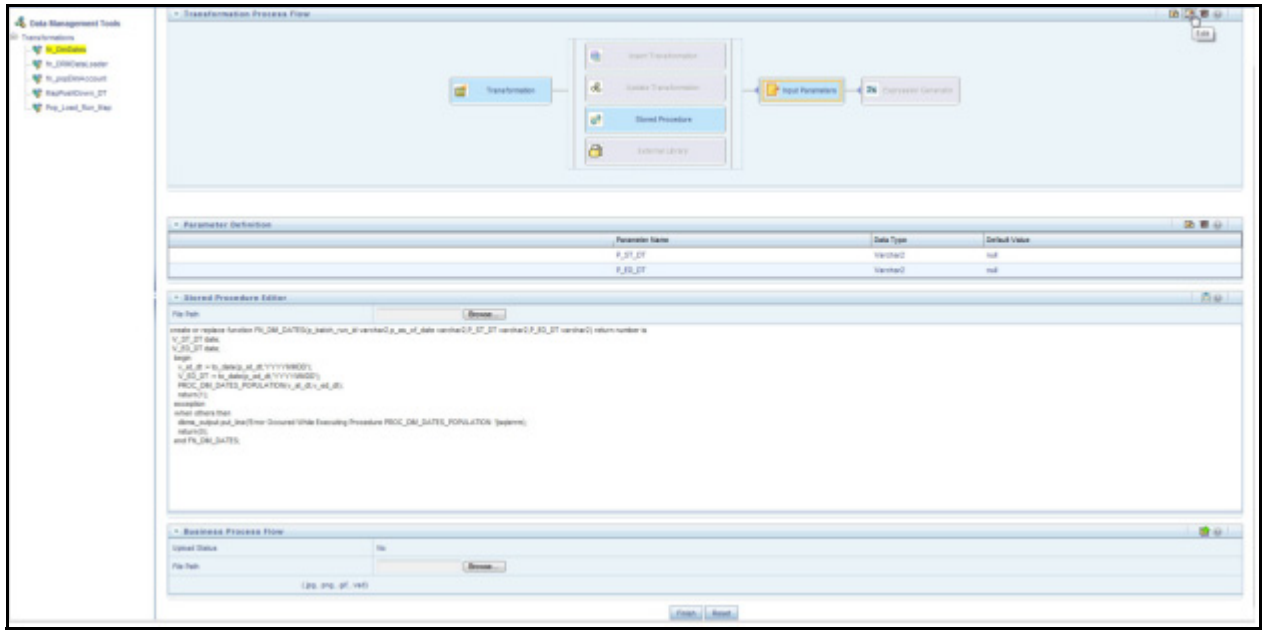
Now any user who is mapped under BSP Admin User Group will have the access to the **Batch execution rights** Menu under **Operations** list.



Saving Post- Load Change Transformations

After creating users, Login to Infrastructure as any user who is mapped to BSP Admin or BSP Analyst group. Navigate to **Data Management Framework >> Post Load Changes**.

A New window will be displayed. Click on Each Transformation from Transformations List & Click on Stored Procedure in the Right Panel, Click on Edit in the Top Right Menu and Click on Finish Button in Bottom.



All the Transformation Stored Procedures are required to be edited and saved (Finish Button) once for getting it is available.

Instrument Table Validation

Run the Instrument Table Validation. For more information, see the Doc ID 1457511.1 and Data Model Utility Guide.

Check the `FSI_MESSAGE_LOG` file after running Instrument Table Validation to verify that tables are classified correctly.

APPENDIX A - TDE, DATA REDACTION AND THE CORRESPONDING SETTINGS IN OFSAA

This section provides information to help enable TDE (Transparent Data Encryption), Data Redaction and its corresponding settings in OFSAA. For more details on TDE and Data Redaction, see the Database Advanced Security Guide.

The following sections provide details to enable TDE in the database and run the schema utility.

Prerequisites

1. Ensure the required Oracle Database Server versions are installed:
   - Oracle Database Server Enterprise Edition 11g Release 2 (11.2.0.4.0 +) - 64 bit RAC/Non-RAC with/ without partitioning option, Advanced Security Option
   - Oracle Database Server Enterprise Edition 12c Release 1 (12.1.0.1.0 +) - 64 bit RAC/ Non-RAC with/ without partitioning option, Advanced Security Option
2. Ensure the required patches are applied for your respective Oracle DB versions:
   - For Oracle DB Serve 11.2.0.4, the patch 22205607 should have been applied.
   - For Oracle DB Server 12.1.0.1 and 12.1.0.2, the patches 27010930 and 22205607 should have been applied.

Creating a Wallet

The environment setup for tablespace encryption is the same as that for transparent data encryption. Before creating an encrypted tablespace, create a wallet to hold the encryption key. The search order to find the wallet is described in the following list:

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.

1. Add the following entry into the `sqlnet.ora` file on the server and check if the specified directory is created:

   ```
   ENCRYPTION_WALLET_LOCATION=
   ```

```
    (SOURCE=(METHOD=FILE)(METHOD_DATA=
       (DIRECTORY=/u01/app/oracle/admin/DB11G/WALLET/)))
```

For RAC-DB or ASM enabled databases, use the following entry:

```
ENCRYPTION_WALLET_LOCATION=
    (SOURCE=
       (METHOD=FILE)
       (METHOD_DATA=
       (DIRECTORY=+DATA/PRODCDB/WALLET)
    )
)
```

2. For ASM Diskgroup, create a relevant directory as defined by `ENCRYPTION_WALLET_LOCATION` using the following instruction:

```
[oracle@server ~]$ echo $ORACLE_SID

+ASM


[oracle@server ~]$ asmcmd

ASMCMD>

ASMCMD> cd +DATA/PRODCDB

ASMCMD> mkdir WALLET

ASMCMD> cd WALLET/

ASMCMD> pwd

+DATA/PRODCDB/WALLET
```

3. Use the following command to create and open the wallet:

```
CONN sys/password@serviceid AS SYSDBA

ALTER SYSTEM SET ENCRYPTION KEY IDENTIFIED BY "my Password";
```

4. Reopen Wallets after the instance restart and then close it to prevent access to encrypted data using the following command.

```
ALTER SYSTEM SET ENCRYPTION WALLET OPEN IDENTIFIED BY "my Password";
```

Note: In a CDB, open the Keystore in the ROOT (CDB$ROOT) container and in all the associated PDBs, where TDE is enabled.

Alternatively, you can create an Auto-Login or Local-Login Keystore to avoid opening the Keystore manually every time. To enable the Keystore to open automatically, use the following command:

```
ADMINISTER KEY MANAGEMENT CREATE [LOCAL] AUTO_LOGIN KEYSTORE FROM KEYSTORE
'keystore_location' IDENTIFIED BY keystore_password;
```

Running the Schema Utility with Encryption

Run the schema creator utility by including the **encrypt=on** option in the Tablespace tag in the Schema in the XML file. You have to perform this procedure manually as it's not a part of the schema template originally.

```
<APPPACKSCHEMA>
    <APP_PACK_ID>OFS_AAAI_PACK</APP_PACK_ID>
    <JDBC_URL>jdbc:oracle:thin:@whf00ajn:1521:OFSPQA12CDB</JDBC_URL>
    <JDBC_DRIVER>oracle.jdbc.driver.OracleDriver</JDBC_DRIVER>
    <HOST><HOST_NAME></HOST>
    <SETUPINFO NAME="t608" PREFIX_SCHEMA_NAME="Y"/>
    <PASSWORD APPLYSAMEFORALL="Y" DEFAULT="<password>"/>
    <TABLESPACES>
        <TABLESPACE NAME="OFS_AAI_TBSP" VALUE="TS_USERS1" DATAFILE="<HOME_DIR>/ora12c/app/
        oracle/oradata/OFSPQA12CDB/ts_users1.dbf" SIZE="500M" AUTOEXTEND="OFF" ENCRYPT="ON"
        />
    </TABLESPACES>
    <SCHEMAS>
        <SCHEMA TYPE="CONFIG" NAME="ofsaaconf" PASSWORD="" APP_ID="OFS_AAI"
        DEFAULTTABLESPACE="TS_USERS1" TEMPTABLESPACE="TEMP" QUOTA="unlimited"/>
        <SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_AAAI"
        DEFAULTTABLESPACE="TS_USERS1" TEMPTABLESPACE="TEMP" QUOTA="unlimited"
        INFODOM="OFSAAAIINFO"/>
        <SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_IPE"
        DEFAULTTABLESPACE="TS_USERS1" TEMPTABLESPACE="TEMP" QUOTA="unlimited"
        INFODOM="OFSAAAIINFO"/>
    </SCHEMAS>
</APPPACKSCHEMA>
```

Testing 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 (ENCRYPTED TS - YES) or not (ENCRYPTED TS - NO) in the ENC column:

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

6 rows selected.

APPENDIX A - DATA PROTECTION IMPLEMENTATION IN OFSAA

This chapter includes sections about Data Protection implemented in OFSAA applications and covers the following sections:

Right to be Forgotten

This section covers the following sub-sections:

Introduction to Right to be Forgotten

Right to be Forgotten is the task of removing PII (Personally Identifiable Information) of a Data Subject for the given Party. The financial institution can delete PII for those Data Subjects who have requested this Right to be Forgotten functionality.

The Data Subjects may have made significant financial transactions, and/or financial information may be required for regulatory or compliance reporting. Deleting the complete record that consists of PII may lead to issues in data reconciliation. In OFSAA, the PII data will be replaced with randomized values and therefore, the complete Data Subject record is retained. As a result, financial information is retained; however, the associated Party PII is removed permanently.

Implementation of Right to be Forgotten by OFSAA

To implement Right to be Forgotten:

1. Use the FSI_PARTY_RIGHT_TO_FORGET table to collect the input list of Party IDs for which PII must be removed from the system. The financial institution must source this Party ID list into the FSI_PARTY_RIGHT_TO_FORGET table, and then invoke the batch (<<INFODOM>>_RightToForget) or schedule it.

   Note: For sample query, see Sample Query for the FSI_PARTY_RIGHT_TO_FORGET table.

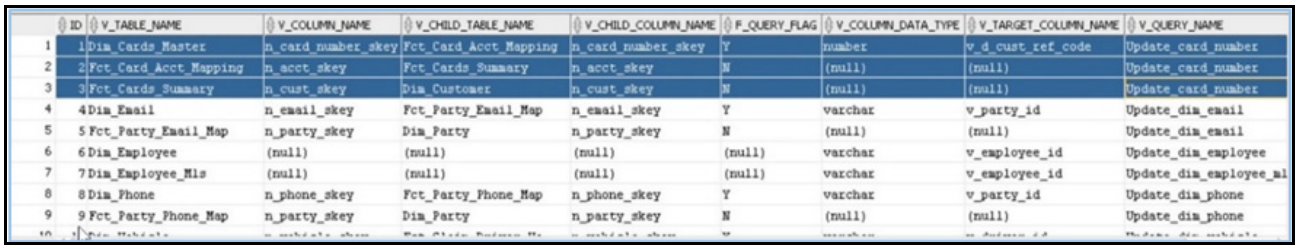
2. Use the AAI table AAI_DRF_FUNCTION_COLUMN_MAP to store the PII attribute list. During the Right to Forget batch execution, AAI_DRF_FUNCTION_COLUMN_MAP table is referred to randomize the PII values. See the Data Redaction section in OFSAAI Administration Guide.

3. Use the AAI table AAI_DRF_QUERY_METADATA to store the query metadata, which is used during the <<INFODOM>>_RightToForget batch execution. This is the query metadata table that can lead to two types of queries:
   a. When the table consists of Party Identifier as an attribute, a simple record is required in the metadata query table.

      For example:

      Select v_party_id from Dim_Party where v_party_id='10'

   b. When the table does not consist of Party Identifier as an attribute, an interrelated set of records are required in the metadata query table AAI_DRF_QUERY_METADATA. Compose these set of records in a systematic way such that, for the selected Party Identifier, the table join procedure can be performed and traversed to reach the required PII attribute.



	ID	V_TABLE_NAME	V_COLUMN_NAME	V_CHILD_TABLE_NAME	V_CHILD_COLUMN_NAME	F_QUERY_FLAG	V_COLUMN_DATA_TYPE	V_TARGET_COLUMN_NAME	V_QUERY_NAME
1	1	Dim_Cards_Master	n_card_number_skey	Fct_Card_Acct_Mapping	n_card_number_skey	Y	number	v_d_cust_ref_code	Update_card_number
2	2	Fct_Card_Acct_Mapping	n_acct_skey	Fct_Cards_Summary	n_acct_skey	N	(null)	(null)	Update_card_number
3	3	Fct_Cards_Summary	n_cust_skey	Dim_Customer	n_cust_skey	N	(null)	(null)	Update_card_number
4	4	Dim_Email	n_email_skey	Fct_Party_Email_Map	n_email_skey	Y	varchar	v_party_id	Update_dim_email
5	5	Fct_Party_Email_Map	n_party_skey	Dim_Party	n_party_skey	N	(null)	(null)	Update_dim_email
6	6	Dim_Employee	(null)	(null)	(null)	(null)	varchar	v_employee_id	Update_dim_employee
7	7	Dim_Employee_Mls	(null)	(null)	(null)	(null)	varchar	v_employee_id	Update_dim_employee_ml
8	8	Dim_Phone	n_phone_skey	Fct_Party_Phone_Map	n_phone_skey	Y	varchar	v_party_id	Update_dim_phone
9	9	Fct_Party_Phone_Map	n_party_skey	Dim_Party	n_party_skey	N	(null)	(null)	Update_dim_phone

Table definition for AAI_DRF_QUERY_METADATA

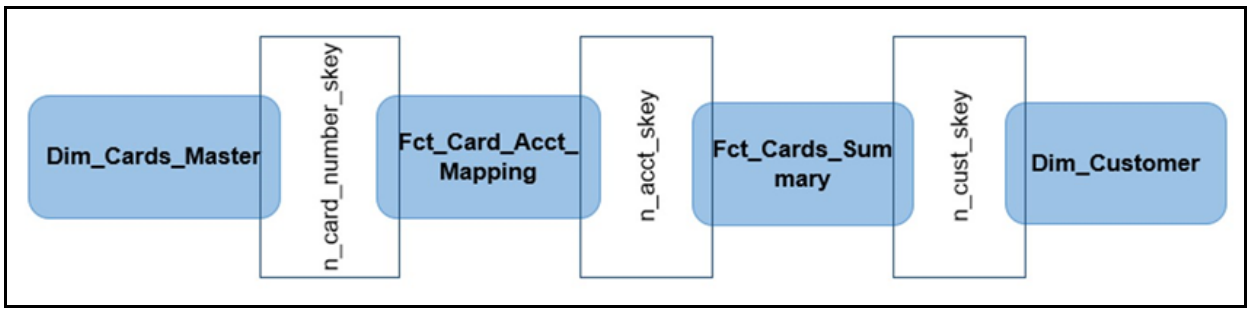
Column Name	Column Type	Description
ID	Number	This is the Primary Key field. You must enter a numerical value.
V_TABLE_NAME	Varchar	This is the source table name.
V_COLUMN_NAME	Varchar	This is the source column name.
V_CHILD_TABLE_NAME	Varchar	This is the table name, which must be linked to the V_TABLE_NAME. If the same table name is repeated with the same column name V_COLUMN_NAME, then the AND condition is formed with V_CHILD_TABLE_NAME. V_CHILD_TABLE_NAME
V_CHILD_COLUMN_NAME	Varchar	This the column name, which must be linked to the V_COLUMN_NAME.
F_QUERY_FLAG	Varchar	Enter Y or N, which is case sensitive. If the value is Y, then you must form a query from V_TABLE_NAME .V_COLUMN_NAME
V_COLUMN_DATA_TYPE	Varchar	Mention the Data Type of the V_COLUMN_NAME. This is required only if F_QUERY_FLAG = Y.

Column Name	Column Type	Description
V_TARGET_COLUMN_NAME	Varchar	Mention the PARTY_ID column name, which is required only if F_QUERY_FLAG = Y.
V_QUERY_NAME	Varchar	Mention the same query for a set of joining tables and columns. The set of tables and columns under join query are grouped together using the same query name.

For example:

Dim_Cards_Master table does not consist of n_cust_skey (n_cust_skey is the required Primary Key for the PII Attribute n_card_number_skey). Therefore, perform the table join procedure similar to the following query:

```
Select Dim_Cards_Master.n_card_number_skey from Dim_Cards_Master Dim_Cards_Master,
Fct_Card_Acct_Mapping Fct_Card_Acct_Mapping,
Fct_Cards_Summary Fct_Cards_Summary, Dim_Customer Dim_Customer where
Dim_Cards_Master.n_card_number_skey=Fct_Card_Acct_Mapping.n_card_number_skey and
Fct_Card_Acct_Mapping.n_acct_skey=Fct_Cards_Summary.n_acct_skey and
Fct_Cards_Summary.n_cust_skey=Dim_Customer.n_cust_skey and v_d_cust_ref_code='GDPR'
```



Where Dim_Customer.n_cust_skey is a Number Datatype.

Note: For more sample queries generated using the query metadata table, see Sample Queries using the AAI_DRF_QUERY_METADATA Metadata Table.

To arrive at the above-mentioned query, follow these steps:

In first figure, the required table Dim_Cards_Master does not consist of Party Identifier. Therefore, perform the table join procedure using the AND condition at the table level.

i. Search for a table, which consists of the Party Identifier field. In this query, we have searched for the table Dim_Customer with unique identifier n_cust_skey field. This table must be joined with the required table Dim_Cards_Master.

ii. However, the tables Dim_Cards_Master and Dim_Customer do not consist of any common column name to perform the table join operation. Therefore, search for one more table Fct_Card_Acct_Mapping. This table (Fct_Card_Acct_Mapping) consists of common column name (n_card_number_skey) between Dim_Cards_Master table and itself.

iii. Join the Fct_Card_Acct_Mapping table, which consists of common column name (n_acct_skey) with another table Fct_Cards_Summary.

iv. Join the Fct_Cards_Summary table, which consists of common column name (n_cust_skey) with the final table Dim_Customer.

v. Now, the Dim_Cards_Master table is joined with the Dim_Customer table.

c. You must arrive at the skey or equivalent column in the table, which consists of the required PII attributes. Then the <<INFODOM>>_RightToForget batch uses this key to filter records (For example: Dim_Cards_Master) and randomize all the PIIs listed in the AAI_DRF_FUNCTION_COLUMN_MAP for that table.

4. Now, PII attributes can be queried and the values are randomized.

Sample Queries using the AAI_DRF_QUERY_METADATA Metadata table

These are the sample queries generated using the AAI_DRF_QUERY_METADATA table:

Example 1:

```
select DIM_MANAGEMENT.n_manager_skey from DIM_MANAGEMENT DIM_MANAGEMENT, FCT_CUSTOMER
FCT_CUSTOMER, DIM_CUSTOMER DIM_CUSTOMER where
DIM_MANAGEMENT.n_manager_skey=FCT_CUSTOMER.n_manager_skey and
FCT_CUSTOMER.n_cust_skey=DIM_CUSTOMER.n_cust_skey and DIM_CUSTOMER.v_d_cust_ref_code
in(?,?)
```

Example 2:

```
select  DIM_EMAIL.n_email_skey from DIM_EMAIL DIM_EMAIL, FCT_PARTY_EMAIL_MAP
FCT_PARTY_EMAIL_MAP, DIM_PARTY DIM_PARTY where
DIM_EMAIL.n_email_skey=FCT_PARTY_EMAIL_MAP.n_email_skey and
FCT_PARTY_EMAIL_MAP.n_party_skey=DIM_PARTY.n_party_skey and DIM_PARTY.v_party_id
in(?,?)
```

Example 3:

```
select  STG_CLAIM_DETAILS.v_claim_id from STG_CLAIM_DETAILS STG_CLAIM_DETAILS,
STG_CLAIM_CLAIMANT STG_CLAIM_CLAIMANT where
STG_CLAIM_DETAILS.v_claim_id=STG_CLAIM_CLAIMANT.v_claim_id and
STG_CLAIM_CLAIMANT.v_cust_ref_code in(?,?)
```

Example 4:

```
select STG_CONTACT_MASTER.v_contact_id from STG_CONTACT_MASTER STG_CONTACT_MASTER,
DIM_CONTACT DIM_CONTACT where STG_CONTACT_MASTER.v_contact_id=DIM_CONTACT.v_contact_id
and DIM_CONTACT.v_customer_id in(?,?)
```

Example 5:

```
select  DIM_CARDS_MASTER.n_card_number_skey from DIM_CARDS_MASTER DIM_CARDS_MASTER,
FCT_CARD_ACCT_MAPPING FCT_CARD_ACCT_MAPPING, FCT_CARDS_SUMMARY FCT_CARDS_SUMMARY where
DIM_CARDS_MASTER.n_card_number_skey=FCT_CARD_ACCT_MAPPING.n_card_number_skey and
FCT_CARD_ACCT_MAPPING. n_acct_skey=FCT_CARDS_SUMMARY.n_acct_skey and
FCT_CARDS_SUMMARY.v_d_cust_ref_code in(?,?)
```

Sample Query for the FSI_PARTY_RIGHT_TO_FORGET table

This is the sample entry for the FSI_PARTY_RIGHT_TO_FORGET table:

```
Insert into FSI_PARTY_RIGHT_TO_FORGET values (SYSDATE, <<PARTY_ID_FROM_Ur_ENV>>,
'Testing Right2Forget');
```

Data Portability

According to the Data Protection guidelines, a scenario may occur with a customer in which a Data Subject requests the financial institution to share the PII of that Data Subject stored in the application. To cater to such a scenario, the customer may use T2F (Table to File) functionality provided by AAI. This T2F functionality enables the customer to query the data warehouse and save the attributes to a file.

Data Portability Scenario

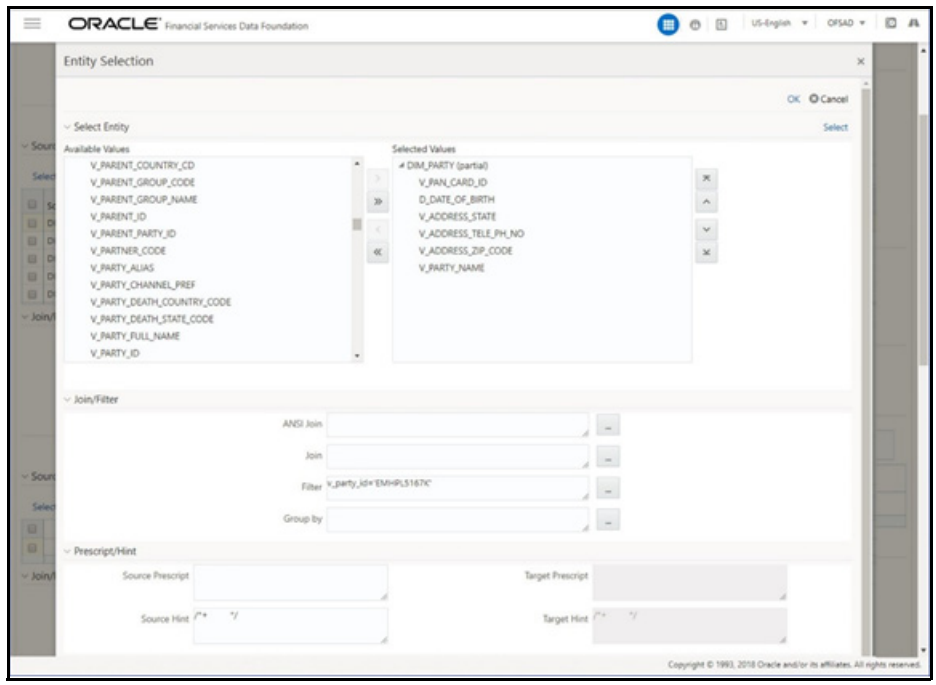
A sample scenario to apply Data Portability:

1. The DIM_PARTY table consists of a set of PIIs for multiple Data Subjects.

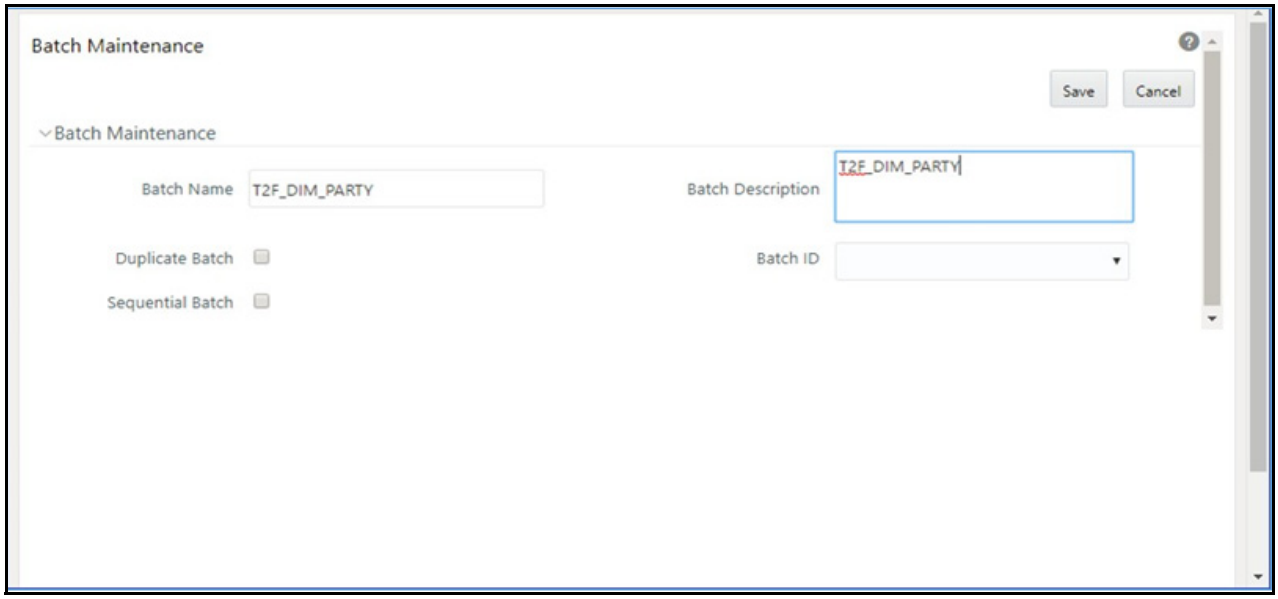
	V_PARTY_NAME	V_PAN_CARD_ID	D_DATE_OF_BIRTH	D_DATE_OF_BIRTH_1	V_ADDRESS_TELE_PH_NO	V_ADDRESS_STATE	V_ADDRESS_STATE_1
1	Aditya Sharma	HSWNJ8291T	09-JAN-93	09-JAN-93	8801283098	Himachal Pradesh	Himachal Pradesh
2	Maria Victor	PCLDS7413N	15-SEP-84	15-SEP-84	9024372784	Karnataka	Karnataka
3	Abdul Mohammed	AHJNS8384F	04-DEC-73	04-DEC-73	9852198762	Orissa	Orissa
4	Vibha Rao	RQSAA7190L	13-MAY-78	13-MAY-78	8962735610	Maharashtra	Maharashtra
5	Sharanya Gupta	EMHPL5167K	29-JAN-90	29-JAN-90	9901838919	Punjab	Punjab

   A Data Subject requests the bank to share a copy of the PII data of that Data Subject stored by the bank. For illustration, the Data Subject with V_PAN_CARD_ID EMHPL5167K is used.

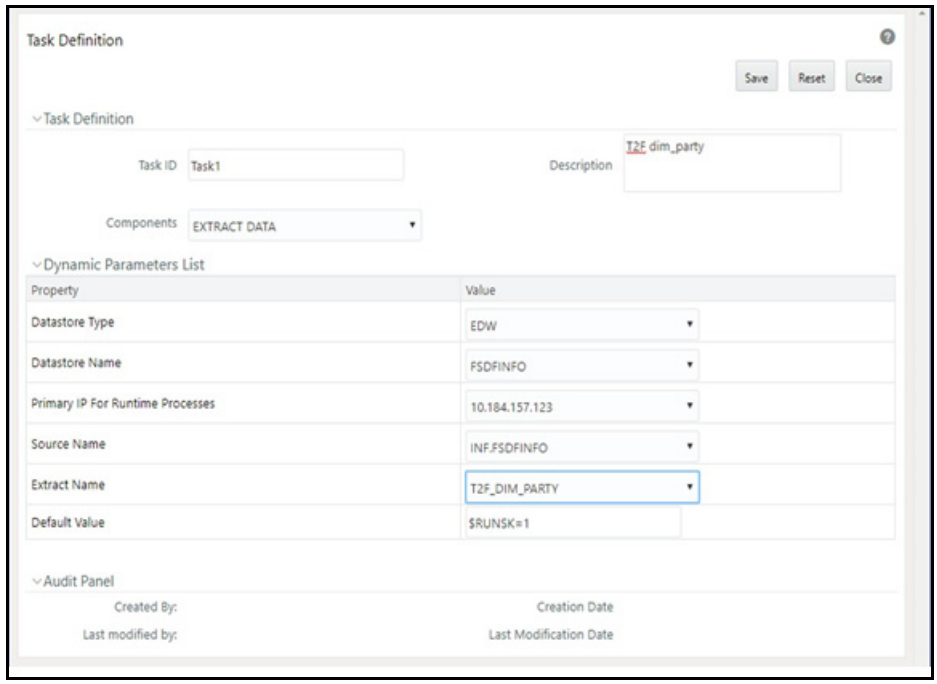
2. To make a file copy of the PII requested by the Data Subject, the User (bank) must perform T2F data mapping. Follow the Data Mapping procedure. See the *Defining Data Mapping to File (T2F, H2F)* section in the *Data Mapping* part in the OFS AAAI Application Pack Minor Release 8.0.7.0.0 User Guide to:
   a. Create a T2F definition for the scenario mentioned in step 1. V_PAN_CARD_ID is the V_PARTY_ID in the DIM_PARTY table.



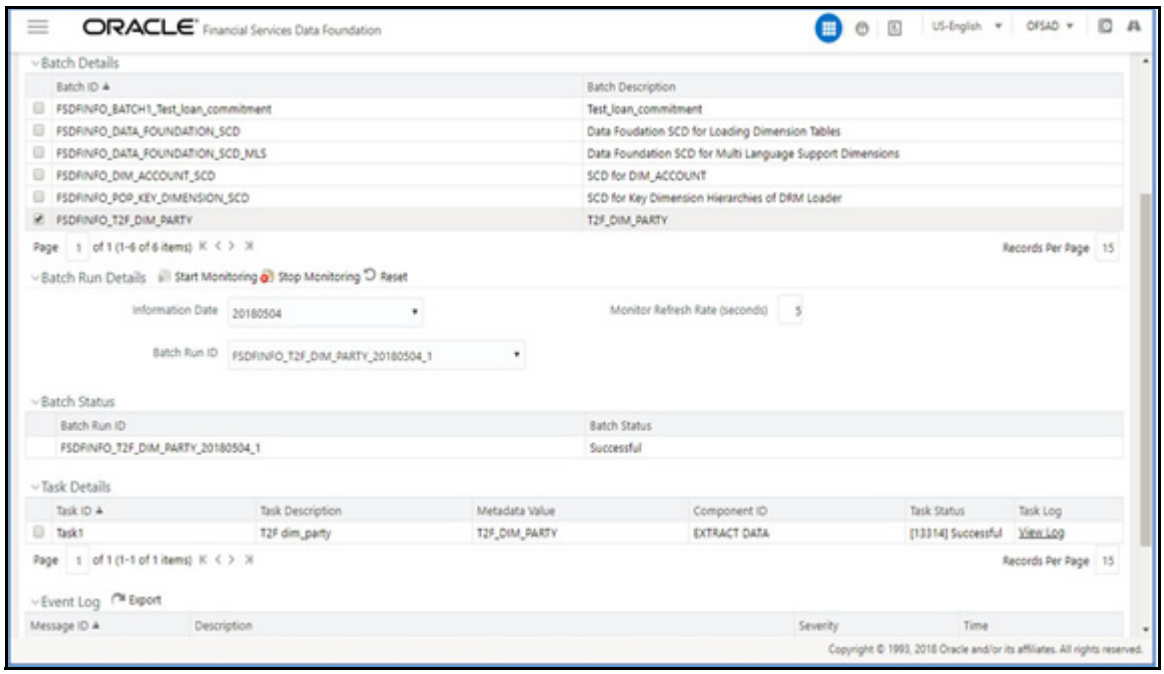
b. Create a Batch to run the T2F.



c. Create a Task for the Batch.



d. Execute the Batch. Verify the progress of batch execution in Batch Monitor.



1. The output file path is:

/scratch/ofsaaapp1/ftpshare/FSDFINFO/dmt/def/<T2F_name>/<Batch_name>/<batch_run_id>/<information_date>/<T2Fname>.dat

For example:

/scratch/ofsaaapp1/ftpshare/FSDFINFO/dmt/def/T2F_DIM_PARTY/FSDFINFO_T2F_DIM_PARTY_20180504_1_Task1/20180504/ T2F_DIM_PARTY.dat

---

Note: This extracted file consists of PII of a Data Subject that must be encrypted. See the Data Mapping section in Data Management Tools chapter in the OFS AAAI Application Pack Minor Release 8.0.6.0.0 User Guide.

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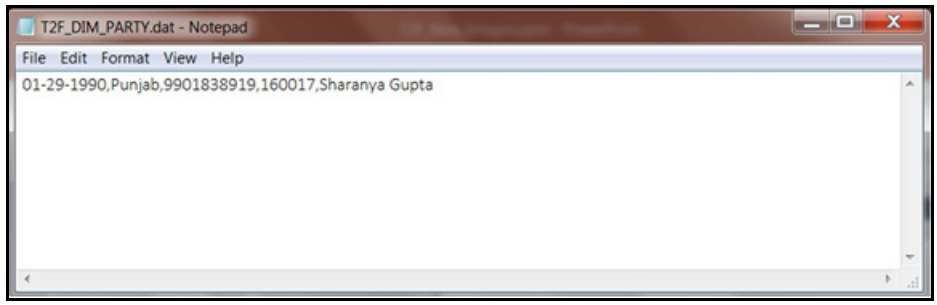
2. T2F output file with the PII details requested by the Data Subject.



Pseudonymization

Overview of Pseudonymization

Pseudonymization is a process by which PII fields of a record are replaced by one or more artificial identifiers, or pseudonyms. There can be a single pseudonym for a collection of replaced fields or one pseudonym for each replaced field. Therefore, Pseudonymization is a method to substitute PII data with a reversible and consistent value. This decreases the linking ability of a data set with the original identity of a data subject and acts as a Data Security mechanism.

The mapping of pseudonyms to those PIIs that are required for lookups, to retrieve the data subject information, must be stored away from the data warehouse in a secure location. This involves highly restricted access controls and security mechanisms that are defined at the customer environment to suit customer data security needs.

Implementation of Pseudonymization

OFSDF data model enables its customers to implement Pseudonymization process such that the PII data is separated from transaction data, and this PII data is referenced only by pseudonym. For a wide range of analytical processes, the access to PII data is not necessary.

1. Customers can employ Pseudonymization and load the Pseudonymized data into OFSDF.
2. When analytical or modeling condition requires the availability of PII data, then care must be taken by the customer to load PII data into those columns that consist of additional data security controls such as Redaction. When the requisite attributes are not part of the seeded PII list, then the customer must:
   - Extend the PII list
   - Verify the completeness of the extensions
   - Verify that Redaction is enabled on the extended PII fields prior to loading sensitive data attributes

To know more about Data Redaction, see OFS Analytical Applications Infrastructure Administration Guide.

Note: It is recommended that the PII values must not be added in the account dimension, party dimension, and customer dimension columns where redaction is not applied. For example, PII values must not be added in the v_account_number, v_party_id, and v_cust_id columns. Instead, they must be loaded in the v_original_account_number, v_orig_party_id and v_orig_cust_ref_code columns respectively, where redaction is applied.

Notice and Consent

Introduction to Notice and Consent

According to the Data Protection guidelines, a clear, legal based and accessible Notice must be provided to the Party regarding the Personally Identifiable Information (PII), which is collected from the Party during the on-boarding process or during any stage of the workflow where PII of the Data Subject is captured.

After providing a Notice, a clear Consent must be obtained from the Party regarding the usage and handling of PII by the financial institutions. This Consent must be given by the Party, and must be presented to them as their choice with the option of withdrawal from providing Consent at any time. After the Party gives their Consent, their PII can be used in the workflow.

Populating Consent Purpose Dimension Party Consent and Fact Party Consent

OFSAA is a back office product, and does not have direct interaction with the end user of the bank. Therefore, Notice, and Consent User Interfaces are not applicable. However, Data Model of Data Foundation is enhanced to hold Notice and Consent information as a download from source systems. The bank may further use this feature for the task of processing or reporting.

Procedure to Populate Consent Purpose Dimension and Fact Party Consent

This section provides information about Consent Purpose Dimension Population and Party Consent Population processes in the Oracle Financial Services Data Foundation application.

Overview of Consent Purpose Dimension Population and Fact Party Consent Population

- **Overview of Consent Purpose Dimension Population**

  In the Consent Purpose Dimension table (DIM_CONSENT_PURPOSE), Consent content is stored. This table can be populated from Stage Consent Purpose Master Entity (STG_CONSENT_PURPOSE_MASTER) using the SCD-468 packaged in FSDF.

- **Overview of Fact Party Consent Population**

  Fact Party Consent is the table where Consent of the Party is stored. Table to Table seeded definitions are provided for loading data into the target table Fact Party Consent (FCT_PARTY_CONSENT):

Source Table Name	Target Table Name	T2T Definition Name
STG_PARTY_CONSENT	FCT_PARTY_CONSENT	T2T_FCT_PARTY_CONSENT

Executing Consent Purpose Dimension Population and Fact Party Consent Population T2T

- **Executing through Batch**
  - From Consent Party Master, Consent Purpose Dimension SCD can be executed by executing task present in the SCD batch FSDFINFO_DATA_FOUNDATION_SCD.
  - Fact Party Consent T2T can be executed by executing task present in the T2T batch FSDF_SOURCED_RUN.

    Follow these steps to execute the batch:

    i. Navigate to the **Batch Execution** screen.

    ii. Select the seeded batch:

    FSDFINFO_DATA_FOUNDATION_SCD for Consent Purpose Dimension

    FSDF_SOURCED_RUN for Fact Party Consent

    where Infodom is the information domain where application is installed.

    iii. Select the AS_OF_DATE for which source customer information is required to be loaded into the table.

    iv. Click **Execute Batch**.

    Monitor the status of the batch in the screen of OFSAAI.
- **Execution of T2T Batch through Run Management**

  T2T_FCT_PARTY_CONSENT is part of Financial Services Data Foundation Sourced Run. The process can be executed through the Seeded Run Financial Services Data Foundation Execution Run.

Note: When executing through Run, the RUNSkey is auto-generated and stamped against each record.

Error Messages

In the log file present in the:

- ftpshare/logs/<Run_Date>/FSDFINFO/RUN EXECUTABLE folder for DIM_CONSENT_PURPOSE
- ftpshare/logs/<Run_Date>/FSDFINFO/LOAD DATA folder for T2T_FCT_PARTY_CONSENT

This is the most common error message:

- **Unique Constraint Violation**: This occurs when attempting re-load or loading existing records for the already executed AS_OF_DATE.

Checking the Execution Status for Fact Party Consent T2T

The status of execution can be monitored using the Batch Monitor screen.

Note: For a more comprehensive coverage of configuration and execution of a batch, see Oracle Financial Services Analytical Applications Infrastructure Release 8.0.6.0.0 User Guide.

The status messages in Batch Monitor are:

- N - Not Started
- O - On Going
- F - Failure
- S - Success

The execution log can be accessed on the application server in the directory *ftpshare/logs/<Run_Date>/FSDFINFO/LOAD DATA*. The file name consists of the Batch Execution ID.

This is the error log table in atomic schema:

- FCT_PARTY_CONSENT$ for T2T_FCT_PARTY_CONSENT

Fact Party Consent T2T

T2T definition can be retrieved as an excel document for reference from the metadata browser of the Unified Metadata Manager (UMM) component of OFSAAI.

Data Archival

Synopsis for Data Archival

The OFSAA data model, along with the active data stores Personally Identifiable Information (PII) of Data Subjects who are no longer actively using the financial services, which is a liability.

Implementation of Data Archival by OFSAA

To implement this invisibility of data at row level, Oracle Database 12c has introduced a new feature called Row Archival.

- The Row Archival feature is simple and effective to use as opposed to the traditional approach, which requires storage and maintenance of historical tables.
- This feature enables to archive records based on a given criteria within the account table. The criteria can be, for example, the Account Close Date of the Data Subject.
- This archived data can be viewed or made hidden by setting a session parameter.

A Criteria for Data Archival

To archive Party records, which are closed for more than seven years:

1. To enable Row Archival on the DIM_PARTY table, run this command:

   ```
   ALTER TABLE DIM_PARTY ROW ARCHIVAL
   ```

2. Run the Row Archival Update statement periodically, to search for the account Party records which are closed for more than seven years. Run this command:

   ```
   UPDATE DIM_PARTY SET ora_archive_state='1' where
   trunc(months_between(SYSDATE, d_closed_date)/12)>7
   ```

   In the above query:

   - `ora_archive_state` is a hidden column which is created after the ROW ARCHIVAL is set on the table.
   - SET `ora_archive_state='1'` archives the records which meets the criteria of seven years of account closure.
   - Hidden rows are available for Select/Update queries only after `ora_archive_state` is disabled.

Viewing Archived Rows

- To make hidden rows visible for a session, run this command:

  ```
  ALTER SESSION SET ROW ARCHIVAL VISIBILITY=ALL;
  ```

- To make the rows invisible, run this command:

  ```
  ALTER SESSION SET ROW ARCHIVAL VISIBILITY=ACTIVE;
  ```

Data Redaction

Overview of Data Redaction in OFSAA

Data Redaction is one of the Data Security features that provides protection of data against unauthorized access and data theft.

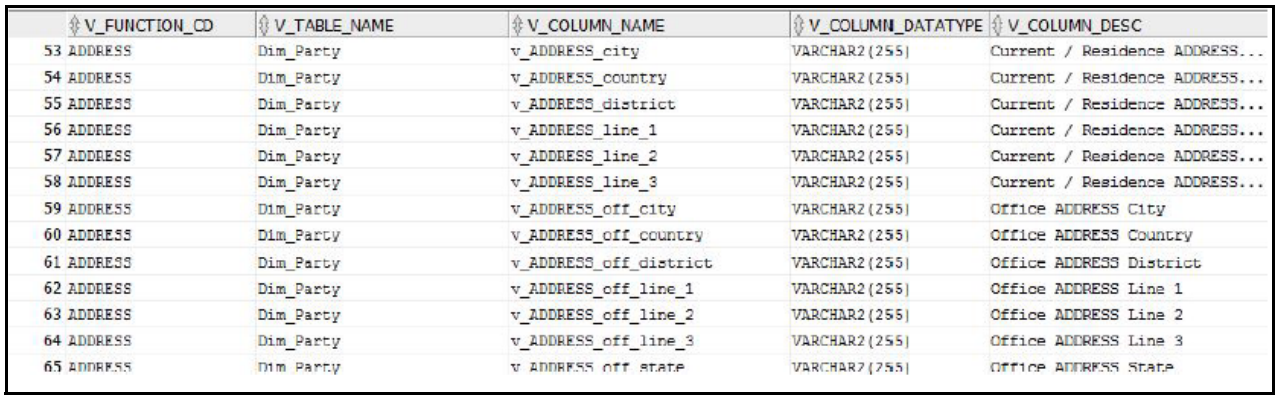
In OFSAA, these tables are seeded as part of Data Redaction:

- AAI_DRF_FUNCTION_MASTER

  This table holds the Redaction function definitions. Generic logical functions can be address, email, card number, phone number etc.

- AAI_DRF_FUNCTION_COLUMN_MAP

This table holds the Redaction Function- Column mappings. The PII columns will be redacted according to the Function mapping.



	V_FUNCTION_CD	V_TABLE_NAME	V_COLUMN_NAME	V_COLUMN_DATATYPE	V_COLUMN_DESC
53	ADDRESS	Dim_Party	v_ADDRESS_city	VARCHAR2(255)	Current / Residence ADDRESS...
54	ADDRESS	Dim_Party	v_ADDRESS_country	VARCHAR2(255)	Current / Residence ADDRESS...
55	ADDRESS	Dim_Party	v_ADDRESS_district	VARCHAR2(255)	Current / Residence ADDRESS...
56	ADDRESS	Dim_Party	v_ADDRESS_line_1	VARCHAR2(255)	Current / Residence ADDRESS...
57	ADDRESS	Dim_Party	v_ADDRESS_line_2	VARCHAR2(255)	Current / Residence ADDRESS...
58	ADDRESS	Dim_Party	v_ADDRESS_line_3	VARCHAR2(255)	Current / Residence ADDRESS...
59	ADDRESS	Dim_Party	v_ADDRESS_off_city	VARCHAR2(255)	Office ADDRESS City
60	ADDRESS	Dim_Party	v_ADDRESS_off_country	VARCHAR2(255)	Office ADDRESS Country
61	ADDRESS	Dim_Party	v_ADDRESS_off_district	VARCHAR2(255)	Office ADDRESS District
62	ADDRESS	Dim_Party	v_ADDRESS_off_line_1	VARCHAR2(255)	Office ADDRESS Line 1
63	ADDRESS	Dim_Party	v_ADDRESS_off_line_2	VARCHAR2(255)	Office ADDRESS Line 2
64	ADDRESS	Dim_Party	v_ADDRESS_off_line_3	VARCHAR2(255)	Office ADDRESS Line 3
65	ADDRESS	Dim_Party	v_ADDRESS_off_state	VARCHAR2(255)	Office ADDRESS State

- AAI_DRF_TABLE_ACCESS_CD_MAP

  This table holds the mapping of tables having columns marked for redaction to the Access codes. These access codes are SMS function codes and are expected to be mapped to the role DATASECURITY. The policy expression will be created based on this role and evaluated to access non-redacted data.

Note: The list of PIIs, on which Data Redaction is applied, is available at My Oracle Support.

Accessing PII Table and PII Datasheet

- AAI_DRF_FUNCTION_COLUMN_MAP is the PII table.
- PII Datasheet list can be accessed from My Oracle Support.

Data Redaction Batch

Execute the Data Redaction seeded Batch `##INFODOM##_DATA_REDACTION` to execute the Data Redaction Utility if it is available as part of application common metadata. If the Batch is not available, you must create a new Batch as mentioned in the *Creating Batch for Executing Data Redaction Utility* section in the OFS Analytical Applications Infrastructure Administration Guide.

The task in the Batch `##INFODOM##_DATA_REDACTION` consists of three parameters:

- `dataredaction.sh`
- true/false
- OFSAA User ID

For more information, see *Data Redaction* section in the OFS Analytical Applications Infrastructure Administration Guide.

Mapping Roles to User Groups for Data Redaction

Data Controller Group is mapped to DATASECURITYADMIN role:

- Group Code: DATACONTROLLER
- Group Name: Data Controller Group
- Group Description: Data Controller Group
- Role code: DATASECURITYADMIN
- Role Name: Data Security Admin
- Role Description: Data security admin role for executing redaction policies

Mapping from individual applications to DATASECURITY role:

- Role code: DATASECURITY
- Role Name: Data Security Viewer
- Role Description: Data Security Viewer role for viewing original (non-redacted) data.
  a. DATASECURITY role must be mapped to those application User Groups which have the privilege to view the data in its originality (un-redacted). Therefore, applications must identify the functions which must be mapped to the DATASECURITY role. These mappings must come as seeded data.
  b. And then, map DATASECURITY role to the respective User groups. This mapping must be done manually from individual applications to the DATASECURITY role.

Data Redaction Batch Execution Sample

- Data before executing Data Redaction Batch:

Row 1	Fields
N_ACCT_SKEY	6
V_ACCOUNT_NUMBER	BC1007
V_ACCOUNT_DESC	data redaction desc
V_ACCOUNT_MANAGER_CODE	drmc1
V_ORIGINAL_ACCOUNT_NUMBER	data redaction original account numb

- Data after executing Data Redaction Batch:

Row 1	Fields
N_ACCT_SKEY	6
V_ACCOUNT_NUMBER	BC1007
V_ACCOUNT_DESC	
V_ACCOUNT_MANAGER_CODE	
V_ORIGINAL_ACCOUNT_NUMBER	