Oracle Financial Services Loan Loss Forecasting and Provisioning

Installation Guide

Release 8.1.2.0.0

February 2022

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Financial Services

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OFS Oracle Financial Services Loan Loss Forecasting and Provisioning Installation Guide

Document Control

Table 1: Document Version Control

Version Number	Revision Date	Change Log
2.0	September 2023	Added additional information in the Additional Configurations for Web Servers section for the Bug **35758248**
1.0	February 2022	Created the document with instructions for the installation of the Oracle Financial Services Loan Loss Forecasting and Provisioning Release 8.1.2.0.0.

Table of Contents

1 Preface

This section provides supporting information for the Oracle Financial Services Loan Loss Forecasting and Provisioning Installation Guide.

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

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

Topics:

1.1 Intended Audience

The Oracle Financial Services Loan Loss Forecasting and Provisioning Installation Guide is intended for administrators, business users, strategists, data analysts, and implementation consultants who handle installing and maintaining the application pack components.

This document assumes that you have experience installing enterprise components and basic knowledge of the following:

- Oracle Financial Services Loan Loss Forecasting and Provisioning components
- OFSAA architecture
- UNIX commands
- Database concepts
- The web server or web application server

1.2 Related Documents

We strive to keep this document and all other related documents updated regularly; visit the OHC Documentation Library to download the latest version available. The list of related documents is provided here:

- OHC Documentation Library **for Oracle Financial Services Loan Loss Forecasting and Provisioning :**

  For existing customers of OFS Loan Loss Forecasting and Provisioning (LLFP):

  - *OFS Loan Loss Forecasting and Provisioning 8.1.2.0.0 Installation Guide*
  - *OFS Loan Loss Forecasting and Provisioning 8.1.2.0.0 User Guide*
- For new customers of Oracle Financial Services Loan Loss Forecasting and Provisioning (LLFP):

- *OFS Loan Loss Forecasting and Provisioning 8.1.2.0.0 Release Notes*
- *OFS Loan Loss Forecasting and Provisioning 8.1.2.0.0 Installation Guide*
- *OFS Loan Loss Forecasting and Provisioning 8.1.2.0.0 User Guide*

- OHC Documentation Library **for OFS AAAI Application Pack:**
  - *OFS Advanced Analytical Applications Infrastructure (OFS AAAI) Application Pack Installation and Configuration Guide*
  - *OFS Analytical Applications Infrastructure User Guide*
  - *OFS Analytical Applications Infrastructure Administration Guide*
  - *Oracle Financial Services Analytical Applications Infrastructure Environment Check Utility Guide*
- **Additional Reference Documents:**
  - OFSAA Licensing User Manual, Release 8.1.2.0.0
  - OFS Analytical Applications 8.1.2.0.0 Technology Matrix
  - OFS Analytical Applications Infrastructure Security Guide
  - Oracle Financial Services Loan Loss Forecasting and Provisioning Security Guides Release 8.1.x
  - Oracle Financial Services Analytical Applications Infrastructure Cloning Guide
  - Oracle Financial Services Loan Loss Forecasting and Provisioning Cloning Guide release 8.0.x
  - Oracle Financial Services Loan Loss Forecasting and Provisioning Cloning Guide Release 8.1.x
  - OFSAAI FAQ Document

1.3 Conventions

The following text conventions are used in this document.

Table 2: Document Conventions

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

1.4 Abbreviations

The following table lists the abbreviations used in this document.

Table 3: Abbreviations

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

Abbreviation	Meaning
RDBMS	Relational Database Management System
RHEL	Red Hat Enterprise Linux
SFTP	Secure File Transfer Protocol
SID	System Identifier
SSL	Secure Sockets Layer
TNS	Transparent Network Substrate
URL	Uniform Resource Locator
VM	Virtual Machine
WAR	Web Archive
XML	Extensible Markup Language

Part I

Topics:

2 Introduction

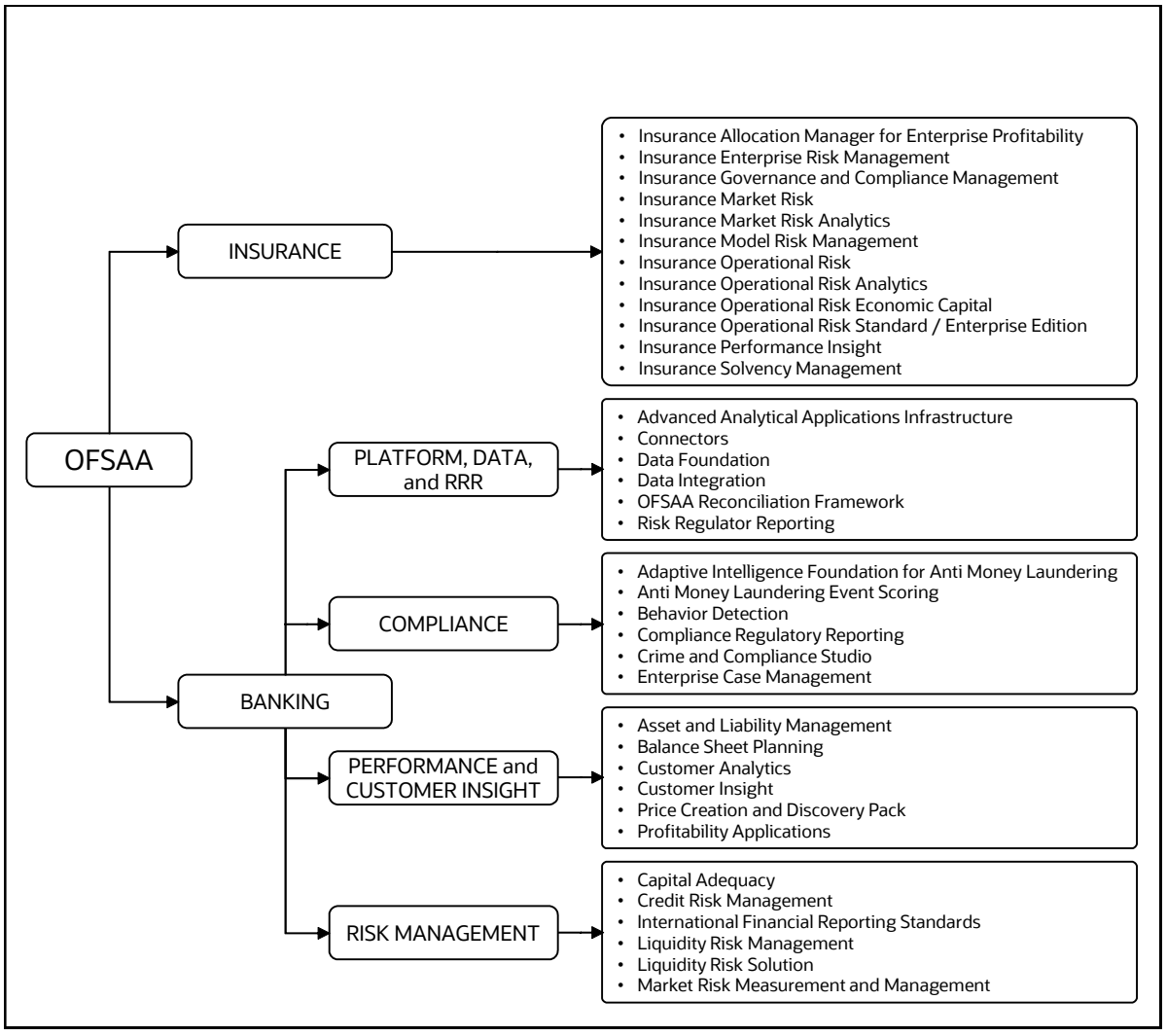
In today's turbulent markets, financial institutions require a better understanding of their risk-return, while strengthening competitive advantage and enhancing long-term customer value. Oracle Financial Services Analytical Applications (OFSAA) enable financial institutions to measure and meet risk-adjusted 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 models, 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, promotes a transparent risk management culture, and provides pervasive intelligence.

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

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

Figure 1: OFSAA Application Packs



Topics:

2.1 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 required to analyze, understand and report on specific performance, risk, compliance, and customer insight issues by providing a strong foundation for the entire family of Oracle Financial Services Analytical Applications across the domains of Risk, Performance, Compliance and Customer Insight.

Topics:

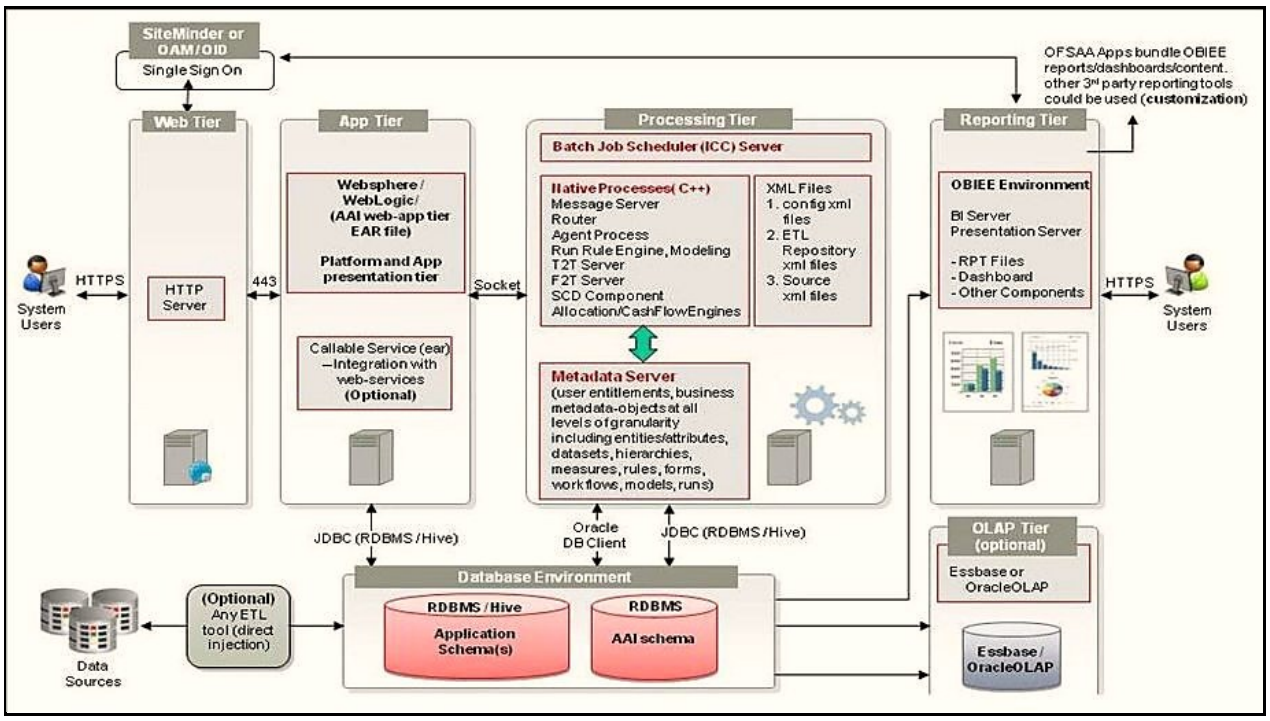
2.1.1 Components of OFSAA Infrastructure

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

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

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

Figure 2: Components of OFSAAI



2.1.2 OFSAA Infrastructure High Availability

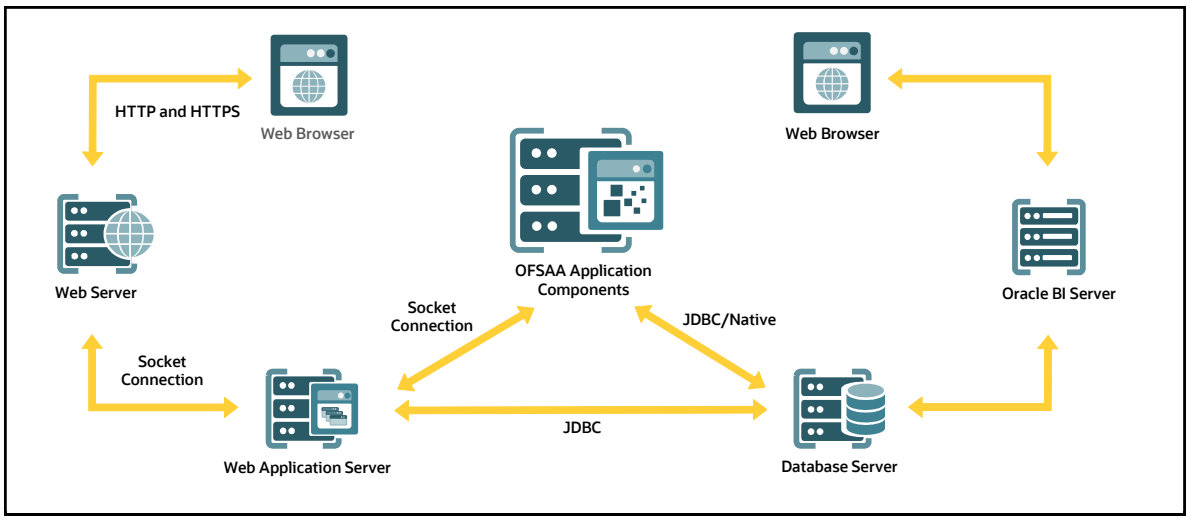
The current release of the OFSAA Infrastructure supports only the Single Instance installation for the Infrastructure components. However, the High Availability (HA) for the Database Server and (or) the Web application server clustering and deployment is supported in this release.

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

2.1.3 Deployment Topology

The following figure illustrates the deployment topology of OFSAA application packs.

Figure 3: Logical Architecture Implemented for OFSAA Application Packs



2.2 About Oracle Financial Services Loan Loss Forecasting and Provisioning Application Pack

International Financial Reporting Standards (IFRS) guidelines have set out new requirements on the classification and measurement of financial assets and liabilities. It specifies two approaches for the measurement of assets namely Amortized Cost and the Fair Value approach. The scope of Oracle Financial Services Loan Loss Forecasting and Provisioning is to focus only on the amortized cost approach.

2.3 OFS AAI Extension Pack

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

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

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

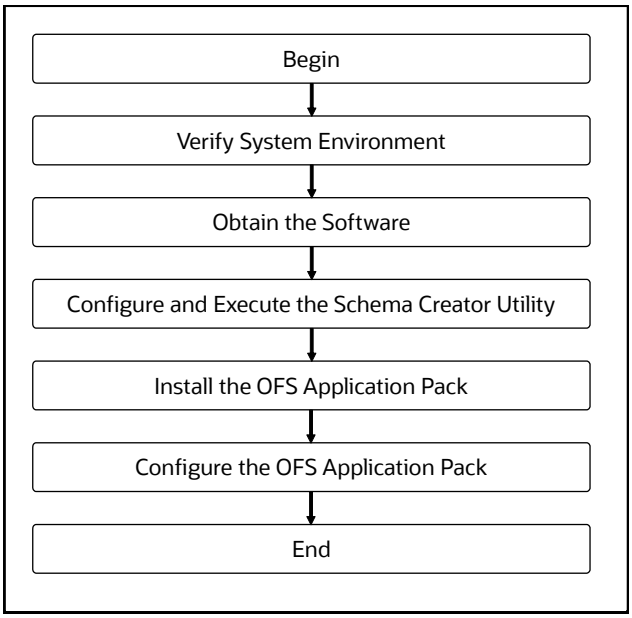
> **NOTE** The pack is enabled by the procurement of an additional license. For more information, see the OFS AAIE Release Notes and Installation Guide on the OHC.

2.4 Installation Overview

To install an Oracle Financial Services Loan Loss Forecasting and Provisioning application pack 8.1.2.0.0 instance, users and administrators must download this installer. The following figure displays the order of procedures you will need to follow to install a new Oracle Financial Services Loan Loss Forecasting and Provisioning Pack 8.1.2.0.0 instance.

> **NOTE** This installer supports both upgrades (from OFS Loan Loss Forecasting and Provisioning (LLFP) 8.0.9 onwards) and fresh installation of Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.2.0.0.

Figure 4: Installation Flow



2.5 Installation and Upgrade Scenarios

Release 8.1.2.0.0 of Oracle Financial Services Loan Loss Forecasting and Provisioning supports various installation and upgrade scenarios. A high-level overview of the possible scenarios is provided in the following table. Detailed procedural steps are provided in the succeeding sections of this document.

Table 4: Oracle Financial Services Loan Loss Forecasting and Provisioning Release 8.1.2.0.0 Installation and Upgrade Scenarios

Scenario	Installation and Upgrade Instructions
New Installation	
Installing Release 8.1.2.0.0 application pack for the first time (new installation).	1. Prepare for the Installation. 2. Execute the Schema Creator Utility. 3. Install the OFS LLFP Application Pack.
Install OFS LLFP Application Pack v8.1.2.0.0 on an Existing OFSAA Instance You have already installed an application pack from release 8.1.2.0.0 and now you want to install another application pack from Release 8.1.2.0.0. **Example**: OFS ALM Pack is already installed and now you want to install OFS LLFP Pack.	1. Run the schema creator utility ONLY for the new pack. 2. Update the `OFS_LLFP_PACK.xml` file for the newly licensed pack. 3. Update the `Silent.props` file of the newly licensed pack. 4. The values in the following placeholders are in the **default.properties** File in **the <installer path>/OFS_LLFP_PACK/OFS_LLFP/conf** must be blank: **a.** LLFPSB_SANDBOX= **b.** LLFPSB_DBNAME= **c.** LLFPSB_DESC= 5. Trigger the Release 8.1.2.0.0 installation. **ATTENTION:** During an integrated pack on pack installation, where OFS ALM is first installed and then OFS LLFP is being installed, ignore the error generated due to the object **fsi_eco_ind_master** in the **OFS_LLFP_installation.err** file and proceed with the post-install steps.
Upgrade Installation	
If you are on any supported 80x versions	1. Upgrade any supported Release v8.0.x to Release v8.1.0.0.0 2. Upgrade from Release v8.1.0.0.0 to Release v8.1.1.0.0 3. Upgrade from Release v8.1.1.0.0 to Release v8.1.2.0.0
Upgrade an already installed OFS LLFP 8.1.1.0.0 to 8.1.2.0.0.	1. Run the Environment Check Utility tool and ensure that the hardware and software requirements are installed as per the OFS Analytical Applications Technology Matrix. See the OFSAA Environment Check Utility Guide for detailed steps. 2. Trigger the Release 8.1.2.0.0 installation. 3. Remap the modeler role (**Modeler**). For detailed information see the Upgrade Release v8.1.1.0.0 to v8.1.2.0.0 Section.

2.6 Compatibility Matrix

This table lists the applications or app combinations that must not be installed on a single infodom.

NOTE If you are upgrading the OFSAA Application Pack to release v8.1.2.0.0, you must upgrade the other packs installed in the same environment to release v8.1.2.0.0, to ensure a successful deployment.

Table 5: LLFP 8.1.x Application Compatibility Matrix

If you are installing	Do not Install the Listed Application in the Same Environment
OFS_LLFP_PACK	None

3 Complete Installation Checklist

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

Table 6: Complete Installation Checklist

Sl. No.	Pre-installation Activity
1	Install all the prerequisite hardware and software given in the OFS Analytical Applications Technology Matrix.
2	Verify the System Environment using the Environment Check Utility.
3	Configure the following Operating System and File System settings: • File Descriptor • Total number of processes • Port(s) • `.profile` file permissions • Add FTP/SFTP configuration for file transfer
4	Configure the Operating System and File System Settings.
5	Install and configure the web application server.
6	Configure the HTTP settings on the webserver.
7	Mount the FSS to Compute Virtual Machine if you are deploying on the cloud server. **NOTE**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
8	Open the Network Ports for OFSAA Services if you are deploying on the cloud server. **NOTE**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
9	Create the Installation, Download, and Metadata Repository Directories: • Installation directory • Temporary directory • Staging Area/Metadata Repository directory • Download directory
10	Update the following Environment Settings required for the installation in the `.profile` file: • Java settings • Oracle Database Server and Client settings • Add TNS entries in the `TNSNAMES.ORA` file • Oracle Essbase settings • Time Zone settings
11	Download the Oracle Financial Services Loan Loss Forecasting and Provisioning installer kit and erwin data model.
12	Extract the installer kit.

Table 7: Complete Installation Checklist

Sl. No.	Installation Activity
1	Configure the `OFS_LLFP_SCHEMA_IN.xml` file.
2	Execute the Schema Creator Utility in Online, Offline, modes, and verify the log file.
3	Configure the `OFSAAI_InstallConfig.xml` file.
4	Trigger the application installation.
5	Verify the installation logs.

Table 8: Complete Installation Checklist

Sl. No.	Post-installation Activity
1	Verify that all patches are successfully installed.
2	Update the Config Schema. **Note**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
	Edit the WDSL Property File. **Note**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
3	Back up the `OFS_LLFP_SCHEMA_IN.xml`, `OFS_LLFP_SCHEMA_OUTPUT.xml`, and `Silent.props` files.
4	Stop the OFSAA Infrastructure services.
5	Start the OFSAA Infrastructure services.
6	Create and deploy EAR or WAR files.
7	Configure the webserver.
8	Configure the Resource Reference in web application servers.
9	Configure the Work Manager in the web application servers.
10	EAR/WAR File - Build Once and Deploy Across Multiple OFSAA Instances.
11	Access the OFSAA application.
12	Configure excludeURLList.cfg file.
13	Configure Tomcat.
14	Configure Data Source.
15	Set Data Redaction in Oracle Financial Services Loan Loss Forecasting and Provisioning.
16	Implement Data Protection in OFSAA.
17	Configure the Sandbox.
18	Configure OBIEE.

Table 9: Complete Installation Checklist

Sl. No.	Additional Configuration Activity
1	Add FTP/SFTP Configuration for File Transfer.
2	Configure the Infrastructure Server Memory.
3	Configure the Internet Settings.
4	Set OLAP Data Server Configuration.
5	Change IP or Hostname, Ports, Deployed Paths of the OFSAA Instance.
6	Execute the OFSAAI Setup Information Fetching Tool.
7	Execute the Encryption Changer.
8	Configure the Infrastructure LDAP Configuration.
9	Enable Parallel Execution of DML statements
10	Clear the application cache.
11	Configure password changes.
12	Configure Java Virtual Machine.
13	Configure Internal Service (Document Upload/Download).

4 Hardware and Software Requirements

For a list of all the hardware and software requirements including operating systems, database, web servers, and web application server versions for which this release of the Oracle Financial Services Loan Loss Forecasting and Provisioning Applications Pack is qualified see the OFS Analytical Applications Technology Matrix.

Topics:

> **NOTE** Oracle Financial Services Loan Loss Forecasting and Provisioning Application Pack installation can be performed on both Virtual and Physical servers.

Oracle Financial Services Loan Loss Forecasting and Provisioning application pack recommends the following software combinations for deployment.

Table 10: Recommended Software Combination

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

4.1 Third-party Licensing Information

For more information about the third-party software tools used in Oracle Financial Services Loan Loss Forecasting and Provisioning, see the OFSAA Licensing Information User Manual Release 8.1.2.0.0.

4.2 Verify System Environment

To verify your system environment meets the minimum requirements for the installation, a Pre-install Check utility is available within the Install Kit archive file. This utility can also be obtained separately by contacting My 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 before beginning the installation as part of your organization's Installation Readiness Verification Process.

For more information about downloading and using this utility, see the OFSAA Environment Check Utility Guide.

5 Pre-installation

This chapter provides the necessary information to review before installing the Oracle Financial Services Loan Loss Forecasting and Provisioning Pack 8.1.2.0.0.

> **NOTE** If the operating system is Linux or Red Hat Enterprise Linux, install the package lsb_release with one of the following commands by logging in as root user: `yum install redhat-lsb-core` or `yum install redhat-lsb`

Topics:

> **NOTE** When merging the lower version of an application with an integrated data model, retain the larger size of column length.

5.1 Pre-installation Checklist

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

The Installer Environment Check utility notifies you if any requirements are not met.

Table 11: Pre-Installation Checklist

Sl. No.	Pre-installation Activity
1	Install all the prerequisite hardware and software given in the OFS Analytical Applications Technology Matrix.
2	Verify the System Environment using the Environment Check Utility.
3	Configure the following Operating System and File System settings: • File Descriptor • Total number of processes • Port(s)

Sl. No.	Pre-installation Activity
	• `.profile` file permissions • Add FTP/SFTP configuration for file transfer
4	Configure the Operating System and File System Settings.
5	Install and configure the web application server.
6	Configure the HTTP settings on the webserver.
7	Mount the FSS to Compute Virtual Machine if you are deploying on the cloud server. **NOTE**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
8	Open the Network Ports for OFSAA Services if you are deploying on the cloud server. **NOTE**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
9	Create the Installation, Download, and Metadata Repository Directories: • Installation directory • Temporary directory • Staging Area/Metadata Repository directory • Download directory
10	Update the following Environment Settings required for the installation in the `.profile` file: • Java settings • Oracle Database Server and Client settings • Add TNS entries in the `TNSNAMES.ORA` file • Oracle Essbase settings • Time Zone settings
11	Download the Oracle Financial Services Loan Loss Forecasting and Provisioning installer kit and erwin data model.
12	Extract the installer kit.

5.2 Oracle Database Instance Settings

Ensure that the following database instance settings are configured:

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

5.3 Web Application Server Settings

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

Table 12: Web Application Server Settings

Description	Example Value
WebSphere or WebLogic or Tomcat	Web Application Server should be installed and the profile/domain created. You will be prompted to enter the WebSphere Profile path during OFSAAI installation. **NOTE:** See the Configure the Web Server section in the OFS AAI Release 8.1.2.0.0 Installation and Configuration Guide to complete these procedures.

5.4 Web Server Settings

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

Table 13: Web Server Settings

Description	Example Value
Apache HTTP Server, Oracle HTTP Server, or IBM HTTP Server	Configure the HTTP Server and note down the IP or Hostname and Port details as you will be prompted to enter these details during installation. **NOTE:** See the Configure the Web Server section in the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide to complete these procedures

5.5 Mounting FSS to Compute Virtual Machine

This section provides details about the required configurations for successful installation and (or) deployment on the Oracle Cloud Infrastructure. For more information, see Generic Documents.

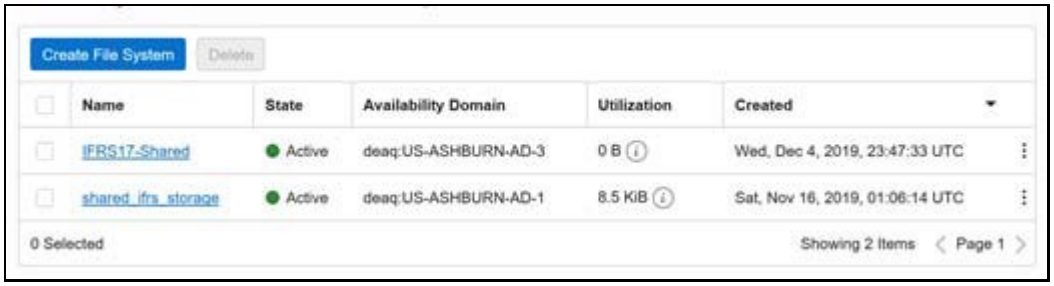
If you are deploying on the cloud server, you must perform the steps mentioned in this section. This section enables you to mount `ftpshare` directory across the OFSAA Processing Tier Compute nodes, and conditionally apply to any other nodes, for high availability or nonhigh availability deployments.

> **NOTE** Ensure that the `ftpshare` folder is created and use the mount under which the `ftpshare` folder was created.

To mount the file system to compute Virtual Machine, follow these steps:

1. Log in to the Oracle Cloud Infrastructure console.
2. Navigate to **File Storage** and select **File Systems**.

Figure 5: The File Systems Window



3. In the Name column, select the project-specific FSS that has been created. In this example, click shared_ifrs_storage to open the **Details Screen** and view the export path.

Figure 6: The Details Screen Displaying the Export Path

4. For the required export path, click More  , and select Mount Commands.

Figure 7: The Details Screen after clicking the More Icon

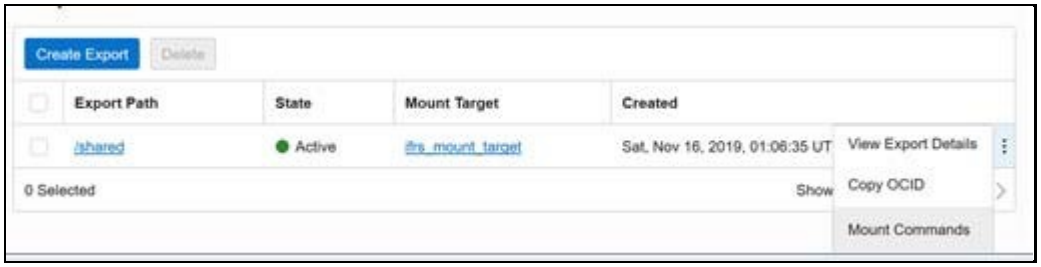
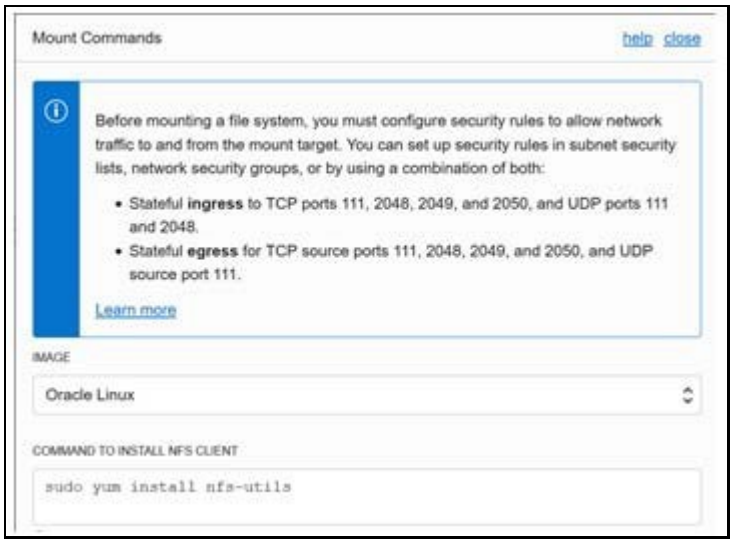


Figure 8: The Mount Commands Window



5. Ensure that the Oracle Cloud Infrastructure (OCI) team has opened the Ingress or Egress ports.
6. In the Mounting Commands window:
   a. In the **COMMAND TO INSTALL NFS CLIENT** field, enter the value `sudo yum install nfs-utils`.
   b. In the **COMMAND TO INSTALL NFS CLIENT** field, enter the value `sudo mkdir -p /mnt/shared`, where `/mnt/shared` must be replaced with your mount value.
   c. In the **COMMAND TO MOUNT THE FILE SYSTEM** field, enter the value `sudo mount 10.0.14.5:/shared/mnt/shared`, where `/mnt/shared` must be replaced with your mount value and `10.0.14.5` must be replaced with your storage VM IP address.
7. Click **Close**.
8. Use PuTTY tunneling session to connect to the **OFSAA Product Home1** compute virtual machine with the command, `ssh <ofsaa product_home1>`.
9. Execute the commands in the fields **COMMAND TO INSTALL NFS CLIENT**, **COMMAND TO INSTALL NFS CLIENT**, and **COMMAND TO MOUNT THE FILE SYSTEM** in sequence.
10. To verify that the execution of the mounting commands was successful, try to verify by accessing a sample text file from OFSAA product home:
    a. Verify the mount by using the command: `df -k`.

b. Create any text file in this mount.

c. Verify that this file is accessible when you connect to the OFSAA Product Home2 compute virtual machine.

5.6 Opening up the Network Ports for OFSAA Services

If you are deploying the OFS HM application on the Cloud servers, you must open the respective ports that will be used for the OFSAA Services across the network for the respective subnets in the deployment setup through the OCI team:

> **NOTE** The ports mentioned in this section are the default ports. You must open your available ports.

1. Open the following ports:

```
JAVAPORT
NATIVEPORT
AGENTPORT
ICCPORT
ICCNATIVEPORT
OLAPPORT
MSGPORT
ROUTERPORT
AMPORT
WEB_SERVER_PORT
```

5.7 Create the Installation, Download, and Metadata Repository Directories

To install Oracle Financial Services Loan Loss Forecasting and Provisioning, create the following directories:

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

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

- **OFSAA Installation Directory (Mandatory)**: Create an installation directory where the product binaries are installed. Set the variable FIC_HOME in the .profile file to point to the OFSAA Installation Directory. Assign 755 user permission to the installation directory.
- **OFSAA Staging or Metadata Directory (Mandatory)**: A directory to hold the application metadata artifacts and additionally act as the staging area for the flat files. This directory is also referred to as "FTPSHARE". Create a Staging or Metadata Repository Directory to copy data files, save data extracts, and so on.

  The directory must exist on the same system as the OFSAA Installation. This directory can be configured on a different mount or under a different user profile. However, the owner of the installation directory must have RWX (775) permissions to this directory.

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

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

This section provides detailed information on configuring the operating system and file system settings and how to configure the environment settings.

Topics:

5.8.1 Configure Operating System and File System Settings

Log in as a root user and create the `.profile` file at the home directory of the logged-in user if it is not already available. The user must have 755 permission on the file to execute it. This file consists of various parameters for Environment Settings, OS, and File System Settings. Configure the following settings:

Table 14: Web Server Settings

Parameter	Configuration Action

File Descriptor Settings	In the `sysctl.conf` file, to change the number of file descriptors, do the following as the root user:
	1. Edit the following line in the `/etc/sysctl.conf` file:
	`fs.file-max = <value>`
	where `<value>` is greater than 15000
	2. Apply the change by running the following command:
	`# /sbin/ sysctl -p`
	NOTE: The value specified here is the minimum value to be set for the installation process to go forward.

Total Number of Process Settings	In the `sysctl.conf` file set the value to 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.
OS Locale	**Linux**: 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'`

If you are a non-root user, configure the following settings:

Table 15: Configure Operating System and File System Settings

Parameter	Configuration Action
Installation Directory	In the `.profile` file, set the variable FIC_HOME to point to the OFSAA Installation Directory.
.profile permissions	You must have 755 permission on the .profile file.

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

WARNING Do not modify any other parameters other than the parameters mentioned in the following subsections.

5.8.2 Configure the Environment Settings

This section provides information to configure the environment settings before installation.

Topics:

5.8.2.1 Java Settings

The following table displays the Java settings required for installation.

Table 16: Java Settings

Description	Example Value
In the `.profile` file, set PATH to include the Java Runtime Environment (JRE) absolute path. Ensure that SYMBOLIC links to JAVA installation are not set in the PATH variable.	For example: `PATH=/usr/java/jre1.8.0_221/bin:$ORACLE_HOME/bin:$PATH` `export PATH` **NOTE:** OFSAA does not support OpenJDK and JRE.

In the `.profile` file, set PATH to include the Java Runtime Environment bin path.	`JAVA_BIN=/scratch/<<version>>/jre/bin`
	For example:
	`PATH=/usr/java/jre1.8.0_221/bin:$ORACLE_HOME/bin:$PATH`

In the `.profile` file, set the Java tool options for all versions JDK 11.0.20 and above updates	`JAVA_TOOL_OPTIONS=" -Djdk.util.zip.disableZip64ExtraFieldValidation=true"` `export JAVA_TOOL_OPTIONS`
Enable unlimited cryptographic policy for Java.	For more information, see the *Enabling Unlimited Cryptographic Policy* section from the OFS Analytical Applications Infrastructure Administration Guide.

5.8.2.2 Oracle Database Server and Client Settings

The following table displays the Oracle Database server and client settings required for installation.

Table 17: Oracle Database Server and Client Settings

Description	Example Value
In the `.profile` file, set TNS_ADMIN pointing to the appropriate `tnsnames.ora` file.	`TNS_ADMIN=$HOME/tns`
In the `.profile` file, set ORACLE_HOME pointing to the appropriate Oracle Client installation.	`ORACLE_HOME=/scratch/oraofss/app_client18c/product/ 18.0.0/client_1`
In the `.profile` file, set PATH to include the appropriate `$ORACLE_HOME/bin` path.	`PATH=$JAVA_HOME/bin:$ORACLE_HOME/bin`
Add an entry in the tnsnames.ora file. Processing Server	Ensure that an entry (with SID/ SERVICE NAME) is added in the tnsnames.ora file.

5.8.2.3 TNS entries in the TNSNAMES.ORA file for Non-TCPS and TCPS

The section includes information about the TNS entries in the TNSNAMES.ORA file for Non-TCPS and TCPS.

5.8.2.3.1 Non-TCPS

The following table displays the Non-TCPS settings required for installation.

Table 18: TNS entries in the TNSNAMES.ORA file for Non-TCPS

Description	Example Value
Ensure that an entry (with SID/ SERVICE NAME) is added in the `tnsnames.ora` file on the OFSAA server.	`<SID_NAME> = DESCRIPTION =(ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = <HOST_NAME>.in.oracle.com)(PORT = 1521)))(CONNECT_DATA = (SERVICE_NAME = <SID_NAME>)))<ATOMIC_SCHEMA_NAME> = (DESCRIPTION =(ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = <HOST_NAME>.in.oracle.com)(PORT = 1521)))(CONNECT_DATA = (SERVICE_NAME = <SID_NAME>)))`

```
<SID NAME> =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = <HOST NAME>)(PORT = <PORT NUMBER>))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = <SID NAME>)
    )
  )

<ATOMICSCHEMANAME> =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = <HOST NAME>)(PORT = <PORT NUMBER>))
    )
    (CONNECT_DATA =
```

```
    (SERVICE_NAME = <SID NAME>)
  )
)
```

> **NOTE** The ATOMIC SCHEMA NAME must be the same as defined in the `OFS_<App Pack>_SCHEMA_IN.xml` file.

5.8.2.3.2 TCPS

The following table displays the TCPS settings required for installation.

Table 19: TNS entries in the TNSNAMES.ORA file for TCPS

Description	Example Value
Ensure that an entry (with SID/ SERVICE NAME) is added in the `tnsnames.ora` file on the OFSAA server.	`<SID_NAME> = DESCRIPTION =(ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCPS)(HOST = <HOST_NAME>.in.oracle.com)(PORT = 1521)))(CONNECT_DATA = (SERVICE_NAME = <SID_NAME>)))<ATOMIC_SCHEMA_NAME> = (DESCRIPTION =(ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCPS)(HOST = <HOST_NAME>.in.oracle.com)(PORT = 1521)))(CONNECT_DATA = (SERVICE_NAME = <SID_NAME>)))(security=(ssl_server_cert_dn=CN=<HOST_NAME>))))`
Ensure that an entry (with WALLET_HOME and wallet parameters) is added in the `sqlnet.ora` file on the OFSAA server must be the same as the Oracle database server running with TCPS.	`NAMES.DIRECTORY_PATH= (TNSNAMES, EZCONNECT)WALLET_LOCATION = (SOURCE = (METHOD = FILE) (METHOD_DATA = (DIRECTORY = <PATH TO WALLET DIRECTORY>)))SQLNET.WALLET_OVERRIDE = TRUE SSL_CLIENT_AUTHENTICATION = FALSE SQLNET.AUTHENTICATION_SERVICES = (TCPS,NTS,BEQ)SSL_CIPHER_SUITES = (SSL_RSA_WITH_AES_256_CBC_SHA, SSL_RSA_WITH_3DES_EDE_CBC_SHA)`

```
<SID NAME> =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCPS)(HOST = <HOST NAME>)(PORT = <PORT NUMBER>))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = <SID NAME>)
(security=(ssl_server_cert_dn=CN=<HOST NAME>))
    )
  )

<ATOMICSCHEMANAME> =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCPS)(HOST = <HOST NAME>)(PORT = <PORT NUMBER>))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = <SID NAME>)
```

```
(security=(ssl_server_cert_dn=CN=<HOST NAME>))     )
  )
```

> **NOTE** The ATOMIC SCHEMA NAME must be the same as defined in the `OFS_<App Pack>_SCHEMA_IN.xml` file, which also includes prefix without underscore. For example, DEVOFSAAATM.

5.8.2.4 Time Zone Settings

In the `.profile` file, set the Time Zone parameter to indicate the time zone of your region or location.

Table 20: Time Zone Settings

Description	Example Value
Time Zone	TZ=Asia/Calcutta

5.9 Download the OFS LLFP Application Pack Installer and Erwin Data Model

To download the OFS LLFP Installer Release v8.1.2.0.0, follow these steps: (Bug Number: **33813714**)

1. Log in to My Oracle Support and search for **33813714** under the **Patches & Updates** tab.
2. Download the installer archive and copy (in Binary mode) to the download directory that exists in the OFS LLFP installation setup.

> **NOTE** Download the OFS LLFP Erwin Data Model patch **33869224** from My Oracle Support. You can search for the patch number in the **Patches and Updates** tab and download it.

5.10 Extract the Software

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

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 an unzip utility to extract the contents of the downloaded archive, skip this step.
2. Uncompress the unzip installer file using the following command:

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

   > **NOTE** If an error message: *uncompress: not found [No such file or directory]* is displayed, contact your UNIX administrator.
3. Assign execute (751) to the file using the following command:

   ```
   chmod 751 unzip_<OS>
   ```

For example `chmod 751 unzip_sparc`

4. Extract the contents of the Oracle Financial Services Loan Loss Forecasting and Provisioning Application Release 8.1.2.0.0 installer archive file in the download directory using the following command:

   `unzip OFS_LLFP_PACK.zip`

5. Extract the following one-off patch in the download directory:

   31545589

6. Extract the mandatory patches mentioned in the Mandatory Patches section. See the **Readme** packaged with the patch for further instructions on how to install the patch.

7. Navigate to the download directory and assign execute permission to the installer directory using the following command:

   `chmod -R 750 OFS_LLFP_Pack.`

8. For Linux version 8, rename the **linux7** folder as **linux8** inside the installer folder `OFS_LLFP_PACK/OFS_LLFP/bin/ficdb` and then trigger the installation.

6 Installation

This section provides detailed steps to install the Oracle Financial Services Loan Loss Forecasting and Provisioning Application.

> **ATTENTION** You must apply the OFS AAI patch **32530173** in the case of Pack-on-Pack v8.1.2.0.0 installation. Do not apply this patch, if you have already applied it as part of another application pack's installation.

Topics:

6.1 Installation Checklist

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

Table 21: Installation Checklist

Sl. No.	Installation Activity
1	Configure the `OFS_LLFP_SCHEMA_IN.xml` file.
2	Execute the Schema Creator Utility in Online, Offline, modes, and verify the log file.
3	Configure the `OFSAAI_InstallConfig.xml` file.
4	Trigger the application installation.
5	Verify the installation logs.

6.2 Configure the OFS_LLFP_PACK.xml File

The `OFS_LLFP_PACK.xml` file contains details on the various products that are packaged in the OFS LLFP Application. This section details the various tags and parameters available in the file and the values that must be updated. Before installing the LLFP Application, it is mandatory to update this file.

> **NOTE** Enable licenses as per your Service Level Agreement (SLA).

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

9. Navigate to the `OFS_LLFP_PACK/conf` directory.

10. Open the `OFS_LLFP_PACK.xml` file in a text editor.
11. Configure the `OFS_LLFP_PACK.xml` file as mentioned in the following table.

Table 22: OFS_LLFP_PACK.xml File Parameters

Tag Name or Attribute Name	Description	Mandatory (Y or N)	Comments
APP_PACK_ID	Unique Application Pack Identifier	Y	Unique Seeded Value. Do not modify this value.
IS_OPT_INSTALL VALUE="TRUE"	Unique Application Entry	Y	Unique Seeded Value. Do not modify this value.
APP_PACK_NAME	Unique Application Pack Name	Y	Unique Seeded Value. Do not modify this value.
APP_PACK_DESCRIPTION	Unique Application Pack Description	Y	Unique Seeded Value. Do not modify this value.
VERSION	Unique release version	Y	Unique Seeded Value. Do not modify this value.
APP	Unique Application Entries	Y	Unique Seeded Value. Do not modify this value.
APP_ID	Unique Application Identifier	Y	Unique Seeded Value. Do not modify this value.
APP_ID/ PREREQ	Prerequisite Application or Product	Y	Unique Seeded Value. For most applications, the prerequisite that is set is OFSAAAI. For all other applications, the default Application ID is set to none. You can set it for the applications you want to install. Do not modify this value.
APP_ID/ DEF_SEL_FLAG	Default Selected Flag	Y	In all Application Packs, Infrastructure requires this value to be set to YES. Do not modify this value.

Tag Name or Attribute Name	Description	Mandatory (Y or N)	Comments
APP_ID/ ENABLE	Enable Application or Product	Y	• Default YES for Infrastructure • NO for Others Set this attribute-value to YES against every APP_ID which is licensed and must be enabled for use. **NOTE:** The Application or Product cannot be disabled once enabled. However, an Application or Product which is not enabled during installation can be enabled later through the Administration UI.
APP_NAME	Unique Application or Product Name	Y	Unique Seeded Value. Do not modify this value.
APP_DESCRIPTION	Unique Application or Product Name	Y	Unique Seeded Value. Do not modify this value.
VERSION	Unique release version	Y	Unique Seeded Value. Do not modify this value.

6.3 Configure the Schema Creator Utility

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

Configure and execute the schema creator utility before installing the OFSAA Application.

Topics:

6.3.1 Prerequisites

Ensure you have the following before configuring the Schema Creator Utility:

- Oracle User ID and Password with SYSDBA privileges
- JDBC Connection URL for RAC or Non-RAC database
- The HOSTNAME or IP of the server on which OFSAA is being installed.
- It is recommended to set the PGA_AGGREGATE_LIMIT database-parameter value sufficiently when Oracle 18c or 19c is installed.
- You must add a TNS entry before the installation.

6.3.2 Configure the Schema Creator Utility for RDBMS Installation

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

You can configure the following types of schemas:

- **CONFIG**: This schema holds the entities and other objects required for OFSAA setup configuration information. Only one CONFIG schema per OFSAA instance is permitted.
- **ATOMIC**: This schema holds the data model entities. One ATOMIC schema is attached to one Information Domain. You can have multiple ATOMIC schemas for a single OFSAA instance.
- **SANDBOX**: This schema holds the entities and other objects required for OFSAA setup configuration information. You can have multiple sandbox schemas per OFSAA instance.

6.3.2.1 Configure the OFS_LLFP_SCHEMA_IN.xml File

This section describes how to create database schemas, objects within schemas, and assign appropriate grants.

Specify the database schemas required for the installation in the `OFS_LLFP_SCHEMA_IN.xml` file. Update the values of the various tags and parameters available in this file before executing the schema creator utility.

This file must be configured only if the database is RDBMS.

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

1. Log in to the system as a non-root user.
2. Navigate to the `OFS_LLFP_PACK/schema_creator/conf` directory.
3. Edit the `OFS_LLFP_SCHEMA_IN.xml` file using a text editor.

Figure 9: Sample OFS_LLFP_SCHEMA_IN.xml File

```
<APPPACKSCHEMA>
  <APP_PACK_ID>OFS_LLFP_PACK</APP_PACK_ID>
  <IS_TCPS>FALSE</IS_TCPS>
  <JDBC_URL></JDBC_URL>
  <JDBC_DRIVER>oracle.jdbc.driver.OracleDriver</JDBC_DRIVER>
  <HOST></HOST>
  <SETUPINFO NAME="DEV" PREFIX_SCHEMA_NAME="N" />
  <PASSWORD APPLYSAMEFORALL="Y" DEFAULT="" />
  <!--
  <ADV_SEC_OPTIONS>
    <OPTION NAME="TDE" VALUE="TRUE"/>
    <OPTION NAME="DATA_REDACT" VALUE="TRUE" />
  </ADV_SEC_OPTIONS>
  <TABLESPACES>
    <TABLESPACE NAME="OFS_AAI_TBSP1" VALUE="TBS_USERS_1" DATAFILE="/scratch/ora12c/app/oracle/oradata/ENCDB/datafile/tbs_users1.dbf"
                SIZE="500M" AUTOEXTEND="OFF" ENCRYPT="ON" />
    <TABLESPACE NAME="OFS_AAI_TBSP2" VALUE="TBS_USERS_2" DATAFILE="/scratch/ora12c/app/oracle/oradata/ENCDB/datafile/tbs_users2.dbf"
                SIZE="500M" AUTOEXTEND="OFF" ENCRYPT="OFF" />
  </TABLESPACES>
  -->
  <SCHEMAS>
      <SCHEMA TYPE="CONFIG" NAME="ofsaaconf" PASSWORD="" APP_ID="OFS_AAI" DEFAULTTABLESPACE="USERS" TEMPTABLESPACE="TEMP" INFODOM="" QUOTA="" />
      <SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_AAAI" APP_GRP="1" DEFAULTTABLESPACE="USERS" TEMPTABLESPACE="TEMP" INFODOM="" QUOTA="" />
      <SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_LLFP" APP_GRP="1" DEFAULTTABLESPACE="USERS" TEMPTABLESPACE="TEMP" INFODOM="" QUOTA="" />
      <SCHEMA TYPE="SANDBOX" NAME="ofsasbx1" PASSWORD="" APP_ID="OFS_LLFP" DEFAULTTABLESPACE="USERS" TEMPTABLESPACE="TEMP" INFODOM="LLFPSBXINFO" QUOTA="" SUB-TYPE
  </SCHEMAS>
</APPPACKSCHEMA>
```

4. Configure the values as mentioned in the following table and save the file.

> **NOTE** On successful execution of the utility, the passwords entered in the `OFS_LLFP_SCHEMA_IN.xml` file are nullified.

Table 23: OFS_LLFP_SCHEMA_IN.xml File Parameters

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	OFS_LLFP_PACK	Do not modify this value.
<IS_TCPS>	Enter if the TCPS configuration is required.	Y	Seeded, with FALSE as the default value.	Modify this to TRUE if you require the installer to uptake the configuration.
<JDBC_URL>	Enter the JDBC URL. **NOTE**: You can enter the following JDBC URL types: 1. RAC/ NON-RAC enabled database connectivity URL. 2. TCPS RAC/ NON-RAC enabled database connectivity URL provided the <IS_TCPS> tag value is TRUE. 3. Wallet-enabled JDBC URL.	Y	Example: jdbc:oracle:thin:@< DBSERVER IP/ HOST/ IP>:<PORT>:<SID> or jdbc:oracle:thin:@//[HOS T][:PORT]/ SERVICE or jdbc:oracle:thin:@(DESCRI PTION=(ADDRESS_ LIST=(ADDRESS=(PROT OCOL=TCP)(HOST=[HO ST])(port=[PORT]))(ADD RESS=(PROTOCOL=TCP) (HOST=[HOST])(PORT=[PORT]))(LOAD_ BALANCE=yes)(FAILOV ER=yes))(CONNECT_ DATA=(SERVICE_ NAME=[SERVICE]))) For example: jdbc:oracle:thin:@//dbhos t.server.com:1521/service 1 or jdbc:oracle:thin:@//dbsho st.server.com:1521/scan-1 or jdbc:oracle:thin:@(DESCRI PTION=(ADDRESS_ LIST=(ADDRESS=(PROT OCOL=TCP)(HOST=dbhost1.server.com) (port=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=dbho st2.s erver.com)(PORT=1521))(LOAD_BALANCE=yes)(FAILOV ER=yes))(CONNECT_ DATA=(SERVICE_NAME=service1))) or <JDBC_URL>jdbc:oracle:thin:@(DESCRIPTION = (ADDRESS = (PROTOCOL =TCPS)(HOST = dbhost.server.com)(PORT = 2484)) (CONNECT_DATA	Ensure to add an entry (with SID/ SERVICE NAME) in the `tnsnames.ora` file on the OFSAA server. The entry must match with the SID/ SERVICE NAME used in the JDBC URL. Ensure that you have configured: 4. The correct Oracle Wallet with the credentials for stored Sys, Config, and Atomic Users. 5. The JDBC URL as follows: `jdbc:oracle:thin:/@` For more information on how to configure Oracle Wallets for OFSAA Installation and Data Sources, see the OFS Analytical Applications Infrastructure Administration Guide.

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
			=(SERVER = DEDICATED) (SERVICE_NAME=SERVICEID))(security=(ssl_server_cert_dn=CN=dbhost))) or jdbc:oracle:thin:/@	
<JDBC_DRIVER>	The name of the driver is seeded by default.	Y	Example: oracle.jdbc.driver.OracleDriver	Only JDBC Thin Driver is supported. Do not modify this value.
<HOST>	Enter the Hostname or IP Address of the system on which you are installing the OFSAA components.	Y	Hostname or IP Address	
<SETUPINFO>/PREFIX_SCHEMA_NAME	Identifies whether the value specified in <SETUPINFO>/NAME attribute must be prefixed to the schema name.	N	YES or NO	The default value is YES.
<SETUPINFO>/NAME	Enter the acronym for the type of implementation. This information is displayed on the OFSAA Home Page. On executing the schema creator utility, this value is prefixed with each schema name. For example: dev_ofsaaconf, uat_ofsaatm.	Y	Seeded, with REG PREFIX_SCHEMA_NAME="N as the default value. Accepts strings with a minimum length of two and a maximum of four. Example: DEV, SIT, PROD	This name appears on the OFSAA Landing Page as "Connected To: xxxx". The schemas that are created get this prefix. For example, dev_ofsaaconf, uat_ofsaaconf, and so on.
<PASSWORD>/ DEFAULT*	Enter the password if you want to set a default password for all schemas. You also must set the APPLYSAME-FORALL attribute as Y to apply the	N	Seeded, with oracle123 as the default value. The maximum length allowed is 30 characters. Special characters are not allowed.	On successful execution of the utility, the entered password in the `OFS_<APP PACK>_SCHEMA_IN.xml` file is cleared.

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
	default password for all the schemas.			
<PASSWORD>/ APPLYSAMEFORALL	If you have entered Y in APPLYSAME-FORALL attribute and also have specified individual passwords for all the schemas, then the specified individual passwords will take precedence.	Y	Default N Permissible: Y or N. Enter Y if you want to apply the password specified in the DEFAULT attribute for all the schemas. If you enter as N, you must provide individual passwords for all schemas.	Setting this attribute value is mandatory if the DEFAULT attribute is set.
<SCHEMA>/TYPE	The different types of schemas that are supported in this release are ATOMIC and CONFIG. By default, the schemas types are seeded based on the Application Pack.	Y	ATOMIC or CONFIG	Only One CONFIG schema can exist in the file. Do not edit this attribute value. This schema identifies as the CONFIGURATION schema that holds the OFSAA setup detains and other Metadata information. Multiple ATOMIC schemas can exist in the file.
<SCHEMA>/NAME	The schemas' names are seeded based on the Application Pack by default. You can edit the schema names if required. The Schema Name will have a prefix of the SETUPINFO/ NAME attribute.	Y	Seeded, with OFSCONFIG as the default value. The permissible length is 15 characters and only alphanumeric characters are allowed. No special characters are allowed except underscore '_'.	SETUPOINFO/NAME attribute value is prefixed to the schema name being created. For example, if a name is set as 'ofsaatm' and setupinfo as 'uat', then the schema being created is 'uat_ofsaatm'.
<SCHEMA>/PASSWORD	Enter the password of the schema to be created. If this attribute is left blank, then the password specified in the <PASSWORD>/DEFAULT	N	The maximum length allowed is 30 characters. Special characters are not allowed.	It is mandatory to enter the password if you have set the <PASSWORD>/ APPLYSAMEFORALL attribute as N.

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
	attribute is applied as the Schema Password.			
<SCHEMA>/APP_ID	The Application ID is seeded based on the Application Pack by default.	Y	Unique seeded values are: OFS_AAI OFS_LLFP	Identifies the Application or Product for which the schema is being created. Do not edit this attribute value. Do not modify this value.
<SCHEMA>/DEFAULTTABLESPACE	Enter the available default tablespace for DB User. If this attribute is left blank, then USERS is set as the default tablespace.	N	Seeded, with USERS as the default value. 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. If this attribute is left bank, TEMP is set as the default tablespace.	N	Seeded, with TEMP as the default value. Permissible Any existing valid temporary tablespace name.	Modify this value to associate any valid tablespace with the schema.
<SCHEMA>/QUOTA	Enter the quota to be set on the DEFAULTTABLESPACE attribute for the schema or user. Minimum: 500M or Unlimited on default Tablespace.	N	Permissible values are a minimum of 500M or UNLIMITED as the default value. 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	N	Seeded, with OFSINFDOM as the default value. Permissible length is 16 characters and only alphanumeric characters are allowed. No special characters are allowed.	

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
	Name based on the Application Pack if no value is specified for this attribute.			
<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 in the comments for the <TABLESPACE>/ENCRYPT tag.
<ADV_SEC_OPTIONS>/ TDE	Tag to enable or disable TDE.	N	The 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 or disable the Data Redaction feature.	N	The default is FALSE. To enable DATA_REDACT, set this to TRUE	Ensure this tag is not commented if you have uncommented<ADV_SEC_OPTIONS>
<TABLESPACES>	Parent tag to hold <TABLESPACE> elements	N	NA	Uncomment the tag and edit. ONLY if tablespaces are to be created as part of the installation. For details, see the example following the table. When TDE is TRUE in ADV_SEC_OPTIONS, then the <TABLESPACES> tag must be present in the XML file.
<TABLESPACE>/NAME	Logical Name of the tablespace to be created.	Y		Name, if specified, must be referred in the <SCHEMA DEFAULTTABLESPACE= "##NAME##"> attribute. Note the ## syntax.
<TABLESPACE>/VALUE	Physical Name of the tablespace to be created.	Y	NA	Value, if specified, is the actual name of the TABLESPACE.
<TABLESPACE>/DATAFILE	Specifies the location of the data file on the server.	Y	NA	Enter the absolute path of the file to be created.

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
<TABLESPACE>/AUTOEXTEND	Specifies if the tablespace must be extensible or have a hard limit.	Y	ON or OFF	Set to ON to ensure that the tablespace does not run out of space when full.
<TABLESPACE>/ENCRYPT	Specifies if the tablespace(s) must be encrypted using TDE	Y	ON or OFF	Set to ON to ensure that the tablespaces when created are encrypted using TDE. **NOTE**: Encryption of tablespaces requires enabling Transparent Data Encryption (TDE) on the Database Server. **Example**: The following snippet shows that TDE is enabled and hence the tablespace is shown with encryption ON. <ADV_SEC_OPTIONS> <OPTION NAME="TDE" VALUE="FALSE"/> <OPTION NAME="DATA_REDACT" VALUE="FALSE" /> </ADV_SEC_OPTIONS> <TABLESPACES> <TABLESPACE NAME="OFS_AAI_TBSP_1" VALUE="TS_USERS1" DATAFILE="/scratch/ora19c/app/oracle/oradata/OFSPQA19cDB/ts_users1.dbf" SIZE="500M" AUTOEXTEND="ON" ENCRYPT="ON" /> <TABLESPACE NAME="OFS_AAI_TBSP_2" VALUE="TS_USERS2" DATAFILE="/scratch/ora19c/app/oracle/oradata/OFSPQA19cDB/ts_users2.dbf" SIZE="500M" AUTOEXTEND="ON" ENCRYPT="ON" /> </TABLESPACES>

Tag Name/Attribute Name	Description	Mandatory (Y/ N)	Default Value/ Permissible Value	Comments
				<SCHEMAS> <SCHEMA TYPE="CONFIG" NAME="ofsaaconf" PASSWORD="" APP_ID="OFS_AAI" DEFAULTTABLESPACE="##OFS_AAI_TBSP_1##" TEMPTABLESPACE="TEMP" QUOTA="unlimited"/> <SCHEMA TYPE="ATOMIC" NAME="ofsaaatm" PASSWORD="" APP_ID="OFS_AAAI" DEFAULTTABLESPACE="##OFS_AAI_TBSP_2##" TEMPTABLESPACE="TEMP" QUOTA="unlimited" INFODOM="OFSAAAIINFO"/> </SCHEMAS>

6.4 Execute the Schema Creator Utility

Depending on the option selected, select the appropriate schema creator utility execution option.

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

After creating the schema, proceed to Configure the OFSAAI_InstallConfig.xml File.

6.4.1 Execute the Schema Creator Utility in Offline Mode

In the Offline mode, the utility generates an SQL script with all the required DDLs for Users, Objects, and Grants. This script must 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, an SYSDBA user can execute the script file manually. To run the OFSAA Application Pack installer in Silent mode, it is mandatory to execute the schema creator utility with the -s option.

To execute the utility in Offline mode, you must have a database user with the following 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

> **NOTE** Explicit Grants to the user are required. Grants assigned through Roles are not supported.

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

1. Log in to the system as a non-root user.
2. Navigate to the following path: `OFS_LLFP_PACK/schema_creator/bin`.
3. Execute the `osc.sh` file using the following command:

   ```
   ./osc.sh -s -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` to proceed.

6. Enter the DB Username with SELECT privileges.
7. Enter the User Password.
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 or N).
9. Enter `Y` to start the script generation. The following message is displayed:

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

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

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

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

10. Navigate to the `OFS_LLFP_PACK/schema_creator` directory.
11. Log in to SQLPLUS as 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` directory to a remote server and execute the `sysdba_output_scripts.sql` file, after providing appropriate execute permissions.
13. Make a TNS entry for the new users created. For details, see Add the TNS entries in TNSNAMES.ORA file section.

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

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

After creating the schema, proceed to Configure the OFSAAI_InstallConfig.xml File section.

6.4.2 Execute the Schema Creator Utility in Online Mode

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

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

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

1. Edit the file `OFS_LLFP_PACK/schema_creator/conf/OFS_LLFP_SCHEMA_IN.xml` in a text editor. See Configure the OFS_LLFP_SCHEMA_IN.xml File section for values to modify in the XML file.
2. Execute the utility with -s option. For Example: `./osc.sh -s`
3. Make a TNS entry for the new users created. For details, see Add the TNS entries in TNSNAMES.ORA file.

   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).
4. Enter `Y` to proceed.
5. The following message is displayed:

   You have chosen to install this application pack on INFODOM "<INFODOM_NAME>". Do you wish to proceed? (Y/y or N/n).
6. Enter `Y` to proceed.
7. After Schema creation is successful, proceed to Configure the OFSAAI_InstallConfig.xml File.

As a result of this task is the `OFS_LLFP_SCHEMA_OUTPUT.XML` file is generated. Do not modify this file.

6.4.3 Execute the Schema Creator Utility in TCPS Mode

If you intend to run the OFS LLFP Installer in TCPS mode, it is mandatory to execute the schema creator utility with the -s option and in online mode.

Prerequisite:

Configure the Oracle Wallet with trusted certificates between the DB Server with TCPS configured and the DBClient to enable communication through the SSL protocol.

> **NOTE** You can also use Oracle Wallet to support OFSAA for storing Config and Atomic Schema credentials. To add OFSAA Config and Atomic Schema credentials to Oracle Wallet, see the OFS Analytical Applications Infrastructure Administration Guide.
>
> For example, all the database utilities such as sqlplus, tnsping, and sqlldr must work between the Client and the Server.

To execute the utility, follow these steps:

1. Edit the file `OFS_LLFP_PACK/schema_creator/conf/OFS_LLFP_SCHEMA_IN.xml` in the text editor. See the tables in the Configure the OFS_LLFP_SCHEMA_IN.xml File section for values to modify in the XML file.
2. Execute the utility with -s option.

   `./osc.sh -s TCPS <WALLET_HOME>`

   For example: `$ ./osc.sh -s TCPS /scratch/oraofss/wallet`

Figure 10: Schema Creation in the TCPS Mode

```
/scratch/aai81ssl>cd /scratch/aai81ssl/OFS_AAAI_PACK/schema_creator/bin
/scratch/aai81ssl/OFS_AAAI_PACK/schema_creator/bin>./osc.sh TCPS /scratch/aai81ssl/wallet
Error: - Please provide proper arguments
/scratch/aai81ssl/OFS_AAAI_PACK/schema_creator/bin>./osc.sh -s TCPS /scratch/aai81ssl/wallet
-S
TCPS
/scratch/aai81ssl/wallet
-Doracle.net.tns_admin=/scratch/aai81ssl -Doracle.net.wallet_location=(SOURCE=(METHOD=file)(METHOD_DATA=(DIRECTORY=/scratc
h/aai81ssl/wallet))) -Doracle.net.ssl_server_dn_match=true -Djavax.net.ssl.trustStoreType=SSO -Djavax.net.ssl.trustStore=c
wallet.sso -Doracle.net.ssl_version=1.2
exporting wallet FALSE
##Entries created by schema creator ##
============================================================
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/N):
Y
```

3. The following message is displayed:

   Triggering the utility in ONLINE mode will execute the DDLS directly on the Database. Do you wish to proceed? (Y/y or N/n).

4. Enter `Y` to proceed.
5. The following message is displayed:

   You have chosen to install this application pack on "<ATOMIC_SCHEMA_NAME>" ATOMIC schema. Do you wish to proceed? (Y/y or N/n).

Figure 11: Schema Creation in the TCPS Mode – Install on Atomic Schema

```
0430: 58 8D 05 B2 02 0F 2D 01   0C 00 00 00 00 00 00 04  X.....-.........
0440: 01 01 02 23 E4 00 02 05   7B 00 00 01 0C 01 0E 03  ...#............
0450: 00 00 00 00 00 00 00 00   00 00 00 00 10 00 01 01  ................
0460: 00 00 00 00 02 05 7B 00   19 4F 52 41 2D 30 31 34  ........ORA-014
0470: 30 33 3A 20 6E 6F 20 64   61 74 61 20 66 6F 75 6E  03: no data foun
0480: 64 0A 61 1D D5 6D 51 10   60 C1 A6 85 B4 88 52 0F  d.a..mQ.`.....R.
0490: A4 F8 CA 1B 2C F2 09 09   09 09 09 09 09 09 09 09  ....,...........
You have chosen to install this Application Pack on "t81s_ofsaaatm" ATOMIC schema. Do you want to proceed? (Y/N)
Y
```

6. Enter `Y` to proceed.

Figure 12: Schema Creation in the TCPS Mode

```
0030: 05 02 24 2C 00 00 00 00   01 10 00 2B 00 00 00 00  ..$,.......+....
0040: 00 00 00 00 00 00 00 00   58 00 01 01 00 00 00 00  ........X.......
0050: 00 00 EE 63 D9 C7 F0 3C   A2 23 E1 34 68 01 68 96  ...c...<.#.4h.h.
0060: 4F 69 FD 59 9F 23 09 09   09 09 09 09 09 09 09 09  Oi.Y.#..........
Grants creation scripts execution completed...
================================================================================
                        Schemas Creation Completed
================================================================================
Schema Creator executed Successfully.Please proceed with the installation.
/scratch/aai81ssl/OFS AAAI PACK/schema creator/bin>
```

The result of this task is that the `OFS_LLFP_SCHEMA_OUTPUT.XML` file is generated. Do not modify this file.

7. After Schema creation is successful, proceed to Configure the OFSAAI_InstallConfig.xml File section.

6.4.4 Execute the Schema Creator Utility while Installing Subsequent Applications

> **NOTE** If upgrading the App on App, you must provide the same schema details you provided earlier

When executing the schema creator utility during the installation of a subsequent application, you can choose to install the pack either on the same Information Domain and the same Atomic Schema of the existing application pack or on a new Information Domain and the same Atomic Schema of the existing application pack. You can execute the schema creator utility either in Online or Offline mode.

, The following is an example of executing the schema creator utility while installing OFS Loan Loss Forecasting and Provisioning over an existing Application Pack in an offline mode:

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

   After successful schema creation, execute the `sysdba_output_scripts.sql` file

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

3. The utility identifies the application packs that are already installed on the current OFSAA setup and displays the following on the console:
   - Atomic schema of the existing application pack
   - Information Domain Name of the existing pack
   - List of installed application packs
4. Enter Y or y to start the schema creation.
5. If you enter N or n, the list of Atomic Users is displayed.
6. Select the Atomic User on which you want to install the application pack.
7. Make a TNS entry for the new users created. For details, see Add the TNS entries in TNSNAMES.ORA file section.

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

   Success. Please proceed with the installation.

NOTE

1. See the log file in the `OFS_LLFP_PACK/schema_creator/logs` directory for the execution status.
2. See the log file `sysdba_output_scripts.log` for the execution status if executed in offline mode. The log will be empty if there are no errors in the execution.
3. If there are any errors, contact My Oracle Support.

6.5 Configure the OFSAAI_InstallConfig.xml File

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

1. Navigate to the `OFS_LLFP_PACK/OFS_AAI/conf/` directory.
2. Open the `OFSAAI_InstallConfig.xml` file in a text editor.
3. Configure the `OFSAAI_InstallConfig.xml` file as mentioned in the following table.

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

Table 24: OFSAAI_InstallConfig.xml file Parameters

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 are deployed. Set the following numeric value depending on the type of web application server: • Apache Tomcat = 1 • IBM WebSphere Application Server = 2 • Oracle WebLogic Server = 3 For example, `<InteractionVariable name="WEBAPPSERVERTYPE">3</InteractionVari able>`	Yes
InteractionGroup name="OFSAA Infrastructure Server Details"		
DBSERVER_IP	Identifies the hostname or IP address of the system on which the Database Engine is hosted. **NOTE:** For RAC Database, the value must be NA. For example, `<InteractionVariable name="DBSERVER_IP">14.15.16.17</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	Yes

InteractionVariable Name	Significance and Expected Value	Mandatory
	NOTE: The `Oracle_SID` value must be the same as it is mentioned in `JDBC_URL`. For example, `<InteractionVariable name="ORACLE_SID/SERVICE_NAME">ofsaser</InteractionVariable>`	
ABS_DRIVER_PATH	Identifies the directory where the JDBC driver (`ojdbc<version>.jar`) exists. This is typically the `$ORACLE_HOME/jdbc/lib` directory. For example, `<InteractionVariable name="ABS_DRIVER_PATH">">/oradata6/revwb7/ oracle </InteractionVariable>` **NOTE:** See Hardware and Software Requirements to identify the correct `ojdbc<version>.jar` file version to be copied.	Yes
InteractionGroup name="OLAP Detail"		
OLAP_SERVER_IMPLEMENTATION	Identifies whether the OFSAA Infrastructure OLAP component must be configured. It depends on whether you intend to use the OLAP feature. The following numeric value must be set depending on your choice: • YES: 1 • NO: 0 **NOTE:** If the value for `OLAP_SERVER_IMPLEMENTATION` is set to 1, the installer checks if the following environment variables are set in the `.profile` file: • ARBORPATH • HYPERION_HOME • ESSBASEPATH	No
InteractionGroup name="SFTP Details"		
SFTP_ENABLE	Identifies if the SFTP (Secure File Transfer Protocol) feature is to be enabled. The following numeric value must be set depending on your choice: • SFTP: 1 • FTP: 0	Yes
NOTE: The default value for `SFTP_ENABLE` is **1**, which signifies that SFTP is used. Oracle recommends using SFTP instead of FTP because SFTP is more secure. However, you can ignore this recommendation and use FTP by setting `SFTP_ENABLE` to **0**. You can change this selection later from the OFSAAI administration interface. Set `SFTP_ENABLE` to **-1** to configure ftpshare and weblocal path as a local path mounted for the OFSAAI server.		
FILE_TRANSFER_PORT	Identifies the port used for the file transfer service. The default value specified is **22** (SFTP). Specify the value as **21** or any other PORT value if the value for `SFTP_ENABLE` is **0**. For example, `<InteractionVariable name="FILE_TRANSFER_PORT">21</InteractionVariable>`	Yes
InteractionGroup name="Locale Detail"		

InteractionVariable Name	Significance and Expected Value	Mandatory
LOCALE	Identifies the locale information to be used during the installation. This release of the OFSAA Infrastructure supports only US English. For example, `<InteractionVariable name="LOCALE">en_US</InteractionVariable>`	Yes
InteractionGroup name=”OFSAA Infrastructure Communicating ports" **NOTE:** The following ports are used internally by the various OFSAA Infrastructure services. The default values mentioned are set in the installation. If you intend to specify a different value, update the parameter value accordingly, ensure that the port value is in the range 1025 to 65535, and the respective port is enabled.		
JAVAPORT	9999	Yes
NATIVEPORT	6666	Yes
AGENTPORT	6510	Yes
ICCPORT	6507	Yes
ICCNATIVEPORT	6509	Yes
OLAPPORT	10101	Yes
MSGPORT	6501	Yes
ROUTERPORT	6500	Yes
AMPORT	6505	Yes
InteractionGroup name="Web Details" **NOTE:** If the value for `HTTPS_ENABLE` is set to **1**, ensure that you have a valid certificate available from a trusted CA and it is configured on your web application server.		
HTTPS_ENABLE	Identifies whether the UI must be accessed using HTTP or HTTPS scheme. The default value is set to **0**. The numeric value must be set depending on the following options: • YES: 1 • NO: 0 For example, `<InteractionVariable name="HTTPS_ENABLE">0</InteractionVariable>`	Yes
WEB_SERVER_IP	Identifies the HTTP server IP or Hostname or web application server IP or Hostname, to be used to access the UI. This IP is typically the HTTP server IP. If a separate HTTP server is not available, then the value must be Web application server IP or Hostname. For example, `<InteractionVariable name="WEB_SERVER_IP">10.11.12.13</InteractionVariable>` or `<InteractionVariable name="WEB_SERVER_IP">myweb.server.com</InteractionVariable>`	No
WEB_SERVER_PORT	• Identifies the Web Server Port, which is typically 80 for non-SSL if the `HTTPS_ENABLE` variable is 0 and 443 for SSL if the	No

InteractionVariable Name	Significance and Expected Value	Mandatory
	HTTPS_ENABLE variable is 1. If a separate HTTP Server exists, the port value must be the value configured for the Web Server. For example, <InteractionVariable name="WEB_SERVER_PORT">80</InteractionVariable>	
CONTEXT_NAME	Identifies the web application context name which is used to build the URL to access the OFSAA application. You can identify the context name from the following URL format: <scheme>://<host>:<port>/<context-name>/login.jsp For example: https://myweb:443/ofsaadev/login.jsp For example, <InteractionVariable name="CONTEXT_NAME">ofsaadev</InteractionVariable>	Yes
WEBAPP_CONTEXT_PATH	Identifies the absolute path of the exploded EAR file on the web application server. • For Tomcat, specify the Tomcat directory path till /webapps. For example, /oradata6/ revwb7/tomcat/webapps/. • For WebSphere, specify the WebSphere path as <WebSphere profile directory>/installedApps/<NodeCellName>. • For example, /data2/test//WebSphere/AppServer/profiles/<Profile_Name>/installedApps/aiximfNode01Cell, where aix-imf is the Hostname. • For WebLogic, specify the WebLogic home directory path. For example, /<WebLogic home directory path>/bea/wlserver_10.3	Yes
WEB_LOCAL_PATH	Identifies the absolute path to any directory on the web application server that can hold temporary files, which are uploaded as part of the usage of the application. Set this in the FTPSHARE location. **NOTE:** During a clustered deployment, ensure that this path and the directory are the same on all the nodes.	Yes
InteractionGroup name="Weblogic Setup Details"		
WEBLOGIC_DOMAIN_HOME	Identifies the WebLogic Domain Home. For example, <InteractionVariable name="WEBLOGIC_DOMAIN_HOME">/home/weblogic/bea/user_ projects/domains/mydomain</InteractionVariable>	Yes. Specify the value only if WEBAPPSERVERTYPE is set as 3 (WebLogic)
InteractionGroup name="OFSAAI FTP Details"		
OFSAAI_FTPSHARE_PATH	Identifies the absolute path of the directory that is identified as the file system stage area.	Yes

InteractionVariable Name	Significance and Expected Value	Mandatory
	NOTE: The directory must exist on the same system on which the OFSAA Infrastructure is being installed (can be on a separate mount). The user mentioned in this parameter in the following example must have Read, Write, and Execute (RWX) permission on the directory. For example, `<InteractionVariable name="OFSAAI_FTPSHARE_PATH ">/oradata6/revwb7/ftpshare</ InteractionVariable>`	
OFSAAI_SFTP_USER_ID	The user mentioned in this parameter must have Read, Write, and Execute (RWX) permission on the directory.	Yes
OFSAAI_SFTP_PRIVATE_KEY	Identifies the SFTP private key for OFSAAI. For example, `<InteractionVariable name="OFSAAI_SFTP_PRIVATE_KEY">/home/ofsaapp/.ssh/id_rsa</InteractionVariable>` By default, the value is **NA**, which indicates that, for authentication, you are prompted to enter the password for the user <OFSAAI_SFTP_USER_ID>. For more information on how to generate an SFTP Private key, see the Set Up SFTP Private Key section.	No
OFSAAI_SFTP_PASSPHRASE	Identifies the passphrase for the SFTP private key for OFSAAI. For example, `InteractionVariable name="OFSAAI_SFTP_PASSPHRASE">enter a pass phrase here</InteractionVariable>` By default, the value is **NA**. If the `OFSAAI_SFTP_PRIVATE_KEY` value is given and the `OFSAAI_SFTP_PASSPHRASE` value is **NA**, then the passphrase is identified as empty.	No

6.5.1 Set Up the SFTP Private Key

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

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

```
ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ofsaapp/.ssh/id_rsa):
Created directory '/home/ofsaapp/.ssh'.
Enter passphrase (empty for no passphrase):
Enter the same passphrase again:
```

```
Your identification has been saved in /home/ofsaapp/.ssh/id_rsa.
Your public key has been saved in /home/ofsaapp/.ssh/id_rsa.pub.
The key fingerprint is:
3e:4f:05:79:3a:9f:96:7c:3b:ad:e9:58:37:bc:37:e4
ofsaapp@OFSASERVER:~> cat /home/ofsaapp/.ssh/id_rsa.pub >>
/home/ofsaapp/.ssh/authorized_keys
```

Ensure the following permissions exist for the given directories:

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

6.6 Install the Oracle Financial Services Loan Loss Forecasting and Provisioning Application Pack

ATTENTION Before you begin the installation, configure and execute the following files:

1. Configure the OS File System Settings and Environment Settings in the .profile File
2. Configure OFS_LLFP_SCHEMA_IN.xml
3. Configure the OFSAAI_InstallConfig.xml File (Do not configure this file if an installation of OFSAAI 8.1.2.0.0 already exists.)
4. Execute the Schema Creator Utility

NOTE For enabling Data Redaction, see the Data Protection Implementation in the OFSAA section. For more details, see the Data Redaction section, under Data Security and Data Privacy chapter in the OFS Analytical Applications Infrastructure Administration Guide.

6.6.1 Installation

To install the Oracle Financial Services Loan Loss Forecasting and Provisioning Application Pack, follow these steps:

NOTE The OFS LLFP application contains two Erwin data model files. If you are uploading the model outside of the installation and if ECL computation is required for reinsurance receivables merge the `OFS_LLFP_Datamodel` and `OFS_LLFPI_Datamodel` (Insurance Model) data models before you begin the installation.

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

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

3. Execute the user `.profile` file.
4. Navigate to the `OFS_LLFP_PACK` directory.
5. Rename the `OFS_LLFP_PACK/schema_creator/conf/OFS_LLFP_SCHEMA_IN.xml.Template` file to `OFS_LLFP_PACK/schema_creator/conf/OFS_LLFP_SCHEMA_IN.xml`.
6. Execute the schema creator utility with the `-s` option.
7. Navigate to the path `OFS_LLFP_PACK/conf/OFS_LLFP_PACK.xml`, and enter YES in the enable tag for OFS_AAI and OFS_AAAI.
8. From Release 8.1.0.0.0 onwards, LLFP supports a single `Silent.template` file available in the path `OFS_LLFP_PACK/appsLibConfig/conf`. The `Silent.template` file is populated with default values. Ensure to modify the template in the directory. Create a copy of this file and rename it as `Silent.props`.
9. Ensure to modify the template in the directory. Create a copy of this file and rename the copy as `Silent.props`.
10. Installation is achieved through the properties file (`Silent.props`) that must be updated with proper values, before attempting to install using silent mode. Edit the parameters in the `Silent.props` file and specify the parameters as per the requirements.

    The following table lists all the properties that must be specified:

Table 2: Parameters for the Silent.props File

Property Name	Description of Property	Permissible values	Comments
LOG_MODE	Specify Log Mode	1 = Debug Mode 0 = General Mode [Passwords will not be printed in the log file]	Password will be printed in the log file. The default value is 0.
APPFTP_LOG_PATH	Specify the Infodom Maintenance log path (to be created) for the new Infodom. Ignore if you are doing the installation on an existing information domain.	User Input	

Property Name	Description of Property	Permissible values	Comments
DBFTP_LOG_PATH	Specify the Infodom Maintenance log path (to be created) for the new Infodom. Ignore if you are doing the installation on an existing information domain.	User Input	
UPLOAD_MODEL	Specify whether you want to perform Model Upload.	0 = If you have already performed Model Upload and want to skip the model upload process. 1 = If you want to perform Model Upload.	The default value is 1.
MODEL_TYPE	Specify whether you want to use the released data model or customized data model for the model upload process.	0 = If you want to upload the released data model. 1 = If you want to upload the customized data model.	The default value is 0.
DATAMODEL DM_DIRECTORY	Specify the path (DM_DIRECTORY) and file (DATAMODEL) name for the customized data model. Mandatory only if you want to upload the customized data model i.e you have specified MODEL_TYPE=1.	User Input	
SEGMENT_1_CODE	Specify the LLFP Segment Code.	LLFP809SEG	The default value is LLFP809SEG.
OBI_HOST	Specify the Host Name of the OBIEE Server	User Input	This field should NOT be left blank. If OBIEE is not configured at the moment, ensure that you provide a dummy value in this field
OBI_PORT	Specify the Port Number of the OBIEE Server	User Input	This field should NOT be left blank. If OBIEE is not configured at the moment, ensure that you provide a dummy value in this field.

Property Name	Description of Property	Permissible values	Comments
OBI_CONTEXT	Specify the Context Name of the OBIEE Server	User Input	This field should NOT be left blank. If OBIEE is not configured at the moment, ensure that you provide a dummy value in this field.
ETL_APPSRC_TYPE	Specify if you want to create a new ETL App or Src pair or use an existing one.	0 = If you want to create a new ETL app/src pair. 1 = If you want to use an existing pair.	The default value is 1.
ETL_SRC_1_DESC	ETL Staging source description.	Describe the ETL Src. Mandatory if you want to create a new ETL Src if you have specified ETL_APPSRC_TYPE= 1.	The default value is Staging.
ETL_SRC_2_DESC	ETL Processing source description.	Describe the ETL Src. Mandatory if you want to create a new ETL Src if you have specified ETL_APPSRC_TYPE= 1.	The default value is Processing.
ETL_SRC_1_NAME	ETL Staging source name.	User Input	The default value is Staging. Specify the ETL Source Name into ETL Area Definitions to be deployed.
ETL_SRC_2_NAME	ETL Processing source name.	User Input	The default value is Processing. Specify the ETL Source Name into ETL Area Definitions to be deployed.
LLFP_SEGMENT	Specify the name of the Segment for the LLFP models sandbox infodom	User Input	
LLFP_APPSERVER_FTP_LOGPATH	Specify the sandbox Maintenance log path (to be created) for the LLFP models sandbox infodom.	User Input	
LLFP_DBSERVER_FTP_LOGPATH	Specify the sandbox Maintenance log path (to be created) for the LLFP models sandbox infodom	User Input	

11. Enter the following command in the console to execute the application pack installer with the Silent option.

    ```
    ./setup.sh SILENT
    ```

12. The installer proceeds with Pre-Installation Checks.
13. Enter the OFSAA Processing Tier FTP or SFTP password value and proceed, when prompted in the command prompt.

Table 25: Console Prompt: Enter the OFSAA Processing Tier FTP/SFTP Password

Console Prompts	User Inputs
Please enter OFSAA Processing Tier FTP or SFTP password	Enter the password to access the processing tier in the application server. **NOTE**: If the prompt reads as follows, enter the username and password for accessing the product Staging or Metadata Repository FTPSHARE: • Kerberos username [user] • Kerberos password for user

14. The process displays the OFSAA License. Enter **Y** and proceed.
15. The installer installs the AAI application.
16. After the platform is installed, the Oracle Financial Services Loan Loss Forecasting and Provisioning installation begins.
17. After Data Model Upload is complete, verify the installation logs in the log directories mentioned in the Verify the Log File Information section.
18. After successful LLFP application installation, the WAR file is generated and all the servers are verified and the installation complete message is displayed.
19. The OFSAA Infrastructure installation performs a post-install health check automatically on the successful installation of the product.
20. On completion of the installation, verify the installation log files mentioned in the Verify the Log File Information section.
21. Apply the mandatory patches mentioned in the Mandatory Patches section.
22. If the OFS MMG patch (**33672339**) has been applied, then to access the models in the UI:
    a. Log in as a sysadmin.
    b. Navigate to Identity Management, User – User Group Role Map
    c. Map the Roles LLFP MODELLER and LLFP LGD MODELLER for the user LLFP Application Analyst Group to access Models.

Figure 13: Remap the LLFP Modeler Role

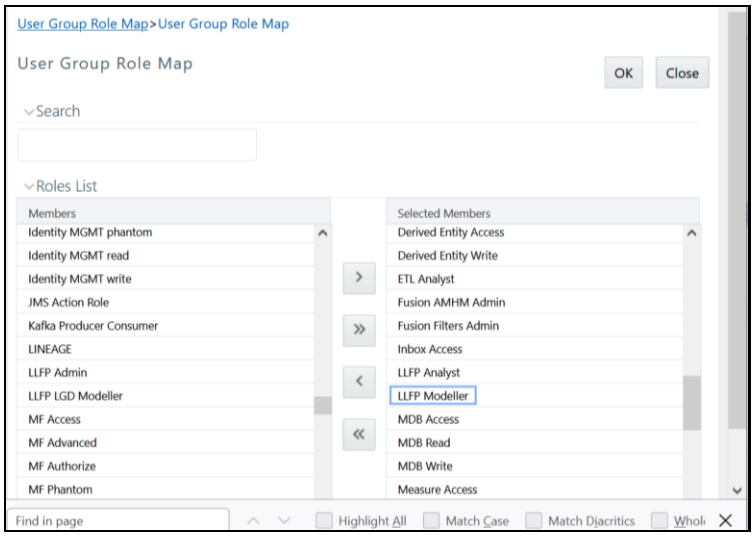
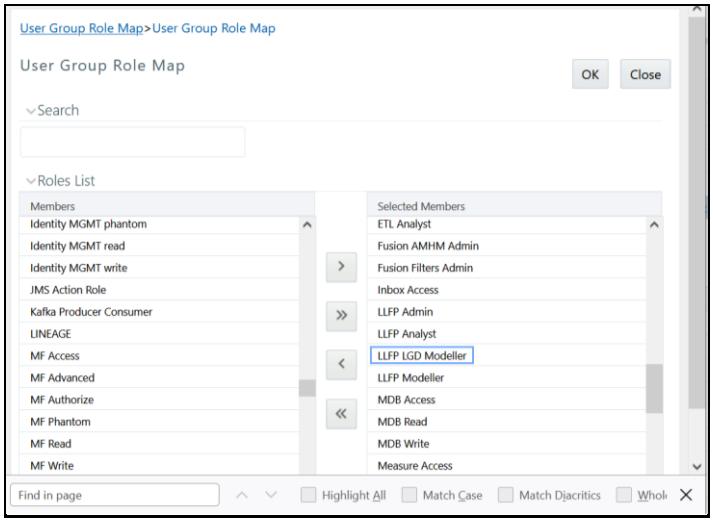


Figure 14: Remap the LLFP LGD MODELLER Role



NOTE

- Perform steps mentioned in the Post-Installation section.
- Ensure that the OFS_LLFP_PACK installer directory with its contents is preserved, for enabling additional products in the future.

6.6.2 Technical Documents

See the **Components for Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.x (Tech Metadata, Business Metadata,Process Metadata, Run Chart, and Data Difference Sheets)** (Doc ID 2696527.1)

6.6.3 Verify the Log File Information

See the following logs files for more information:

- See the log files in the locations, for OFS Loan Loss Forecasting and Provisioning installation.
- See the log file (or files) in the `OFS_LLFP_PACK/OFS_AAI/logs/` directory for the Infrastructure installation log.
- See the `OFSAAInfrastucture_Install.log` file located at the `$FIC_HOME` directory for the Infrastructure installation log.
- See the `pack.install` log file in the `OFS_LLFP_PACK/logs` directory.
- In the log file in the `OFS_LLFP_PACK/OFS_LLFP/logs` directory, ignore the error *ORA-00942: table or view does not exist* for the `llfp_reinsurance_ratings_views.sql` file if the reinsurance model has not been uploaded.

7 Post-installation

On successful installation of the Oracle Financial Services LLFP application pack, follow the post-installation procedures mentioned in Post-installation Checklist.

> **NOTE** You must clear the application cache before deploying the Application Pack web archive file. This applies to all web servers (WebSphere, WebLogic, Tomcat). For more information, see the Clear Application Cache section.

Topics:

7.1 Post-Installation Checklist

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

> **NOTE** See the *Post-Installation* section in the OFS AAI Release 8.1.2.0.0 Installation and Configuration Guide to complete the following checklist procedures.

Table 26: Post-installation Checklist

Sl. No.	Post-installation Activity
1	Verify that all patches are successfully installed.
2	Update the Config Schema. **NOTE**: This step is applicable only for deployment on the Oracle Cloud Infrastructure.
3	Back up the `OFS_LLFP_SCHEMA_IN.xml`, `OFS_LLFP_SCHEMA_OUTPUT.xml`, and `Silent.props` files.
4	Stop the OFSAA Infrastructure services.
5	Start the OFSAA Infrastructure services.
6	Create and deploy EAR or WAR files.
7	Configure the webserver.
8	Configure the Resource Reference in web application servers.
9	Configure the Work Manager in the web application servers.
10	EAR/WAR File - Build Once and Deploy Across Multiple OFSAA Instances.
11	Access the OFSAA application.
12	Configure excludeURLList.cfg file.
13	Configure Tomcat.
14	Configure Data Source.
15	Set Data Redaction in Oracle Financial Services Loan Loss Forecasting and Provisioning.
16	Implement Data Protection in OFSAA.
17	Configure the Sandbox.
18	Configure OBIEE.

7.2 Mandatory Patches

The following table includes information about the mandatory patches that must be applied if OFS LLFP is the first pack to be installed.

Table 27: Mandatory Patches

One-Off Patch	Description
33738222	This is a mandatory security patch.
33995565	This is a mandatory AAI one-off patch.
34058716	This is a mandatory AAI one-off patch.

7.3 Attribution Analysis

To use the Attribution Analysis feature, download and install patch **32343027** from MOS.

7.4 Patch Oracle Financial Services Loan Loss Forecasting and Provisioning

Oracle strongly recommends installing the latest available patch set to be up-to-date with the various releases of the OFSAA product. For the mandatory patches, see the Mandatory Patches section.

Contact My Oracle Support for more information on the latest release.

7.5 Updating the Config Schema

Update the configuration set `paramvalue` to `Y` in the Config Schema:

1. Log in to the Config Schema and execute the following query:

```
update configuration set paramvalue='Y' where
paramname='IS_CLOUD_INSTALL'; commit;
```

7.6 Editing the WDSL Property File

To edit the WDSL property file, follow these steps:

1. Connect to the Compute virtual machine on which the OFSAA product is installed.
2. Navigate to the `$FIC_HOME/ficdb/conf/` directory.
3. Edit the `subLedgerRun.properties` file.
4. Change the parameter in the WDSL property file to point to the WebLogic server (any of the nodes) and the listener port that is corresponding to that node.

7.7 Backup the OFS_LLFP_SCHEMA_IN.xml, OFS_LLFP_SCHEMA_OUTPUT.xml, and Silent.props Files

Backup the `OFS_LLFP_SCHEMA_IN.xml`, `OFS_LLFP_SCHEMA_OUTPUT.xml`, and `Silent.props` files as they can be reused when upgrading existing applications or installing new applications.

Table 28: Directory of Files to Backup

File Name	Directory
OFS_LLFP_SCHEMA_IN.xml	OFS_LLFP_PACK/schema_creator/conf
OFS_LLFP_SCHEMA_OUTPUT.xml	OFS_LLFP_PACK/schema_creator/
Silent.props	OFS_LLFP_PACK/appsLibConfig/conf

7.8 Update the Component Value

After installing the OFS LLFP application, the component value must be updated for data to flow into the **dim_gl_account** table.

If the component value in the **setup_master** table that corresponds to the **v_component_code** for **GL_ACCOUNT_HIER** is *Default*, then modify this value to the correct general ledger hierarchy ID that is used in the subledger definition.

> **NOTE** If the correct general ledger hierarchy ID is already present in the **setup_master** table that corresponds to the component code for **GL_ACCOUNT_HIER**, then there is no need to update the value.

The following is a sample query that can be used update the value:

- Before executing this query, replace the text `<GL Hierarchy Name>` with the correct General ledger hierarchy name that is used or will be used in a subledger definition.

```
update setup_master
set v_component_value = (select object_definition_id
    from fsi_m_object_definition_tl
    where short_desc = '<GL Hierarchy Name>' )
where upper(v_component_code)='GL_ACCOUNT_HIER'
and upper(v_component_value) = 'DEFAULT' ;
commit;
```

After committing the above update, execute the batch **<Infodom>_DIMENSION_DATA_POPULATION**. This ensures that the general ledger hierarchy structure is used in the **dim_gl_account** reporting table.

7.9 Configuring Tomcat for User Group Authorization, Data Mapping, and Disabling WADL for the Web Service

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 *$FIC_WEB_HOME/webroot/WEB-INF/* 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. To disable the WADL for the Web Service, navigate to the following snippet in the *web.xml* file.

```
<servlet>
<servlet-name>CommonRESTServlet</servlet-name>
<servlet-class>org.glassfish.jersey.servlet.ServletContainer</servlet-class>
<init-param>
<param-name>javax.ws.rs.Application</param-name>
<param-value>com.ofs.fsapps.commonapps.util.ApplicationResourceConfig</param-value>
</init-param>
<load-on-startup>1</load-on-startup>
</servlet>
```

4. Add the following snippet before the `<load-on-startup>1</load-on-startup>` attribute.

```
<init-param>
<param-name>jersey.config.server.wadl.disableWadl</param-name>
<param-value>true</param-value>
</init-param>
```

5. Save and close the file.

7.10 Stop the Infrastructure Services

See Stop the Infrastructure Services in the OFS AAI Release 8.1.2.0.0 Installation and Configuration Guide for details.

7.11 Create and Deploy the EAR or WAR Files

See Create and Deploy the EAR or WAR Files in the OFS AAI Release 8.1.2.0.0 Installation and Configuration Guide for details.

7.12 EAR or WAR File - Build Once and Deploy Across Multiple OFSAA Instances

See EAR or WAR File - Build Once and Deploy Across Multiple OFSAA Instances in the OFS AAI Release 8.1.2.0.0 Installation and Configuration Guide for details.

7.13 Start the Infrastructure Services

See Start the Infrastructure Services in the OFS Analytical Applications Infrastructure Installation Guide for details.

7.14 Setting Up Setup the Master Table

The following table provides details on setting up the SETUP_MASTER table.

Table 29: The Setup Master Table

Name	Table or Column Name	Description
Table Name	SETUP_MASTER	This table allows the user to set certain one-time preferences. These preferences guide the application while performing various functionalities.
Component Code	DEFAULT_GAAP	Enter the default GAAP code to be used to filter the accounts for processing. Accepted Values: Any GAAP Code from DIM_GAAP
Component Code	LLFP_ACCOUNTS_TO_PROC	The value in this column indicates the number of accounts to be processed in a batch. Accepted Values: Any number starting from 1, depends on the hardware size. Default Seeded Value: 200000
Component Code	LLFP_SLICE_COUNT	The value in this column indicates the number of slices instrument data should be chunked. Default Value: -1 Accepted Values: Any number starting from 1, depends on the hardware size.
Component Code	DEFAULT_FX_RATE_SRC	Default FX Rate Source Example of Accepted Values: BLOOMBERG
Component Code	LLFP_PARALLEL_DOP	The value in this column indicates the Degree of Parallelism for the execution of DT. Accepted Values: Any numeric value based on the hardware size.
Component Code	MIN_ECL_COHORT_SIZE	A minimum number of accounts will form part of the ECL cohort. Example of Accepted Values: 50

Name	Table or Column Name	Description
Component Code	LLFP_PREFERRED_RATING_ST_LT_IND	The value in this column indicates the LLFP Default Rating Type Indicator, S, or L. Accepted Values: S or L
Component Code	DT_LOG_LEVEL	The value in this column indicates the log level as Debug or Error. Accepted values: 0 for Debug or 1 for Errors

7.15 Access the OFSAA Application

Before accessing the OFSAA application ensure the internet settings are configured.

To access the OFSAA application, follow these steps:

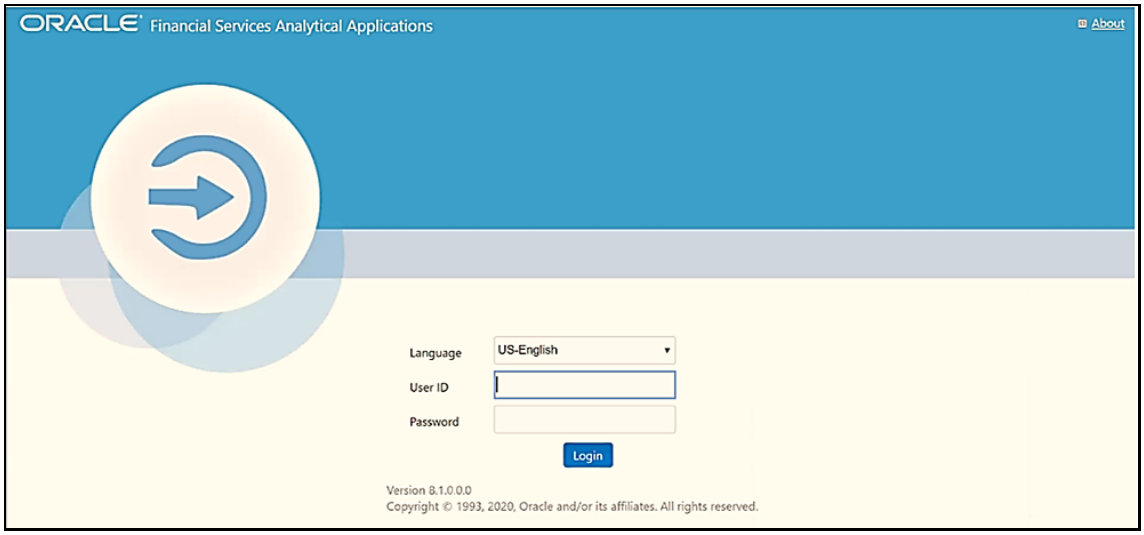
1. Open a browser and enter the URL in the following format:

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

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

   The OFSAA Login window is displayed.

   Figure 15: OFSAA Login Window

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

   - SYSADMN System Administrator
   - SYSAUTH System Authorizer

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

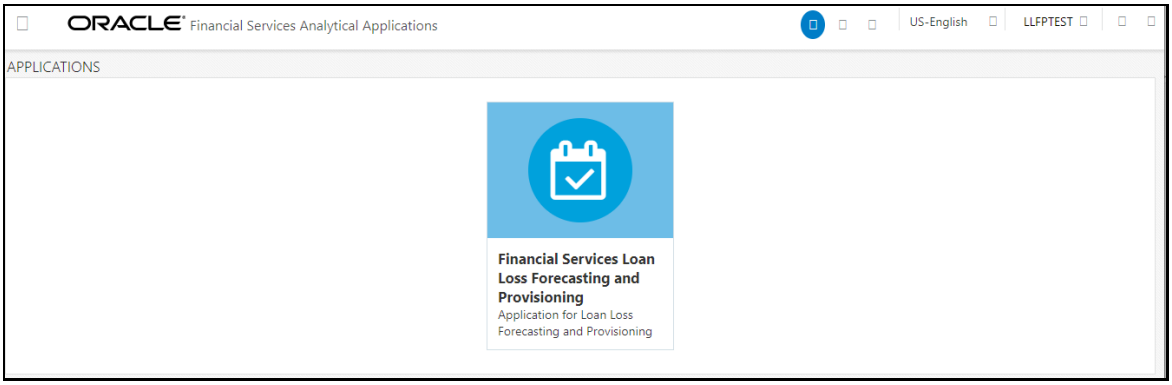
2. Log in to the application using the "SYSADMN" User ID and the default password. After the first login, you are prompted to change the password.

ATTENTION The password change is required only for a new installation scenario and not for upgrade scenarios.

7.15.1 OFSAA Landing Page

On successful login, the *OFSAA Landing* screen is displayed.

Figure 16: OFSAA Landing screen



OFSAA Landing screen shows the available Applications as tiles, for which a user has access to. Clicking the respective Application tile launches that particular application. You can change the landing page based on your preference. For more information on the components of OFS Analytical Applications, refer to the OFS Analytical Applications Infrastructure (OFS AAI) Application Pack Installation and Configuration Guide.

7.16 View OFSAA Product Licenses after Installation of Application Pack

In an integrated environment, where you have multiple applications installed on the same domain or infrastructure, OFSAAI allows you to see the other licensed applications through the UI. For more information, see the View OFSAA Product Licenses after Installation of Application Pack in the OFS Analytical Applications Infrastructure User Guide Release 8.1.2.0.0.

7.17 Configure Tomcat

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

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

1. Navigate to the `tomcat/conf` directory.
2. Edit the `web.xml` file as follows:
3. 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>
```

7.18 Configure Server.xml for Tomcat 9x

Perform the following step to configure server.xml for Tomcat9x:

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

```
<Context path="/ $CONTEXTNAME$" docBase=" $APP_DEPLOYED_PATH$ "
debug="0" reloadable="true" crossContext="true">
<Resource auth="Container" name="jdbc/ $INFODOM_NAME$"
type="javax.sql.DataSource"
driverClassName="oracle.jdbc.driver.OracleDriver" username="
$ATOMICSCHEMA_USERNAME$" password="$ATOMICSCHEMA_PASSWORD$"
url="$JDBC_CONNECTION_URL"
maxTotal="300" maxIdle="30" maxWaitMillis="10000"
removeAbandonedOnBorrow="true" removeAbandonedTimeout="60"
logAbandoned="true"/>
</Context>
```

For more information, refer to section Define JDBC Connection Pooling in the OFS AAAI Installation Guide.

7.19 Add TNS entries in the TNSNAMES.ORA File

Add TNS entries in the `tnsnames.ora` file for every schema created for the Application Pack. For details see Add TNS entries in the TNSNAMES.ORA file section.

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

1. Log in to the application using System Administrator privileges.
2. Navigate to **System Configuration & Identity Management** tab.
3. Click **Administration and Configuration**, select **System Configuration**, and click **Database Details**.
4. Expand Name to get the list of TNS entry names.

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

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

7.20 Configure Data Source

This section details the configurations required for Data Sources in the OFSAA applications.

- Create a connection pool in the Information Domain. For more information, see the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide.
- Create and deploy the web components into the webserver. For more information on deploying the web components, see the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide.

7.21 Configure the excludeURLList.cfg File

See Configure the excludeURLList.cfg File in the OFS Analytical Applications Infrastructure Installation Guide for details.

7.22 Data Protection Implementation in OFSAA

See OFSDF Data Protection Implementation Guide for details.

7.23 Users and Roles

The section provides information about the User Group names that are part of the Oracle Financial Services Loan Loss Forecasting and Provisioning application pack.

To access the OFS Loan Loss Forecasting and Provisioning application, you can map the created users to the following user groups:

- **LLFPADMINGRP** - LLFP Admin Group
- **LLFPANALYSTGRP** - LLFP Analyst Group

7.24 Configuring OBIEE for Loan Loss Forecasting and Provisioning BI Analytics

The Oracle Financial Services Loan Loss Forecasting and Provisioning Analytics application release 8.1.2.0.0 is based upon a dedicated reporting mart built from the new Fusion Financial Services Data Model. Oracle Financial Services Loan Loss Forecasting and Provisioning Analytics 8.1.2.0.0 leverages several components of Oracle Business Intelligence Enterprise Edition (OBIEE) or Oracle Analytics Server (OAS) technology including Dashboards and Answers. It also includes various Dashboards and Reports for the user to carry out various Loan Loss Forecasting and Provisioning Gap-based analytics.

Follow these steps to configure the Oracle Financial Services Loan Loss Forecasting and Provisioning Analytics:

1. Make sure Oracle Business Intelligence 12.2.1.4.0 or OAS 5.5.0 installation is completed and available. See Installing and Configuring Oracle Business Intelligence 12c (12.2.1.4) (E91876-03) or Installing and Configuring Oracle Analytics Server 5.5.0 (F27232-03) for more details.
2. Configure the ODBC data source to connect to the Oracle BI Server:
   a. Navigate to **Control Panel, select Administrative Tools**, and then select **Data Sources (ODBC)**.
   b. Select the **System DSN** tab and click **Add**.

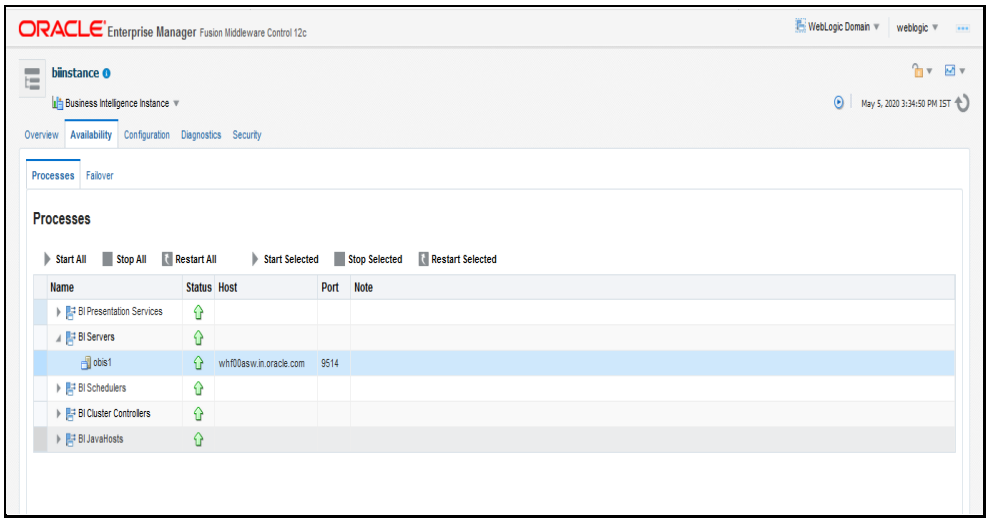
c. Select a driver-specific to Oracle BI Server 2.2.1.4.0 or OAS 5.5 and click **Finish**.

d. Enter the **Name** and **Server** details (specify the Hostname or IP Address of the BI Server) and click **Next**.

e. Enter the Oracle BI Server login ID and password (Enter the User Name and Password created at the time of OBIEE or OAS installation). Update the port with the port number available for the BI Server in the **Availability** tab of Business Intelligence in the Enterprise Manager.

For example: In the following figure, the port number is 9514.

Figure 17: Update Port Number in the BI Server



f. Click **Next.**

g. Navigate to the RPD and Catalog folders available in the following directories. Copy the RPD and required Catalog files (as per the license agreement) in the server where the BI client tools are installed:

- `$FIC_HOME/LLFP_DASHBOARDS/LLFP.rpd` in the data model folder and archived.
- `$FIC_HOME/LLFP_DASHBOARDS/LLFP.catalog` in the data model folder and archived.

h. Click **Finish**.

3. Modify the connection pool and set the properties.
4. Open the OBI Administration tool.

a. Select **Start, s**elect **Programs,** select **Oracle Business Intelligence** and then select **BI Administration.**

b. Select **File**, select **Open,** select **Offline**, and then select the `LLFP.rpd` file.

c. In the **Open** dialog box, select and open the `LLFP.rpd` file.

d. Enter the Repository password as Admin123.

e. In the **Physical** layer, double-click the **Connect Pool**: *LLFPBI* to open its properties.

f. In the **General** tab, edit and check the following entries:

i. **Call Interface**: (OCI 10g/11g).

ii. **Data source name**: `<TNS Entry connecting to OFSAA atomic schema>`

For example:
`(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=<Database IP address>)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=<Database Name>)))`

iii. **User name**: <enter atomic db user name>.

iv. **Password**: <enter atomic db user password>.

v. Confirm the password and click **OK** to close the window.

vi. Similarly, configure the connection pools for LLFPBITRANS and LLFPBI_ INIT_BLOCK, and LLFPBI.

— Check Global Consistency, that is, press Ctrl+k.

— Double-click on the warning (if you are using OAS).

— Click **Reset to defaults** and click **OK**.

vii. Click **Save**.

g. Click **Yes** for the Global Consistency Message. No warnings should be generated at this stage.

h. Close the RPD file (close the file and exit).

5. Log in to the Oracle Financial Services Loan Loss Forecasting and Provisioning Analytics application using the

URL: http:// `<ipaddress>:<port>`/analytics (replace the port number based on your setup).

6. Follow these steps to configure the BI publisher Data Source:

a. Log in to the Oracle Financial Services Loan Loss Forecasting and Provisioning Analytics application.

b. Navigate to **Administration, select BI Publisher**, and then select **Manage BI Publisher**.

c. Click JDBC Connection from Data Sources.

d. Click **Add Data Source**.

e. Enter the Data Source name as **LLFP**.

f. Add Database details in the Connection string, that is the hostname (IP address), port number, and SID.

g. Enter the username (schema name) and password.

h. Click **Test Connection**.

i. Ensure that the connection is successfully established. Click **Apply**.

7. Perform the following OBIEE presentation server configuration steps:

a. Navigate to the `<<Oracle BI Instance Home>/config/fmwconfig/biconfig/OBIPS` directory.

b. Edit the `instanceconfig.xml` file.

c. Insert the following code within the XML tag `<Views>` `</Views>`.

```
<Charts>
```

```
<MaxVisibleColumns>50000</MaxVisibleColumns>
<MaxVisiblePages>25000</MaxVisiblePages>
<MaxVisibleRows>10000000</MaxVisibleRows>
<MaxVisibleSections>50000</MaxVisibleSections>
<JavaHostReadLimitInKB>10240</JavaHostReadLimitInKB>
</Charts>
```

d. Insert the following code within the XML tag **<**`Views`**> <**`/Views`**>**.

```
<Table>
<DefaultRowsDisplayedInDelivery>75</DefaultRowsDisplayedInDelivery>
<DefaultRowsDisplayedInDownload>6500</DefaultRowsDisplayedInDownload>
<MaxCells>4000000</MaxCells>
<MaxVisibleRows>140000</MaxVisibleRows>
</Table>
<Narrative>
<MaxRecords>500000</MaxRecords>
<DefaultRowsDisplayed>25</DefaultRowsDisplayed>
</Narrative>
```

e. Save the file and restart the BI services.

> **NOTE** Take a backup of the `instanceconfig.xml` file before making any changes.

7.24.1 OBIEE Server Configuration for Upgrade

Perform the following OBIEE server configuration steps. You can ignore the steps if OBIEE is already configured in your setup.

1. Perform the following OBIEE presentation server configuration steps:
   a. Navigate to the `<<Oracle BI Instance Home>/config/fmwconfig/biconfig/OBIPS` directory.
   b. Edit the file `instanceconfig.xml`.
   c. Insert the following code within the XML tag **<**`Views`**> <**`/Views`**>**.

```
<Charts>
<MaxVisibleColumns>50000</MaxVisibleColumns>
<MaxVisiblePages>25000</MaxVisiblePages>
<MaxVisibleRows>10000000</MaxVisibleRows>
<MaxVisibleSections>50000</MaxVisibleSections>
<JavaHostReadLimitInKB>10240</JavaHostReadLimitInKB>
</Charts>
```

d. Insert the following code within the XML tag <Views> </Views>.

```
<Table>
<DefaultRowsDisplayedInDelivery>75</DefaultRowsDisplayedInDelivery>
<DefaultRowsDisplayedInDownload>6500</DefaultRowsDisplayedInDownload>
<MaxCells>4000000</MaxCells>
<MaxVisibleRows>140000</MaxVisibleRows>
</Table>
<Narrative>
<MaxRecords>500000</MaxRecords>
<DefaultRowsDisplayed>25</DefaultRowsDisplayed>
</Narrative>
```

e. Save the file and restart the BI services.

> **NOTE** Take a backup of the `instanceconfig.xml` file before making any changes.

2. Perform the following RPD changes, to set the Early Warning Indicators 1 and 2:
   a. Open the **Repository** in Online or Offline mode.
   b. Select **Manage** and then select **Variables**.
   c. Navigate to hierarchy **Repository,** select **Variables**, and then select **Static**.
   d. Modify EARLYWARNIND1 and EARLYWARNIND2 variable values as required.
   e. Save and commit the changes to RPD.

      NOTE: You must redeploy the RPD on the BI server if you have made changes in the offline mode.
3. For OBIEE reporting, configure the following:
   a. Navigate to the `<<obiee <<Oracle BI Instance Home>/config/fmwconfig/biconfig/OBIJH` directory.
   b. Modify the `config.xml` file.
   c. Increase parameter value for the following tag:

```
<XMLP>
<InputStreamLimitInKB>40000</InputStreamLimitInKB>
<ReadRequestBeforeProcessing>true</ReadRequestBeforeProcessing>
</XMLP>
<DVT>
<InputStreamLimitInKB>40000</InputStreamLimitInKB>
</DVT>
```

d. Save the `config.xml` file.

e. Navigate to the `<<obiee <<Oracle BI Instance Home>/config/fmwconfig/biconfig/OBIPS` directory.

f. Modify the `instanceconfig.xml` file.

g. Increase the parameter value for a tag if already exists or add the following code:

```
<Charts>
<MaxVisibleColumns>50000</MaxVisibleColumns>
<MaxVisiblePages>25000</MaxVisiblePages>
<MaxVisibleRows>100000</MaxVisibleRows>
<MaxVisibleSections>50000</MaxVisibleSections>
<JavaHostReadLimitInKB>10240</JavaHostReadLimitInKB>
</Charts>
and
<Pivot>
<MaxCells>1920000</MaxCells>
<MaxPagesToRollOutInDelivery>10000</MaxPagesToRollOutInDelivery>
<MaxVisibleColumns>50000</MaxVisibleColumns>
<MaxVisiblePages>100000</MaxVisiblePages>
<MaxVisibleRows>10000000</MaxVisibleRows>
<MaxVisibleSections>50000</MaxVisibleSections>
<DefaultRowsDisplayed>100000</DefaultRowsDisplayed>
</Pivot>
under <Views> tag
```

h. Save the `instanceconfig.xml` file.

i. Restart the BI Services.

7.24.2 Deploying the RPD

For RPD deployment, follow these steps:

1. Connect to the OBIEE server.
2. Create a folder. For example, `tmp` in the following directory:

   `<Oracle_Home>/user_projects/domains/domain_name`
3. Copy the `LLFP.rpd` from the local directory (where you have saved the RPD) to the folder created in the preceding step.
4. Open the command prompt, and navigate to the following directory:

   `/scratch/<mount_name>/Middleware/Oracle_Home/user_projects/domains/bi/bitools/bin`
5. Execute the following command:

```
./datamodel.sh  uploadrpd -I <RPDfilepath> -W <RPDpassword> -SI ssi -U
<username> -P <password>
```

For example:

```
./datamodel.sh uploadrpd -I
/Oracle_Home/user_projects/domains/bi/RPD/LLFP.rpd  -SI ssi -U weblogic -P
weblogic123
```

```
rpd pass : Admin123
```

7.24.3 Deploying the Web Catalog

For web catalog deployment, follow these steps:

1. Open the catalog manager, navigate to the File menu and open the catalog online by giving the necessary credentials based on your setup:
   - Type: Online
   - URL: http://<ipaddress>:<port>/analytics-ws
2. After the catalog is opened, it will display a directory structure on the left-hand side. Select the *Catalog Root and select Shared Folders* in the LHS tree structure.
   a. Go to the **File** menu and select **Unarchive**. It will ask for the path for a file.
   b. Browse the path of the archived catalog file saved in your local directory using the Browse button and click **OK**.
   c. The catalog must be extracted in the Shared Folders directory for the reports to display. A successful operation message is displayed.
   d. Restart the presentation services once again.
   e. Open the analytics OBIEE URL (http://<ipaddress>:<port>/analytics).
   f. Login with credentials based on your setup, and verify that the catalog is available.
      i. Click on catalog in the OBIEE application right top menu list.
      ii. In the LHS menu, navigate to shared directories and verify all the directories are available.
      iii. Navigate to Administration, then Maintenance and Troubleshooting, select Reload Files, and then click MetaData.

> **NOTE** If you need to clear the cache in OAS, click Issue SQL and run the Call SAPurgeAllcache() method.

7.24.4 Starting and Stopping Services in OBIEE

Follow the below steps to start and stop OBIEE services:

1. Connect to the OBIEE or OAS server.
2. Navigate to the `/scratch/<mount_name>/Middleware/Oracle_Home/user_projects/domains/bi/bitools/bin` directory.

3. Execute the following commands:
   a. Command to stop service: `./stop.sh`
   b. Command to start service: `./start.sh`

7.24.5 Update the OBIEE URL

To access the respective Business Intelligence Analytics Application, you must update the OBIEE URL in the AAI_MENU_B table after the OBIEE environment is up and running. Use the following command:

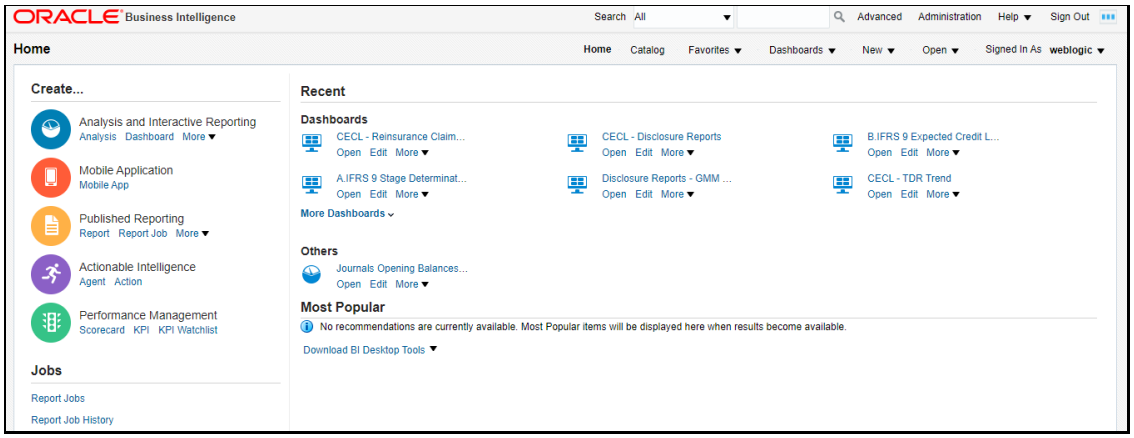
```
UPDATE AAI_MENU_B
SET V_MENU_URL = '&obieeURL'
WHERE V_MENU_ID IN ('OFS_LLFP_BI')
/
COMMIT
/
```

7.24.6 Editing Global Variables for OBIEE or OAS

To edit the global variables for OBIEE, in this release of the Oracle Financial Services Loan Loss Forecasting and Provisioning application, follow these steps:

1. Host the RPD in the server where you have configured OBIEE or OAS and Catalog for the Oracle Financial Services Loan Loss Forecasting and Provisioning application as part of this release.
2. Log in to OBIEE or OAS by using the URL format (http://<ipaddress>:<port>/analytics) to open the home page.

Figure 18: The Analytics Home Page



3. In the **Dashboards** drop-down list, click **CECL** to open the dashboard.
4. Click **Edit** on any of the reports to open the **Settings** window.
5. In the **Criteria** tab, in the **Selected Columns** pane, click **Criteria ("IFRS 9")**.
6. Click **Settings** 
7. Click the **Edit formula** to open the **Edit Column Formula** window.

8. In the **Variables drop-down list**, select **Global...** to open the Insert **Global Variable** window.
9. Select the **Global Variable** that you want to edit, and then click **Edit Global Variable**.
10. Edit a global variable with the following details:

Table 30: Required Values for the Global Variable

Field	Value to be added
Name	denomination
Type	Text
Value	case when '@{denomination}{In Thousand}' = 'In Thousand' then 1000 when '@{denomination} {In Thousand}' = 'In Million' then 1000000 else 1 end

This variable is used to divide all amount values by thousand or million, depending on the selected criteria.

11. Click **OK**, and then click **OK** again to save.

7.25 View OFSAA Product Licenses after Installation of Application Pack

In an integrated environment, where you have multiple applications installed on the same domain or infrastructure, OFSAAI allows you to see the other licensed applications through the UI. For more information, see the View OFSAA Product Licenses after Installation of Application Pack in the OFS Analytical Applications Infrastructure User Guide Release 8.1.2.0.0.

Part II

Topics:

8 Upgrade

This section includes the procedures for the various upgrade scenarios supported by OFS Loan Loss Forecasting and Provisioning Release 8.1.2.0.0.

Topics:

8.1 Upgrade any supported Release v8.0.x to Release v8.1.0.0.0

Upgrade the OFS LLFP application pack from Release 8.0.x or later patches to OFS LLFP Release 8.1.0.0.0. For example, use release OFS LLFP Release 8.0.8.0.0 and upgrade to OFS LLFP Release 8.1.0.0.0.

8.1.1 Upgrade from Release v8.0.x of OFS LLFP on AIX or Solaris x86 Operating System

Release v8.1.2.0.0 of OFS LLFP is not certified for AIX and Solaris x86 Operating Systems. If you are currently running OFSAA v8.0.x on AIX or Solaris x86 Operating Systems and plan to upgrade to Release v8.1.2.0.0, then you must migrate from AIX or Solaris x86 to Linux or Solaris SPARC. See the OFSAA 8.0.x.x.x Migration Guide for details.

> **NOTE** The AAI 81200 Solaris x86 Operating System supports only Java 8x.

8.2 Upgrade from Release v8.1.0.0.0 to Release v8.1.1.0.0

Upgrade the OFS LLFP application pack from Release 8.1x or later patches to OFS LLFP Release 8.1.1.0.0.

8.3 Upgrade from Release v8.1.1.0.0 to Release v8.1.2.0.0

Perform the following steps to upgrade from release v 8.1.1.0.0 to Release v8.1.2.0.0:

1. Backup the following environment files from their respective directories:
   - Database schema
   - OFSAHOME.zip
   - ftpshare.zip
     (User must run the OFSAA_Archive.sh present in the path: **$OFSAA_HOME/LLFPHOME/utility/Clone/bin**)
     This will backup of **OFSAHOME** and ftpshare folders.

- tnsnames.ora
- .profile

2. Download and extract the OFS LLFP Application Pack Release 8.1.2.0.0 installer (Bug Number: **<>**) from MOS.
3. Copy the archive file to your OFSAA server in Binary mode.

> **NOTE** The archive files are different for every operating system such as Solaris SPARC, RHEL, or Oracle Linux.

4. Log in to the OFSAA Server with user credentials that were used to install OFSAA.
5. If you have Unzip utility, skip to the next step. Download the Unzip utility (OS-specific) and copy it in Binary mode to the directory that is included in your PATH variable, typically $HOME path or directory in which you have copied the 8.1.2.0.0 installer.

   Extract the installer zip file using the command:

   ```
   Unzip –a _<OS>.Z
   ```

> **NOTE** If you receive an error message: *unzip: not found [No such file or directory]* when the package is not installed, contact your administrator.

6. Give execute permission to the archive file. Navigate to the path where the directory OFS_LLFP_PACK exists and execute the command:

   ```
   chmod –R 755 OFS_LLFP_PACK
   ```

7. Execute the user `.profile` file.

8. Update the OFS_LLFP_PACK.xml File

   Enable only the existing installed applications. Before installing OFS LLFP, it is mandatory to update this file.

   a. Navigate to the `OFS_LLFP_PACK/conf` directory.

   b. Open the `OFS_LLFP_PACK.xml` file in a text editor and enable OFS LLFP and OFS AAAI to Yes.

Figure 19: Sample OFS_LLFP_PACK.xml File

```
<APP_PACK_CONFIG>
    <APP_PACK_ID>OFS_LLFP_PACK</APP_PACK_ID>
    <APP_PACK_NAME>Financial Services Loan Loss Forecasting And Provisioning</APP_PACK_NAME>
    <APP_PACK_DESCRIPTION>Applications for Loan Loss Forecasting And Provisioning</APP_PACK_DESCRIPTION>
    <VERSION>8.1.2.0.0</VERSION>
    <APP>
        <APP_ID PREREQ="" DEF_SEL_FLG="YES" ENABLE="YES">OFS_AAI</APP_ID>
        <APP_NAME>Financial Services Analytical Applications Infrastructure</APP_NAME>
        <APP_DESCRIPTION>Base Infrastructure for Analytical Applications</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
    <APP>
        <APP_ID PREREQ="OFS_AAI" DEF_SEL_FLG="NO" ENABLE="YES">OFS_AAAI</APP_ID>
        <APP_NAME>Financial Services Enterprise Modeling</APP_NAME>
        <APP_DESCRIPTION>Base Infrastructure for Advanced Analytical Applications</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
    <APP>
        <APP_ID PREREQ="OFS_AAI" ENABLE="YES">OFS_LLFP</APP_ID>
        <APP_NAME>Financial Services Loan Loss Forecasting and Provisioning</APP_NAME>
        <APP_DESCRIPTION>Application for Loan Loss Forecasting and Provisioning</APP_DESCRIPTION>
        <VERSION>8.1.2.0.0</VERSION>
    </APP>
</APP_PACK_CONFIG>
```

c. Configure the `OFS_LLFP_PACK.xml` file. Enable OFS_AAAI and OFS_LLFP to YES.

> **NOTE** If OFS AAAI is already licensed, then enable OFS AAAI in the `OFS_LLFP_PACK.xml` file to upgrade the same to Release 8.1.2.0.0.

9. Configure the Schema Creator Utility for RDBMS Installation.
10. Update the Silent.props File in Release 8.1.2.0.0 Pack
    a. Navigate to the `OFS_LLFP_PACK/appsLibConfig/conf` directory.
    b. From Release 8.1.0.0.0 onwards, LLFP supports a single `Silent.template` file available in the `OFS_LLFP_PACK/appsLibConfig/conf` directory. The `Silent.template` is populated with default values.
    c. Ensure to modify the template in the directory. Create a copy of this file and rename the copy as `Silent.props`.
    d. Edit the `Silent.props` file and specify the parameters as per the requirements.
    e. SILENT installation is achieved through a properties file (`Silent.props`) that must be updated with proper values, before attempting to install using the silent mode. The following table lists all the properties that need to be specified.
    f. Configure the `Silent.props` file as mentioned in the following table. Open the `Silent.props` file and edit only the following parameters.

Table 31: Parameters for the Silent.props File

Property Name	Description of Property	Permissible values	Comments
UPLOAD_MODEL	Specify whether you want to perform Model Upload.	0 = If you have already performed Model Upload and want to skip the model upload process. 1 = If you want to perform Model Upload.	The default value is 1.
MODEL_TYPE	Specify whether you want to use the released data model or customized data model for the model upload process.	0 = If you want to upload the released data model. 1 = If you want to upload the customized data model.	The default value is 0.
DATAMODEL DM_DIRECTORY	Specify the path (DM_DIRECTORY) and file (DATAMODEL) name for the customized data model. Mandatory only if you want to upload the customized data model i.e you have specified MODEL_TYPE=1.	User Input	
ETL_APPSRC_TYPE	Specify the value to 1 in the upgrade mode.	0 = If you want to create a new ETL app/src pair. 1 = If you want to use an existing pair.	

11. Trigger the Upgrade Installation
    a. Navigate to the path `OFS_LLFP_PACK/bin`, and enter the following command in the console to execute the application pack installer with the Silent option.
    b. `./setup.sh SILENT`
    c. The installer proceeds with the pre-installation checks and starts the upgrade installation process.
    d. The OFS LLFP installation or upgrade begins. After the installation is complete, an *Installation Successful* message is displayed.
    e. Verify the log files. See section Verify the Log File Information for Upgrade for details.

8.4 Verify the Log File Information for Upgrade

See the following logs paths for more information:

- Verify if the release is applied successfully by checking the log file generated in the locations mentioned in the section Verify the Log File Information.
- You can also verify the OFSAAI log files from the `OFS_LLFP_PACK/OFS_AAAI_PACK/logs` directory.
- Verify the Model Upload log file available in the `ftpshare/<INFODOM>/logs` directory.
- You can ignore ORA-00001, ORA-00955, ORA-02260, ORA-01430, ORA-02298 errors in the log file. For any other errors, contact My Oracle Support.

> **NOTE** Ignore all the warnings in the installation log. For any issues contact My Oracle Support.

8.5 Post-installation Steps

Perform the following post-installation steps based on the scenario:

Scenario 1 - Fresh Install of 812 with LLFP Python Models

Scenario 2 - Upgrade from 811 to 812 Without Access to Python Models

Scenario 3 – Upgrade from 811 to 812 With Access to OFS LLFP Python Models Using OFS MMG

Deployment of Webserver

Configuring the Sandbox

8.5.1 Scenario 1 - Fresh Install of 812 with LLFP Python Models

To access the OOB OFS LLFP Models, install and apply the OFS LLFP one-off **33672339** patch from MOS. This patch deploys the LLFP models within the MMG application.

8.5.1.1 Deploying OFS LLFP Models in OFS MMG

This section provides detailed information on deploying OFS LLFP Models in OFS MMG.

8.5.1.1.1 Prerequisites

- OFS MMG v8.1.1.0.0 is installed. For more information on installing OFS MMG, see the Oracle Financial Services Model Management and Governance Installation and Configuration Guide.
- OFS MMG Data Studio v21.4.3.0.0 is Configured
- Python3 and required libraries are installed and configured as mentioned in the **Installing MMG Python Library** Section in the OFS MMG Installation Guide.

8.5.1.1.2 Deploying LLFP Models in MMG

To download the OFS LLFP MMG Models, follow these steps: (Bug Number: **33672339**)

1. Log in to My Oracle Support and search for **33672339** under the **Patches & Updates** tab.

2. Download the **33672339_GENERIC.zip** archive file and copy it to your OFSAA server in Binary mode.
3. Follow the instructions in the **ofs_llfp_8_1_2_0_1_ReadMe.txt** file.

8.5.1.1.3 Installing LLFP Dependent Third-Party Python Libraries

To setup LLFP dependent third-party python libraries, perform the following steps:

1. After deploying the patch **33672339_GENERIC.zip**, navigate to **<Installer path>/ OFS_LLFP/bin/LLFPMODELS**.
2. Inside the same directory, find the **requirements.txt** File.

requirements.txt
numpy==1.19.5
pandas==1.3.3
scipy==1.7.1
scikit-learn==1.0
matplotlib==3.4.3
seaborn==0.11.2
statsmodels==0.12.2
lifelines==0.26.3

NOTE The following step will install the above libraries with this specific version. If you have any conflict with the Python libraries version, then reinstall the Python and required libraries in different a path or folder or use the existing version.

If Python is configured in a different path other than the default, configure the Datastudio Python Interpreter Parameter **##PYTHON_HOME##**.

For more information, see the OFS Data Studio Installation Guide Section(7).

Execute the below command:

```
python3 -m pip install requirements.txt --user

python3 in the above script can be changed with whatever the python alias is
set on the system to access the python environment (e.g., python3.9) or
simply run,

pip install requirements.txt --user
or
pip3 install requirements.txt –user
```

8.5.2 Scenario 2 - Upgrade from 811 to 812 Without Access to Python Models

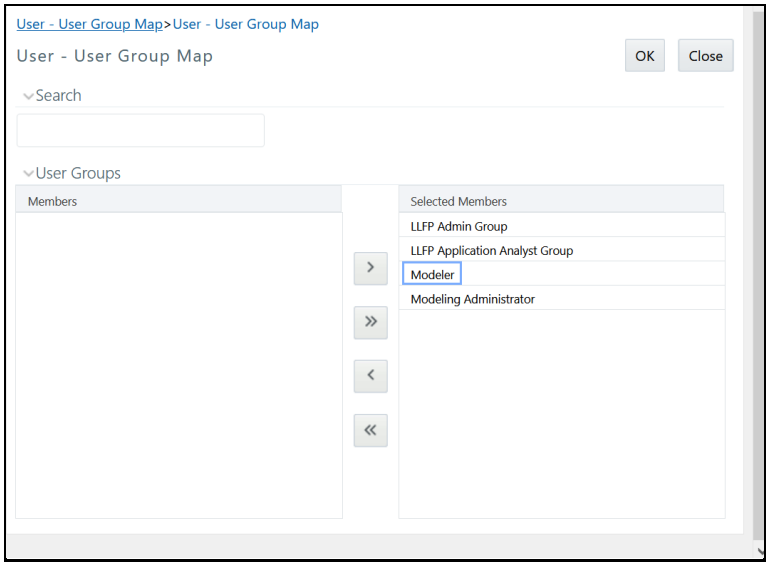
In this scenario, you can access the EMF Sandboxes and execute the R/ORE Models by remapping the Modeler Role.

8.5.2.1 Access the EMF Sandbox

Perform the following steps to remap the Modeler and LLFP MODELERRole to access the EMF Sandbox.

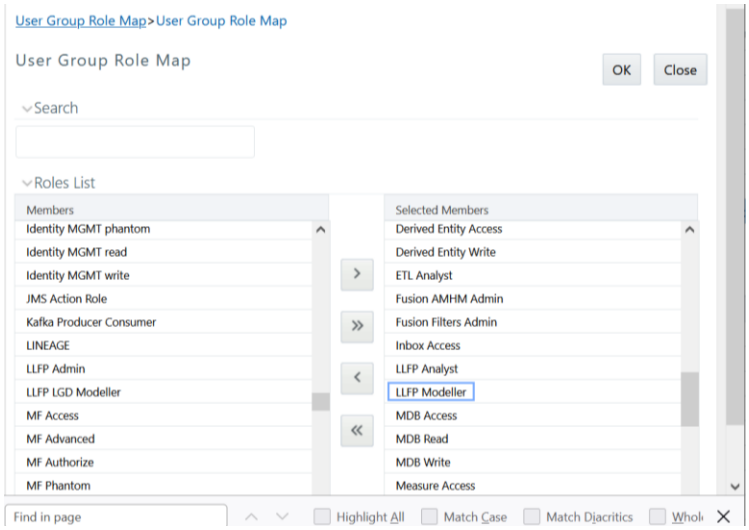
1. Log in as a sysadmn and navigate to **Identity Management**, **User - User Group Map.**
2. Remap the Modeler Role (**Modeler**) to access Models and the Sandbox.

Figure 20: Remap the Modeler Role



3. Navigate to **Identity Management**, **User – User Group Role Map**
4. Map the Role **LLFP MODELER** for the user **LLFP Application Analyst Group** to access Models.

Figure 21: Remap the LLFP Modeler Role



5. A new Sandbox must be created and mapped to the new entries in the tables **mf_model_ds_query**, **mf_model_master**, **mf_model_script_master** in the Config Schema.
6. Remap the new script changes for the Models Survival CRE and PD Model to the new or old Sandbox.

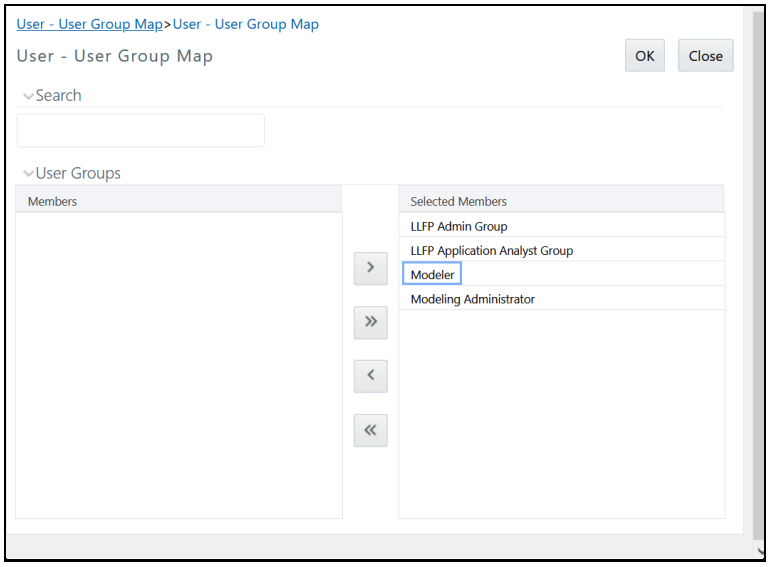
OFS EMF and OFS MMG are supported in Release v8.1.2.0.0 for OFS LLFP upgrades. For fresh installation of OFS LLFP Release v8.1.2.0.0, OFS MMG is supported.

8.5.3 Scenario 3 – Upgrade from 811 to 812 With Access to OFS LLFP Python Models Using OFS MMG

Perform the following steps to access EMF and MMG

1. To access the EMF Sandbox, the user must perform the steps mentioned in Access the EMF Sandbox.
2. Log in as a sysadmin.
3. Navigate to **Identity Management**, **User - User Group Map.**
4. Remap the Modeler Role **Modeler** to access Models and the Sandbox.

Figure 22: Remap the Modeler Role



5. Navigate to **Identity Management**, **User – User Group Role Map**
6. Map the Roles **LLFP MODELLER** and **LLFP LGD MODELLER** for the user **LLFP Application Analyst Group** to access Models.

Figure 23: Remap the LLFP Modeler Role

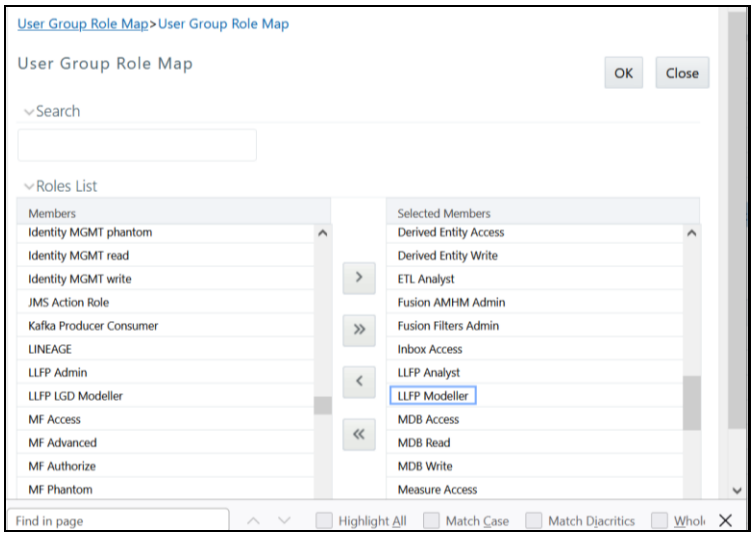
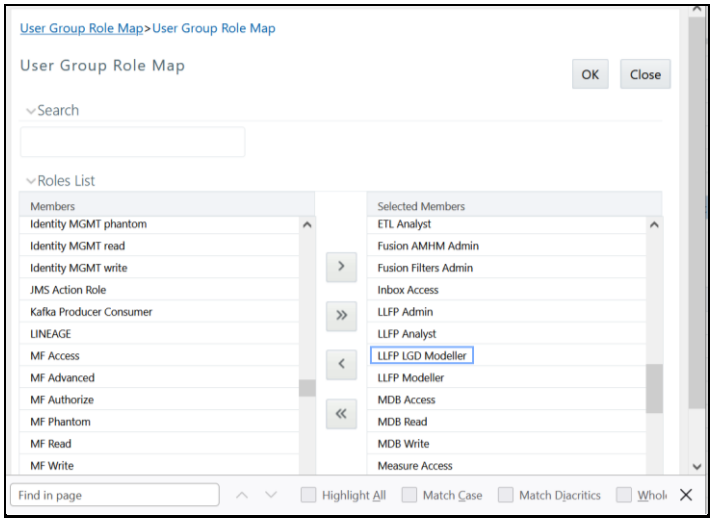


Figure 24: Remap the LLFP LGD MODELLER Role



7. Install and apply the OFS LLFP one-off **33672339** patch from MOS. This patch deploys the LLFP models within the MMG application.
8. Perform the steps mentioned in the section Deploying OFS LLFP Models in OFS MMG.

8.5.4 Deployment of Webserver

1. After successful fresh installation or upgrade, follow these steps:
   f. Clear the application cache. Navigate to the following path depending on the configured web application server and delete the files.
      - **Tomcat**:
        `<Tomcat installation directory>/work/Catalina/localhost/<Application name>/org/apache/jsp`
      - **WebLogic**:
        `<WebLogic installation location>/domains/<Domain`

```
name>/servers/<Server name>/tmp/_WL_user/<Application name>/<auto
generated directory>/jsp_servlet
```

Delete the directory named `.WL_internal` present in the `<WebLogic installation location>/user_projects/domains/< Domain name >/applications/<context_name>.ear/META-INF/` directory, if it exists.

- **WebSphere**:
  `<WebSphere installation directory>/AppServer/profiles/<Profile name>/temp/<Node name>/server1/<Application name>/<.war file name>`

2. Follow these steps to remove `ContextDocLoader` from the `web.xml` file:
   a. Navigate to `$FIC_WEB_HOME/webroot/WEB-INF` folder.
   b. Open the `web.xml` file in a text editor.
   c. Search for `ContextDocLoader` parameter and remove the following entries:

```
<servlet>
   <servlet-name>context</servlet-name>
      <servlet-
class>com.ofs.fsapps.commonapps.core.summary.common.ContextDocLoader</s
ervlet-class>
   <load-on-startup>1</load-on-startup>
</servlet>
d. <servlet-mapping>
<servlet-name>LLFPService</servlet-name>
            <url-pattern>/llfpService</url-pattern>
</servlet-mapping>
e. <servlet>
            <servlet-name>LLFPService</servlet-name>
            <servlet-
class>com.sun.xml.ws.transport.http.servlet.WSServlet</servlet-class>
      </servlet>
f. <servlet>
            <servlet-name>context</servlet-name>
            <servlet-
class>com.ofs.fsapps.commonapps.core.summary.common.ContextDocLoader</s
ervlet-class>
            <load-on-startup>1</load-on-startup>
</servlet>
```

3. For configuration of Server.xml for Tomcat 9x, see the section Configure Server.xml for Tomcat 9x.
4. Generate the application EAR or WAR file and redeploy the application onto your configured web application server. See Create and Deploy the EAR or WAR Files, for more information on generating and deploying the EAR or WAR files.

5. Restart all the OFSAAI services. See the Stop the Infrastructure Services and Start the Infrastructure Services sections in the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide for details.
6. To configure OBIEE or OAS, follow the steps mentioned in the Configuring OBIEE for Loan Loss Forecasting and Provisioning section.

8.5.5 Configuring the Sandbox

This section provides information on configuring the sandbox. These steps are optional and are only applicable if you want to use the sandbox feature.

8.5.5.1 Configuring the Sandbox after you Upgrade to Release 8.1.2.0.0

This section details the steps that you must perform if you want to configure the sandbox for the OFS LLFP application after you upgrade to Release 8.1.2.0.0.

8.5.5.1.1 Prerequisites

This configuration procedure is required only if you have a license for OFSAAI Enterprise Modelling.

Once you license OFS Advanced Analytical Applications Infrastructure, the following configurations must be made to use the Modelling features. These steps are required to verify and execute the models that are packaged with the OFS LLFP application.

> **NOTE** Ensure that Oracle R Enterprise Server version 1.5.1 is installed on the database server and AAAI Runner Package is installed on the DB server before you perform these configurations. Also, you must access the application with the required privileges.

1. In the config schema, create a new schema with the following grants:

```
grant create SESSION to <<schema_user>>; grant create PROCEDURE to
<<schema_user>>; grant create SEQUENCE to <<schema_user>>; grant create
TABLE to <<schema_user>>; grant create TRIGGER to <<schema_user>>; grant
create VIEW to <<schema_user>>;

grant create MATERIALIZED VIEW to <<schema_user>>;

grant create SYNONYM to <<schema_user>>;

grant unlimited TABLESPACE to <<schema_user>>;
```

2. Grant the **RQADMIN** role to the config schema user by executing the following query:

```
grant RQADMIN to <<config_schema>>; grant RQADMIN to <<atomic_schema>>;
grant RQADMIN to <<pdmodel_schema>>;
```

3. If Data Redaction is enabled, execute the following query:

```
alter user <<pdmodel_schema>> default role RQADMIN; grant OFS_SEC_DATA to
<<schema_user>>;

grant OFS_NOSEC_DATA to <<schema_user>>;
```

4. Log in to the application using System Administrator privileges.

5. Navigate to **System Configuration**, then **Configure Database Server**, and then click **Configure Database Server**.
6. Add a new database server. For more information about adding a new database server, see the *Adding Database Server Details* section in the OFS Analytical Applications Infrastructure User Guide.
7. Navigate to **System Configuration & Identity Management** tab.
8. Click **Administration and Configuration**, select **System Configuration**, and click **Database Details**.
9. Make a TNS entry for the newly created database. For more information, see the *Adding Database Details* section in the OFS Analytical Applications Infrastructure User Guide.
10. Create a new information domain for the sandbox and create a new segment. For more information, see the *Creating Information Domain* and *Creating Segment* sections in the OFS Analytical Applications Infrastructure User Guide.
11. Navigate to **Identity Management**, then **Security Management**, then **User Administrator**, and then **User Group Domain Map**.
12. Map the newly created sandbox information domain to the *LLFP Admin Group*. For more information about mapping a domain to a specific user group, see the User Group Domain Map section in the OFS Analytical Applications Infrastructure User Guide.
13. Map the *LLFP Admin User* to the *EMF Group*. For more information about mapping a user to a specific user group, see the User Group Role Map section in the OFS Analytical Applications Infrastructure User Guide.

8.5.5.1.2 Configurations for Verifying and Executing PD Model

Perform the following configurations to verify and execute the PD Model.

1. Log in to the application as an *LLFP admin* user.
2. By using the `IFRS ECL Consolidated` dataset, create a sandbox. For more information on how to create a sandbox, see the *Sandbox* section in the OFS Enterprise Modelling User Guide.

8.5.5.1.3 Configurations for Verifying and Executing Survival Model

Perform the following configurations to verify and execute the Survival Model.

1. Log in to the application as an *LLFP admin* user.
2. Create a sandbox by using the following datasets:
   - `Survival Model Input Dataset`
   - `Survival Model Output Dataset`
   - `Survival Rate Model Dataset`
   - `Survival Model UI Data Dataset`
3. Navigate to the `$FIC_HOME/scripts_OFS_ IFRS/atomic/create` folder.
4. Execute the `VW_SURVIVAL_MODEL.sql` and `vw_survival_model_derived_entity.sql` files.

8.5.5.1.4 Configurations for Verifying and Executing Vintage Model

Perform the following configurations to verify and execute the Vintage Model.

1. Log in to the application as an *LLFP admin* user.
2. Create a sandbox by using the following datasets:
   - `IFRS - Vintage Model Historic Dataset`
   - `IFRS - Vintage Model Prediction Dataset`
   - `IFRS - Vintage Model Average Loss Rate`

8.5.5.1.5 Replacing the placeholders

After you complete the configurations for each model, you must replace the placeholder sandbox ID in the config schema:

1. In the config schema, you must replace the place holder `##LLFPSANDBOX_ID##` with the sandbox ID in the following tables:
   - **MF_MODEL_MASTER**
   - **MF_MODEL_SCRIPT_MASTER**
   - **MF_MODEL_DS_QUERY**

8.5.5.2 Sandbox Execution and deployment

After you complete the above configurations, you must follow the instructions in the Oracle Financial Services Analytical Applications Installation and Configuration Guide to view, execute, and deploy the model from the sandbox.

9 Configure Resource Reference in Web Servers

Configuring resource references in webservers includes the following activities. See Configure Resource Reference in Web Servers section in the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide to complete these procedures.

- **Configure Resource Reference in WebSphere Application Server**
  - Create a JDBC Provider
  - Create Data Source
  - Create J2C Authentication Details
  - Define JDBC Connection Pooling
- **Configure Resource Reference in WebLogic Application Server**
  - Create Data Source
  - Create GridLink Data Source
  - Configure Multi Data Sources
  - Configure Advanced Settings for Data Source
  - Configure JDBC Connection Pooling
  - Create a Work Manager
- **Configure Resource Reference in Tomcat Application Server**
  - Create Data Source
  - Define JDBC Connection Pooling
  - Configure ClassLoader for Apache Tomcat

10 Configure Work Manager in Web Application Servers

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

Before proceeding with the domain creation, download and install the required one-off Patch or the latest WLS PSU for 14.1.1 from **My oracle Support** (Doc ID 2806740.2). For more information, refer to **Configure WebLogic for Application Deployment** in the OFS AAI installation guide.

Configuring Work Manager in web application servers includes the following activities. See Configure Work Manager in Web Application Servers section in the OFS Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide to complete these procedures.

11 Additional Configurations

This section provides information for additional configurations required for the OFSAA application packs.

To complete the configuration process, you may require to perform the following steps listed in the Additional Configuration Checklist. Use this checklist to verify whether these steps are completed or not. See the Additional Information section in the OFS Advanced Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide to complete these procedures.

Table 32: Additional Configuration Checklist

Sl. No.	Additional Configuration Activity
1	Add FTP/SFTP Configuration for File Transfer.
2	Configure the Infrastructure Server Memory.
3	Configure the Internet Settings.
4	Set OLAP Data Server Configuration.
5	Change IP or Hostname, Ports, Deployed Paths of the OFSAA Instance.
6	Execute the OFSAAI Setup Information Fetching Tool.
7	Execute the Encryption Changer.
8	Configure the Infrastructure LDAP Configuration.
9	Enable Parallel Execution of DML statements
10	Clear the application cache.
11	Configure password changes.
12	Configure Java Virtual Machine.
13	Configure Internal Service (Document Upload/Download).

12 Frequently Asked Questions (FAQs) and Error Dictionary

For FAQs and installation error-related information, see the section Frequently Asked Questions (FAQs) and Error Dictionary in the OFS Advanced Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide.

12.1 Application Pack 8.1.2.0.0 FAQs

You can see the Frequently Asked Questions that are developed with the interest to help you resolve some of the Oracle Financial Services Loan Loss Forecasting and Provisioning 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.

1. **What is an Application pack?**

   An Application Pack is a suite of products.

2. **Can I get a standalone installer for OFSAAI 8.1.2.0.0?**

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

3. **Where can I download Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.2.0.0 Application Pack?**

   You can download the OFSAAI 8.1.2.0.0 Application Pack from My Oracle Support (MOS).

4. **What are the minimum system and software requirements for the Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.2 Application Pack?**

   See the Hardware and Software Requirements for more information.

5. **Is my environment compatible with Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.2.0.0 Application Pack?**

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

6. **Does the Oracle Financial Services Loan Loss Forecasting and Provisioning 8.1.2.0.0 Application Pack support all Operating systems?**

   See the Hardware and Software Requirements section.

7. **How can I install the OFS Analytical Applications Infrastructure 8.1.2.0.0 Application Pack?**

   See the OFS Advanced Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide.

8. **Does this installation require any Third-party Software?**

   For details on the third-party software tools used, see the OFSAA Licensing Information user Manual *Release 8.1.2.0.0*.

9. **What languages are supported during the OFSAA 8.1.2.0.0 Application Pack installation?**

   US English is the language supported.

10. **What mode of installations OFSAA Application Pack supports [that is., Silent, GUI]?**

    OFSAA Application Packs support only Silent Mode.

11. **Does OFSAA 8.1.2.0.0 Application Pack support Multi-tier Installations?**

    OFSAA 8.1.2.0.0 supports only a single-tier installation. For more information, see the Frequently Asked Questions (FAQs) and Error Dictionary section.

12. **Does this Application Pack validate all prerequisites required for this installation like Memory, Disk Space, and so on?**

    Yes. The pre-requisite checks are done by the respective application pack installer.

13. **What happens if it aborts during the installation of any application or products within an Application pack?**

    You must restore the system and retrigger the installation

14. **Does this Application pack 'Roll Back' if any application installation fails due to errors?**

    The rollback of installation is not supported.

15. **Does the Application pack install all applications bundled?**

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

16. **Can I re-install any of the Application Packs?**

    You can retrigger in case of failure.

17. **Does this Application pack allow enabling or disabling any of the applications installed?**

    Yes, you can enable but you cannot disable it once the product is enabled in an environment.

18. **I have installed one application in an Application pack, can I install any of the new applications within the Application pack later?**

    Yes, but the installation must be done with the applications by enabling the application in the pack.xml file.

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

    There is no issue in installing separate OFSAAI installations, each with its own PFT/FTP 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 must be taken when running multiple OFSAAI installations on a single server. Adequate memory is required for each installation as several OFSAAI processes (model upload, DEFQ services, and so on) take significant amounts of memory. So it depends on your server's memory.

20. **Is it possible to install OFSAA 8.1.2.0.0 Application pack on an existing 'Infodom' where another OFSAA 8.1.2.0.0 application is installed?**

    Yes. However, the Behavioral Detection Application Pack and Compliance Regulatory Reporting Application pack are the exceptions. They must be installed in a different Infodom.

21. **Can I select an Infodom for the Application pack during installation?**

    Yes. You can select or change the required infodom.

22. **Can I install all Application Packs in a Single Infodom?**

Yes. But, the Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack are the exceptions. They must be installed in a different Infodom.

23. **How many Infodoms can be created over a single OFSAA Infrastructure of 8.1.2.0.0?**

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

24. **Is it possible to install OFS Enterprise Modeling later?**

    OFS Enterprise Modeling is a separate product and can be enabled as an option later from any application pack that bundles Enterprise Modeling. For more information, see Enable Financial Services Enterprise Modeling on Another Application Pack section in the OFS Advanced Analytical Applications Infrastructure Release 8.1.2.0.0 Installation and Configuration Guide.

25. **Does the Application pack create a sandbox automatically for the required applications?**

    Yes, Sandbox creation is part of the application install process only if OFS AAAI is licensed and enabled in the pack.xml.

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

    Maintenance Level (ML) Release and Minor Release upgrades are available with the complete application pack.

27. **Is it possible to uninstall any Application from the Application pack?**

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

28. **Can I uninstall the entire Application Pack?**

    No, you cannot uninstall the Application Pack.

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

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

30. **Does Application Pack contain all Language Packs supported?**

    Language Packs must be installed on the application packs.

31. **Can I install an Application Pack over another Application Pack (that is the 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 Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack are the exceptions. They must be installed in a different Infodom.

32. **What should I do if I get the error message: HostName in the input XML file is not matching with the local hostname while running the schema creator utility?**

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

33. **What are the Java versions supported in Oracle Financial Services Loan Loss Forecasting and Provisioning Application Pack version 8.1.2.0.0?**

    See the Hardware and Software Requirements section.

34. **Is OFS LLFP Application Pack version 8.1.2.0.0 supported on Java 9 and Java 11?**

For information about supported Java versions, see the Hardware and Software Requirements section

35. What should I do when I get the message: "[ERROR] - Error: APP Setup bin file failed." during OFS_Application_PACK installation?

This is a generic error message that appears during application installation failure. You must check the installation log files for more information about what failed the installation.

However, if the message is displayed and the log files are not generated, this can be a temp directory issue. The resolution is that your UNIX administrator has to disable the NOEXEC option. The installers extract the installation files into the `/tmp` directory, and if NOEXEC is enabled, the execution of binaries will not happen in the directory and the installation fails. Re-run the installer after the configuration is changed. For detailed information, see the support note at https://support.oracle.com/epmos/faces/DocumentDisplay?id=2340045.1.

OFSAA Support

Raise a Service Request (SR) in My Oracle Support (MOS) for queries related to the OFSAA applications.

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