

Oracle Financial Services Model Management and Governance

Installation and Configuration Guide

8.1.2.3.0

November 2023

ORACLE
Financial Services

Model Management and Governance

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1 Preface

This section provides information about the Oracle Financial Services Model Management and Governance (OFS MMG) Installation and Configuration Guide.

Topics:

- [Audience](#)
- [Additional Resources](#)
- [Conventions](#)
- [Abbreviations](#)

1.1 Audience

OFS MMG Installation and Configuration Guide is intended for administrators and implementation consultants who handle installing and maintaining the Application Pack Components.

This document assumes that you have experience in installing Enterprise Components and basic knowledge about the following:

- OFS AAI Components
- OFSAA Architecture
- UNIX Commands
- Database Concepts
- Web Server or Web Application Server

1.2 Additional Resources

This section identifies additional resources to the OFS MMG Application. You can access the following documents from the [Oracle Help Center](#):

- [OFS Model Management and Governance Release Notes](#)
- [OFS Model Management and Governance User Guide](#)

Additional related documents are as follows:

- [OFS Analytical Applications 8.1.2.0.0 Technology Matrix](#)

1.3 Conventions

The following text conventions are used in this document:

Table 1: Document Conventions

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

1.4 Abbreviations

The following table lists the abbreviations used in this document:

Table 2: Abbreviations

Abbreviation	Meaning
BDP	Big Data Processing
DBA	Database Administrator
DDL	Data Definition Language
DEFQ	Data Entry Forms and Queries
DML	Data Manipulation Language
EAR	Enterprise Archive
EJB	Enterprise JavaBean
ERM	Enterprise Resource Management
FTP	File Transfer Protocol
HDFS	Hadoop Distributed File System
HTTPS	Hypertext Transfer Protocol Secure
J2C	J2EE Connector
J2EE	Java 2 Enterprise Edition
JCE	Java Cryptography Extension
JDBC	Java Database Connectivity
JDK	Java Development Kit

Abbreviation	Meaning
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
OFS AAI	Oracle Financial Services Analytical Application Infrastructure
OFS MMG	Oracle Financial Services Model Management and Governance Application
OHC	Oracle Help Center
OLAP	On-Line Analytical Processing
OLH	Oracle Loader for Hadoop
ORAAH	Oracle R Advanced Analytics for Hadoop
OS	Operating System
RAM	Random Access Memory
RDBMS	Relational Database Management System
RHEL	Red Hat Enterprise Linux
SFTP	Secure File Transfer Protocol
SID	System Identifier
SSL	Secure Sockets Layer
TNS	Transparent Network Substrate
URL	Uniform Resource Locator
VM	Virtual Machine
WAR	Web Archive
XML	Extensible Markup Language
PGX	Parallel Graph AnalytiX
FQDN	Fully Qualified Domain Name

2 Introduction

Financial institutions require models that work on traditional statistical techniques, modern machine-learning methods, computational and simulation models. Oracle Financial Services Model Management and Governance leverage the Data Studio environment to develop, deploy, and manage models at the enterprise level.

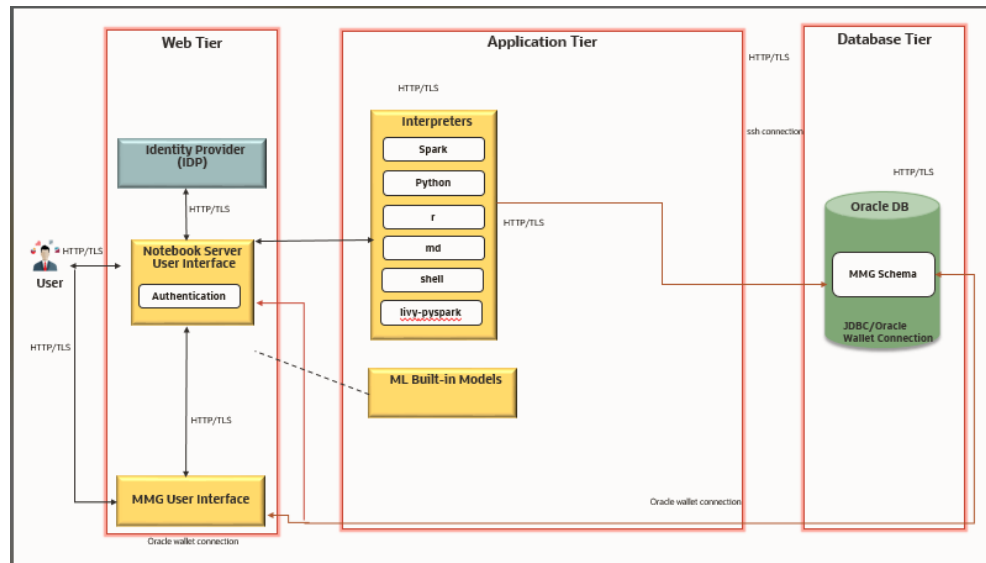
The OFS Model Management and Governance application enables institutions to implement their IT policies while providing flexibility and freedom that Data Scientists and Statistical Modelers desire. OFS MMG's design facilitates financial institutions to manage external regulatory and internal governance policies by building testing models in a workspace environment. A workspace is provisioned and authorized for use (usually by an administrator) before making it available to modelers. Administrative users grant analysts and modelers access to workspaces along with a subset of production data to build models. Validated and approved models can then be promoted from workspaces to the enterprise model repository. Models in the repository can then be woven into analytical application flows crafted by mixing data management tasks, model execution, and deterministic business logic.

Topics:

- [Deployment Topology](#)
- [Components of Oracle Financial Services Model Management Governance](#)

2.1 Deployment Topology

Figure 1: The logical architecture implemented for OFS MMG Application Pack



2.2 Components of Oracle Financial Services Model Management Governance

The following are the components of Oracle Financial Services Model Management Governance Application:

- Workspace Management
- Model Management
- Dataset
- Model Pipelines
- Model Actions
- Graphs
- Scheduler Service
- Audit Trail
- Data Studio Options
- Object Migration
- Model Training

For more information on how to use the application, see the [OFS Model Management and Governance User Guide](#).

2.3 Installation Check List

To complete the installation process, you must perform the following steps listed in the Pre-install Checklist. Use this checklist to verify whether these steps are completed or not.

Table 3: Installation Checklist

Sl. No.	Activity
Pre-installation Steps	
1	Install all the prerequisite <i>hardware and software</i> as per the OFS Analytical Applications 8.1.2.0.0 Technology Matrix .
2	Configure the Database Instance Settings.
3	Create the Installation, Download, and Metadata Repository Directories: <ul style="list-style-type: none"> • Installation Directory • Temporary Directory • Staging Area/Metadata Repository • Download Directory
4	Configure the following Operating System and File System Settings: <ul style="list-style-type: none"> • File Descriptor • Total number of processes • Port(s)

Sl. No.	Activity
	<ul style="list-style-type: none"> • .profile file permissions • Add FTP or SFTP Configuration for file transfer (to access Staging Area and Metadata Directory)
5	<p><u>Update</u> the following Environment Settings as required for the installation in the .profile file:</p> <ul style="list-style-type: none"> • Java Settings <ul style="list-style-type: none"> ▪ Oracle Database Server and Client Settings ▪ Add TNS entries in the TNSNAMES.ORA file ▪ Time Zone Settings
Installation Steps	
6	<u>Download</u> the Installer Kit.
7	<u>Extract</u> the Installer Kit.
8	<u>Configure</u> the config.sh file.
9	<u>Trigger</u> the Application Installation.
Post-Installation Steps	
10	<u>Access</u> the MMG Application.
11	<u>Create</u> Application Users.
12	<u>Map</u> Application User(s) to User Groups.

3 Hardware and Software Requirements

See the [Oracle Financial Services Analytical Applications 8.1.2.0.0 Technology Matrix](#) for the hardware and software required for OFS MMG Release 8.1.2.0.0.

3.1 License Information

For details on the third-party software tools used, see the [OFSAA Licensing Information User Manual Release 8.1.2.0.0](#).

Part I

Topics:

- [Pre-installation](#)
- [Installation](#)
- [Post-installation](#)
- [PGX Installation](#)

4 Pre-installation

This section contains the pre-installation requirements to install the OFS MMG Application.

4.1 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

4.2 Create the Database Schema on Oracle Database

You need to create the following Database Schemas:

- [MMG Application Schema](#)
- [MMG Studio Schema](#)
- [Graph Schema](#)

Tablespace

You can either use the existing Tablespace or can create a new Tablespace during Schema creation using the following script:

Permanent Tablespace

```
CREATE TABLESPACE <tablespace_name >  
  DATAFILE '<tablespace_name >.dat'  
  SIZE 1G  
  ONLINE;
```

Temporary Tablespace

```
CREATE TEMPORARY TABLESPACE <tablespace_name >  
  TEMPFILE '<tablespace_name >.dbf'  
  SIZE 100M;
```

4.2.1 Creating an Oracle user

You can create an Oracle user using the following script:

```
CREATE USER <oracle_user_name> IDENTIFIED BY <password> DEFAULT TABLESPACE  
USERS TEMPORARY TABLESPACE TEMP QUOTA <quota_size>|UNLIMITED ON USERS
```

4.2.2 Create the MMG Application Schema

You must create an Oracle User to create the MMG Application schema. For more details, see [Creating an Oracle User](#) section.

Assign the Grants

This section discusses the various grants required for the Oracle Database User.

Assign the following grants:

```
grant create SESSION to <oracle_database_user>;
grant create PROCEDURE to <oracle_database_user>;
grant create SEQUENCE to <oracle_database_user>;
grant create TABLE to <oracle_database_user>;
grant create TRIGGER to <oracle_database_user>;
grant create VIEW to <oracle_database_user>;
grant create MATERIALIZED VIEW to <oracle_database_user>;
grant select on SYS.V_$PARAMETER to <oracle_database_user>;
grant create SYNONYM to <oracle_database_user>;
grant select on sys.v_$parameter to <oracle_database_user>;
grant select on sys.dba_free_space to <oracle_database_user>;
grant select on sys.dba_tables to <oracle_database_user>;
grant select on sys.Dba_tab_columns to <oracle_database_user>;
grant create RULE to <oracle_database_user>;
grant create any trigger to <oracle_database_user>;
grant drop any trigger to <oracle_database_user>;
grant select on SYS.DBA_RECYCLEBIN to <oracle_database_user>;
```

NOTE

This is required for MMG Config Schema and the Workspace Schemas.

4.2.3 Create the MMG Studio Schema

You must create an Oracle User to create the MMG Studio schema. For more details, see [Creating an Oracle User](#) section.

Assign the following grants

```
GRANT CONNECT, CREATE TABLE, CREATE VIEW, CREATE SEQUENCE TO
<mmgstudio_schema_name>;
```

4.2.4 Create the Graph Schema

You must create an Oracle User to create the Graph schema. For more details, see [Creating an Oracle User](#) section.

Assign Grants

This section discusses the various grants required for the Graph schemas.

Assign the following grants for the schema:

1. Pre-installation grants for Graph schema :


```

GRANT CREATE SESSION TO <GRAPH_SCHEMA>;
GRANT CREATE TABLE TO <GRAPH_SCHEMA>;
GRANT CREATE VIEW TO <GRAPH_SCHEMA>;
GRANT CREATE ANY PROCEDURE TO <GRAPH_SCHEMA>;
GRANT CREATE SEQUENCE TO <GRAPH_SCHEMA>;
GRANT CREATE JOB TO <GRAPH_SCHEMA>;
GRANT CREATE MATERIALIZED VIEW TO <GRAPH_SCHEMA>;
GRANT EXECUTE ON DBMS_SCHEDULER to <GRAPH_SCHEMA>;
GRANT EXECUTE ON DBMS_COMPARISON TO <GRAPH_SCHEMA>;
GRANT EXECUTE ON DBMS_RLS TO <GRAPH_SCHEMA>;
GRANT EXECUTE ON SYS.DBMS_SESSION TO <GRAPH_SCHEMA>;
GRANT EXECUTE ON DBMS_REDEFINITION TO <GRAPH_SCHEMA>;
GRANT REDEFINE ANY TABLE TO <GRAPH_SCHEMA>;
GRANT SELECT ON SYS.V_$PARAMETER TO <GRAPH_SCHEMA>;
GRANT SELECT ON <DATA_SOURCE_SCHEMA>.<TABLE_NAME> TO <GRAPH_SCHEMA>;

```

Example:

Change the <DATA_SOURCE_SCHEMA> to the schema used in the Graph pipeline.

NOTE

If the user has to execute the custom graph, the same permissions have to be provided for the input tables referred in Custom Graph Pipeline.

4.3 Create the Installation, Download, and Metadata Repository Directories

To install OFS MMG, create the following directories:

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

NOTE

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

- **OFS MMG Installation Directory (Mandatory):** Create an installation directory where the product binaries are installed. Assign 755-user permission to the installation directory.

- **OFS MMG Staging/Metadata Directory (Mandatory):** A directory to hold the application metadata artifacts and additionally act as the staging area for the flat files. This directory is also referred to as "FTP SHARE". Create a Staging/Metadata Repository Directory to copy data files, save data extracts, and so on.

The directory must exist on the same system as the OFS MMG Installation. This directory can be configured on a different mount or under a different user profile.

NOTE Ensure the OFS MMG staging directory is not set to the same path as the OFS MMG Installation Directory and is not a subdirectory inside the OFS MMG Installation Directory.

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

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

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

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

4.4.1 Configure Operating System and File System Settings

To configure the Operating System and file system settings refer the parameters and configuration actions that must be performed to install the OFS MMG Application.

Table 4: Configure Operating System and File System Settings

Parameter	Configuration Action
File Descriptor Settings	<p>In the <code>sysctl.conf</code> file, to change the number of file descriptors, do the following as the root user:</p> <ol style="list-style-type: none"> 1. Edit the following line in the <code>/etc/sysctl.conf</code> file: <code>fs.file-max = <value></code> where <code><value></code> is greater than 15000 2. Apply the change by running the following command: <code># /sbin/sysctl -p</code> <p>NOTE: The value specified here is the minimum value to be set for the installation process to go forward. For other modules, this value may depend on the available resources and the number of processes executed in parallel.</p>

Parameter	Configuration Action
Total Number of Process Settings	In the <code>sysctl.conf</code> 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.

4.4.2 Configure the Environment Settings

Environment settings refers to values related to the current environment, like the Operating System or user sessions. To configure the environment settings refer the following topics.

4.4.2.1 Java Settings

To configure the Java Settings, refer the following table.

Table 5: Java Settings

Description	Example Value
In the <code>.profile</code> file, set the Java tool options for all versions JDK 11.0.20 and above updates. Ensure that SYMBOLIC links to JAVA installation are not set in the PATH variable.	<pre>JAVA_TOOL_OPTIONS=" - Djdk.util.zip.disableZip64ExtraFieldValidation=true" export JAVA_TOOL_OPTIONS</pre> NOTE: OFS MMG does not support OpenJDK .
In the <code>.profile</code> file, set JAVA_BIN to include the JDK absolute path	For example: <pre>JAVA_BIN=/usr/java/jdk-11.0.20/bin export JAVA_BIN</pre>

4.4.2.2 Oracle Database Server and Client Settings

To configure the Oracle Database Server and Client settings refer the following table.

Table 6: Oracle Database Server and Client Settings

Description	Example Value
In the <code>.profile</code> file, set TNS_ADMIN pointing to the appropriate <code>tnsnames.ora</code> file.	<pre>TNS_ADMIN=\$HOME/tns</pre>
In the <code>.profile</code> file, set ORACLE_HOME pointing to the appropriate Oracle Client installation.	<pre>ORACLE_HOME=/scratch/oraofss/app_client19c/product/ 19.0.0/client_1</pre>

Description	Example Value
In the <code>.profile</code> file, set <code>PATH</code> to include the appropriate <code>\$ORACLE_HOME/bin</code> path.	<code>PATH=\$JAVA_HOME/bin:\$ORACLE_HOME/bin</code>

4.4.2.3 TNS entries in the `tnsnames.ora` file for Non-TCPS

You must configure the TNS entries in the `tnsnames.ora` file for Non-TCPS.

4.4.2.3.1 Non-TCPS

To configure the TNS entries in the `tnsnames.ora` file for Non-TCPS, refer the following table.

Table 7: TNS entries in the `TNSNAMES.ORA` file for Non-TCPS

Description	Example Value
Ensure that an entry (with <code>SID</code> or <code>SERVICE NAME</code>) is added in the <code>tnsnames.ora</code> file on the OFSAA server.	<pre><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>)))</pre>

```
<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>)
    )
  )
```

4.4.2.4 Time Zone Settings

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

For more information, see *MMG User Guide*.

Table 8: Time Zone Settings

Description	Example Value
Time Zone	TZ=Asia/Calcutta

4.5 Setup Password Stores with Oracle Wallet

This section describes the steps to create a wallet and the aliases for the database user accounts. For more information on configuring authentication and password stores, see [Oracle Database Security Guide](#).

As part of an Application Installation, Administrators must set up password stores for Database User Accounts using Oracle Wallet. These password stores must be installed on the Application Database side. The installer handles much of this process. The administrators must perform some additional steps.

A password store for the application and Application Server User Accounts must also be installed. However, the installer takes care of this entire process.

4.5.1 Setup the Password Stores for Database User Accounts

After the database is installed and the default Database User Accounts are set up, Administrators must set up a password store using the Oracle Wallet. This involves assigning an alias for the username and associated password for each Database User Account. The alias is used later during the application installation. This password store must be created on the system where the Application Server and database client are installed.

NOTE In this section, `<wallet_location>` is a placeholder text for illustration purposes. Before running the command, ensure that you have already created the `<wallet_location>` directory where you want to create and store the wallet.

The wallet is created in the `<wallet_location>` directory with the auto-login feature enabled. This feature enables the database client to access the wallet contents without using the password. For more information, see [Oracle Database Security Guide](#).

To create a wallet, follow these steps:

1. Login to the server as a Linux user.
2. Create a wallet in the `<wallet_location>` using the following command:

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

NOTE The mkstore utility is included in the Oracle Database Client Installation.

3. After you run the command, a prompt appears. Enter a password for the Oracle Wallet in the prompt.
A prompt appears to re-enter the password. Re-enter the password.

Figure: Wallet Creation

```
$ mkstore -wrl /scratch/ofsasftp/pgx_server/wallet -create
Oracle Secret Store Tool Release 19.0.0.0.0 - Production
Version 19.3.0.0.0
Copyright (c) 2004, 2019, Oracle and/or its affiliates. All rights reserved.

Enter password:
Enter password again:
$ mkstore -wrl /scratch/ofsasftp/pgx_server/wallet -createCredential MMGConfigSchema_Alias MMG_Config_Schema
Oracle Secret Store Tool Release 19.0.0.0.0 - Production
Version 19.3.0.0.0
Copyright (c) 2004, 2019, Oracle and/or its affiliates. All rights reserved.

Your secret/Password is missing in the command line
Enter your secret/Password:
Re-enter your secret/Password:
Enter your secret/Password:
Re-enter your secret/Password:
Enter wallet password:
$ mkstore -wrl /scratch/ofsasftp/pgx_server/wallet -createCredential MMGStudio_Schema_Alias MMG_Studio_Schema
Oracle Secret Store Tool Release 19.0.0.0.0 - Production
Version 19.3.0.0.0
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Your secret/Password is missing in the command line
Enter your secret/Password:
Re-enter your secret/Password:
Enter wallet password:
$ mkstore -wrl /scratch/ofsasftp/pgx_server/wallet -createCredential MMGGraphSchema_Alias MMG_Graph_Schema
Oracle Secret Store Tool Release 19.0.0.0.0 - Production
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Your secret/Password is missing in the command line
Enter your secret/Password:
Re-enter your secret/Password:
Enter wallet password:
$
```

4. Create the database connection credentials for the MMG Schema using the following command:
`mkstore -wrl <wallet_location> -createCredential <alias-name> <mmg-schema-name>`

Here, MMG Schema is the same as explained in Create the MMG Schema section.

After you run the command, a prompt appears. Enter the password associated with the Database User Account in the prompt. You are prompted to re-enter the password. You are prompted for the wallet password used in Step 1.

NOTE In this manner, create a wallet and associated database connection credentials for all the Database User Accounts including Graph and Studio Schema.

After the wallet is created, go to the <wallet_location> directory and click Refresh  to view the created wallet folder.

The wallet folder contains two files: **ewallet.p12** and **cwallet.sso**.

5. In the `<wallet_location>` directory, configure the `tnsnames.ora` file to include the entry for each alias name to be set up. Alias name can be renamed as wallet db alias name.

NOTE

- You can either update the existing `tnsnames.ora` file with the above details or create new `tnsnames.ora` file and add the required entries.
- `<alias-name>` is a user-defined value.

6. Create a `sqlnet.ora` file in the wallet directory using the following content:

```
WALLET_LOCATION = (SOURCE = (METHOD = FILE) (METHOD_DATA = (DIRECTORY =
<Wallet_Location>))) )
```

```
SQLNET.WALLET_OVERRIDE=TRUE
```

```
SSL_CLIENT_AUTHENTICATION=FALSE
```

Here, `<Wallet_Location>` should be in below format:

```
WALLET_LOCATION = (SOURCE = (METHOD = FILE) (METHOD_DATA =
(DIRECTORY = <WALLET_PATH> ) ) )
```

4.5.2 Verify the Connectivity of the Wallet

To verify the connectivity of the wallet, follow these steps:

1. Test the connectivity using the following command:

NOTE

The `ORACLE_HOME` used with the wallet must be the same version or higher than the wallet created.

```
$ export WALLET_LOCATION=<wallet_location>
```

```
$ export TNS_ADMIN=<tnsnames.ora_location>. If you have created a new
tnsnames.ora file, provide the location of the new file.
```

```
$ sqlplus /@<alias_name>
```

The output is similar to:

```
SQL*Plus: Release 11
```

```
Connected to:
```

```
Oracle Database 12c
```

To verify if you are connected to the correct user:

```
SQL> show user
```

The output is similar to:

```
USER is "<database-user-name>"
```

5 Installation

This section provides detailed steps to install the OFS MMG Application.

5.1 Prerequisites

Below is the list of prerequisites:

- Port Details
MMG Studio uses the following ports by default, so make sure these are free:
graph service: 7059
Server: 7008
markdown-interpreter: 7009,7029
python-interpreter: 7012,7032,6012
shell-interpreter: 7013,7033
plainr-interpreter 7019,7039,6311 (Rserve port- configurable in plainr.Json)
pgx server: 7007
pgx-interpreter: 7022, 7042
jdbc-interpreter : 7011, 7031
- For Solaris Operating System, the MMG Studio has to be configured in Linux machine remotely. And, the studio URL must be the same as that of the remote studio during MMG Application installation. To configure Remote MMG Studio, see the [Remote MMG Studio Configuration](#).

5.2 Download the OFS MMG Installer Kit

To download the software as a .zip folder, download the mandatory minor release patch **34813613** from [My Oracle Support \(MOS\)](#).

Download the installer archive and copy (in Binary Mode) to the download directory that exists in the OFS MMG Installation Setup.

5.3 Extract the Software

You must be logged in to the UNIX Operating System as a Non-Root User to perform the following steps. To extract the software, follow these steps:

1. Download the unzip (OS-specific) `unzip_<os>.zip` 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. Uncompress the unzip installer file with the command:

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


NOTE

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

2. Assign execute (751) to the file with the following command:

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

For example: `chmod 751 unzip_sparc`

3. Extract the contents of the OFS MMG Application Pack Release 8.1.2.3.0 installer archive file in the download directory with the following command:

```
unzip OFS_MMG_8.1.2.3.0_<OS>.zip
```

After unzipping the `OFS_MMG_8.1.2.3.0` folder, following zip folders are displayed under OFS MMG folder.

- `mmg-pgx.zip`
- `mmg-installer.zip`

Unzip `mmg-installer.zip` and the following components are available under `/OFS_MMG/mmg-installer.zip`:

- `mmg-ui`
- `mmg-studio`
- `mmg-service`
- `mmg-schema-creator`
- `mmg-pipeline`
- `lib`
- `bin`
- `conf`

4. Navigate to the download directory and assign execute permission to the installer directory with the following command:

```
chmod -R 750 OFS_MMG
```

5.4 Configure the config.sh File

To configure the `config.sh` file for installing MMG, follow these steps:

1. Login to the server as a non-root user.
2. Navigate to the `<MMG_PACK>OFS_MMG/bin` directory.
3. Configure the applicable `config.sh` attributes as shown in the following table.

Sample Config.sh file

```
#!/bin/sh
## Common properties
export APPLICATION_NAME=##APPLICATION_NAME##
```

```
export WALLET_LOCATION=##WALLET_LOCATION##
export TNS_ADMIN_PATH=##TNS_ADMIN_PATH##
export WALLET_ALIAS=##WALLET_ALIAS##
export LOG_HOME=##LOG_HOME##
export FTPSHARE=##FTPSHARE##
export DATASTUDIO_URL=##DATASTUDIO_URL##
export MMG_CONFIG_SCHEMA_NAME=##MMG_CONFIG_SCHEMA_NAME##
export BE_HOSTNAME=##BE_HOSTNAME##
export BE_PORT=##BE_PORT##
export UI_PORT=##UI_PORT##
export SCHEMA_PORT=##SCHEMA_PORT##
export CONTEXT_PATH=##CONTEXT_PATH##
export STUDIO_AUTH_TYPE=##STUDIO_AUTH_TYPE##
export SSO_TOKEN=##SSO_TOKEN##
export SSL_ENABLED=##SSL_ENABLED##
export SSL_KEYSTORE=##SSL_KEYSTORE##
export SSL_KS_SECRET=##SSL_KS_SECRET##
export SSL_KS_TYPE=##SSL_KS_TYPE##
export SSL_KS_ALIAS=##SSL_KS_ALIAS##
export SESSION_TOKEN_CREDENTIALS=##SESSION_TOKEN_CREDENTIALS##
export FCC_API_USER=##FCC_API_USER##
export MMG_DATASOURCE_MAX_POOL_SIZE=10
export MMG_DATASOURCE_IDLE_TIMEOUT=30000
export MMG_DATASOURCE_CONN_TIMEOUT=80000
export EXT_DATASOURCE_MAX_POOL_SIZE=10
export EXT_DATASOURCE_IDLE_TIMEOUT=30000
export EXT_DATASOURCE_CONN_TIMEOUT=80000
export MMG_HTTP_MAX_CONN=20
export MMG_HTTP_MAX_CONN_PER_ROUTE=2
export MMG_HTTP_CONNECT_TIMEOUT=30000
export MMG_HTTP_READ_TIMEOUT=120000
## Properties for mmg-ui
export APPLICATION_FAVICON_PATH=##APPLICATION_FAVICON_PATH##
export UI_AUTH_TYPE=##AUTH_TYPE##
export AAI_AUTH_URL=##AAI_AUTH_URL##
export SAML_IDP_URL=##SAML_IDP_URL##
export SAML_SP_ENTITY=##SAML_SP_ENTITY##
```

```
export SAML_SRV_URL=##SAML_SRV_URL##
export SAML_LOGOUT_URL=##SAML_LOGOUT_URL##
export LDAP_URL=##LDAP_URL##
export LDAP_SEARCH_BASE=##LDAP_SEARCH_BASE##
export LDAP_USER_FILTER=##LDAP_USER_FILTER##
export LDAP_USER_SEARCH_FILTER=##LDAP_USER_SEARCH_FILTER##
export LDAP_GROUP_SEARCH_FILTER=##LDAP_GROUP_SEARCH_FILTER##
export LDAP_GROUP_SEARCH_BASE=##LDAP_GROUP_SEARCH_BASE##
export LDAP_GROUP_MEMBER=##LDAP_GROUP_MEMBER##
export SERVER_COOKIE_DOMAIN=##SERVER_COOKIE_DOMAIN##
export SERVER_COOKIE_NAME=##SERVER_COOKIE_NAME##
export SERVER_COOKIE_TIMEOUT=##SERVER_COOKIE_TIMEOUT##
export SERVER_COOKIE_IS_SECURE=##SERVER_COOKIE_IS_SECURE##
##Properties for mmg-service
export BE_AUTH_TYPE=public
export MMG_PYTHON_INTERPRETER=##MMG_PYTHON_INTERPRETER##
##Properties for mmg-studio
export STUDIO_WALLET_ENABLED=##STUDIO_WALLET_ENABLED##
export LOGIN_SHOW=##LOGIN_SHOW##
export SESSION_MODE=##SESSION_MODE##
export STUDIO_REALM=##STUDIO_REALM##
export OFSAA_URL=##OFSAA_URL##
export API_USERS=##API_USERS##
export VALID_ROLES=##VALID_ROLES##
export DATASOURCE_URL=##DATASOURCE_URL##
export DATASOURCE_USERNAME=##DATASOURCE_USERNAME##
export DATASOURCE_PASSWORD=##DATASOURCE_PASSWORD##
export DATASOURCE_DRIVER=##DATASOURCE_DRIVER##
export JPA_DB_PLATFORM=##JPA_DB_PLATFORM##
export STUDIO_LOG_LEVEL=##STUDIO_LOG_LEVEL##
export PYTHON_HOME=##PYTHON_HOME##
export R_ENABLED=##R_ENABLED##
export RS_CONF_PATH=##RS_CONF_PATH##
export RS_KEYSTORE=##RS_KEYSTORE##
export RS_KS_SECRET=##RS_KS_SECRET##
# Following are fcc services specific configurations, Leave as it is if not
applicable
export TEMPLATE_CONFIG_PATH=##TEMPLATE_CONFIG_PATH##
```

```
export TEMPLATE_DEFAULT_LINK=##TEMPLATE_DEFAULT_LINK##
export AUTH_SERVICE_URL=##AUTH_SERVICE_URL##
export META_SERVICE_URL=##META_SERVICE_URL##
export ER_SERVICE_URL=##ER_SERVICE_URL##
export BATCH_SERVICE_URL=##BATCH_SERVICE_URL##
export SAML_ISSUER=##SAML_ISSUER##
export SAML_DESTINATION=##SAML_DESTINATION##
export SAML_ASSERTION=##SAML_ASSERTION##
export SAML_ROLE_ATTRIBUTE=##SAML_ROLE_ATTRIBUTE##
export SAML_STUDIO_LOGOUT_URL=##SAML_STUDIO_LOGOUT_URL##
export SAML_COOKIE_DOMAIN=##SAML_COOKIE_DOMAIN##
# Following are pipeline services specific configurations, Leave as it is if
not applicable
export DATAPIPELINE_SERVICE_PORT1=##DATAPIPELINE_SERVICE_PORT1##
export DATAPIPELINE_SERVICE_PORT2=##DATAPIPELINE_SERVICE_PORT2##
export
DATAPIPELINE_METADATA_ARCHIVE_PATH=##DATAPIPELINE_METADATA_ARCHIVE_PATH##
export
DATAPIPELINE_METADATA_IMPORT_SERVICE_PORT=##DATAPIPELINE_METADATA_IMPORT_S
ERVICE_PORT##
export DATAPIPELINE_ERXMLPATH=##DATAPIPELINE_ERXMLPATH##
#URLS for pipeline,ER and matching service. Leave as it is if not
applicable. Will impact the pipeline that could be added to a graph
export MATCHRULE_BASE_URL=##MATCHRULE_BASE_URL##
export LOADGRAPH_BASE_URL=##LOADGRAPH_BASE_URL##
export MATCHSRVC_UI_CREATE_URL=##MATCHSRVC_UI_CREATE_URL##
export MATCHSRVC_UI_EDIT_URL=##MATCHSRVC_UI_EDIT_URL##
export MATCHSRVC_UI_CLONE_URL=##MATCHSRVC_UI_CLONE_URL##
#URLS for index service. Leave as it is if not applicable. Will impact the
pipeline that could be added to a graph
export GRAPH_INDEX_BASE_URL=##GRAPH_INDEX_BASE_URL##
export LOADINDEX_UI_CREATE_URL=##LOADINDEX_UI_CREATE_URL##
export LOADINDEX_UI_EDIT_URL=##LOADINDEX_UI_EDIT_URL##
#Changes for auth services + mmg keys
export AAI_COOKIE_DOMAIN=##AAI_COOKIE_DOMAIN##
export MMG_KEYS_LOC=##MMG_KEYS_LOC##
#Additional MMG Features
export KAFKA_ENABLED=##KAFKA_ENABLED##
#Properties to package Load to Graph (L2G) service inside MMG
```

```
## Start of L2G Properties ##
export GRAPH_INSTALLATION_PATH=##GRAPH_INSTALLATION_PATH##
export GRAPH_KEYSTORE_PASSWORD=##GRAPH_KEYSTORE_PASSWORD##
## Graph schema configurations
export MMG_DB_SERVER_NAME=##MMG_DB_SERVER_NAME##
export MMG_DB_PORT=##MMG_DB_PORT##
export MMG_DB_SERVICE_NAME=##MMG_DB_SERVICE_NAME##
export PGX_SERVER_URLS=##PGX_SERVER_URLS##
#### PGX data memory limits configurations
## Overall Configuration
export
MAX_TOTAL_SHARED_DATA_MEMORY_SIZE=##MAX_TOTAL_SHARED_DATA_MEMORY_SIZE##
export
MAX_TOTAL_PRIVATE_DATA_MEMORY_SIZE=##MAX_TOTAL_PRIVATE_DATA_MEMORY_SIZE##
export MAX_PER_SESSION_DATA_MEMORY_SIZE=##MAX_PER_SESSION_DATA_MEMORY_SIZE##
## Role wise data memory limits
export MAX_DATA_MEMORY_SIZE_DSUSRGRP=##MAX_DATA_MEMORY_SIZE_DSUSRGRP##
export MAX_DATA_MEMORY_SIZE_DSBATCH=##MAX_DATA_MEMORY_SIZE_DSBATCH##
export MAX_DATA_MEMORY_SIZE_DSINTER=##MAX_DATA_MEMORY_SIZE_DSINTER##
export MAX_DATA_MEMORY_SIZE_DSAPPROVER=##MAX_DATA_MEMORY_SIZE_DSAPPROVER##
export MAX_DATA_MEMORY_SIZE_DSUSER=##MAX_DATA_MEMORY_SIZE_DSUSER##
#end of Properties configurations for L2G
##Schema details for graph service. This is configured as a temporary/target
space for DP to create target tables which will act as input to L2G
export GRAPH_SCHEMA_WALLET_ALIAS=##GRAPH_SCHEMA_WALLET_ALIAS##
export GRAPH_SCHEMA_WALLET_LOCATION=##GRAPH_SCHEMA_WALLET_LOCATION##
export GRAPH_SCHEMA_TNS_ADMIN_PATH=##GRAPH_SCHEMA_TNS_ADMIN_PATH##
export GRAPH_SCHEMA_DB_SCHEMA_NAME=##GRAPH_SCHEMA_DB_SCHEMA_NAME##
#ENDOFFILE#
```

Table : config.sh file

Parameter	Description	Is Mandatory	Comments
Common Properties			
##APPLICATION_NAME##	Title for Application, if not replaced, will be defaulted to: Model Management and Governance	YES	It is defaulted to Model Management and Governance. NOTE: Provide double quotes for application name if it is long and with spaces in it.
##WALLET_LOCATION##	Wallet is the folder that contains the sqlnet.ora and the wallet. sso and .p12 files.	YES	/scratch/users/wallet
##TNS_ADMIN_PATH##	This is the folder that contains the tnsnames.ora	YES	/scratch/users/tns
##WALLET_ALIAS##	CNE_CONFIG is the Config schema alias.	YES	CNE_CONFIG
##LOG_HOME##	Any writable folder, which will store application and MMG Studio logs.	YES	/scratch/users/logs
##FTPSHARE##	This can be any writable folder for the process owner.	YES	/scratch/users/ftps are This should be same as the metadata directory mentioned above.
##DATASTUDIO_URL##	URL of Datastudio 21.4.9	YES	https://whfzzzzz:7777/mmg
##MMG_CONFIG_SCHEMA_NAME##	Name of the MMG Config schema.	YES	
##BE_HOSTNAME##	Hostname on which backend service (mmg-service) runs. Use the same Host name wherever it is applicable.	YES	HostIP or FQDN
##BE_PORT##	Port on which backend service (mmg-service) needs to be run.	YES	7002
##UI_PORT##	Port on which UI service(mmg-ui) needs to be run.	YES	7001
##SCHEMA_PORT##	Port on which Schema Creator service needs to be run.	YES	7003
##CONTEXT_PATH##	Context path of the application	YES	mmg

Parameter	Description	Is Mandatory	Comments
##STUDIO_AUTH_TYPE##	FCC_SSO – for SAML Realm based authentication in FCC Studio MMG_AAI- AAI Based authentication for MMG Data Studio	YES	Can be either MMG_AAI, or FCC_SSO
##SSO_TOKEN##	<p>SSO Token value for Data Studio authentication.</p> <p>Applicable only when STUDIO_AUTH_TYPE is FCC_SSO and MMG_AAI.</p> <p>In case of FCC_SSO, refer to Oracle Financial Services Compliance Studio Installation Guide.</p> <p>In case of MMG_AAI, follow the below steps to create the SSO Token.</p> <ol style="list-style-type: none"> 1. Locate <code><MMG_INSTALLATION_PATH>/OFS_MMG/bin/key-generator.sh</code> and execute it. 2. Post successful execution, public key and private key is generated in the following paths: <code><MMG_INSTALLATION_PATH>/OFS_MMG/conf</code> and <code><MMG_INSTALLATION_PATH>/OFS_MMG/mmg-studio/conf/</code> 3. Execute token-generator.sh file by passing the <API_USER> as an argument value. This file is located under <code><MMG_INSTALLATION_PATH>/OFS_MMG/bin</code> Example: <code>./token-generator.sh MMG_API_USER</code> 4. Post successful execution, token.out is created inside same bin directory. The token.out file has content as follow: 	YES	

Parameter	Description	Is Mandatory	Comments
	<p>“Generated JWT Token for MMG_API_USER: <some-long-random-token-value>”</p> <p>5. Copy the <some-long-random-token-value> part above into <code>##SSO_TOKEN##</code> as mentioned config.sh file. Ensure that no space or end line is present on either or start while copying this value into <code>##SSO_TOKEN##</code>.</p>		
<code>##SSL_ENABLED##</code>	<p>Flag to enable the SSL for the MMG application.</p> <p>NOTE: The SSL is enabled for MMG Studio by default.</p>	YES	Can be either true or false
<code>##SSL_KEYSTORE##</code>	<p>Absolute path for the keystore file.</p> <p>NOTE:</p> <p>Run the following command to create a keystore:</p> <pre>keytool -genkey -v -alias demoalias -keyalg RSA -keysize 2048 -keystore server.keystore -validity 3650 -keypass secret -storepass secret -storetype PKCS12</pre>	YES	<p>../conf/server.keystore. Include the file name in the path.</p> <p>NOTE:</p> <p>If the <code>##SSL_ENABLED##</code> is set to false, keystore configuration must be done for mmg-studio as it is SSL enabled by default. MMG application and MMG Studio can use the same SSL configuration if configured in the same server.</p>
<code>##SSL_KS_SECRET##</code>	Value passed in above command for keypass	YES	Keystore password
<code>##SSL_KS_TYPE##</code>	Keystore type	YES	Can be either JKS or PKCS12
<code>##SSL_KS_ALIAS##</code>	Keystore Alias	YES	For example, demoalias
Properties required if <code>STUDIO_AUTH_TYPE</code> is <code>FCC_SSO</code>			
<code>##SESSION_TOKEN_CREDENTIALS#</code> #	The password used to generate Authorization header token to communicate with mmg-services	YES	NOTE: If not applicable, enter NA

Parameter	Description	Is Mandatory	Comments
##FCC_API_USER##	API User for FCC Studio.	YES	NOTE: If not applicable, enter NA
Properties for MMG Connection			
##MMG_DATASOURCE_MAX_POOL_SIZE##	Maximum connection pool size allowed for Config Datasource.	YES	It is defaulted to 10. You can edit it if required.
##MMG_DATASOURCE_IDLE_TIMEOUT##	Idle timeout for config Datasource.	YES	It is defaulted to 30000. You can edit it if required.
##MMG_DATASOURCE_CONN_TIMEOUT##	Connection timeout for Config Datasource.	YES	It is defaulted to 80000. You can edit it if required.
##EXT_DATASOURCE_MAX_POOL_SIZE##	Maximum connection pool size allowed for meta/data schemas.	YES	It is defaulted to 10. You can edit it if required.
##EXT_DATASOURCE_IDLE_TIMEOUT##	Idle timeout for meta/data schemas.	YES	It is defaulted to 30000. You can edit it if required.
##EXT_DATASOURCE_CONN_TIMEOUT##	Connection timeout for meta/data schemas.	YES	It is defaulted to 80000. You can edit it if required.
##MMG_HTTP_MAX_CONN##	The maximum number of connections allowed across all routes.	YES	It is defaulted to 20.
##MMG_HTTP_MAX_CONN_PER_ROUTE##	The maximum number of HTTP connections allowed for a route.	YES	It is defaulted to 2.
##MMG_HTTP_CONNECT_TIMEOUT##	The connection timeout for HTTP connection. A timeout value of 0 specifies an infinite timeout.	YES	It is defaulted to 30000.
##MMG_HTTP_READ_TIMEOUT##	The socket read timeout for HTTP connection. A timeout value of 0 specifies an infinite timeout.	YES	It is defaulted to 120000.
Properties for mmg-ui			
##APPLICATION_FAVICON_PATH##	Icon for Application. If not present, will be defaulted to: <code>css/images/favicon.ico</code>	NO	<code>css/images/favicon.ico</code>

Parameter	Description	Is Mandatory	Comments
##UI_AUTH_TYPE##	aai – to use an existing AAI instance as the identity provider. saml – for saml based authentication ldap – for ldap based authentication NOTE: This is case sensitive.	YES	Can be one of the following: aai, or saml or ldap.
Properties required if ##UI_AUTH_TYPE## = aai			
##AAI_AUTH_URL##	Base URL of the AAI instance. Will be used for ##UI_AUTH_TYPE## = aai NOTE: If the target AAI is https, then it is required to import the AAI host certificate to the MMG server java keystore. Refer Import Server Certificate to Java Keystore for more details.	YES	http(s)://whfxxxx.in.oracle.com:7110/mm g
Properties required if ##UI_AUTH_TYPE## = saml			
##SAML_IDP_URL##	This is the endpoint on the IDP side where SAML requests are posted. The SP needs to obtain this information from the IDP.	YES	http(s)://idcs-xxxx.com/fed/v1/idp/sso This is used only if ##UI_AUTH_TYPE# # is SAML.
##SAML_SP_ENTITY##	Enter a globally unique name for a SAML entity. It usually takes a URL of an identity provider or a service provider as a value.	YES	http(s)://<UI_HOST>:<UI_PORT>/mmg This is used only if ##UI_AUTH_TYPE# # is SAML.
##SAML_SRV_URL##	UI Landing Page URL	YES	http(s)://<UI_HOST>:<UI_PORT>/mmg/home This is used only if ##UI_AUTH_TYPE# # is SAML.
##SAML_LOGOUT_URL##	Initiated SAML Single Logout URL	YES	http(s)://idcs-xxxx.com/sso/v1/user/logout This is used only if ##UI_AUTH_TYPE# # is SAML.
Properties required if ##UI_AUTH_TYPE## = ldap			

Parameter	Description	Is Mandatory	Comments
##LDAP_URL##	LDAP URL Will be used for ##UI_AUTH_TYPE## = LDAP	YES	ldap://whf00xyz:3060/
##LDAP_SEARCH_BASE##	LDAP Search Base Will be used for ##UI_AUTH_TYPE## = LDAP	YES	"cn=Users,dc=oracle,dc=com"
##LDAP_USER_FILTER##	LDAP User Filter Will be used for ##UI_AUTH_TYPE## = LDAP	YES	"cn={0}"
#LDAP_USER_SEARCH_FILTER##	LDAP User Search Filter Will be used for ##UI_AUTH_TYPE## = LDAP	YES	
##LDAP_GROUP_SEARCH_FILTER##	LDAP Group Search Filter Will be used for ##UI_AUTH_TYPE## = LDAP	YES	
##LDAP_GROUP_SEARCH_BASE##	LDAP Group Search Base Will be used for ##UI_AUTH_TYPE## = LDAP	YES	
##LDAP_GROUP_MEMBER#	LDAP Group Member Will be used for ##UI_AUTH_TYPE## = LDAP	YES	
Properties for Cookie settings			
##SERVER_COOKIE_DOMAIN##	Specifies the Domain Name.	YES	This should be the domain name of the host server. Example: .in.xyz.com
##SERVER_COOKIE_NAME##	Specifies the name for the cookie	YES	If not set it will be defaulted to ORA_OLDS_SESSION
##SERVER_COOKIE_TIMEOUT##	Timeout/expiry in seconds	YES	If not set it will be defaulted to 999999
##SERVER_COOKIE_IS_SECURE##	Specifies if we are using cookie to add an additional security layer to not allow cross origin. Can be either true or false	YES	If not set it will be defaulted to true .
##Properties for mmg-service			
##BE_AUTH_TYPE##	Auth Type on which backend service (mmg-service) runs.	YES	It is defaulted to public.

Parameter	Description	Is Mandatory	Comments
##MMG_PYTHON_INTERPRETER##	It is comma separated value without whitespaces that specifies python interpreter python,fcc-ml4aml	YES	If not set it will be defaulted to python
##Properties for mmg-studio			
##STUDIO_WALLET_ENABLED##	Set true when using wallet for MMG Studio Schema Can be either true/TRUE or false/FALSE (all caps or all small)	YES	true/TRUE
##LOGIN_SHOW##	Can be either true/TRUE or false/FALSE (all caps or all small) NOTE: Set true when login screen of datastudio is required. This property should be set as true if MMG application is non SSL.	YES	It is defaulted to true.
##SESSION_MODE##	Can be either NOTEBOOK or NOTEBOOK_USER	YES	If not set, the default value is NOTEBOOK.
##STUDIO_REALM##	Can be either – OFSAARealm or saml.OFSAASamlRealm	YES	OFSAARealm – for studio auth type FCC_AAI, MMG_AAI, this is the default realm. .auth.saml.OFSAASamlRealm – for SAML specific studio authentication
##OFSAA_URL##	AAI login IDM Service URL. This is applicable only if ##STUDIO_AUTH_TYPE ## is "MMG_AAI".	YES	Format: "http://<ofsa-web-host>:<port>/<context>/rest-api" For example, http://ABC00abc:4325/LLFP/rest-api The /rest-api is mandatory for OFSAA URL.
##API_USERS##	This is the API User with which the token is generated, if not set defaulted to MMG_API_USER. NOTE: Use the same <API_USER> as given in the ##SSO_TOKEN##	YES	MMG_API_USER

Parameter	Description	Is Mandatory	Comments
##VALID_ROLES##	MDLUSR,MDLREV,MDLAPPR This is comma separated value for studio related roles in USER-ROLE mapping	YES	MDLBATCHUSR, DSUSRGRP, DSREDACTGRP
##DATASOURCE_URL##	This is the connection address to the database where MMG Studio Schema is created When ##WALLET_ENABLED## is false- jdbc:oracle:thin:@<Host>:<Port>/<Service_Name> When ##WALLET_ENABLED## is true- jdbc:oracle:thin:@<DS ALIAS>	YES	
##DATASOURCE_USERNAME##	MMG Studio Schema/User name, required only when ##WALLET_ENABLED## is false	YES	dsschema
##DATASOURCE_PASSWORD##	MMG Studio Schema/User Password, required only when ##WALLET_ENABLED## is false	YES	password
##DATASOURCE_DRIVER##	Database Driver used in connection	YES	oracle.jdbc.OracleDriver
##JPA_DB_PLATFORM##	Hibernate Class or SQL Dialect used in Database	YES	org.hibernate.dialect.Oracle12cDialect
##STUDIO_LOG_LEVEL##	Logging level for logs	YES	Any one of info, warn, debug or error
##PYTHON_HOME##	Home Path of Python Library It is defaulted to python3 during installation. For custom installation of python3 where the soft link is not configured you can mention the complete path till python3.	YES	python3
Properties for R Interpreter			

Parameter	Description	Is Mandatory	Comments
##R_ENABLED##	This can be set to TRUE/true or FALSE/false depending on which the R interpreter will be started and will be present in the interpreters list. NOTE: If you are using older studio schema with R-interpreter already present and then perform installation with R_ENABLED set as FALSE; in this case the R-interpreter will still be there in the interpreter's menu of studio and it is required to delete it from there.	YES	The Default is False.
Properties for if ##R_ENABLED## is set to true			
##RS_CONF_PATH##	Absolute path to Rserve.conf file for running Rserve	YES	/scratch/users/datas tudio/conf/Rserve.co nf
##RS_KEYSTORE##	Absolute path for the Keystore file made for Rserve.conf	YES	/scratch/users/datas tudio/conf/rinterpret erkeystore
##RS_KS_SECRET##	Keypass for rinterpreterkeystore	YES	changeit
# Following are fcc services specific configurations, leave as it is if not applicable			
##TEMPLATE_CONFIG_PATH##	Configuration Path of the Template	NO	
##TEMPLATE_DEFAULT_LINK##	Default link of the template	NO	
##AUTH_SERVICE_URL##	Indicates the AUTH service URL that gets activated after the fccstudio.sh file runs.	NO	Example: https://<hostname>: 7041/authservice
##META_SERVICE_URL##	Indicates the metaservice URL that gets activated after the fccstudio.sh file runs.	NO	Example: https://<hostname>: 7045/metaservice
##ER_SERVICE_URL##	This will be used for the entity resolution service.	NO	Example: https://<hostname>: <port>
##BATCH_SERVICE_URL##	This will be used for Batch Service.	NO	Example: https://<hostname>: <port>/batchservice
Properties required if STUDIO_REALM is OFSAASamlRealm and STUDIO_AUTH_TYPE is FCC_SSO			
##SAML_ISSUER##	Indicates the SAML entity ID (Studio URL) configured in the IDP	YES	https://<hostname>. xyz.com:7008

Parameter	Description	Is Mandatory	Comments
##SAML_DESTINATION##	Indicates the SAML IDP URL that the Identity Provider provides after creating the SAML Application.	YES	https://idcs-xyzgvh.com/fed/v1/idp/sso
##SAML_ASSERTION##	Indicates the SAML consume URL (Studio/URL/saml/consume) that is configured in IDP.	YES	https://<hostname>.xyz.com:7008/saml/consume
##SAML_ROLE_ATTRIBUTE##	Indicates the SAML client identifier provided by the SAML Administrator for the Role and Attributes information while creating the SAML application for MMG Studio. The attribute will contain the role required for application.	YES	Example: group
##SAML_STUDIO_LOGOUT_URL##	Indicates the SAML client identifier provided by the SAML Administrator for the Logout URL information, while creating the SAML application for MMG Studio.	YES	https://idcs-xyzgvh.com/sso/v1/user/logout
##SAML_COOKIE_DOMAIN##	Domain of the server	YES	Example: in.xyz.com
# Following are pipeline services specific configurations, leave as it is if not applicable.			
##DATAPIPELINE_SERVICE_PORT1##	Indicates the port where pipeline service resides.	YES	By default, it is set as 18005.
##DATAPIPELINE_SERVICE_PORT2##	Indicates the port where data pipeline service resides.	YES	By default, it is set as 18006.
##DATAPIPELINE_METADATA_ARCHIVE_PATH##	Indicates the dump path for the pipeline service.	YES	/OFS_MMG/mmg-pipeline/pipeline/pipeline-service-x.x.x.x.x.
##DATAPIPELINE_METADATA_IMPORT_SERVICE_PORT##	Meta data import service port.	YES	By default, it is set as 18007.
##DATAPIPELINE_ERXMLPATH##	The XML path in which the schema details are stored.	NO	
URLS for ER and matching service. Leave as it is if not applicable. Will impact the pipeline that could be added to a graph. ER and Matching services are available as part of Studio. If the Services are deployed, the below properties needs to be configured.			
##MATCHRULE_BASE_URL##	Indicates the host and port where match rule service resides	NO	http(s)://abc.in.xyz.com:7051
##MATCHSRVC_UI_CREATE_URL##	Indicates Matching Service create resource path.	NO	/mmgGraph/33

Parameter	Description	Is Mandatory	Comments
##MATCHSRVC_UI_EDIT_URL##	Indicates Matching Service edit resource path.	NO	/mmgGraph/33
##MATCHSRVC_UI_CLONE_URL##	Indicates Matching Service clone resource path.	NO	/mmgGraph/33
Properties for LoadGraph			
##LOADGRAPH_BASE_URL##	Indicates the host and port where Load graph service resides.	YES	http(s)://abc.in.xyz.com: 7059/graph-service
URLS for index service. Leave as it is if not applicable. Will impact the pipeline that could be added to a graph If Graph and Index services are available as part of Studio. If the Services are deployed, the below properties needs to be configured.			
##GRAPH_INDEX_BASE_URL##	Indicates Graph Index resource path.		http(s)://<hostname>xyz.com:7053/load-to-elastic-search
##LOADINDEX_UI_CREATE_URL##	Indicates Create Graph Load Index resource path.		mmgGraph/33
##LOADINDEX_UI_EDIT_URL##	Indicates Edit Graph Load Index resource path.		mmgGraph/33
Changes for auth services and mmg keys			
##AAI_COOKIE_DOMAIN##	The domain of the server.	YES	Example: in.xyz.com
##MMG_KEYS_LOC##	Indicate public and private key location.	YES	Example:< MMG Installation Path>/OFS_MMG/conf
Additional MMG features			
##KAFKA_ENABLED##	To enable or disable the Kafka feature. TRUE or FALSE.	YES	The default is FALSE.
#Properties to package Load to Graph (L2G) service inside MMG ## Start of L2G Properties ##			
##GRAPH_INSTALLATION_PATH##	The installation path of the Graph.	YES	<MMG Installation Path>/OFS_MMG/mmg-load-to-graph/graph-service
##GRAPH_KEYSTORE_PASSWORD##	Graph Keystore Password	YES	password
## Graph schema configurations			
##MMG_DB_SERVER_NAME##	Name of the MMG Database Server	YES	
##MMG_DB_PORT##	Indicates the port of the MMG database server	YES	

Parameter	Description	Is Mandatory	Comments
##MMG_DB_SERVICE_NAME##	Name of the MMG Database Service	YES	
##PGX_SERVER_URLS##	Indicates pgx server resource path. NOTE : Refer to PGX Installation for more details. This field can be skipped if pgx installation is not performed.	YES	http(s)://<hostname>.xyz.com:<pgx port>/<pgx context name>
#PGX data memory limits configurations			
## Overall Configuration			
##MAX_TOTAL_SHARED_DATA_MEMORY_SIZE##	Maximum total shared data memory size.	YES	If not configured, it is defaulted to 20 Gigabyte. You can edit it if required.
##MAX_TOTAL_PRIVATE_DATA_MEMORY_SIZE##	Maximum total private data memory size.	YES	If not configured, it is defaulted to 8 Gigabyte. You can edit it if required.
##MAX_PER_SESSION_DATA_MEMORY_SIZE##	Maximum per session data memory size.	YES	If not configured, it is defaulted to 700 Megabyte. You can edit it if required.
## Role wise data memory limits			
##MAX_DATA_MEMORY_SIZE_DSUSRGRP##	Maximum data memory size allowed for DSUSRGRP.	YES	It is defaulted to 10 Gigabyte. You can edit it if required.
##MAX_DATA_MEMORY_SIZE_DSBATCTH##	Maximum data memory size allowed for DSBATCH.	YES	It is defaulted to 10 Gigabyte. You can edit it if required.
##MAX_DATA_MEMORY_SIZE_DSINTER##	Maximum data memory size allowed for DSINTER.	YES	It is defaulted to 5 Gigabyte. You can edit it if required.
##MAX_DATA_MEMORY_SIZE_DSAPPROVER##	Maximum data memory size allowed for DSAPPROVER.	YES	It is defaulted to 5 Gigabyte. You can edit it if required.
##MAX_DATA_MEMORY_SIZE_DSUSER##	Maximum data memory size allowed for DSUSER.	YES	It is defaulted to 5 Gigabyte. You can edit it if required.
#end of Properties configurations for L2G			

Parameter	Description	Is Mandatory	Comments
##Schema details for graph service. This is configured as a temporary/target space for DP to create target tables which will act as input to L2G			
##GRAPH_SCHEMA_WALLET_ALIAS##	Wallet alias created for the Graph Schema	YES	
##GRAPH_SCHEMA_WALLET_LOCATION##	Wallet is the folder that contains the sqlnet.ora and the wallet. sso and .p12 files The value is same as ##WALLET_LOCATION##	YES	/scratch/users/wallet
##GRAPH_SCHEMA_TNS_ADMIN_PATH##	This is the folder that contains the tnsnames.ora The value is same as ##TNS_ADMIN_PATH##	YES	/scratch/users/tns
##GRAPH_SCHEMA_DB_SCHEMA_NAME##	Name of the Graph schema	YES	

NOTE:

- In case of ##OFSAA_URL## and ##MMG_SVC_URL##, don't add any ending '/' in the URLs
- If pool size, connection timeout and idle timeout are not configured, then it will proceed with default Hikari Configurations.
- The default session timeout is 3600 seconds (60 mins). You can configure timeout using server.servlet.session.timeout property.
- If the AUTH type specified is AAI, make sure the AAI System has appropriate user groups mapped for the users. WKSPADMIN, IDNTYADMN, IDNTYAUTH need minimally to be present for a successful subsequent logins.
- The name for DS cookie is ORA_OLDS_SESSION.
- If the ##SSL_ENABLED## is set to false, keystore configuration must be done for mmg-studio as it is SSL enabled by default. MMG application and MMG Studio can use the same SSL configuration if configured in the same server.
- The wallet is same for all the MMG Services including MMG-Studio. So, if you want to use the MMG-Studio with wallet configurations, then configure same wallet.
- If the MMGStudio is remotely configured, then the MMG Application Config Schema wallet alias and tnsnames.ora file entries need to be added to the MMGStudio configured wallet and tnsnames.ora file.
- If MMGStudio and MMG are on the same server, make sure the MMGStudio User has the permission to access the TNSAdmin of the MMG Service.
- If MMG application is Non SSL, set the below property to "false" in the application.yml file inside the MMG Studio and restart the services.

```
security:
```

```
cookies:  
  secure: false
```

5.4.1 Import Server Certificate to Java Keystore

You must import the server certificate (.cer) file to the java keystore.

To import the server certificate, perform the following steps:

1. Create a .cer file from the server.keystore.

```
keytool -export -alias <alias>-file <filename>.cer -keystore
<path_to_Keystore>/server.keystore -storepass secret
```

Example:

```
keytool -export -alias demo_alias -file server.cer -keystore
OFS_MMG/config/server.keystore -storepass secret
```

2. Import .cer file generated from the above step to java keystore.

```
keytool -import -file "<path_to_Keystore>/<filename>.cer" -alias
<alias>-keystore "<java_home>/lib/security/cacerts" -storepass
"changeit"
```

NOTE The above step should be performed by the Root user.

5.5 Run the MMG Installer

To run the MMG Installer, follow these steps:

1. Navigate to following path:

Go to <MMG_INSTALLATION_PATH>/bin directory.

2. Run the following command:

```
./install.sh
```

This step will install the configurations and has to be executed only once per deployment. This will also bring up the schema creator service in nohup mode.

A message similar to following means a successful startup:

```
PIPELINE_HOME: <MMG_INSTALLATION_PATH>/OFS_MMG/mmg-pipeline/pipeline
<MMG_INSTALLATION_PATH>/OFS_MMG/mmg-pipeline/pipeline
PIPELINE_HOME: <MMG_INSTALLATION_PATH>/OFS_MMG/mmg-pipeline/pipeline
Installing Pipeline Data Model. Please Wait ...
Pipeline Data Model installation finished.
Starting Pipeline Service ...
Starting Data pipeline services ...
Inserting DataMeta Data ...
***** Data Pipeline Deployment Done *****
Schema Creator executed successfully
```

You can check `mmg-schema-creator/bin/nohup.out` to check if the service comes up properly.

```
Started BuildSchemaCreatorApplication in 20.317 seconds (JVM running for 21.26)
```

WARNING If you notice any errors, do not proceed further. Contact [My Oracle Support \(MOS\)](#) and provide the applicable error code and log files.

3. Execute `shutdown.sh` and trigger `startup.sh` for the services to come up. For more details, refer to the below sections.

NOTE: The MMG Application is installed with or without OFSAA, depending on the configuration provided in the `config.sh` file.

5.6 Starting MMG Services

To start the MMG service, run the following command:

1. Navigate to `<MMG_INSTALLATION_PATH>/bin` directory.

```
./startup.sh
```

A message similar to following means a successful startup:

```
<mmg installation path>/OFS_MMG/bin>./startup.sh
Starting MMG UI...
MMG UI started successfully.
Starting MMG Service...
MMG Service started successfully.
Starting Data Studio...
Data Studio started successfully.
Starting Pipeline Service ...
Starting Data pipeline services ...
```

You may check `<MMG_INSTALLATION_PATH>/mmg-ui/bin/nohup.out` to check if the UI service comes up properly.

A message similar to following means a successful startup:

```
Started BuildUIServiceApplication in 27.981 seconds (JVM running for 29.365)
```

You can check `<MMG_INSTALLATION_PATH>/mmg-service/bin/nohup.out` to check if the backend service comes up properly.

A message similar to following means a successful startup:

```
Started BuildServiceBuildApplication in 20.317 seconds (JVM running for 21.26)
```

You can check `<MMG_INSTALLATION_PATH>/mmg-studio/bin/nohup.out` to check if the backend service comes up properly.

A message similar to following means a successful startup:

```
05:06:02.155 Thread-9] INFO
oracle.datastudio.starter.App - Data Studio Server is ready to use
```

This will start the successful installation of application.

WARNING If you notice any errors, do not proceed further. Contact [My Oracle Support \(MOS\)](#) and provide the applicable error code and log files.

NOTE Unset the https/http proxy details before starting the services.
OR
Add the relevant entries in no_proxy with mmg hosted server details.

5.7 Stopping MMG Services

To stop the MMG services, run the following command:

```
./shutdown.sh
```

A message similar to following means a successful shutdown:

```
<MMG_INSTALLATION_PATH>/mmg-pipeline/pipeline
MMG UI shutdown is complete.
MMG Service shutdown is complete.
MMG Schema Creator shutdown is complete.
Data Studio shutdown is complete.
Data Pipeline Service shutdown is complete.
```

5.8 Generate GRAPH-KEYSTORE.P12

Prerequisite : Graph services should be up and running.

To generate GRAPH-KEYSTORE.P12 file, perform the below steps:

NOTE The Keystore generation fails if graph service is down.

1. Execute `graph-keystore-generator.sh` using PUTTY.
2. Enter the values as below when prompted.
 - Enter Wallet Alias : <GRAPH_SCHEMA_WALLET_ALIAS> as given in the `config.sh` file.
 - Enter Password: <GRAPH_SCHEMA_DB_SCHEMA> password
 - Enter Keystore alias: <GRAPH_SCHEMA_DB_SCHEMA_NAME> as given in the `config.sh` file.

Check the below location for the graph-keystore.p12
/OFS_MMG/mmg-load-to-graph/graph-service/conf/

5.9 Install MMG Python Library

This section provides detailed steps to install the MMG Python Library.

5.9.1 Prerequisites

- Python 3.9.x

NOTE Ensure the libraries, **bzip2-devel**, **sqlite-devel**, **ncurses-devel**, **xz-devel**, and **libffi-devel** are installed before you install the Python package.

For Example:

NOTE: Install the below libraries as a root user.

- **bzip2-devel** : Execute the command `yum install bzip2-devel`
- **sqlite-devel**: Install as a root user using the command `yum install sqlite-devel`
- **ncurses-devel** : Install as a root user using the command `yum install ncurses-devel`
- **xz-devel** : Install as a root user using the command `yum install xz-devel`
- **libffi-devel**: Install as a root user using the command `yum install libffi-devel`

5.9.2 Procedure

1. Set system python3 to the one that is to be used. Navigate to bin folder.
2. To install the mmg library with dependencies from `conf/requirements.txt` , execute the following command:
`./python-env-install.sh`
3. To install the mmg library with flexible dependencies or using already installed dependent packages, execute the following command:

```
./python-env-install.sh -S
```

Or

```
./python-env-install.sh --skip
```

This will skip the installation of dependency based on the version mentioned in the `conf/requirements.txt`. The installation will be with whatever version available in the pypi server.

5.10 Setting up the Environment for Hive Data Sourcing

This section is applicable if you want to use Hive Data Source.

In the MMG Home directory, a `lib` folder is available for the Hive specific jars and a `conf` folder is available for the Kerberos configuration and Keytab files.

Configure the Hive jars and configuration files.

For Hadoop version 3.1.1 and hive version 3.1.2, below is the list of jar files that needs to be copied into the `OFS_MMG/lib` location:

zookeeper-3.4.9.jar
woodstox-core-5.0.3.jar
stax2-api-3.1.4.jar
slf4j-log4j12-1.7.25.jar
slf4j-api-1.7.25.jar
re2j-1.1.jar
log4j-1.2.17.jar
libthrift-0.9.3.jar
libfb303-0.9.3.jar
httpcore-4.4.4.jar
httpclient-4.5.2.jar
htrace-core4-4.1.0-incubating.jar
hive-service-3.1.2.jar
hive-metastore-3.1.2.jar
hive-jdbc-3.1.2.jar
hive-exec-3.1.2.jar
hadoop-hdfs-client-3.1.1.jar
hadoop-common-3.1.1.jar
hadoop-auth-3.1.1.jar
curator-client-2.12.0.jar
commons-logging-1.0.4.jar
commons-io-2.4.jar
commons-configuration2-2.1.1.jar
commons-collections-3.2.2.jar
commons-cli-1.2.jar

The `mmg-service` requires a restart after copying the Hive jars and configuration files. For more information, see the MMG User Guide.

5.11 Remote MMG Studio Configuration

For Solaris Operating System, the MMG Studio has to be configured in Linux machine remotely. The MMG Studio URL must be the same as that of the remote studio during MMG Application installation.

In the `OFS_MMG/bin/config.sh`, update the following properties with the remote server where the MMG Studio will be running:

```
export DATASTUDIO_URL=##DATASTUDIO_URL##
export SSL_KEYSTORE=##SSL_KEYSTORE##
export SSL_KS_SECRET=##SSL_KS_SECRET##
export SSL_KS_TYPE=##SSL_KS_TYPE##
export SSL_KS_ALIAS=##SSL_KS_ALIAS##
```

Note: The keystore must be generated for the remote machine and the path must be present in the remote server.

```
export DS_TNS_ADMIN_PATH=##DS_TNS_ADMIN_PATH##
export DS_WALLET_LOCATION=##DS_WALLET_LOCATION##
```

TNS admin and wallet must be configured in the remote server and the wallet must contain the mmg config schema wallet configurations.

```
export MMG_TNS_ADMIN_PATH=##MMG_TNS_ADMIN_PATH##
export MMG_LIB_WALLET_ALIAS=##MMG_LIB_WALLET_ALIAS##
```

For more information, see the [Configure the config.sh file](#) section.

5.12 PGX Installation

NOTE PGX installation is recommended to be installed in a different server other than the MMG installation server.

To install the PGX, follow these steps:

1. Copy the `mmg-pgx.zip` file from MMG server and copy it to the target server where pgx has to be installed remotely to MMG.
2. Unzip the `mmg-pgx.zip` file.
For Example: `unzip -a mmg-pgx.zip`
The below files will be displayed:
 - bin
 - conf
 - pgx-22.4.2
3. Give 0755 permission to `mmg-pgx` folder.
4. Configure the `config.sh` of pgx. For more details, see [Configure the config.sh File of PGX](#) section.
5. Copy the `graph-keystore.p12` from MMG Installation server to `<pgx installation path>/mmg-pgx/conf`. For more details, see [Generate GRAPH-KEYSTORE.P12](#) section.
6. Copy the below key files from `<MMG Installation path>/OFS_MMG/conf` to `<pgx installation path>/mmg-pgx/conf`.

- public.key
 - private.key
7. Run the `install.sh` from `<pgx installation path>/mmg-pgx/bin`
 8. Update the pgx-server URL in `config.sh` for `##PGX_SERVER_URLS##` in the `<MMG Installation path>/bin` and run the `install.sh -u` command and restart the MMG services. For more details, see [Configure the config.sh File of PGX](#) section.
 9. Start the Server. For more details, see [Starting pgx server](#) section.
 10. Stop the Server. For more details, see [Stopping pgx server](#) section.

5.12.1 Configure the config.sh File of PGX

To configure the `config.sh` file for installing PGX with MMG, follow these steps:

1. Login to the server as a non-root user.
2. Navigate to the `<OFS_MMG>/mmg-pgx/bin` directory.
3. Configure the applicable `config.sh` attributes as shown in the following table.

Sample Config.sh file

```
#!/bin/sh
export PGX_PORT=##PGX_PORT##
export PGX_CONTEXT_PATH=##PGX_CONTEXT_PATH##
export PGX_SSL_ENABLED=##PGX_SSL_ENABLED##
export PGX_SSL_KEYSTORE=##PGX_SSL_KEYSTORE##
export PGX_SSL_KS_SECRET=##MMG_SSL_KS_SECRET##
export PGX_SSL_KS_TYPE=## PGX_SSL_KS_TYPE ##
export PGX_SSL_KS_ALIAS=## PGX_SSL_KS_ALIAS##
export GRAPH_SERVICE_URL=## GRAPH_SERVICE_URL##
export GRAPH_KEYSTORE_PASSWORD=## GRAPH_KEYSTORE_PASSWORD##
export LOG_HOME=##LOG_HOME##
```

Table : config.sh file of pgx

Parameter	Description	Is Mandatory	Comments
<code>##PGX_PORT##</code>	Port on which pgx server needs to be run.	YES	If not set, Port defaults to 7007.
<code>##PGX_CONTEXT_PATH##</code>	Context path of pgx server	YES	If not set, Context path defaults to pgx.

Parameter	Description	Is Mandatory	Comments
##PGX_SSL_ENABLED##	<p>The values can be true /false.</p> <p>If true, follow the below steps if Self Signed is being used:</p> <ul style="list-style-type: none"> • Import pgx server .cer file to MMG server java keystore • Import MMGserver .cer file to pgx server java keystore <p>For more details, see Import Server Certificate to Java Keystore section.</p>	YES	
Properties if ##PGX_SSL_ENABLED## is set to true.			
##PGX_SSL_KEYSTORE##	<p>Absolute path for the keystore file.</p> <p>This is applicable only if ##PGX_SSL_ENABLED## is set to true.</p> <p>NOTE:</p> <p>Run the following command to create a keystore:</p> <pre>keytool -genkey -v -alias demoalias -keyalg RSA -keysize 2048 -keystore server.keystore -validity 3650 -keypass secret -storepass secret -storetype PKCS12</pre>	YES	../conf/server.keystore. Include the file name in the path.
##PGX_SSL_KS_SECRET##	<p>Value passed in above command for keypass.</p> <p>This is applicable only if ##PGX_SSL_ENABLED## is set to true.</p>	YES	Keystore password
##PGX_SSL_KS_TYPE##	<p>The type of the pgx keystore.</p> <p>This is applicable only if ##PGX_SSL_ENABLED## is set to true.</p>	YES	PKCS12
##PGX_SSL_KS_ALIAS##	<p>The Alias of the pgx keystore.</p> <p>This is applicable only if ##PGX_SSL_ENABLED## is set to true.</p>	YES	password123
Properties for graph service			
## GRAPH_SERVICE_URL ##	<p>Graph Service URL.</p> <p>The value is same as ##LOADGRAPH_BASE_URL## in the MMG.config.sh</p>	YES	http(s)://<MMG Host>:<Graph service port>/graph-service
## GRAPH_KEYSTORE_PASSWORD ##	<p>Graph Keystore password.</p> <p>The value is same as ##GRAPH_KEYSTORE_PASSWORD## in the MMG.config.sh</p>	YES	password123
Properties for setting log path			

Parameter	Description	Is Mandatory	Comments
##LOG_HOME##	Any writable folder, which will store pgx logs.		/scratch/users/log s

5.12.2 Starting pgx server

To start the pgx server, run the following command:

1. Navigate to `<MMG_INSTALLATION_PATH>/bin` directory.
`./startup.sh`

You may check `<mmg-pgx/pgx-<pgx-version>/bin/nohup.out` to check if the UI service comes up properly.

A message similar to following means a successful startup:

```
INFO: Starting ProtocolHandler ["http-nio-7007"]
```

This will start the successful installation of pgx server.

5.12.3 Stopping pgx server

To stop the pgx server, run the following command:

```
./shutdown.sh
```

A message similar to following means a successful shutdown:

```
PGX Server shutdown is complete.
```

5.13 R Interpreter

You can configure the R Interpreter support either with ORD-3.6.1 or R 4.1.2.

5.13.1 ORD-3.6.1 Installation

To install ORD-3.6.1, follow the steps mentioned in the below guides:

- <https://www.oracle.com/database/technologies/r-distribution.html>
- <https://docs.oracle.com/en/database/oracle/machine-learning/oml4r/1.5.1/oread/installing-oracle-R-distribution-on-linux.html#GUID-A73BA0EB-507C-4678-9AD7-CE2CB6CE0251>

1. Check installation

- a. `R --version`

2. Installing other packages

Set proxy:

- a. `R -e "install.packages('Rserve', repos='https://www.rforge.net/')"`
- b. `R -e "install.packages(c('knitr', 'ggplot2', 'backports'), repos='https://mirror.las.iastate.edu/CRAN/')"`

5.13.2 R 4.1.2 Installation

NOTE This setup might update some of the older root level files and using Non-Oracle yum Repository for getting R rpm files

To install R 4.1.2, follow these steps:

1. Set Proxy, (pseudo user)
 - a. `curl -O https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm`
 - b. `yum install epel-release-latest-7.noarch.rpm`
 - c. `curl -O https://cdn.rstudio.com/r/centos-7/pkgs/R- $\{R_VERSION\}$ -1-1.x86_64.rpm`
 - d. `sudo yum install R- $\{R_VERSION\}$ -1-1.x86_64.rpm`
 - e. `sudo ln -s /opt/R/ $\{R_VERSION\}$ /bin/R /usr/bin/R`
2. Check installation
 - a. `R --version`
3. Installing other packages-
 - a. `R -e "install.packages('Rserve', repos='https://www.rforge.net/')"`
 - b. `R -e "install.packages(c('knitr', 'ggplot2', 'backports'), repos='https://mirror.las.iastate.edu/CRAN/')"`

5.13.3 Configuring R interpreter

1. Configure Rserve.

```
nano /scratch/software/R/Rserve.conf (sample file)
>
```

```
auth required
plaintext disabled
pwdfile /scratch/software/R/creds/Rserve.pwd
remote enable
switch.qap.tls enable
tls.port 6311
qap disable
interactive no
rsa.key /scratch/software/R/creds/server.key
tls.key /scratch/software/R/creds/server.key
tls.cert /scratch/software/R/creds/server.crt
```

2. password file Rserve.pwd:

>

```
oml $5baa61e4c9b93f3f0682250b6cf8331b7ee68fd8
```

The file contains one line per user, where the first part is the username, and the second part is the password.

The password can either be plain text or a MD5/SHA1 hash. In this example the password `password` is hashed with SHA1.

If you use hashed passwords, the password string needs to start with a `\$` sign.

3. SSL Key:

```
openssl genrsa -out server.key 2048
openssl req -new -key server.key -out server.csr # password 1234
openssl x509 -req -days 365 -in server.csr -signkey server.key -out
server.crt
```

4. Creating Keystore:

```
keytool -import -alias <keystore-alias> -file <path-to-
server.crt>/server.crt -keystore <output-path-to-
keystore/rinterpreterkeystore -storepass <keystore-secret> -noprompt
eg. keytool -import -alias rserve -file
/scratch/software/R/creds/server.crt -keystore
/scratch/software/R/creds/rinterpreterkeystore -storepass changeit -
noprompt
```

5.13.4 MMG Connection Objects Library Setup

5.13.4.1 Installing ROracle Library

Prerequisites

DBI is one of the dependencies for using this library.

- Installing DBI
 - a. `curl -O https://cran.r-project.org/src/contrib/DBI_1.1.1.tar.gz`
 - b. `R CMD INSTALL DBI_1.1.1.tar.gz`

Procedure

To install ROracle Library, follow these steps:

- **For ORD 3.6.1/R 4.1.2**
 - a. `curl -O https://cran.r-project.org/src/contrib/ROracle_1.3-1.1.tar.gz`
 - b. Install oracle instant client sdk package.
This is required for additional header files and an example makefile for developing Oracle Applications with Instant Client.
 - c. Oracle client lib must be present in PATH. In the .profile file, set PATH to include the appropriate \$ORACLE_HOME/bin path.

For example:

```
PATH=$JAVA_HOME/bin:$ORACLE_HOME/bin
```

- d. R CMD INSTALL --configure-args='--with-oci-lib=<absolute-path-to-oracle-client-lib> --with-oci-inc=<absolute path to instantclient_21_5>/include' ROracle_1.3-1.1.tar.gz

For example:

```
R CMD INSTALL --configure-args='--with-oci-lib=/scratch/users/oracle/app/oracle/product/19.3.0/client_1/lib --with-oci-inc=/scratch/users/oracle/instantclient-sdk/instantclient_21_5/sdk/include' ROracle_1.3-1.1.tar.gz
```

5.13.4.2 Installing RODB Library

- **For ORD 3.6.1**
 - a. `curl -O https://cran.r-project.org/src/contrib/Archive/RODBC/RODBC_1.3-16.tar.gz`
 - b. `R CMD INSTALL RODB_1.3-16.tar.gz`

NOTE

It needs write permission to `"/usr/lib64/R/library"` or similar root directory for system installation.

- **For R 4.1.2**
 - a. `curl -O https://cran.r-project.org/src/contrib/RODBC_1.3-19.tar.gz`
 - b. `R CMD INSTALL RODB_1.3-19.tar.gz`

NOTE

LD_LIBRARY_PATH should contain path to \$ORACLE_HOME/lib and check that file 'libsqora.so.19.1' exists in \$ORACLE_HOME/lib. Now, set an environment variable named RODBC_DRIVER with value 'libsqora.so.19.1' whichever is present in \$ORACLE_HOME/lib/ directory based on the Oracle Client Version Installation.

Now for RODBC Connection to work for Sandbox, check the TNS_ADMIN path set, and then in tnsnames.ora, add the connection string details with alias as Sandbox Name. For example, if Sandbox Name is SAND1 for which the datasource is on host abc.in.oracle.com, port 1234 and service name – ABCXYZ, then in tnsnames.ora file add the following entry-

```
SAND1 =
      (DESCRIPTION =
        (ADDRESS_LIST =
          (ADDRESS = (PROTOCOL =
TCP) (HOST=abc.in.oracle.com) (PORT=1234)
        )
        (CONNECT_DATA =
          (SERVICE_NAME = ABCXYZ)
        )
      )
    )
```

If this only does not resolve the connections, then configure odbcinst.ini. / odbc.ini files as well as mentioned in Oracle Client Installation and Setup (figured by: > odbcinst -j)

5.13.5 Using MMG Studio to Oracle Connection Objects

5.13.5.1 Workspaces

1. `mmg.list_workspaces()` : Used to fetch a vector of all workspaces.

For example:

```
vec <- mmg.list_workspaces() vec will be vector object
```

2. `mmg.attach_workspace("workspace_name ")` : A method used to set workspace

Sets a global `mmg_attached_WS` variable with value of `workspace_name`

Sets a `mmg_DS_Vec` Vector Object with name and order of all datasources for attached workspace.

Sets a `mmg_WL_Vec` Vector Object with name and wallet of all datasources for attached workspace.

For example:

```
mmg.attach_workspace("SB1")
```

5.13.5.2 Connections

Following is the list of datasources related to workspace using:

- `mmg.list_datasources("SB1", 1)`: will list datasources related to SB1 workspace with order 1 as passed in second argument

```
mmg.list_datasources("workspace_name", order) order is integer for specific  
order or null for all datasources.
```

For example:

```
df <- mmg.list_datasources("workspace_name", order) df will be Data.Frame
```

Object.

From the datasource name or order for the attached workspace, we can get the **ROracle** or **RODBC** Connection Object

- `mmg.get_connection()`:

datasource_name is the string name of the datasource, order is integer, library is one of **"RODBC"** or **"ROracle"**

```
conn <- mmg.get_connection(datasource=order, conn_type="library");  
conn <-  
mmg.get_connection(datasource="datasource_name", conn_type="library");  
conn <- mmg.get_connection(datasource="datasource_name", "library");  
conn <- mmg.get_connection(datasource=order, "library");  
conn <- mmg.get_connection("datasource_name", conn_type="library");  
conn <- mmg.get_connection(order, conn_type="library");  
conn <- mmg.get_connection("datasource_name", "library");  
conn <- mmg.get_connection(order, "library");  
sets the conn variable to connection object of relevant library
```

6 Post Installation Steps

On successful installation of the OFS MMG Application, refer to the below topics for post installation procedures.

NOTE These Post-installation steps are applicable for both when MMG Installation is performed with or without OFSAA instance.

6.1 Access the Application

To access the application, follow these steps:

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

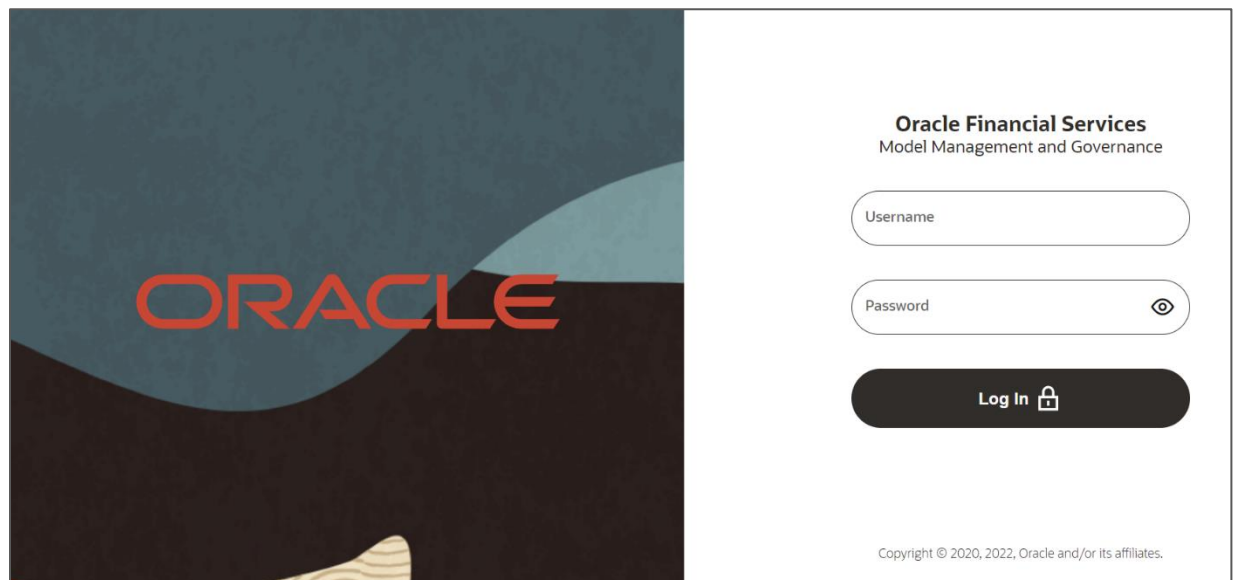
`http(s)://<MMG UI service host name>:<UI_PORT>/mmg/home`

For example,

`https://xyz.com:4155/mmg/home`

The MMG Login window is displayed.

Figure: MMG Login Window – AAI Authentication



For more information, see the [User Access and Permissioning Management](#) section.

6.2 Create Application Users

Create the application users in the MMG setup before use. For more information, see the [User Access and Permissioning Management](#) section.

6.3 Map Application User(s) to User Group

User Groups seeded with the OFS MMG Application Pack are listed in the Seeded User Groups Table.

Table 9: Seeded User Groups

User Group Name	User Group Description
MDLREV	The Modeling Reviewer Group. Users mapped to this group have access to the menu items in the OFS MMG Application that are related to model review activities.
MDLAPPR	The Modeling Approver Group. Users mapped to this group have the rights to approve models created by the users.
MDLBATCHUSR	The Modeling Batch User. Scheduler can use this Group for executing batches.
WKSPADMIN	The Workspace Administrator Group. Users mapped to this group have access to all the menu items in the OFS MMG Application. Additionally, they have authorization rights to create and populate workspaces.
MDLUSR	The Modeling User Group. Users mapped to this group have access to all the menu items in the OFS MMG Application that is related to model creation.
DSUSRGRP	General Role Users mapped to this group have permission to access/modify MMG Studio Interpreter Configurations.
DSREDACTGRP	Roles for applying redaction in graph. This group will be applicable to only those users for whom graph redaction is required.

NOTE: Admin link in MMG Application Home Page will only be accessible if the below seeded groups are mapped to the user:

- IDNTYADMIN
- IDNTYAUTH

6.4 Model Techniques/ Model Library

Following are the pre-requisite to use the model techniques from the older version when you upgrade to 8.1.2.3.0 version.

NOTE: MMG_TECHNIQUE_MASTER table had no V_WORKSPACE_ID column, which has been added in this release and then the primary key is updated to (V_TECHNIQUE_ID, V_WORKSPACE_ID).

To use the existing Techniques in the upgraded setup, perform the below:

The V_WORKSPACE_ID column will have the value set as ##WORKSPACE## for the existing records by default.

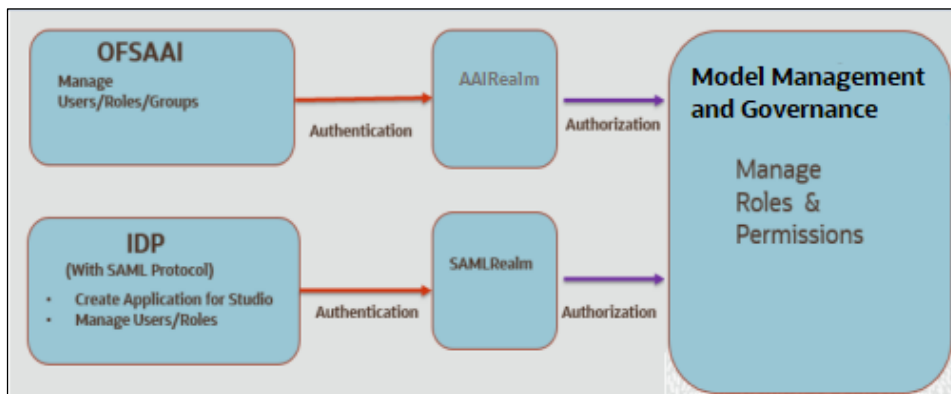
If the same records has to be used in the latest version of MMG, you must update the table MMG_TECHNIQUE_MASTER with relevant workspace id.

6.5 User Access and Permissioning Management

MMG uses a realm based on unique authentication and authorization for its users. Realm indicates the functional grouping of Database Schemas and roles that must be secured for an application. Realms protect data from access through system privileges and do not provide its owner or participants additional privileges. Realm based authorization establishes a set of database accounts and roles that can manage, or access objects protected in realms and are authorized to use its system privileges. It provides a runtime mechanism to check logically if a user's command can access objects specified in the command and proceed with its execution. Realms (AAIRealm, SAMLRealm) are selected based on the Identity Provider (IDP) during the installation. For more information, see the OFS MMG Installation Guide. After you select the realms, you can register a set of schema objects or roles (secured objects) for realm protection and authorize a set of users or roles to access the secured objects. The MMG application is accessed using the following realms that you have selected during the installation of the MMG application:

- **AAIRealm:** This uses Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) Identity Management System for User Authentication. Users, Roles, and Groups are created in the OFSAAI. The OFSAAI facilitates System Administrators to provide access, monitor, and administer users along with the infrastructure metadata operations. The required permissions to roles or groups are authorized in the MMG applications using the Permission feature.
- **SAMLRealm:** The SAMLRealm uses an identity provider (IDP) Identity Management System for User Authentication. Security Assertion Markup Language (SAML) is an open standard that allows Identity Providers (IDP) to pass authorization credentials to Service Providers (SP). IDP acts as the Single Sign-On (SSO) service. Users and Roles are created in the IDP. The required permissions to Users and Roles are authorized in the MMG Applications using the Permission feature.

The following image illustrates the authentication and authorization process in MMG.



6.5.1 Access MMG Using AAI Realm

This section provides information on creating users who can access MMG using the AAIRealm Method of authentication through Oracle Financial Services Analytical Applications Infrastructure (OFSAAI). The users with SYSADMN and SYSAUTH roles in OFSAAI can create and authorize users, respectively. Identity Management in the OFSAAI facilitates System Administrators to provide access, monitor, and administer users along with the infrastructure metadata operations. The Security Management System (SMS) component is incorporated with Password Encryption, Single Logon, Role and

DataBased Security, Access Control, and Audit Trail feature to provide a highly flexible security envelope. Administrators can create, map, and authorize users defining a security framework that can restrict access to the data and meta-data in the warehouse, based on a fine-grained access control mechanism. These activities are done at the initial stage and then on a required basis. For more information on creating and authorizing users in OFSAAI, see the Oracle Financial Services Analytical Applications Infrastructure User Guide. The following table describes the ready-to-use roles and the corresponding user groups who can access MMG using AAIRealm. NOTE Only in AAIRealm, users are mapped to user groups. The default permissions mapped to these users and user groups are available in the Permission section. However, these permissions can be added or modified.

6.5.1.1 Prerequisites

1. Configuring WebLogic for REST Services Authorization.

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

- a. Open the config.xml file located in the domain where OFSAA is deployed that is `<domain_home>/config/config.xml`.

- b. Add the following in the security-configuration tag:

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

2. If MMG is SSL enabled, then the SSL certificate for MMG application should be imported in AAI.
3. In OFSAA application, **Allow user to log in from multiple machines** option should be enabled.

6.5.2 Access MMG Using SAMLRealm

This section provides information on managing users who can access MMG with Identity Provider (IdP or IDP). The IdP acts as the Single Sign-On (SSO) service provider for implementations between MMG, and Compliance Studio. This configuration prevents separate login for each application. An Identity Provider (IdP) is a service that stores and verifies user identity. IdPs are cloud-hosted services, and they often work with single sign-on (SSO) providers to authenticate users. An Identity Provider (IdP or IDP) stores and manages users' digital identities. An IdP checks user identities via username-password combinations and other factors, or it may simply provide a list of user identities that another Service Provider (like an SSO) checks. The following are the ready-to-use roles that can access MMG using SAMLRealm. To integrate MMG with IdP as the SSO Provider, follow these steps:

1. Create the following roles in the IDP System:

- IDNTYADMN
- IDNTYAUTH
- MDLREV
- MDLAPPR
- MDLBATCHUSR
- WKSPADMIN
- MDLUSR
- DSUSRGRP

- DSREDACTGRP

Note: IDNTYADMN role is required only if you need the Admin Access.

2. Map the user groups to the respective user based on the user roles. The default permissions mapped to these users are available in the Permission section. However, these permissions can be added or modified.

NOTE: It is recommended to use AAIRealm or SAMLRealm.

6.6 AAI User Provisioning SQL Scripts Generator Utility

This utility allows you to use AAI for authN in MMG. Identity administrators can create new user groups/roles, perform appropriate roles, usergroup and domain mapping, and so on.

This is provided as a SQL generator utility. This SQL scripts is executed in the AAI's config schema to create the required metadata.

You must execute this script multiple times against each username. Also, generate the merge scripts accordingly.

Execute the following command from <mmg-home>/bin folder

```
./userprovisioning-script-generator.sh <user> <comma separated listof user groups or ALL> <infodom> <segment>
```

Sample Commands:

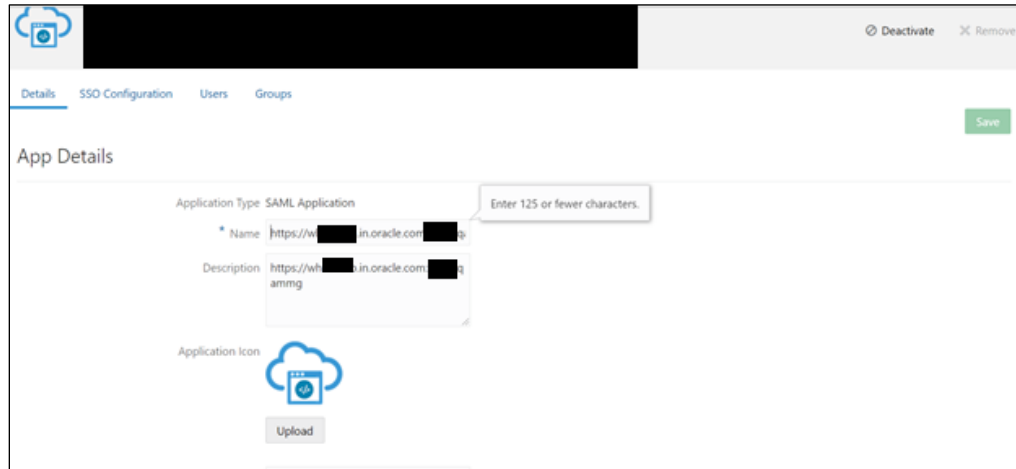
```
./userprovisioning-script-generator.sh SCRIPTUSER ALL OFSAAAIINFO EMFLD
```

```
./userprovisioning-script-generator.sh SCRIPTUSER
MDLREV,MDLUSR,IDENTITY_ADMIN
OFSAAAIINFO EMFLD
```

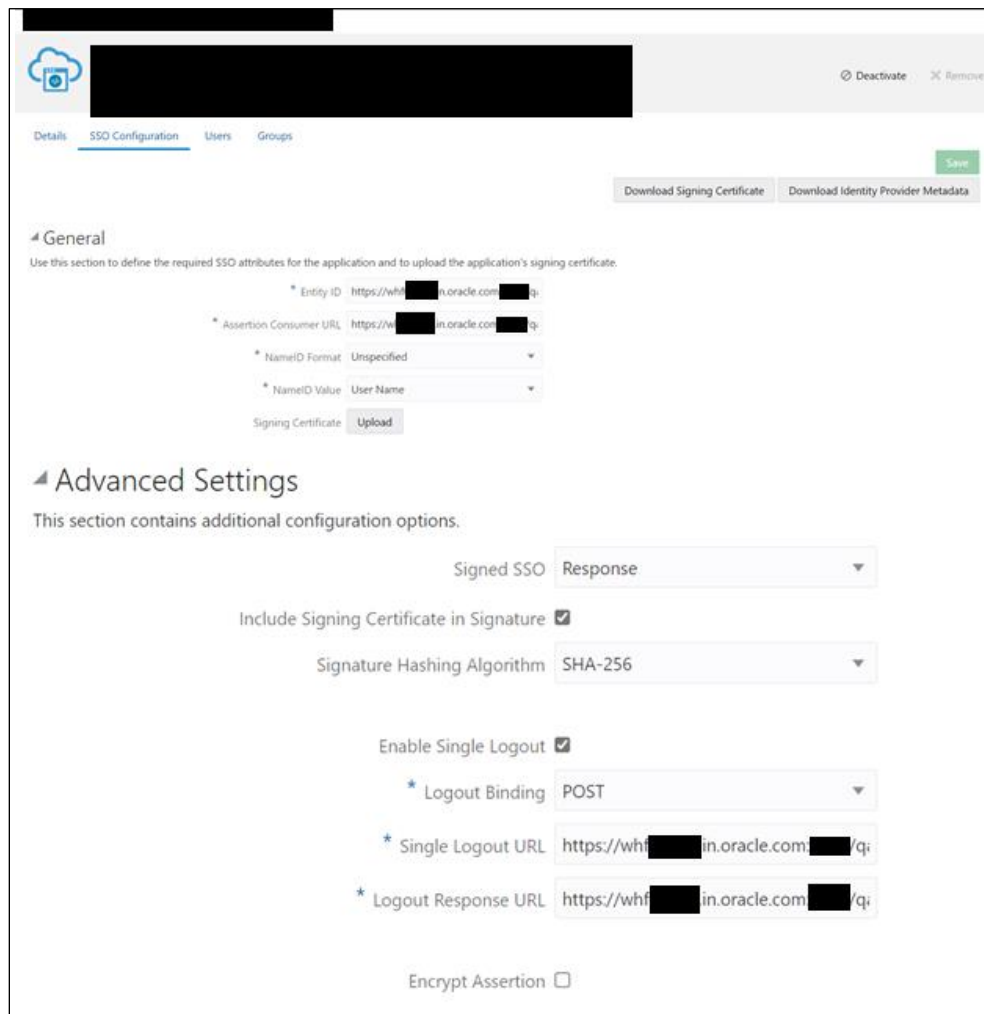
6.7 IDCS Server Configuration

To perform IDCS Server Configuration, follow these steps:

1. Navigate to SAML IDCS Admin.
2. Navigate to Details Section and add the app details in IDCS Server as shown below:



3. Navigate to SSO Configuration Section and add the app details in IDCS Server as shown below:



Advanced Settings

Attribute Configuration

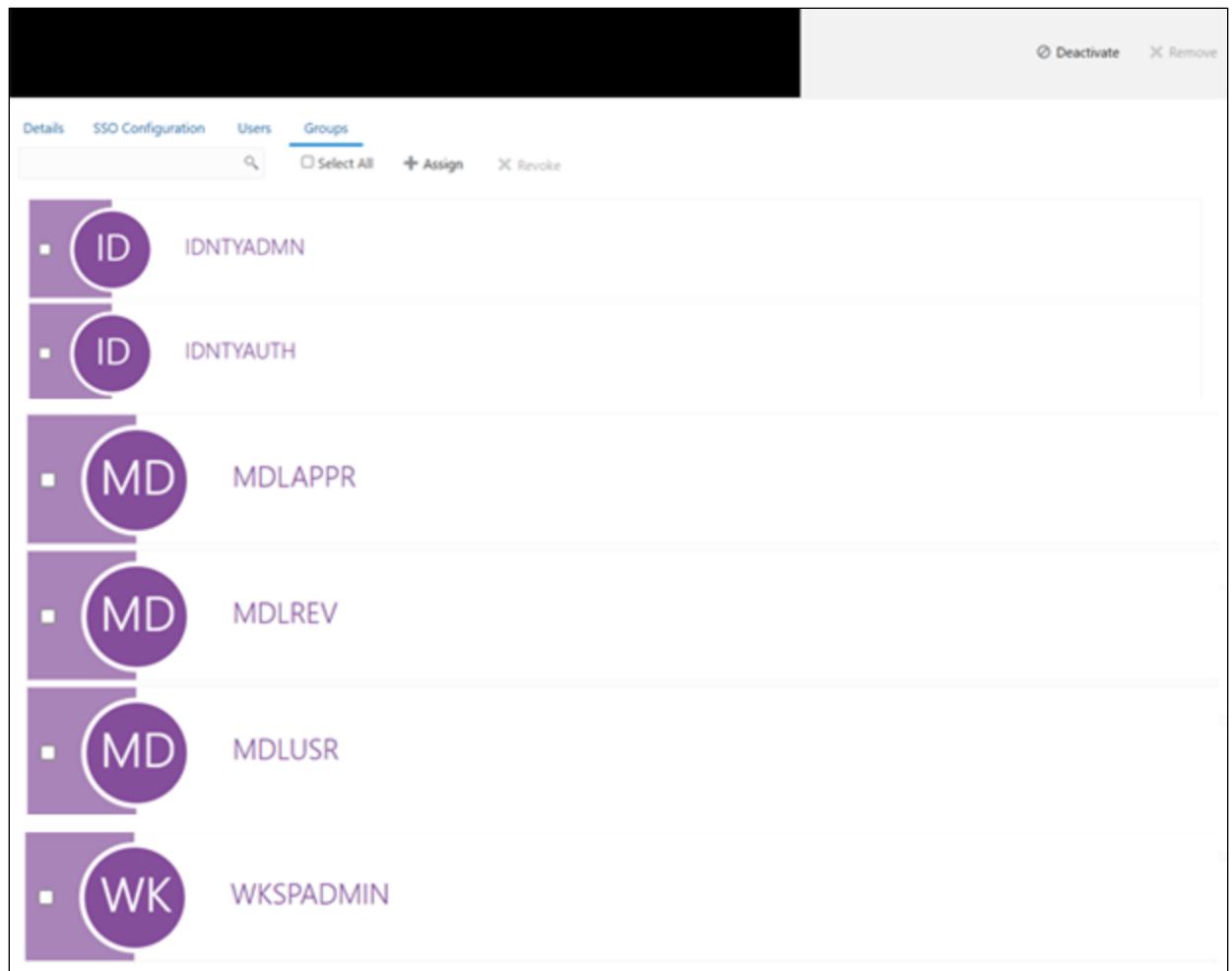
Use this section to add user attributes. This is useful if you want to send user information including group membership details as part of the assertion.

Attributes +

Name	Format	Type	Value	Condition	Value
username	Basic	User Attribute	Last Name		
email	Basic	User Attribute	Primary Email		
ofs_mapped_groups	Basic	User Attribute	Group Membersh...	All Groups	All Groups are selected

NOTE: The following attributes such as **username**, **email**, and **ofs_mapped_groups** needs to be configured as shown in the above image.

4. Navigate to Group Section and Configure User Groups.



Part III

Topics:

- [Upgrade Installation](#)

7 Upgrade Installation

7.1 Upgrading to 8.1.2.3.0

If you have already installed the MMG application and need to update the installation, perform the following:

Prerequisite:

- A valid working setup should be available before performing the upgrade.
- MMG config and MMG datastudio schema of the existing version should be used along with the wallet configurations.
- Create a new graph schema. For more details, see [Create the Graph Schema](#) section.
- Shutdown all the services of the existing installation using `shutdown.sh`.
- Move the existing MMG installation to a backup folder.

To upgrade, perform the below steps:

Follow the steps as mentioned in the [Installation](#) section.

NOTE: Compare and copy the placeholder values from the existing installed MMG.config.sh to the new MMG.config.sh mentioned in the Installation section.

8 Update Utility to Reconfigure Installation Parameters

If you need to update any of the existing configuration related values, perform the following steps:

NOTE: This Utility is applicable from 8.1.2.3.0 version onwards.

Procedure

1. Shut down all the services using `shutdown.sh` command.
2. Reconfigure the `config.sh` file with the required changes.
3. Execute the command `install.sh -u` from the following path: `<mmg installation path>/OFS MMG/bin`

A successful update message as follows:

```
nohup: ignoring input and redirecting stderr to stdout
PIPELINE_HOME: /scratch/ofsaapp/OFS_MMG/mmg-pipeline/pipeline
/scratch/ofsaapp/OFS_MMG/mmg-pipeline/pipeline
PIPELINE_HOME: /scratch/ofsaapp/OFS_MMG/mmg-pipeline/pipeline
Installing Pipeline Data Model. Please Wait ...
Pipeline Data Model installation finished.
Starting Pipeline Service ...
Starting Data pipeline services ...
Inserting DataMeta Data ...
***** Data Pipeline Deployment Done *****
Stopping Graph-Service service...
Graph-Service stopped.
Stopping Graph-Service service...
Graph-Service stopped.
nohup: ignoring input and redirecting stderr to stdout
```

4. Start all the MMG services using `startup.sh` command.

9 Cloning the MMG Instance

There is a consistent requirement for a faster and effective approach of replicating an existing MMG instance for further project developments. The approach is to set up the MMG instances that are exact copies of the current MMG instance.

9.1 Copying the Directories

The installation directory structure in the base environment has to be replicated in the clone environment.

- Copy the MMG base directory (OFS_MMG, by default) in the base environment with all of its contents to the clone environment.

The base directory in the clone environment will have the following folders upon copying:

- mmg-ui
- mmg-studio
- mmg-service
- mmg-schema-creator
- mmg-pipeline
- lib
- bin
- conf

NOTE : You need to copy LOG and FTPSHARE directories to the cloned environment.

9.2 Copying the Database schemas

To copy the Database schemas:

1. Create a copy each of the MMG Config schema and the Data Studio schema.

You may use Oracle Data Pump Export/Import or the Database copy feature of Oracle SQL Developer. For more details, see [Database Copy using Oracle SQL Developer](#).

The cloned schemas can be created either in the same database instance or in a different one.

2. Similarly, create copies of Workspace schemas or other Data Source schemas as required.

9.3 Configuring Password Store with Oracle Wallet

To configure the password store with Oracle wallet:

1. Setup an Oracle wallet in the clone environment. For more details, see [Setup Password Stores with Oracle Wallet](#).

NOTE It is recommended to use the same wallet aliases used in the base environment.

Updating the `WALLET_LOCATION` and `TNS_ADMIN_PATH`

Update the `WALLET_LOCATION` and `TNS_ADMIN_PATH` values in `config.sh` file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment.

9.4 Updating the Host details

Update the `HOST` and `PORT` values in `config.sh` file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment.

NOTE It is recommended to use the same ports and context used in the base environment.

Replace the placeholders and update the host name in the MMG Config schema using the following command:

```
update NEXTGENEMF_CONFIG set V_VALUE =
'http(s)://##HOST_NAME##:##BE_PORT##/##CONTEXT##' where V_NAME in (
'BASE_URL', 'EMFSTUDIO_SERVICE_URL')
/

update NEXTGENEMF_CONFIG set V_VALUE =
'http(s)://##HOST_NAME##:7008/##CONTEXT##' where V_NAME = 'DATASTUDIO_URL'
/

update AAICL_SS_BATCH_URL set V_URL =
'http(s)://##HOST_NAME##:##BE_PORT##/##CONTEXT##' where V_URL_NAME in
('CS_SERVICE_URL', 'MMG_SERVICE_URL', 'WORKSPACE_URL')
/
```

9.5 Update `LOG_HOME` and `FTPSHARE`

Update the `LOG_HOME` and `FTPSHARE` values in `config.sh` file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment.

Replace the `##LOG_HOME##` and `##FTPSHARE##` placeholders and update the `LOG_HOME` and `FTPSHARE` values in the MMG config schema using the following command:

```
update NEXTGENEMF_CONFIG set V_VALUE = '##LOG_HOME##' where V_NAME =
'LOG_HOME'
/

update NEXTGENEMF_CONFIG set V_VALUE = '##FTPSHARE##' where V_NAME =
'FTPSHARE'
/
```

9.6 Setting up the SSL Keystore

To run on HTTPS, you must create a Keystore for MMG Application. For more details, see the SSL Keystore in the [Configure the config.sh File](#).

Update the Keystore path, Password and Storetype values in config.sh file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment.

9.7 Updating Wallet aliases for Oracle schemas

NOTE It is recommended to use the same wallet aliases used in the base environment.

In case if the same wallet aliases cannot be used, perform the following:

1. Update the MMG Config schema wallet alias values in config.sh file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment.
2. Replace the placeholders and update the wallet alias for workspace schemas or other Oracle datasources using the following command:

```
update MMG_DB_MASTER set V_PROPERTY_VALUE = '##WALLET_ALIASES##' where  
V_PROPERTY_NAME = 'WALLET_ALIASES' and V_DB_NAME = '##DATASOURCE NAME##'  
/
```

9.8 Updating Context and Ports

NOTE It is recommended to use the same context and ports used in the base environment.

In case if the same context and ports aliases cannot be used, perform the following:

1. Update the references of context path and port values in config.sh file present in the following path: `OFS_MMG/bin` with configured corresponding values of the cloned environment
2. Replace the `##CONTEXT##` and `##BE_PORT##` placeholders.

For more details, see [Updating the Host details](#).

9.9 Starting MMG Services

Post updating all the required parameters in the new config.sh file, start the services by using the following command: `./install.sh -u`

Part IV

Topics:

- [FAQs](#)

10 Frequently Asked Questions (FAQs) and Error Dictionary

This section consists of resolution to the frequently asked questions and error codes noticed during OFS AAI Installation.

- [Frequently Asked Questions](#)
- [Error Dictionary](#)

10.1 Frequently Asked Questions

You can refer to the Frequently Asked Questions, which is developed with the interest to help you resolve some of the OFS AAI 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.

10.1.1 Frequently Asked Questions in MMG

You can refer to the Frequently Asked Questions, which are developed with interest to help you resolve some of the Compliance Studio 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 problem resolution knowledge to a few Known Issues.

1. Why does my console show an unsuccessful message during wallet creation?

Please check if you have run the following commands correctly. For more information on wallet creation, see [Setup Password Stores with Oracle Wallet](#).

- a. `mkstore -wrl <wallet_location> -create //creates a wallet in the specified location`
- b. `mkstore -wrl <wallet_location> -createCredential <alias-name> <database-user-name> //creates an alias in the studio schema`
- c. `mkstore -wrl <wallet_location> -createCredential <alias-name> <database-user-name> //creates an alias in the atomic schema`
- d. `mkstore -wrl <wallet_location> -createCredential <alias-name> <database-user-name> //creates an alias in the Config Schema`

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

2. Where can I find my created wallet?

Your wallet will be in the directory you have set as your wallet location.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

3. When should I create a Database link, and if yes, how do I do it?

Create a Database link to connect the Atomic and Config Database Schemas to the Studio Database Schema if the databases are different. You must create the link in the Studio Database.

In the following example, a link has been created from the Config Schema to the Atomic Schema by running the following script:

```
create public database link <studio database link>
connect to <Config Schema>
identified by password
using ' (DESCRIPTION = ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP) (HOST
=<host name> (PORT = <port number>)) (CONNECT_DATA = (SERVICE_NAME =
<service name>))) ';
```

```
Config schema : <Config Schema>/password
' (DESCRIPTION = ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP) (HOST
=<host name> (PORT = <port number>)) (CONNECT_DATA = (SERVICE_NAME =
<service name>))) ';
```

After running the script, run the FCDM Connector and ICIJ Connector jobs.

4. Why does my installed studio setup not have any notebooks?

Some default notebooks are ready to use when you install Compliance Studio. If you do not see any notebooks when you log in to the application, you may not be assigned any roles. Check the <COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs directory to see if you have been assigned any roles, and if not, contact your administrator.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

5. What can I do if the schema creation fails?

If the Atomic schema creation fails, login to the BD and ECM Atomic Schemas and run the following query:

```
select * from fcc_orahive_datatypemapping;
```

The fcc_orahive_datatypemapping table must not have duplicate data types.

If the Studio schema creation fails, login as a Studio user and run the following query:

```
select * from fcc_datastudio_schemaobjects
```

Run the following query to replace all Y values with ":

```
update fcc_datastudio_schemaobjects set SCHEMA_OBJ_GENERATED=''
```

After the schema creation is successful, the value of the SCHEMA_OBJ_GENERATED attribute changes to Y.

You can also check for errors in the application log file in the <COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs directory.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

6. What can I do if the Import_training_model batch execution fails?

7. Batch Execution Status always displays success in case of success or failure.

You can also check for errors in the application log file in the <COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs directory.

You can fix the failure according to the log details and run the same batch again.

8. Why is the sqoop job not successful?

The Sqoop job may fail if some of the applicable values are null or if the service name or SID value is not provided. Do one of the following:

- Check if there are any null values for the applicable configurations in the `config.sh` and `FCC_DATASTUDIO_CONFIG` tables. If there are any null values, add the required value.
- Check for any errors in the application log file in the `<COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs` directory.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

9. Why am I getting the following error when I run the sqoop job:

```
Error: Could not find or load main class
com.oracle.ofss.fccm.studio.batchclient.client.BatchExecute
```

Set the `FIC_DB_HOME` path in the

`<COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/ficdb` directory.

You can also check for any errors in the application log file in the

`<COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs` directory.

10. Why is the PGX Server not starting?

The PGX server starts only after the FCDM tables are created after the FCDM Connector Job is run. Check if all FCDM tables are created and then start the PGX Server. You can also check for any errors in the application log file in the

`<COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs` directory.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

11. Why is the ICIJ Connector job failing?

This can happen because of a missing `csv` file path in the `FCC_STUDIO_ETL_FILES` table. Add the `CSV` file path. You can also check for any errors in the application log file in the

`<COMPLIANCE_STUDIO_INSTALLATION_PATH>/deployed/logs` directory.

If your issue is still not resolved, contact [My Oracle Support \(MOS\)](#).

12. What should I do if there is a below Error while selecting edges in manual Decision UI?

```
java.lang.IllegalStateException: Unable to create
PgxSessionWrapperjava.lang.IllegalStateException: Unable to
create PgxSessionWrapper at
oracle.datastudio.interpreter.pgx.CombinedPgxDriver.getOrCr
eateSession(CombinedPgxDriver.java:147) at
oracle.pgx.graphviz.driver.PgxDriver.getGraph(PgxDriver.jav
a:334) at
oracle.pgx.graphviz.library.QueryEnhancer.createEnhancer(Qu
eryEnhancer.java:223) at
oracle.pgx.graphviz.library.QueryEnhancer.createEnhancer(Qu
eryEnhancer.java:209) at
oracle.pgx.graphviz.library.QueryEnhancer.query(QueryEnhanc
er.java:150) at
oracle.pgx.graphviz.library.QueryEnhancer.execute(QueryEnha
```

```
ncer.java:136) at
oracle.pgx.graphviz.interpreter.PgqlInterpreter.interpret (P
gqlInterpreter.java:131) at
oracle.datastudio.interpreter.pgx.PgxInterpreter.interpret (
PgxInterpreter.java:120) at
org.apache.zeppelin.interpreter.LazyOpenInterpreter.interpr
et (LazyOpenInterpreter.java:103) at
org.apache.zeppelin.interpreter.remote.RemoteInterpreterSer
ver$InterpretJob.jobRun (RemoteInterpreterServer.java:632)
at org.apache.zeppelin.scheduler.Job.run (Job.java:188) at
org.apache.zeppelin.scheduler.FIFOScheduler$1.run (FIFOSched
uler.java:140) at
java.base/java.util.concurrent.Executors$RunnableAdapter.ca
ll (Executors.java:515) at
java.base/java.util.concurrent.FutureTask.run (FutureTask.ja
va:264) at
java.base/java.util.concurrent.ScheduledThreadPoolExecutor$
ScheduledFutureTask.run (ScheduledThreadPoolExecutor.java:30
4) at
java.base/java.util.concurrent.ThreadPoolExecutor.runWorker
 (ThreadPoolExecutor.java:1128) at
java.base/java.util.concurrent.ThreadPoolExecutor$Worker.ru
n (ThreadPoolExecutor.java:628) at
java.base/java.lang.Thread.run (Thread.java:834) Caused by:
java.util.concurrent.ExecutionException:
oracle.pgx.common.auth.AuthorizationException:
PgxUser (FCCMDSADMIN) does not own session 6007f00a-8305-
4576-9a56-9fa0f061586f or the session does not exist code:
PGX-ERROR-CQAZPV67UM4H at
java.base/java.util.concurrent.CompletableFuture.reportGet (
CompletableFuture.java:395) at
java.base/java.util.concurrent.CompletableFuture.get (Comple
tableFuture.java:1999) at
oracle.pgx.api.PgxFuture.get (PgxFuture.java:99) at
oracle.pgx.api.ServerInstance.getSession (ServerInstance.jav
a:670) at
oracle.datastudio.interpreter.pgx.CombinedPgxDriver.getOrCr
eateSession (CombinedPgxDriver.java:145) ... 17 moreCaused
by: oracle.pgx.common.auth.AuthorizationException:
PgxUser (FCCMDSADMIN) does not own session 6007f00a-8305-
4576-9a56-9fa0f061586f or the session does not exist code:
PGX-ERROR-CQAZPV67UM4H at
oracle.pgx.common.marshalers.ExceptionMarshaler.toUnseriali
zedException (ExceptionMarshaler.java:107) at
oracle.pgx.common.marshalers.ExceptionMarshaler.unmarshal (E
xceptionMarshaler.java:123) at
oracle.pgx.client.RemoteUtils.parseExceptionalResponse (Remo
teUtils.java:130) at
oracle.pgx.client.HttpRequestExecutor.executeRequest (HttpRe
questExecutor.java:198) at
oracle.pgx.client.HttpRequestExecutor.get (HttpRequestExecut
or.java:165) at
oracle.pgx.client.RemoteControlImpl$10.request (RemoteContro
lImpl.java:313) at
oracle.pgx.client.RemoteControlImpl$ControlRequest.request (
RemoteControlImpl.java:119) at
```

```

oracle.pgx.client.RemoteControlImpl$ControlRequest.request (
RemoteControlImpl.java:110) at
oracle.pgx.client.AbstractAsyncRequest.execute (AbstractAsyn
cRequest.java:47) at
oracle.pgx.client.RemoteControlImpl.request (RemoteControlIm
pl.java:107) at
oracle.pgx.client.RemoteControlImpl.getSessionInfo (RemoteCo
ntrolImpl.java:296) at
oracle.pgx.api.ServerInstance.lambda$getSessionInfoAsync$14
(ServerInstance.java:490) at
java.base/java.util.concurrent.CompletableFuture.uniCompose
Stage(CompletableFuture.java:1106) at
java.base/java.util.concurrent.CompletableFuture.thenCompos
e(CompletableFuture.java:2235) at
oracle.pgx.api.PgxFuture.thenCompose (PgxFuture.java:158)

```

Then, please perform the below steps as a workaround -

Export the "Manual Decision" Notebook

Add the link parameter just below Description

for Ex - "link": "manualDecision",

```

[ {
  "name" : "manual Decision",
  "description" : null,
  "link": "manualDecision",
  "tags" : null,
  "version" : "5",
  "layout" : "zeppelin",
  "type" : "Default",
  "readOnly" : false,

```

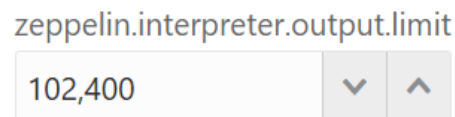
Truncate the table "fcc_er_paragraph_manual" in Studio Schema.

Import the modified notebook again.

13. What should I do when the result set is truncated if the size goes above '102400' bytes?

Perform the following steps:

- a. Login to Compliance Studio.
- b. Navigate to interpreter `zeppelin.interpreter.output.limit`.



- c. Set the value to the required size.
- d. Restart the Studio Application.

14. What should I do if there is a below `KubernetesClientException` in `load-to-elastic-search.log`, `matching-service.log` files after Compliance Studio installation?

```
configServicePropertySourceLocator - Could not locate PropertySource:
I/O error on GET request for "http://localhost:8888/<Service
Name>/default": Connection refused (Connection refused); nested
exception is java.net.ConnectException: Connection refused (Connection
refused)onfigServicePropertySourceLocator - Could not locate
PropertySource: I/O error on GET request for
"http://localhost:8888/<Service Name>/default": Connection refused
(Connection refused); nested exception is java.net.ConnectException:
Connection refused (Connection
refused)20:04:55.686 [                main] WARN  .cloud.kubernetes.confir
g.ConfigMapPropertySource - Can't read configMap with name: [<Service
Name>] in namespace:[null].
Ignoring.io.fabric8.kubernetes.client.KubernetesClientException:
Operation: [get] for kind: [ConfigMap] with name: [<Service
Name>] in namespace: [null] failed. at
io.fabric8.kubernetes.client.KubernetesClientException.laundryThrowable
(KubernetesClientException.java:64) ~[kubernetes-client-
4.4.1.jar!/:?] at
io.fabric8.kubernetes.client.KubernetesClientException.laundryThrowable
(KubernetesClientException.java:72) ~[kubernetes-client-
4.4.1.jar!/:?] at
io.fabric8.kubernetes.client.dsl.base.BaseOperation.getMandatory(BaseOp
eration.java:229) ~[kubernetes-client-4.4.1.jar!/:?] at
io.fabric8.kubernetes.client.dsl.base.BaseOperation.get(BaseOperation.j
ava:162) ~[kubernetes-client-4.4.1.jar!/:?] at
org.springframework.cloud.kubernetes.config.ConfigMapPropertySource.get
Data(ConfigMapPropertySource.java:96) ~[spring-cloud-kubernetes-config-
1.1.3.RELEASE.jar!/:1.1.3.
```

You can ignore the error when the following message is displayed at the end of the log; if you do not see this message, contact [My Oracle Support \(MOS\)](#) and provide the applicable error code and log:

```
13:52:57.698 [main] INFO  org.apache.catalina.core.StandardService -
Starting service [Tomcat]
13:52:57.699 [ main] INFO  org.apache.catalina.core.StandardEngine - Starting
Servlet engine: [Apache Tomcat/9.0.43]
```

What happens if a new sandbox workspace is created?

When a new sandbox workspace is created, the folders of the older workspace are by default being copied into the new workspace. Here, folder means the Model Objectives. The Model Objectives are global objects and will be visible across the workspaces. However, the models created within those objectives will be private.

This has been done purposely as you expect multiple modelers working on the common objective in their private workspaces.

Not able to access any models in the copied folders in the new workspace – the folders are being copied as empty folders?

Yes, you should not be able to access other workspace's private models. Also, as long as other users are working on the objective and have their models in there, you will not be able to delete the objectives.

What are the Workspace parameters used in MMG Python Scripts?

The following parameters are used:

- **workspace.list_workspaces():** Used to fetch a list of all workspaces. This list is populated in the dropdown menu of datastudio.
- **workspace.check_aif():** A method used to check if AIF is enabled or not
- **workspace.attach_workspace("SANDBOX123"):** A method used to set workspace
- **workspace.get_workspace():** Used to fetch the selected workspace (for example, SB1)
- **get_mmg_studio_service_url():** Used to fetch the base URL (for example, <http://whf999yyy:0000/mmg>)
- **get_user():** Used to fetch current user (for example, mmguser)

How to take connections for Data access?

You need access to the data to work on it. For the workspace, there are some underlying Data Schemas. You can also create a workspace that allows to select multiple underlying Data Schemas. You can use or remove multiple Data Schemas like multi combo box, where 1, 2, 3, and 4, 5 are schemas underlying. When you work with the models, you can access the notebook to fetch data for all these Data Schemas and create some data frames out of it. That can be used for model reading or other purposes.

This happens in workspace of the sandbox where you are building a Notebook. The same Notebooks gets promoted to production workspace. Therefore, the workspace production has its own set of underlying Data Schemas. When you build the model with getting connection for the this underlying Schema 1 and 2, and getting the data and building, it makes rules work and will not be affected if the same Notebooks gets promoted to production or deployment is cloned.

Therefore, the Notebook needs to run which should not be fetching this data because it will be working on any 1 and 2 Schemas.

To avoid this issue, you can use connection feature to connect with a schema. This is a wrapper function where you can specify which workspace you are connecting to.

You can enter the workspace details to get the connection and that starts fetching the data.

When you create the Notebook to production, a script runs to not to connect the workspace. This also uses overloaded methods. This method tells how to get the connection. Simple get connection gets the primary connection as first Data Schema which you are using without any overload.

The second connection gets an ID as the name the Data Source which you are using and for the current one will passes as get connection 1.

In the sandbox, this script looks for 1 and it creates a connection and moves to production.

It will again look for an equivalent 1 and tries to get a connection.

Therefore, whatever you select first, becomes the first Data Schema, Second Schema, Third Schema, therefore, Primary, Secondary, Tertiary and so on. You can also pass the number while getting the connection to get the first primary Data Schema as a secondary Data Schema. Therefore, when it runs in sandbox, it gets the Secondary Schema. When it runs in the production, it fetches a Secondary Data Schema of production.

What are parameters to establish the Connection for data access?

The following section lists the connection details such as the Data Sources and so on:

workspace.get_connection(): fetches connection object for the Primary Data Source of the workspace.

This is equivalent to executing `workspace.get_connection(1)`.

workspace.get_connection('id'): fetches connection for the Data Source by name.

For example, `workspace.getconnection('ws_data_1')` – here 'ws_data_1' is one of the underlying Data Source for the workspace.

workspace.get_connection(n): fetches connection for the Data Source by order.

For example, `workspace.getconnection(2)` – this will fetch connection for the Secondary Data Source.

The following section lists the workspace details:

After a workspace is attached, we can list Data Sources related to that using:

workspace.list_datasources(): will list Data Sources related to attached workspace with default order 1
For example, `{'Data Source': [{'name': 'newdatasource1', 'order': '1'}]}`

workspace.list_datasources("SB1"): will list Data Sources related to SB1 workspace with default order 1
For example, `{'Data Source': [{'name': 'ds1', 'order': '1'}]}`

workspace.list_datasources("SB1", 1): will list Data Sources related to SB1 workspace with order 1 as passed in second argument

For example, `{'Data Source': [{'name': 'ds1', 'order': '1'}]}`

Note: This is applicable for Python and Python variants interpreters, and not on any other interpreters.

10.1.2 OFS AAI FAQs

1. What are the different components that get installed during OFS AAI?

The different components of OFS AAI are illustrated in [Components of OFS AAI](#).

2. What are the different modes of OFS AAI installation?

OFS AAI can be installed only in Silent Mode.

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

No.

OFSAA Infrastructure Components (ficapp, ficweb, ficdb) cannot be installed on multi-tier. By default, they are installed on a single-tier. However, OFSAA Infrastructure can be deployed within the n-Tier architecture where the Database, Web Server, and Web Application Server is installed on separate tiers.

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

JDK is not required during the installation of OFSAA and only a runtime is needed. For details, see [Hardware and Software Requirements](#).

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

5. How do I know what are the Operating System, Web Servers, and other software versions that OFSAA supports?

See the [Oracle Financial Services Analytical Applications 8.1.2.0.0 Technology Matrix](#).

6. What are the different files required to install OFS AAI?

The following files are required:

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

7. What should I do if I get the following error message during installation:

"Execute Permission denied"? Check whether all the files provided for OFS AAI Installation has execute permissions.

To give execute permissions, navigate to the directory path where the Installation files are extracted and execute the following command:

```
chmod -R 755 OFS_AAI_PACK
```

8. "No Java virtual machine could be..."

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

- Check whether the "java path" is set in the PATH variable. See the [Hardware and Software Requirements](#) Section in this document.
- Check whether sufficient temporary space is available.
- Ensure that the movement of OFS AAI Installer text files to the target system is done in the Text mode so that the `setup.sh` file does not contain control line feed characters (^M).

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

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

10. The installation of OFS AAI was completed successfully! What next?

Post the successful completion of the OFS AAI Installation, one has to perform the Post Installation steps. See [Post-installation](#) Section.

11. What is to be done when OFS AAI Installation is unsuccessful?

OFS AAI installer generates the log file `OFSAAInfrastructure_Install.log` in the Infrastructure Installation Directory. There are also other log files created in the directories:

- `< directory path where the Installation files are extracted >/OFS_AAI_PACK/logs`
- `< directory path where the Installation files are extracted >/OFS_AAI_PACK/OFS_AAI/logs`

If the logs of any of these reported Warnings, Non-Fatal Errors, Fatal Errors, or Exceptions, they must be brought to the notice of the OFS AAI [My Oracle Support](#). It is recommended not to proceed until the reported problems are adequately addressed.

12. How do I completely uninstall OFS AAI?

OFS AAI can be completely uninstalled by performing the steps provided in the [Uninstall OFSAA Infrastructure](#) Section in this guide.

13. Can OFS AAI config and atomic schemas be on different databases?

OFS AAI requires both Config and Atomic Schemas to be present on the same database instance.

14. How do I grant privileges if a new information domain is created?

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

- a. Log into the database as sys and connect as Sysdba User.
- b. Execute the `privileges_atomic_user.sql` file available under the `$FIC_HOME` directory.
- c. Enter the Database Schema for which you want to grant privileges.

15. When should I run the MLS utility?

See the Multiple Language Support (MLS) Utility Section in the [OFS Analytical Applications Infrastructure Administration Guide](#).

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

- a. Log in as root user on the UNIX machine where OFS AAI is getting installed.
- b. Navigate to the `/etc/security/` directory.
- c. Edit the file `limits.conf` to add/edit a row for the UNIX User installing OFSAA:

```
<Unix User> soft nofile 15000
```
- d. After saving the changes, log in as UNIX User with which OFS AAI is getting installed and execute the command:

```
ulimit -n
```
- e. The command must return the value 15000.

17. How do I verify if the system environment is ready for OFS AAI installation?

To verify the system environment meets the minimum requirements for the installation, a Pre-Install Check utility is available within the Install Kit Archive file. This utility can also be obtained separately by contacting [My Oracle Support](#).

See [Verifying System Environment](#) Section for additional information.

18. How do I know if the installation is completed successfully?

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

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

- a. See the [Verify the Log File Information](#) Section for log file information.
- b. Backup the installation logs.
- c. Share the backup logs with [My Oracle Support](#).

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

If the installation process is abruptly terminated, then the installation is incomplete. To recover from this, follow these steps:

- a. Drop the DB Objects in the Config and Atomic Schemas created by OFS AAI Installation.
- b. Open the `.profile` and remove the entries made by the OFS AAI installation, which are made between the comment statements, `#Beginning of entries by OFSAA Infrastructure Installation`, and `#End of entries by OFSAA Infrastructure Installation`.
- c. Delete the OFSAA install and FTP Share Directories created by the OFS AAI Installer.
- d. Perform the OFS AAI Installation again. See [Pre-installation](#) Section.

21. Does OFSAA support any other web server types, other than the ones stated in the Oracle Financial Services Analytical Applications 8.1.2.0.0 Technology Matrix and Installation Guide?

No. All the supported software and versions are stated in the Oracle Financial Services Analytical Applications 8.1.2.0.0 Technology Matrix.

22. What should I do if the database connection from the connection pool displays the following error message, "java.sql.SQLRecoverableException: IO Error: Connection reset"?

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

NOTE

This must be configured on all the machines or VMs where the OFS AAI components are installed.

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

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

This can mostly happen due to the following reasons:

- When the installer is not extracted correctly or corrupted during the Unzip Utility Process.
- `setup.sh` file which resides within the install archive is not transferred in ASCII or Text Mode, which can corrupt the file.

To correct this, follow the steps:

- a. Copy the installer (in BINARY Mode) to the system on which the OFSAA Infrastructure Components will be installed.

- b. Unzip the installer using the command:

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

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

- a. Log in to the server where the installer is copied.
- b. Navigate to the directory `< directory path where the Installation files are extracted >/OFS_AAI_PACK/bin`.
- c. Open the `setup.sh` file in the vi editor using the command: `vi setup.sh`.
- d. Inside vi editor in Esc mode, type: `%s/^M//g`

NOTE

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

- e. Save the `setup.sh` file by typing: `wq!`

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

- Ensure the `JAVA_BIN` Environment variable path is set on the "UNIX user" terminal from where the `startofsaai.sh` file is invoked.
- Ensure that the `.profile` file, where the environment/ path settings are made, is executed successfully.

25. What should I do if the OFS AAI Application Server does not proceed even after providing the system password?

Ensure that, the System Password provided when prompted during installation is correct. Additionally, check whether the connection to the "Configuration Schema" can be established through `sqlplus`.

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

Ensure OFS AAI Servers are started and are running successfully. For details on startup parameter options, see [Start the Infrastructure Services](#) Section.

For more details on the issue, refer to the logs under `$FIC_HOME /logs` directory.

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

The "Oracle Schema" user requires the necessary grants specified before, during, and after the Installation Process. Grants provided must never be revoked as the application makes use of these grants all the time.

28. Can we have a distributed OFS AAI Application Server for load balancing?

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

29. Why do we need FTPSHARE on all the layers? Can we have ftpshare on another server other than the server where OFS AAI is installed?

FTPSHARE is a Metadata Repository Directory. All the metadata related files used in Infrastructure are stored in the FTPSHARE Directory. The ftpshare contains directories for each Information Domain, with each Information Domain Directories holding Erwin, log, and Scripts Directory. The transfer of data among the Web, Application, and Database Servers in Infrastructure takes place through FTP/SFTP.

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

Yes, you can have FTPSHARE as a common local storage mount point, which can be mounted where OFS AAI is installed.

30. Is it mandatory to provide the FTP/SFTP password?

Yes, OFS AAI needs credentials of the user who has complete permissions on the FTPSHARE Directory, and the user must be able to independently log in to the UNIX Server.

For more information, see the [Configure OFSAAI InstallConfig.xml File](#) Section.

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

It is recommended to provide permissions on FTPSHARE in case of installations done across different machines or VMs (Multitier Installation).

In the case of a Single-Tier Installation, 770 permissions can be provided if the UNIX Users of OFS AAI and Web Servers belong to the same UNIX Group.

Additionally, any new file that is created in the FTPSHARE Directory of any Installation Layer must be granted specific/explicit permission.

32. How to modify the port number currently being used by the Infrastructure application?

Port Changer utility can be used to have the Port number modified, which is currently being used by the Infrastructure Application. For more information, refer to the *Change IP Address or Hostname, Ports, Deployed Paths of the OFSAA Instance* Section in the [OFS Analytical Applications Infrastructure Administration User Guide](#).

33. Are there any in-built system administration users within OFS AAI Application?

The following two in-built system administration users are provided to configure and setup OFS AAI:

- SYSADMIN
- SYSAUTH

34. Does OFS AAI Application support both FTP and SFTP?

OFS AAI supports both FTP and SFTP Configuration.

35. Is it necessary to enable the FTP/SFTP services to use the OFS AAI?

Yes, enabling of FTP/SFTP Services and its ports is a prerequisite step towards using the OFS AAI.

36. OFS AAI Configuration: Unable to save the server details?

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

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

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

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

- Verify whether a connection to the Configuration Schema can be established through SQL*PLUS.
- Verify the Configuration Schema Password is modified post-installation.
- Ensure Oracle Database Alias Name created for Oracle Instance and Oracle Service Name are the same.

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

Ensure the `Reveleus.SEC` file exists under the `$FIC_HOME/conf` directory where the Database Components are installed.

40. Does OFS AAI Application support LDAP authentication?

OFS AAI supports LDAP Configuration and Authentication.

41. Does OFS AAI support multiple languages?

Yes, OFS AAI supports multiple languages.

42. Does OFS AAI provide any data back-up features?

OFS AAI does not have a built-in backup facility. External Storage Infrastructure is recommended for back-up.

43. What kind of security features does the OFS AAI provide?

See the [Security Guide](#) for more information.

44. Does OFS AAI have the ability to enforce periodic password change?

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

45. What is the password policy followed in OFS AAI?

OFS AAI enforces a minimum password length with a combination of Upper- and Lower-case Characters and Alphanumeric Strings.

46. Which version of Erwin Data Modeller does OFS AAI support?

See the [Hardware and Software Requirements](#) Section for more information.

47. Does OFS AAI provide the mechanism to upload Business Data Model?

OFS AAI provides two mechanisms for Business Data Model Upload:

- Easy to use GUI based Model upload mechanism to upload the Business Data Model through Data Model Management, select **Data Model Maintenance** and then select **Import Model**.
- OFS AAI also provides a Model Upload Utility "upload.sh" for uploading the business data model through the command line parameter by executing this Shell Script file under the path <FIC_HOME>/ficapp/common/FICServer/bin.

For more details, see the *Model Upload Utility* Section of the [OFS Analytical Applications Infrastructure User Guide](#).

48. How do I apply the incremental change to the existing model when the Business Data Model changes?

The modified data model can be uploaded into the system and OFS AAI can compare the changes within the data model concerning the one already present in the system and enables propagation of incremental changes in a consistent manner.

49. What are the different types of uploading a Business Data Model?

OFS AAI supports uploading of the Business Data Model from Client Desktop and also by picking up the Data Model from the server location.

50. Can the OFS AAI Configuration Schema Password be modified post-installation?

The OFS AAI Configuration Schema Password can be modified post-installation. OFS AAI Application Stores the password in the database and few configuration files, thus any changes to the Configuration Schema Password will require updating in those files. For more information, see [Modify OFSAA Infrastructure Config Schema Password](#).

51. Can the OFS AAI Atomic Schema Password be modified?

The OFS AAI Atomic Schema Password can be modified. OFS AAI Application stores the atomic schema password in the database and few configuration files, thus any change to the atomic Schema Password will require updating those files.

To change the Atomic Schema Password, follow the steps:

- a. Log in to **OFSAA**.
- b. Navigate to **System Configuration** and select **Database Details** Window. Select the appropriate connection, provide the modified password, and save.
- c. Based on the Web Server installed, follow the steps:
 - If you are using Apache as Web Server:
 - Update the <Context> and select the Resource tag details in the `server.xml` file from the `$CATALINA_HOME/conf` directory. (In case of Tomcat only Atomic <Resource> will exist).
 - If you are using WebSphere as Web Server:
 - Log in to the WebSphere Administration Console from the left side menu.
 - Navigate to **Resources**, and select **JDBC**, and then select **Data Sources**. A list of data sources is populated on the right side.
 - Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic Data Sources must be modified).
 - If you are using WebLogic as Web Server:
 - Log in to the WebLogic Administration Console from the left side menu.
 - Under Domain Structure list box, expand the appropriate Domain and navigate to **Services**, and select **JDBC**, and then select **Data Sources**. A list of data sources is populated on the right side.
 - Select the appropriate Data Source and edit the connection details. (In this case, both Config and Atomic Data Sources must be modified).
- d. **Restart the OFS AAI Services**

NOTE If the modified passwords are not updated, OFS AAI logs display the message ORA-28000: the account is locked.

52. Does the upload of the Business Data Model depend on Java Memory?

Business Data Model upload through OFS AAI depends on the Java memory settings on the client and server machines. Java memory setting varies with the Data Model size and the available RAM. Contact [My Oracle Support](#) for more details.

53. Why do the Business Metadata Management Screens (Business Processors Screen) in User Interface take more time to load than other screens?

The Log file in `DynamicServices.xml` which resides in the `$FIC_HOME/conf` directory is continuously being updated or refreshed to cache metadata. This can be observed when you are starting `startofsaai.sh` and if any of the log files (for example, `SMSService.log`) in `DynamicServices.xml` is being continuously refreshed for a longer time.

By default, the Metadata Logfile cache size is set to 1000. If in case the log is being updated beyond this limit, retrospectively the preceding entries are overwritten. For example, the 1001st

entry is overwritten by deleting the first entry. This results in the Application Window taking a longer time to load.

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

- a. Generate the Log report by executing the following query in the Config Schema.

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

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

For example, if the "MEASURE_CACHE_SIZE" is set to 1000 and the total measure reported in the log is 1022, increase the limit to 2000 (approximately).

- d. Restart Reveleus or OFS AAI Servers (Web and APP) and check the issue.

54. What should I do if I get OutOfMemoryError while deploying the EAR file in the WebSphere Application Server?

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

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

55. What is the default memory setting configured by the Installer?

During OFS AAI Installation, the `X_ARGS_APP` Parameter in the `.profile` file is set as given:

```
X_ARGS_APP="-Xms200m -Xmx8g -XX:+UseAdaptiveSizePolicy -
XX:MaxPermSize=1024M -XX:+UseParallelOldGC -XX:+DisableExplicitGC
```

During the Application Installation, if 10 times the Data Model Size (`data model size*10`) is greater than the default `Xmx` value of 8g (8GB), the installer automatically updates the `Xmx` value to 10 times the Data Model size.

56. What configurations should I ensure if my Data Model size is greater than 2GB?

Ensure the `Xmx` value in the `X_ARGS_APP` Parameter in the `.profile` file is set as 10 times the Data Model size.

For example, if it is 2GB, set it as:

```
X_ARGS_APP="-Xms200m -Xmx20g -XX:+UseAdaptiveSizePolicy -
XX:MaxPermSize=1024M -XX:+UseParallelOldGC -XX:+DisableExplicitGC
```

Then execute the `.profile` file.

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

In some cases, the Hierarchy Filters do not save the edits correctly if the underlying Hierarchy is changed. This can occur in Hierarchy Maintenance, where you have moved a member to another Hierarchy Branch, and that member is explicitly selected in the Filter and is now a Child of a node that is already selected in the Filter. See the Support Note [1586342.1](#) for the workaround.

58. Can I install an Application Pack on an existing Atomic Schema/ Information Domain created manually?

No, you cannot install an Application Pack on existing Atomic Schema or Information Domain created manually. Application Packs can be installed only on Atomic Schemas or Information Domain created using Schema Creator Utility and (or) the Application Pack Installer.

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

Ensure you have created a directory "STAGE" under the path mentioned as "Local Path" in the Web Server Details Window. This directory must be created under the local path on every node, in case of Web Application Server clustering.

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

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

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

Follow these steps to turn off unused Infodoms from caching:

- a. Navigate to `$FIC_HOME/conf` in the APP layer of your OFS AAI Installation.
- b. In the `DynamicServices.xml` file, identify the section for `<Service code="20">`.
- c. Modify the value of parameter `CACHE_ON_STARTUP` to 0 (default is 1).
- d. Update the same details in the table `Aai_Dyn_Svcs_Params` of Config Schema for the parameter `CACHE_ON_STARTUP`. Set the value as 0 and commit the change.
- e. Restart the OFS AAI Services (APP and WEB).
For more information, see the [Start the Infrastructure Services](#) Section.

NOTE

This setting helps cache the Infodom Metadata only for the Infodoms that are accessed after the user login. Infodoms that are not accessed are not cached.

Sample Code is as follows:

```
<SERVICE CODE="20"
CLASS="com.iflex.fic.metadata.services.MetadataServiceProvider"
NAME="BMD"
```

```

SERVERID="DEFAULT" PATH=" " LOGGERNAME="UMMLOGGER" LOGGERLEVEL="10">
<PARAMETERS>
<PARAMETER NAME="CACHE_ON_STARTUP" VALUE="0" />
<PARAMETER NAME="BACKUP_XML" VALUE="1" />
<PARAMETER NAME="MAX_BACKUP_XML" VALUE="2" />
<PARAMETER NAME="PC_NONBI_BI_SWITCH" VALUE="2048" />
<PARAMETER NAME="HIERARCHY_NODE_LIMIT" VALUE="2000" />
<PARAMETER NAME="ALIAS_CACHE_SIZE" VALUE="1000" />
<PARAMETER NAME="DATASET_CACHE_SIZE" VALUE="2000" />
<PARAMETER NAME="MEASURE_CACHE_SIZE" VALUE="2000" />
<PARAMETER NAME="HIERARCHY_CACHE_SIZE" VALUE="2000" />
<PARAMETER NAME="DIMENSION_CACHE_SIZE" VALUE="2000" />
<PARAMETER NAME="HIERARCHYATTRIBUTE_CACHE_SIZE" VALUE="1000" />
<PARAMETER NAME="CUBE_CACHE_SIZE" VALUE="1000" />
<PARAMETER NAME="RDM_CACHE_SIZE" VALUE="1000" />
<PARAMETER NAME="BUSINESSPROCESSOR_CACHE_SIZE" VALUE="2000" />
<PARAMETER NAME="DERIVEDENTITY_CACHE_SIZE" VALUE="1000" />
<PARAMETER NAME="LOG_GET_METADATA" VALUE="false" />
<PARAMETER NAME="METADATA_PARALLEL_CACHING" VALUE="0" />
</PARAMETERS>
</SERVICE>

```

- 62. While creating an Excel Mapping, after specifying the Excel Worksheet, the Target Table, and mapping each column in the worksheet to a Target Table, I click Save and nothing happens. But when I click Cancel, a message pops up informing me that all changes will be discarded", what is to be done.**

Check if the version of the browser and JRE Plugin are as mentioned in the [Hardware and Software Requirements](#) Section of this manual. If not, use the qualified versions as mentioned.

- 63. Can multiple OFSAA Infrastructure instances share the same Config Schema?**

No, only one OFSAA Environment can be installed using one Config Schema.

- 64. Can Atomic Schema be shared?**

Yes, it can be shared between two OFSAA Instances.

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

The OFSAA Servlet port, which is the same as the Web server port, must be open. In addition, the Web Application Port must be open.

- 65. Can I install an already installed application in a different Infodoms?**

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

66. How can I configure the OFSAA Application for High Availability?

OFSAA can have active-passive high availability.

For more details, see [Configuration for High Availability- Best Practices Guide](#).

67. During OFSAA Installation, should I provide a Web Application Server's IP Address or Hostname and Port or Web Server's IP or Hostname and Port, if the Apache HTTP Server or Oracle HTTP Server or IBM HTTP Server are configured?

In case the Web Server is configured, you must enter the Web Server IP Address or Hostname and Port details during OFSAA installation. Here the Servlet port must be the same as the Web Server Port.

If Web Server is not configured, the Web Application Server's IP Address or Hostname and Port are required during the installation process. Here the Servlet Port must be the same as the Web Application Server Port.

68. Is "ReveleusAdminConsoleAgent" applicable for OFS AAI 8.1.2.0.0 and higher versions?

No, ReveleusAdminConsoleAgent is not applicable starting OFS AAI 7.3.3.0.0. There is a change in the way agentservers are managed through `agentstartup.sh` and `agentshutdown.sh`.

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

This error is displayed due to the following reasons:

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

To resolve the error, re-set the Config Schema Password to the old password. Otherwise, if the Config Schema password is modified to something else then follow these steps:

- a. Delete the `$FIC_HOME/conf/Reveleus.SEC` file.
- b. Shutdown the OFSAAI App service: `cd $FIC_APP_HOME/common/FICServer/bin`
`./stopofsaai.sh`
- c. Start the Infrastructure Server in foreground directly on the server or through XWindows Software using the command: `./startofsaai.sh`
- d. Enter System Password.
- e. Enter the new Config Schema Password. The service starts and initializes if it can successfully connect to the DB and generates the `Reveleus.SEC` file.
- f. Post successful startup of the service, if required, the Infrastructure server may be shut down and restarted in the background using Nohup Mode.

70. What is the mechanism of log file sizing, changing the log file path, and creating backups of the log files?

OFS AAI Log files created under `$FIC_APP_HOME/common/FICServer/logs` and `<OFSAAI_DEPLOYED_AREA>/<CONTEXT.war>/logs` is configurable in `RevLog4jConfig.xml`.

The default size of the log files (`MaxFileSize`) is set to 5000kb and the number of maximum backup log files (`MaxBackupIndex`) retained is set to 5, both of which are configurable. Increasing these parameters to a higher value must depend on the Server Hardware Configurations and may reduce the performance.

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

- a. Navigate to `$FIC_HOME/conf` where OFSAA is installed.
- b. Edit the following parameters in the `RevLog4jConfig.xml` file:
 - param name="fileName" : Enter the path where the Logs are to be generated.
 - param name="size" : Provide the required file size.
 - param name="max" : Provide the required number of backup files to be created.

Example:

```
<RollingFile name="REVSERVERAPPENDER"
fileName="<Path_exists>/logs/RevAppserver.log"
  filePattern="<Path_exists>/logs/RevAppserver-%i.log" >
  <PatternLayout>
    <Pattern> [%d{dd-MM-yy HH:mm:ss,SSS zzz aa}{GMT}] [%-
5level] [APP] [REVELEUS] %m%n</Pattern>
  </PatternLayout>
  <Policies>
    <SizeBasedTriggeringPolicy size="5000 KB" />
  </Policies>
  <DefaultRolloverStrategy max="5"> <!-- number of backup
files -->
  </DefaultRolloverStrategy>
</RollingFile>
```

- c. Navigate to `$FIC_HOME/ficweb/webroot/conf` and configure the deployed Area Logs. Edit the following parameters in the `RevLog4jConfig.xml` file:
 - param name="file": Do not change this value.
 - param name="MaxFileSize" : Provide the required file size.
 - param name="MaxBackupIndex" : Provide the required number of backup files to be created.

Example:

```
<RollingFile name="REVSERVERAPPENDER"
fileName="${sys:LOG_HOME}/logs/RevAppserver.log"
    filePattern="${sys:LOG_HOME}/logs/RevAppserver-%i.log" >
    <PatternLayout>
        <Pattern> [%d{dd-MM-yy HH:mm:ss,SSS zzz aa}{GMT}] [%-
5level] [WEB] [REVELEUS] %m%n</Pattern>
    </PatternLayout>
    <Policies>
        <SizeBasedTriggeringPolicy size="5000 KB" />
    </Policies>
    <DefaultRolloverStrategy max="5"> <!-- number of backup
files -->
    </DefaultRolloverStrategy>
</RollingFile>
```

To configure the deployed Area Log File Path, modify the value in the **LOG_HOME_PATH** parameter in the **aai_setup_props** table.

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

Follow these steps:

- a. Create SSL related certificates and import to respective servers.
- b. Enable SSL on a desired Port (example 9443) on your existing and already deployed Web Application Servers.
- c. Replace the protocol as https and new SSL Port (FIC_SERVLET_PORT) configured and in all the URLs specified on the following files:

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

- d. Replace XML attribute or Node Values as specified on the following files:

```

— $FIC_HOME/ficweb/webroot/WEB-INF/web.xml
— FIC_WEBSERVER_PORT=9443
— FIC_WEBPROTOCOL=https
— $FIC_HOME/conf/LookUpServices.xml and $FIC_
  HOME/ficweb/webroot/conf/LookUpServices.xml
— PORT="9443"   PROTOCOL="https:"

```

- e. Log in to Config Schema and execute the following SQL Command to replace protocol and SSL Port.

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

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

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

- f. Create EAR or WAR file and redeploy.

72. What should I do if my HIVE connection fails with the following exception:

```
java.sql.SQLException: [Cloudera][HiveJDBCdriver](500164) Error
initialized or created transport for authentication:
```

```
[Cloudera][HiveJDBCdriver](500168) Unable to connect to server: GSS
initiate failed.
```

```
com.ibm.security.krb5.KrbException, status code: 37
```

```
message: PROCESS_TGS at
```

```
com.ibm.security.krb5.KrbTgsRep.<init>(KrbTgsRep.java:20)
```

This happens if there is clock skew between the Client and the KDC Server. To resolve this, there are two solutions:

Solution 1:

Synchronize the clocks between the servers.

For more information, visit <http://docs.oracle.com/cd/E19253-01/816-4557/setup-192/index.html>

Solution 2:

- Set clock skew parameter on the server side (KDC) `krb5.conf` file and replace the same file in the `HIVE_LIBRARY_PATH` directory. Parameter Value must be decided based on the time difference between the two machines.
- Get the epoch time on the two servers by firing “date +%s” on the command line.
- Clock SKEW Param Value must be chosen as a value sufficiently larger than the difference of the preceding two calculated values.
- Set “clock skew = <value>” in the `/etc/krb5.conf` file on the KDC server.
- Restart Kerberos Services.

73. What should I do if my schema creator log has the following exception:

```
Failed to detect a valid hadoop home directory java.io.IOException:
HADOOP_HOME or hadoop.home.dir are not set. at
org.apache.hadoop.util.Shell.checkHadoopHome (Shell.java:302)
at org.apache.hadoop.util.Shell.<clinit>(Shell.java:327) at
org.apache.hadoop.util.StringUtils.<clinit>(StringUtils.java:79) at
org.apache.hadoop.security.Groups.parseStaticMapping (Groups.java:130)
at org.apache.hadoop.security.Groups.<init>(Groups.java:94) at
org.apache.hadoop.security.Groups.<init>(Groups.java:74) at
org.apache.hadoop.security.Groups.getUserToGroupsMappingService (Groups.
java:303) at
org.apache.hadoop.security.UserGroupInformation.initialize (UserGroupInf
ormation.java:283) at
org.apache.hadoop.security.UserGroupInformation.setConfiguration (UserGr
oupInformation.java:311) at HdfsDbUtil.connect (HdfsDbUtil.java:162) at
SchemaParserUtil.validateHiveConnection (SchemaParserUtil.java:1359) at
SchemaParserUtil.checkAllPreChecks (SchemaParserUtil.java:1011) at
Main.execute (Main.java:317) at Main.main (Main.java:145) This occurs
when HADOOP_HOME environment variable is not set.
```

You can ignore this exception since we do not mandate to install HIVE where OFSAA is installed.

74. What should I do if the Sliced Data Model Upload takes a long time to complete?

If the Metadata Cache size is set to a lower value than the actual count of each Metadata Type (Hierarchy, Dataset, Dimension, and so on), then it gets into performance degrade issues. Increase the cache size for each Metadata Type according to the count in the environment.

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

```
<PARAMETER NAME="HIERARCHY_NODE_LIMIT" VALUE="2000"/>
<PARAMETER NAME="ALIAS_CACHE_SIZE" VALUE="1000"/>
<PARAMETER NAME="DATASET_CACHE_SIZE" VALUE="2000"/>
<PARAMETER NAME="MEASURE_CACHE_SIZE" VALUE="3000"/>
<PARAMETER NAME="HIERARCHY_CACHE_SIZE" VALUE="2000"/>
<PARAMETER NAME="DIMENSION_CACHE_SIZE" VALUE="2000"/>
<PARAMETER NAME="CUBE_CACHE_SIZE" VALUE="1000"/>
<PARAMETER NAME="BUSINESSPROCESSOR_CACHE_SIZE" VALUE="2000"/>
<PARAMETER NAME="DERIVEDENTITY_CACHE_SIZE" VALUE="1000"/>
```

Metadata count can be derived based on the following queries:

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

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

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

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

```

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

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

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

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

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

```

75. For LDAP authentication, which server connects with the LDAP Server, the Application Server (where OFS AAI is installed), or Web Application Server (where EAR is deployed)?

For LDAP Authentication, the Application Server (ficapp) connects with the LDAP Server.

76. The LDAP Server in the setup listens on Secure Protocol ldaps (Port 636). I have the root certificate of the LDAP Server for SSL, and would like to know where to offload this certificate?

You must import the certificate into the JDK or JVM used by Reveleus Server in Ficapp Layer.

77. How to relocate FTPSHARE directory, change IP HOST name, and deployed area in OFSAA?

You can run the `PortC.jar` utility.

For more details, refer *Change IP or Hostname, Ports, Deployed Paths of the OFSAA Instance* Section in the [OFS Analytical Applications Infrastructure Administration Guide](#).

78. How do we identify the list of ports that are used by or configured in an OFSAA Environment?

- a. Navigate to `$FIC_HOME` directory on Target.
- b. Refer to the `PortsDef.log` file.

79. What should I do if I get the following error message, "Error while fetching open cursor value Status : FAIL"?

This error occurs while executing `envCheck.sh` because the user does not have access to the `V$parameter`. This error does not occur due to `sysdba` or non `sysdba` privileges provided they have access or grants to the `V$parameter`.

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

- a. Locate the `webserver` deployed area `webroot/conf/excludeURLList.cfg` file.
- b. Modify the following entries:


```

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

```
- c. Save the changes and restart the webserver.
- d. Resave the definition.

81. What should I do if I get the following error message when I try to start the OLAP Server:

```
./olapdataserver: error while loading shared libraries: libessapinu.so:
cannot open shared object file: No such file or directory FATAL ERROR
:- OLAP DATA SERVER start up failed.
```

This error occurs when the OLAP component is not configured and the OLAP feature in OFSAA is not used. However, this error can be ignored.

82. What should I do if I get the error "FATAL ERROR-Problem with OFSAA Service" during the OFS_AAI_PACK Installation?

Increase the sleep counter (default value is 80) to a higher value in the following section of the OFS_AAI_PACK/OFSAAIUpdate.sh file:

```
if [ $count -eq 0 ] ; then sleep 80;
count=` grep -i "FICServer Initialization Complete"
$FIC_HOME/ficapp/common/FICServer/bin/nohup.out|wc -l ` fi
if [[ $count -gt 0 ]] ; then echo OFSAA Service - OK
else
fi
echo FATAL ERROR-Problem with OFSAA Service exit 1
```

83. What should I do to increase the notebook execution timeout?

Navigate to the following path:

`$FIC_HOME/utility/mmgstudio/datastudio_distribution/datastudio/conf` and open the mmg datastudio application.yml file.

Add the following parameter under studio-server:

```
synchronous-execution-timeout-ms: 1200000
```

10.1.3 Application Pack 8.1.2.0.0 FAQs**1. What is an Application Pack?**

An Application Pack is a suite of products.

For more information, see [About Oracle Financial Services Analytical Applications \(OFSAA\) Application Packs](#).

2. Can I get a standalone installer for OFS AAI 8.1.2.0.0?

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

3. Where can I download OFSAA 8.1.2.0.0 Application Pack?

You can download the OFS AAI 8.1.2.0.0 Application Pack from Oracle Software Delivery Cloud (OSDC).

4. What are the minimum system and software requirements for the OFSAA 8.1.2.0.0 Application Pack?

See the [Hardware and Software Requirements](#) section for more information.

5. Is my environment compatible with OFSAA 8.1.2.0.0 Application Pack?

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

6. Does the OFSAA 8.1.2.0.0 Application Pack support all Operating systems?

See the [Hardware and Software Requirements](#) Section.

7. How can I install the OFSAA 8.1.2.0.0 Application Pack?

See [Oracle Financial Services Advanced Analytical Infrastructure Installation And Configuration Guide](#).

8. Does this installation require any Third-party Softwares?

For details on the third-party software tools used, see the *OFSAA Licensing Information User Manual Release 8.1.2.0.0* available in the [OHC Documentation Library](#).

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 [OFS AAI FAQs](#) section.

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

Yes. The prerequisite 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?

Only Application Pack System that are enabled are installed. In order to enable other Licensed Applications, you need to reinstall by making the flag as Y. See the Table 15: OFS_<APP PACK>.xml File Parameters, APP_ID/ ENABLE attribute for information on how to enable. However, in case of reinstallation to enable the other Applications, execution of the schema creation utility must be skipped if it does not include any additional sandboxes to be created.

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 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, the installation of additional applications is by setting the flag as Y. See the Table 15: OFS_<APP PACK>.xml File Parameters, APP_ID/ ENABLE attribute for information on how to enable. However, in case of reinstallation, to enable other Applications, execution of the Schema Creation utility must be skipped if it does not include any additional sandboxes to be created.

19. How many OFSAA Infrastructures can be installed in a Single Server?

There is no issue in installing separate OFS AAI Installations, each with their own PFT or 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 OFS AAI Installation is installed using a separate UNIX User and Profile. Care must be taken when running multiple OFS AAI Installations on a Single Server. Adequate memory is required for each installation as several OFS AAI Processes (Model Upload, DEFQ Services, and so on) take significant amounts of memory. Therefore, it depends on the 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. The Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack are the exceptions. They must be installed in a different Infodom.

23. Is it possible to install applications on different Infodom within the Application Pack? (For example, I want to install LRM and MR in two Infodoms)

Applications within the application pack have to be installed in the same Information Domain in the same environment.

24. 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. However, after installation, you can create multiple Infodoms.

25. Is the 'Data Model' bundled specifically to an Application Pack or an Individual Application?

A merged Data Model for all applications within the Application Pack is bundled and uploaded.

26. 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.](#)

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

Yes, Sandbox creation is part of the Application Install Process.

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

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

29. Can I upgrade AAI only?

Yes, you can upgrade AAI alone.

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

No, an upgrade is applied to all applications in the Application Pack.

31. Is it possible to uninstall any Application from the Application Pack?

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

32. Can I uninstall the entire Application Pack?

No, you cannot uninstall the Application Pack.

33. 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.

34. Does Application Pack contain all Language Packs supported?

Language Packs must be installed on the Application Packs.

35. Can I install an Application Pack over another Application Pack (that is the same Infodomain or different Infodomain)?

Yes, you can install an Application Pack over another Application Pack in the same information domain or different information domain. However, Behavioral Detection Application Pack and Compliance Regulatory Reporting Application Pack, Asset Liability Management Application Pack, and Profitability Application Pack are the exceptions. They must be installed in a different Infodomain.

36. What should I do if I get the following error message while running the Schema Creator Utility, "HostName in input xml is not matching with the local Hostname"?

One possible reason 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.

37. What are the Java versions supported in OFS AAI Application Pack version 8.1.2.0.0?

See the [Hardware and Software Requirements](#) Section.

38. Is OFS AAI Application Pack version 8.1.2.0.0 supported on Java 7 and Java 8?

For information about supported Java versions, see the [Hardware and Software Requirements](#) Section

39. What should I do when I get "[ERROR] - Error : APP Setup bin file failed." message 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 [2340045.1](#).

40. If the cx_Oracle conetion is failing in DS with below error in OEL 8.

Fail to execute line 4: cx_Oracle.connect(dsn=dsn_alias)\nTraceback (most recent call last):\n File "/tmp/1638454321889-0/zepelin_python.py", line 163, in <module>\n exec(code, _zcUserQueryNameSpace)\n File "<stdin>", line 4, in <module>\n cx_Oracle.DatabaseError: DPI-1047: Cannot locate a 64-bit Oracle Client library: "libnsl.so.1: cannot open shared object file: No such file or directory".

Install the libnsl package as below:

```
yum install libnsl or sudo yum install libnsl
```

41. Incase of Python Interpreter fails With `py4j` Error

When running interpreters locally, they assume all the dependencies to be already installed and available. Python Interpreter needs `py4j` Package, exact steps to install it depend on the Operating System. If you use `pip`, it can be done with

```
```bash
pip install --user py4j
```
```

Install the package for all users, root user can run this command without `--user`.

42. What is the reason for the http error code 401 when I successfully log in to the MMG application while MMG Studio is down?

If **MMG Studio** is not up during the MMG application login, the mmg-ui logs capture the http error code : 401 .

Since the cookie creation is done during MMG application login, the user must re login to the MMG application once the Studio is up and running.

10.2 Error Dictionary

The contents of this section are created with the interest to help you resolve the installation issues if any. There is a compilation of errors that can arise during the installation process. However, the content also gives the resolution to quickly fix the issue and proceed further with the installation.

OFS AAI Installer performs all the prerequisite validation check during installation. Any errors encountered in the process is displayed with an appropriate Error Code. You can refer to the Error Dictionary to find the exact cause and resolution to rectify the error.

This section includes the following topics:

- [Access the Error Dictionary](#)
- [Error Code Dictionary](#)

10.2.1 Access the Error Dictionary

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

1. With the Installation pdf open, press Ctrl+F or select Edit > Find. The Find Dialog is displayed as indicated.
2. Enter the error code that is displayed on the screen during Infrastructure installation.
3. Press Enter. The search results are displayed and highlighted.
4. View the details of the issues, its cause, and resolution specific to the error code. Repeat the step to find an answer to any other errors that you notice during installation. If you are not able to resolve the issue even after following the steps provided in the resolution, you can contact support.oracle.com along with log files and appropriate screenshots.

10.2.2 Error Code Dictionary

The details of the Error Code Dictionary with the cause and resolution are described in the following table.

Table 10: Error Code Dictionary

| Error Code | Cause | Resolution |
|-------------|--|--|
| OFSAAI-1001 | UNIX shell is not "korn" shell. | Change the shell type to "korn". Use the chsh UNIX command to change the SHELL type.
Shell type can also be changed by specifying the Shell Path for the UNIX User in the /etc/passwd file. |
| OFSAAI-1002 | No proper arguments are available | Provide proper arguments. Invoke the Setup.sh file using SILENT.
Example: ./Setup.sh SILENT |
| OFSAAI-1004 | File .profile is not present in \$HOME. | Create the .profile file in the \$HOME directory, that is, in the Home Directory of the user. |
| OFSAAI-1005 | OFSAAInfrastructure.bin file is not present in the current directory. | Copy the OFSAAInfrastructure.bin file into the Installation Kit Directory. |
| OFSAAI-1006 | CustReg.DAT file is not present in the current directory. | Copy the CustReg.DAT file into the Installation Kit Directory. |
| OFSAAI-1007 | OFSAAI_InstallConfig.xml file is not present in the current directory. | Copy the OFSAAI_InstallConfig.xml file into the Installation Kit Directory. |
| OFSAAI-1008 | validateXMLInputs.jar file is not present in the current directory. | Copy the validateXMLInputs.jar file into the Installation Kit Directory. |

| Error Code | Cause | Resolution |
|-------------|---|---|
| OFSAAI-1009 | log4j.xml file is not present in the current directory. | Copy the log4j.xml file into the Installation Kit Directory. |
| OFSAAI-1010 | An unknown error occurred. | Make sure to provide a proper argument (SILENT) to the Setup.sh file. |
| OFSAAI-1011 | XML validation failed. | Check the InfrastructurePreValidations.Log file for more details. |
| OFSAAI-1012 | Property file with locale name does not exist. | Copy the MyResources_en_US.properties file to the setup kit directory and keep en_US in the LOCALE tag of the OFSAAI_InstallConfig.xml file. |
| OFSAAI-1013 | OFSAAI_InstallConfig.xml/OFSAAI_PostInstallConfig.xml file not found. | Copy the OFSAAI_InstallConfig.xml/OFSAAI_PostInstallConfig.xml file to the setup kit directory. |
| OFSAAI-1014 | XML node value is blank. | Make sure all node values except SMTPSERVER, PROXYHOST, PROXYPORT, PROXYUSERNAME, PROXYPASSWORD, NONPROXYHOST, or RAC_URL are not blank. |
| OFSAAI-1015 | XML is not well-formed. | Execute the command dos2unix OFSAAI_InstallConfig.xml file to convert a plain text file from DOS or MAC format to UNIX format.
OR
Ensure that the OFSAAI_InstallConfig.xml file is valid. Try to open the file through a web browser for a quick way to check validity. If it is not getting opened, create a new OFSAAI_InstallConfig.xml file using the XML_Utility.jar file. |
| OFSAAI-1016 | The user installation directory contains blank spaces. | Provide an Installation Path that does not contain spaces. Check the tag USER_INSTALL_DIR in the OFSAAI_InstallConfig.xml file. This path must not contain any spaces. |
| OFSAAI-1017 | The user installation directory is invalid. | Provide a valid Installation Path. Check if you can create the directory mentioned in the USER_INSTALL_DIR tag value of the OFSAAI_InstallConfig.xml file.
See the My Oracle Support reference document for a workaround on this issue:
https://mosemp.us.oracle.com/epmos/faces/DocumentDisplay?_afLoop=192791484383909&id=2412630.1&_afrWindowMode=0&_adf.ctrl-state=u2t2m1rei_4 . |

OFSAA Support

Raise a Service Request (SR) in [My Oracle Support \(MOS\)](#) for queries related to the OFSAA Applications.

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