

OFS Adaptive Intelligence Foundation for Anti Money Laundering (AIF4AML)

Installation Guide

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OFS Adaptive Intelligence Foundation for Anti Money Laundering (AIF4AML)

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Document Control

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1.0	Aug 2019	Created the document for 8.0.8.0.0 release.
1.1	Oct 2019	Updated R Packages information in the following sections for (Doc 30416708): <ul style="list-style-type: none">• Installing the OFS AIF4AML R Packages on Database Server• Installing OFS AIF4AML R Packages on machine running FCC Studio

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1 Preface

Oracle Financial Services (OFS) Adaptive Intelligence Foundation for Anti Money Laundering (AIF4AML) installation of AIF4AML is based on prerequisites, followed by preparation to install and installation of the application. The final step is to perform post installation steps. Further sections in this guide provide details for the procedures.

1.1 About this Guide

This document provides information to install OFS AIF4AML application.

1.2 Audience

This document is for users who install OFS AIF4AML application.

2 OFS Adaptive Intelligence Foundation for Anti Money Laundering Installation

OFS AIF4AML application is a foundation with building-blocks for ML life-cycle, tailored for the AML domain. It uses the familiar notebook environment to rapidly train, test and validate ML models. It has a pre-defined dataset with more than 300 attributes ready for variable analysis. Users can execute models with multiple techniques and compare the results side-by-side.

2.1 Understanding the Prerequisites

The installation of this application depends on a few prerequisites, which are discussed in the following list:

1. Install Oracle Financial Services Behavior Detection (OFS BD) Application Release 8.0.8.0.0. For further information, see [Oracle Financial Services Behavior Detection Applications Pack Installation Guide](#).
2. Confirm if R and ORE are installed on the database server of BD application. Also, confirm if the BD atomic user has 'RQADMIN' and data mining roles. Grant the following roles to the atomic user using SYSDBA user:

```
grant RQADMIN to &database_username
/
alter user &database_username default role RQADMIN
/
GRANT CREATE MINING MODEL, CREATE TABLE, CREATE VIEW TO
&database_username
/
```

3. Install Oracle Financial Services Crime and Compliance Studio (OFS FCC Studio) Application Release 8.0.8.0.0. For further information, see [Oracle Financial Services Crime and Compliance Studio Pack Installation Guide](#).

NOTE

ORE interpreter, which is part of RServe installation, is required for FCC Studio and AIF4AML. For details on RServe installation, see the [FCC Studio Installation Guide](#).

4. Create the following tablespaces:
 - a. AIF_USER_TEMP_TS
 - b. AIF_USER_TS

2.2 Preparing for Installation

Download the installer package from [My Oracle Support](#) (MOS) and extract the package to the directory where BD Application Server is installed.

2.3 Installing the Application

Perform the following steps to install the application:

1. Open InstallConfig.xml file in the relative directory path `../OFS_AIF_PACK/OFS_AIF/conf` and update as shown in the following table:

Number	Variable Name	Value	Description
1.	FICMASTER_USER	CONFIG_SCHEMA_NAME	Enter the BD Config Schema Name.
2.	FICMASTER_PWD	CONFIG_SCHEMA_PASSWORD	Enter the BD Config Schema Password.
3.	FICMASTER_DRIVER	oracle.jdbc.driver.OracleDriver	Enter the Driver name.
4.	DATABASE_URL	JDBC_URL	Enter the JDBC URL for the database.
5.	AIF_USER	ATOMIC_SCHEMA_NAME	Enter the BD Atomic Schema Name.
6.	AIF_PASSWORD	ATOMIC_SCHEMA_PASSWORD	Enter the BD Atomic Schema Password.
7.	AIF_INFODOM	BD_INFODOM_NAME	Enter the BD Infodom Name.
8.	AIF_SEGMENT	BD_SEGMENT_NAME	Enter the BD Segment Name.
9.	BD_VERSION_PRIOR_805	Y or N	Enter Y if the BD version is less than 8.0.5.0.0. Enter N if the BD version is 8.0.5.0.0 and higher.

2. Run `setup.sh` to install the application. Check the log file for any errors.

2.4 Performing Post Installation Procedures

Perform the following steps post installation:

1. Navigate to `$FIC_HOME` directory.
2. Import pre-packaged notebooks available in the `AIF_R_Notebooks` directory to FCC Studio. The following is the procedure to import pre-packaged notebooks:
 - a. Copy the notebook from `$FIC_HOME/AIF_R_Notebooks` to a directory in your machine.
 - b. Login to FCC Studio UI.
 - c. Click Import Notebook icon and select the notebooks copied to your machine.
 - d. Click Ok. The notebooks should be displayed on the Summary window.
3. Open the directory `AIF_R_Packages` and install the R packages in the database. Also, install the R Packages in the FCC Studio installed machine. For detailed procedures, see [Appendix A: Configuring Oracle R Distribution and Oracle R Enterprise for AIF4AML](#).

3 Appendix A: Configuring Oracle R Distribution and Oracle R Enterprise for AIF4AML

This section provides information for ORD and ORE configurations for OFS AIF4AML enabled in your OFSAA instance. The instructions discussed here involves the post installation of AIF4AML scenarios, which requires installation and configuration of R packages for AIF4AML on the database server and the FCC Studio installed machine.

To install the required R packages and dependent packages for R for the following:

1. OFS AIF4AML on the database server, see [Installing the OFS AIF4AML R Packages on Database Server](#).
2. OFS AIF4AML R Packages on machine running FCC Studio, see [Installing OFS AIF4AML R Packages on machine running FCC Studio](#).

If you have already installed the R packages (as part of a previous installation), uninstall it and reinstall the latest available R packages. To uninstall for the following:

1. OFS AIF4AML on the database server, see [Uninstalling OFS AIF4AML R Packages from Database Server](#).
2. OFS AIF4AML R Packages on machine running FCC Studio, see [Uninstalling OFS AIF4AML R Packages from FCC Studio](#).

3.1 Installing R Packages for OFS AIF4AML

The R packages built by the OFS AIF4AML Application are a prerequisite to execute models developed using R scripts.

NOTE

- GCC 4.6 is a prerequisite to compile XGBoost in Linux [OEL/RHEL]. This is required for R packages.
- Native OEL-7 is recommended. Hence, XGBoost can be installed on OEL-7.
- Native OEL-6 does not support XGBoost. Hence, XGBoost cannot be installed on Native OEL-6.

The R packages are available in the `$FIC_HOME/AIF_R_Packages` directory.

3.1.1 Prerequisites

1. Oracle R & ORE Server must be installed on the Oracle Database server before installing the R packages.
2. Oracle R, ORE Client & ORE supporting packages must be installed on the machine running FCC Studio application.

3.2 Installing the OFS AIF4AML R Packages on Database Server

Perform the following instructions to install the R packages on the database server:

1. Login to the OFSAA Server.
2. Navigate to the directory `$FIC_HOME/AIF_R_Packages`.
3. Copy the **AIF_R_Packages** directory to a directory in the Oracle Database Server.
4. Login to the Oracle Database Server with the user ID that was used to install the Oracle Database Server.
5. Navigate to the **AIF_R_Packages** directory that was copied to the Oracle Database Server.
6. From **AIF_R_Packages** directory, go to **SourcePackages** directory and install the packages by executing the following command:

```
ORE CMD INSTALL R_Package_Name
```

For example, `ORE CMD INSTALL ofswolr_1.0.0.tar.gz`

Install the following packages in the order listed:

- a. `ofswolr_1.0.0.tar.gz`
 - b. `oreclassifiers_1.0.0.tar.gz`
 - c. `orexv_1.0.0.tar.gz`
 - d. `ofsaif_1.0.0.tar.gz`
 - e. `modelXray_1.0.0.tar.gz`
7. From **AIF_R_Packages** directory, go to **BinaryPackages** directory and install the packages by executing the following command:

```
ORE CMD INSTALL R_Package_Name
```

For example, `ORE CMD INSTALL jsonlite_1.5_R_x86_64-pc-linux-gnu.tar.gz`

Install the following packages in the order listed:

- a. `jsonlite_1.5_R_x86_64-pc-linux-gnu.tar.gz`
- b. `data.table_1.10.4-3_R_x86_64-pc-linux-gnu.tar.gz`
- c. `lattice_0.20-35_R_x86_64-pc-linux-gnu.tar.gz`
- d. `magrittr_1.5_R_x86_64-pc-linux-gnu.tar.gz`
- e. `Matrix_1.2-12_R_x86_64-pc-linux-gnu.tar.gz`
- f. `stringi_1.1.6_R_x86_64-pc-linux-gnu.tar.gz`
- g. `xgboost_0.71.2_R_x86_64-pc-linux-gnu.tar.gz`

Successful installation is indicated in the installation log as:

```
* DONE (R package name here)
```

```
Making packages.html ... done
```

NOTE The R packages are installed in the directory `$ORACLE_HOME/R/library`.

8. Navigate to the directory `$ORACLE_HOME/R/library` and check whether R packages are listed there by executing the following command:

```
>library(R package name)
>R package name::
```

9. Press **TAB** key twice to derive the result that displays the list of all the functions.

NOTE Feature Clustering (VARCLUS) technique is optional. If you require this technique, install **GPArotation** (third-party R package) to use it.

3.3 Uninstalling OFS AIF4AML R Packages from Database Server

Perform the following instructions to uninstall the OFS AIF4AML R packages from the database server:

1. Login to the Oracle Database Server with the user ID that was used to install the Oracle Database Server.
2. Enter ORE in command prompt and execute the following command:

```
#ORE
>remove.packages("R package name")
```

NOTE See the directory `$FIC_HOME/AIF_R_Packages` for exact package names.

3. To save workspace image, enter the command:

```
>q()
```

4. Enter n when prompted to save the workspace image.

```
Save workspace image? [y/n/c]: y
```

5. Navigate to the directory `$ORACLE_HOME/R/library` and verify that the package is not listed there by executing the following command:

```
ls -l
```

3.4 Installing OFS AIF4AML R Packages on machine running FCC Studio

Perform the following instructions to install the R packages on a machine that is running FCC Studio:

1. Login to the OFSAA Server.
2. Navigate to the directory `$FIC_HOME/AIF_R_Packages`.
3. Login to the FCC Studio installed machine with the user ID that was used to install the FCC Studio, or with the user ID that is used to run the FCC Studio.

NOTE Packages can also be installed as root user. If you are logged in as root user, then skip steps 5 and 6.

4. Copy the **AIF_R_Packages** directory to a directory in FCC Studio installed machine.
5. Create any directory in the `HOME` directory of the logged in user.
6. Add an environmental variable **R_LIBS_USER** in profile of the UNIX user, with the directory path of newly created directory.

For example, `export R_LIBS_USER=<Directory_Path_of_newly_created_dir>`

NOTE Execute the profile or the command shown in the previous example before you proceed further.

7. Navigate to the **AIF_R_Packages** directory that was copied to the FCC Studio installed machine.
8. From **AIF_R_Packages** directory, go to **SourcePackages** directory and install the packages by executing the following command:

```
ORE CMD INSTALL R_Package_Name
```

For example, `ORE CMD INSTALL ofswolr_1.0.0.tar.gz`

Install the following packages in the order listed:

- a. `ofswolr_1.0.0.tar.gz`
 - b. `oreclassifiers_1.0.0.tar.gz`
 - c. `orexv_1.0.0.tar.gz`
 - d. `ofsaif_1.0.0.tar.gz`
 - e. `modelXray_1.0.0.tar.gz`
9. Navigate to the newly created directory if installed as non-root user and check whether the R packages are listed there by executing the following command:

NOTE If packages are installed as root user, then navigate to `$R_HOME/library`.

```
>library(R package name)
>R package name::
```

10. Press **TAB** key twice to derive the result that displays the list of all the functions.

3.5 Uninstalling OFS AIF4AML R Packages from FCC Studio

Perform the following instructions to uninstall the R packages from the machine where FCC Studio is installed:

1. Login to the Studio Machine with the user ID that was used to install the AIF4AML R packages.
2. Enter R in command prompt and execute the command:

```
#R
>remove.packages("R package name")
```

NOTE See the directory `$FIC_HOME/AIF_R_Packages` for exact package names.

3. To save workspace image, enter the command:

```
>q()
```

4. Enter n when prompted to save the workspace image.

```
Save workspace image? [y/n/c]: y
```

5. Navigate to the newly created directory and verify that the package is not listed there by executing the command:

NOTE If packages are uninstalled as root user, then navigate to `$R_HOME/library` directory.

```
ls -l
```

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