Oracle Financial Services Liquidity Risk Solution Pack

Cloning Reference Guide

ORACLE
Financial Services

DOCUMENT CONTROL

Version Number	Revision Date	Changes Done
1.0	Created: February 2019	Captured steps to setup an OFSAA instance “Clone” for the 8.0.x.0.0 release.
2.0	Updated: May 2019	▪ Added OFSAA_LOG_HOME variable in section Copy and restore OFSAA file system (Doc 29641604). ▪ Added note for table batch_parameter in section Run Port Changer utility (Doc 29448257). ▪ Added note in section Run EncryptC.sh utility to change the key and encryption strings for 8.0.2.2.0, 8.0.4.2.0, and 8.0.5.2.0 (Doc 29419498).

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Preface

The purpose of this document is to serve as a reference material to OFSAA administrators with detailed steps to setup an OFSAA instance “Clone” for the 8.0.x.0.0 release.

Background

There is a consistent need for a faster and effective approach of replicating an existing OFSAA instance for further project developments, that is, setting up OFSAA instances that are exact copies of the current OFSAA instance.

Assumptions

This document assumes a working Source OFSAA 8.0 instance is in place. It also assumes an appropriate Target system exists for the new OFSAA setup that is being created.

Audience

This reference guide is intended for administrators and implementation consultants who are responsible for cloning OFSAA instance.

Conventions and Acronyms

Conventions	Description
Source	A source OFSAA system
Target	A target OFSAA system
8.0	The OFSAA 8.0.0.0.0 release
Configuration Schema (Config Schema)	Database schema which contains setup related configurations and metadata.
Atomic Schema	Database schema where the application data model is uploaded.

1 Setting Up an OFS LRS Instance "Clone" for 8.0.x Release

1.1 Prerequisites

The documented steps in the subsequent sections should be followed only after the following prerequisites are in place:

1.1.1 General

1. FTP/ SFTP service should be running on the OFSAA Target system. User credentials to be available prior to the subsequent activities.
2. If the OFS AAI (platform) version in use is 8.0.0.0.0, download and install patch 20422514 in Source.
3. If the OFS AAI (platform) version in use is 8.0.1.0.0, download and install patch 22329222 in Source.
4. If the OFS AAI (platform) version in use is 8.0.5.0.x or 8.0.5.1.x, upgrade the source to 8.0.5.2.0 by installing the OFS AAI 8.0.5.2.0 ML patch **27552096.**

1.1.2 Source System

1. All OFSAA services are brought down.
2. Database connection details such as RAC/ NON-RAC URL, SID/ Service Name, and User credentials are available.

1.1.3 Target System

1. All basic software required for installation of OFSAA applications (including infrastructure) are installed and working on the machine identified as the Target OFSAA instance. You can use the "Environment Check" utility to verify the system readiness.

   For details on Software and Hardware Requirements, refer the Oracle Financial Services Liquidity Risk Solution (OFS LRS) Pack Installation and Configuration Guide available in OHC Documentation Library.

   For details on usage of Environment Check Utility, see OFS Analytical Applications Environment Check Utility Guide.
2. Web Server and Web Application Server are configured. For details on how to configure, see *Appendix A* in the 8.0.7 OFS Liquidity Risk Solution Application Pack Installation and Configuration Guide.
3. OFSAA installation folder is identified as `$FIC_HOME` with permissions 750. For example, `/scratch/ofsaanew/OFSAA`

4. OFSAA staging/ metadata repository folder is identified as "`ftpshare`" with permissions 775. For example, `/scratch/ofsaanew/ftpsharenew`.
5. Database connection details such as RAC/ NON-RAC URL, SID/ Service Name, and User credentials are available.

NOTE: Ensure a new database instance is created that is different from the database instance used in the Source OFSAA instance.

6. Web Server/ Web Application Server identified for the deployment of OFSAA applications is installed and configured on the machine identified as the Web Server/ Web Application Server.

NOTE: If you intend to use the same Web Application Server, ensure you create a separate profile (WebSphere) or domain (WebLogic).

7. Details of WebSphere profile/WebLogic Domain/Tomcat context to be available.

NOTE: Ensure the `RevLog4jConfig.xml` is configured with default log paths before executing the utility.

1.2 Cloning Steps

Login to source config schema and execute the following query to get the config and atomic schemas names. You can use schema names in SCHEMAS attribute of **expdp** and **impdp** Database utility.

```
select dbuserid from db_master;
```

Perform the instructions given in the following sections:

1.2.1 Export the complete Configuration and Atomic Schema from Source Environment

For example:

```
expdp SYSTEM/oracle@OFSA12C2DB DIRECTORY=data_pump_dir
DUMPFILE=ofsaaconf_ofsaaatm_%U.dmp filesize=2G
SCHEMAS=ofsaaconf,ofsaaatm LOGFILE=ofsaaconf_ofsaaatm_exp.log
```

NOTE: Using above command will create data dumps in files of 2GB each (multiples). Any other commands/ tools as appropriate may be used to archive the schemas.

1.2.2 Restore the complete exported dumps into the Target Environment database

For example:

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

NOTE: Restoring the exported dumps creates Config and Atomic Schema(s) with the same user credentials as that of the source, along with the existing grants.

1.2.3 In case of restoring the complete exported dumps in to the Target Environment database with different database user names (schemas)

For Example:

```
impdp SYSTEM/oracle@OFSA12nDB DIRECTORY=data_pump_dir
DUMPFILE=ofsaaconf_ofsaaatm_%U.dmp REMAP_SCHEMA=
ofsaaconf:newofsaaconf,ofsaaatm:newofsaaatm
LOGFILE=new_ofsaaconf_ofsaaatm_imp.log
```

NOTE: Restoring the exported dumps creates Config and Atomic Schema(s) with the users mentioned under *REMAP_SCHEMA* attribute replaced as of the source, along with the existing grants as in the Source environment.

Ignore the **ORA-39082** object type create with compilation errors which will be rectified later in subsequent steps.

1.2.4 Provide select grants on `sys.V_$parameter` view to Config and Atomic Schemas of Target Environment database

For example:

Login as sys user:

```
SQL> GRANT SELECT ON SYS.V_$PARAMETER TO ofsaaconf;

Grant succeeded

SQL> GRANT SELECT ON SYS.V_$PARAMETER TO ofsaaatm;

Grant succeeded
```

NOTE: In case you had imported into different schemas, you need to additionally set passwords for Config and Atomic schemas of target environment Database same as source.

For example:

Login as sys user

```
SQL> ALTER USER newofsaaconf IDENTIFIED BY welcome1;

User Altered
```

```
SQL> ALTER USER newofsaaatm IDENTIFIED BY welcome1;

User Altered
```

1.2.5 Login to Config Schema of Target Environment database

Update the Config Schema Table values as mentioned in Table 1 of Appendix A.

NOTE: This step is required only in case you have imported into different schemas.

1.2.6 Copy and restore OFSAA file system

1. Navigate to `$FIC_HOME/utility/Clone/bin` on Source environment and give 750 permissions to all files present in the folder.
2. Execute `./OFSAA_Archive.sh`.

   This step will create zipped files for `$FIC_HOME` and `FTPSHARE` folders in their respective locations on Source. For example, `<FIC_HOME>.zip` and `<FTPSHARE>.zip`.
3. Copy the `<FIC_HOME>` and `<FTPSHARE>` archive files from Source to Target in respective locations, that is, as per the folders created for `$FIC_HOME` and `FTPSHARE`. (Refer points 2, 3 in the Target System section.)

NOTE: Ensure the archives are transferred in BINARY mode.

4. Copy the entries made by OFSAA installer in *.profile* of Source to the *.profile* of Target in respective location.
5. To unzip, navigate to the directory where the zipped folder is in *Target* and execute the following command:

   ```
   unzip –a <<Zipped_file>>
   ```

   For example,

   ```
   unzip –a ftpshare.zip
   ```

   Perform this step for both `<FIC_HOME>` and `<FTPSHARE>` zipped files. This will unzip both files in their respective locations in the Target environment.
6. Give 750 permissions recursively to `$FIC_HOME` and 775 to `FTPSHARE` folder that have been extracted in the *Target* environment.

   For example:

   ```
   chmod –R 750 $FIC_HOME

   chmod –R 775 FTPSHARE
   ```

7. Modify the variables `FIC_HOME`, `JAVA_BIN`, `PATH`, `ORACLE_HOME`, `TNS_ADMIN`, `ORACLE_SID` and `OFSAA_LOG_HOME` in the entries made by installer in *.profile* of the *Target* environment according to the appropriate values of the *Target* Environment.

   For example: Change the path to Java runtime in JAVA_BIN variable according to the java runtime installation on Target environment.

8. Execute the *.profile* file in the Target environment.
9. Edit the `tnsnames.ora` file under `$TNS_ADMIN` directory to add/edit the connection details to OFSAA schemas of Target environment.

1.2.7 In case, you have imported into different schemas, additionally modify Files under $FIC_HOME

Navigate to `$FIC_HOME` of OFSAAI server, modify values in files as specified in step 2 of Appendix A and follow subsequent steps.

1.2.8 Run Port Changer utility

- Ensure RevLog4jConfig.xml is configured with default log paths before executing the utility.
- This utility will connect to config schema to collect all the configurations, hence mandatorily edit the fie DynamicServices.xml of $FIC_HOME/conf directory for the attribute DEFAULT_CONNECTION_URL, The VALUE should be qualified jdbc url of Target Database.

NOTE: The instructions in this step are not applicable to OFSAAI 8.0.2.2.0, 8.0.3.3.0, 8.0.4.2.0 and 8.0.5.1.0. For information on Running Port Changer Utility for the versions mentioned previously, see Run port changer utility for 8.0.2.2.0, 8.0.3.3.0, 8.0.4.2.0, and 8.0.5.2.0.

1. Navigate to `$FIC_HOME` folder on Target.
2. Run the **PortC.jar** utility using the command:

   ```
   java -jar PortC.jar DMP
   ```

   A file with the name **DefaultPorts.properties** will be created under `$FIC_HOME` directory which will contain the ports, IPs and paths currently being used.

NOTE: It is mandatory to run the Port Changer utility using the DMP parameter every time before executing the utility using UPD command.

3. Make the necessary changes to those ports, IPs, and paths in the **DefaultPorts.properties** file as per the Target environment. Save the changes.
4. Run the **PortC.jar** utility using the command:

   ```
   java -jar PortC.jar UPD
   ```

This will change the ports, IPs and paths in `.profile` (under home directory), all files under `$FIC_HOME` directory, and tables in the database according to the values mentioned in **DefaultPorts.properties** file.

NOTE: The table `batch_parameter` is not updated with the new IP after you run `portc.jar`. This table holds the batch execution details of batches that were executed earlier. The table `batch_parameter_master` holds the new IP after you run `portc.jar`.

1.2.8.1 Run Port Changer utility for 8.0.2.2.0, 8.0.3.3.0, 8.0.4.2.0, and 8.0.5.2.0

1. Navigate to `$FIC_HOME/utility/PortC/bin` folder on *Target*.
2. Run the **PortC.sh** utility using the command:

   ```
   ./PortC.sh DMP
   ```

   A file with the name **DefaultPorts.properties** will be created under `$FIC_HOME` directory which will contain the ports, IPs and paths currently being used.

NOTE: It is mandatory to run the Port Changer utility using the DMP parameter every time before executing the utility using UPD command.

3. Make the necessary changes to those ports, IPs, and paths in the **DefaultPorts.properties** file as per the Target environment. Save the changes.
4. Run the **PortC.sh** utility using the command:

   ```
   ./PortC.sh UPD
   ```

   This will change the ports, IPs and paths in `.profile` (under home directory), all files under $FIC_HOME directory, and tables in the database according to the values mentioned in **DefaultPorts.properties** file.

1.2.9 Run EncryptC.jar utility to change the key and encryption strings

NOTE: The instructions in this step are not applicable to OFSAAI 8.0.2.2.0, 8.0.4.2.0, 8.0.5.2.0, 8.0.6.0.0 and later releases. For more information, see Run EncryptC.sh utility to change the key and encryption strings for 8.0.2.2.0, 8.0.4.2.0, and 8.0.5.2.0 and Run EncryptC.sh utility to change the key and encryption strings for 8.0.6.0.0 versions and above.

1. Navigate to `$FIC_HOME` folder on *Target*.
2. Execute the following command:

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

3. See the `Encrypt_utility.log` file under *$FIC_HOME/utility/EncryptC/bin* folder for log information.

1.2.9.1 Run EncryptC.sh utility to change the key and encryption strings for 8.0.2.2.0, 8.0.4.2.0, and 8.0.5.2.0

1. Navigate to `$FIC_HOME/utility/EncryptC/bin` folder on *Target*.
2. Execute the following command:

   `./EncryptC.sh`

3. See the `Encrypt_utility.log` file under `$FIC_HOME/utility/EncryptC/bin` folder for log information.

NOTE: `EncryptC.jar` is mainly to maintain new encrypt keys for a new environment, so there will not be an impact if you skip this step. If you get the error message "`Error: Could not find or load main class OFSAAI.AESCrypter`" while you execute `./EncryptC.sh`, it is because the required jar file is missing in the lib folder. If you want to execute EncryptC.jar in 8.0.4.2.0, update `EncryptC.sh` with the following entry and proceed with execution:

Replace line

```
"JAR_FILELIST=`find ../lib \( -name "*.jar" \)` "
```

with

```
"JAR_FILELIST=`find $FIC_HOME \( -name "*.jar" \)` "
```

1.2.9.2 Run EncryptC.sh utility to change the key and encryption strings for 8.0.6.0.0 versions and above

See *Generating new AESCryptKey.ext and updating the keystore* section under *Key management* section in OFS Analytical Applications Infrastructure Administration Guide.

1.2.10 Perform Post Cloning Configurations

As mentioned in the *Post Installation Configurations* section in the 8.0.0.0.0 and 8.0.2.0.0 OFS AAAI Application Pack Installation and Configuration Guide.

1.2.11 Create and deploy .ear/ .war

1. Navigate to `$FIC_WEB_HOME` on the *Target*.
2. Delete OFSAA application *.war/*.ear file present in this folder.
3. Execute the command:

   `./ant.sh`

4. Copy the generated .ear/.war file on to the Web Application Server identified for this OFSAA instance.

5. Modify all the Database connection resources done on Web Application Server are mapped to new JDBC URL and Database User Credentials. Verify test connection to validate.
6. Deploy the .ear/.war file using the Web Application Server Admin Console.

1.2.12 Access the UI

Access the UI by using the new IP Address/ Host Name, new Port, and new Context Name.

For example:

```
http://<IP ADDRESS/ HOSTNAME>:<PORT>/<CONTEXT NAME>/login.jsp
```

Appendix A

Manually modify the occurrences of source database username with new target database username (see REMAP_SCHEMA attribute given in Restore the complete exported dumps into the Target Environment database of Cloning Steps).

1. Login to the newly imported Config Schema and update the Column values as mentioned in the following table (Ignore if there are no rows found):

Table 1

Sl no	TABLE NAME	COLUMN NAME
1	DB_MASTER	DBUSERID
2	AAI_DB_AUTH_ALIAS	V_AUTH_USERNAME
3	AAI_DB_DETAIL	V_SCHEMA_NAME
4	AAI_ETL_SOURCE	V_TABLE_OWNER
5	ETLSOURCEDETAILS	V_SCHEMA

2. Manually modify the occurrences of source Config Database username with New Target Config Database username.

Table 2

Sl no	Folder Path	File Name
1	$FIC_HOME/conf/	Reveleus.SEC
2	$FIC_HOME/utility/OFSAAGenerateRepository/conf/	Reveleus.SEC
3	$FIC_HOME/conf/	DynamicServices.xml
4	$FIC_HOME/MigrationUtilities/Migration_LDAP/conf/	DynamicServices.xml
5	$FIC_HOME/utility/OFSAAGenerateRepository/conf/	DynamicServices.xml
6	$FIC_HOME/ficweb/webroot/conf/	DynamicServices.xml
7	$FIC_HOME/EXEWebService/Tomcat/ROOT/conf/	DynamicServices.xml

Sl no	Folder Path	File Name
8	$FIC_HOME/EXEWebService/WebSphere/ROOT/conf/	DynamicServices.xml
9	$FIC_HOME/EXEWebService/weblogic/ROOT/conf/	DynamicServices.xml
10	$FIC_HOME/commonscripts/	ofs_aai_create_atomic.ora

NOTE: Based on the Web Application Server, choose the relevant folder path from number 7, 8 or 9 from above list.

3. Execute scripts on Atomic Schemas to update new target config database user name as mentioned in the following:

   a. On the putty console, navigate to `$FIC_HOME/commonscripts/` on OFSAAI Server.

   b. Create a copy of file `ofs_aai_create_atomic.ora` as `ofs_aai_create_atomic_<INFODOM>.ora`.

   c. Now replace $INFODOM place holder with actual infodom name in the file `ofs_aai_create_atomic_<INFODOM>.ora`.

NOTE: Enclose the actual infodom name within single quote.

INFODOM is associated with each atomic schema, hence you have to create individual files for each atomic schema.

You can fetch the INFODOM value associated with each atomic schema by executing the following query logging into the newly modified config schema.

```
SQL> select h.dbuserid, g.dsnid from dsnmaster g, db_master
h where g.dbname = h.dbname and h.dbname <> 'CONFIG';
```

   d. Connect to Atomic Schemas using sqlplus utility of `$ORCLE_HOME/bin`.

   e. Execute `ofs_aai_create_atomic_<INFODOM>.ora` file and ignore **ORA-00001** and **ORA-02292** errors in the log file. In case, there are other errors, contact Oracle Support Services.

```
SQL> spool aai_create_<INFODOM>.log

SQL> @ofs_aai_create_atomic_<INFODOM>.ora

SQL> spool off

SQL> exit;
```

NOTE: Repeat this for all the atomic schemas. Once execution is complete, delete all files created as `ofs_aai_create_atomic_<INFODOM>.ora`.

4. Login into the newly imported Atomic Schemas. Perform the following steps on each Atomic Schema to modify the interdependent object:

   Run the following query in each Atomic schema for verification of invalid object status:

```
select object_type, object_name from user_objects
where object_type in ('FUNCTION','PACKAGE','PACKAGE
BODY','PROCEDURE','TRIGGER','VIEW') and status = 'INVALID'
order by object_type , object_name;
```

   If the above query list out the objects,

   a. Run the following anonymous block to compile invalid objects:

```
BEGIN
  FOR cur_rec IN ( select object_type, object_name from
user_objects
where object_type in ('FUNCTION','PACKAGE','PACKAGE
BODY','PROCEDURE','TRIGGER','VIEW') and status = 'INVALID'
order by object_type , object_name )
  LOOP
    BEGIN
IF cur_rec.object_type = 'PACKAGE BODY' THEN
                EXECUTE IMMEDIATE 'ALTER PACKAGE ' || ' "'
|| cur_rec.object_name || '" COMPILE BODY';
              COMMIT;
                                                    ELSE
                EXECUTE IMMEDIATE 'ALTER ' ||
cur_rec.object_type || ' "' || cur_rec.object_name || '"
COMPILE';
              COMMIT;
    END IF;
    EXCEPTION
      WHEN OTHERS THEN NULL;
    END;
```

```
  END LOOP;
END;
```

b. Run the following scripts to enable object registration elements:

```
spool <Validpath>/restore_owner.log
alter table REV_TABLES_TL disable constraint FK_REV_TABLES_TL_1
/
alter table REV_TABLE_CLASS_ASSIGNMENT disable constraint FK_V_TABLE_CLASS_ASSIGNMENT_2
/
alter table REV_TAB_COLUMNS disable constraint FK_REV_TAB_COLUMNS_1
/
alter table REV_TABLE_LOG_CLASS_ASMNT disable constraint FK_V_TABLE_CLASS_LOG_ASMNT_2
/
alter table REV_TAB_CONSTRAINTS disable constraint FK_REV_TAB_CONSTRAINTS
/
alter table REV_TAB_CONSTRAINT_COLUMNS disable constraint FK_REV_TAB_CONST_COLUMNS
/
alter table REV_TAB_INDEXES disable constraint FK_REV_TAB_INDEXES
/
update FSI_DB_INFO set owner=USER
/
update REV_COLUMN_PROPERTIES set owner=USER
/
update REV_DESCRIPTION_TABLES set owner=USER , DESCRIPTION_TABLE_OWNER=USER
/
```

```
update REV_TABLES_B set owner=USER
/
update REV_TABLES_TL set owner=USER
/
update REV_TABLE_CLASS_ASSIGNMENT set owner=USER
/
update REV_TAB_COLUMNS set owner=USER
/
update REV_TAB_COLUMNS_MLS set owner=USER
/
update REV_VIRTUAL_TABLES set owner=USER
/
update REV_VIRTUAL_TABLES_MLS set owner=USER
/
update REV_VIRTUAL_TABLES_TL set owner=USER
/
update REV_TAB_CONSTRAINTS set owner=USER
/
update REV_SYNONYMS set table_owner=USER
/
update REV_TABLE_LOG_CLASS_ASMNT set owner=USER
/
update REV_TAB_CONSTRAINT_COLUMNS set owner=USER
/
update REV_TAB_INDEXES set owner=USER
/
update REV_TAB_REF_CONSTRAINTS set owner=USER
/
alter table REV_TABLE_LOG_CLASS_ASMNT enable constraint
FK_V_TABLE_CLASS_LOG_ASMNT_2
```

```
/

alter table REV_TAB_CONSTRAINTS enable constraint
FK_REV_TAB_CONSTRAINTS

/

alter table REV_TAB_CONSTRAINT_COLUMNS enable constraint
FK_REV_TAB_CONST_COLUMNS

/

alter table REV_TAB_INDEXES enable constraint
FK_REV_TAB_INDEXES

/

alter table REV_TAB_COLUMNS enable constraint
FK_REV_TAB_COLUMNS_1

/

alter table REV_TABLE_CLASS_ASSIGNMENT enable constraint
FK_V_TABLE_CLASS_ASSIGNMENT_2

/

alter table REV_TABLES_TL enable constraint
FK_REV_TABLES_TL_1

/

commit

/

spool off

exit;
```

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