

# Oracle Banking APIs

Host Integration Guide

Release 18.1.0.0.0

Part No. E94092-01

April 2018

**ORACLE®**

Host Intergration Guide

April 2018

Oracle Financial Services Software Limited

Oracle Park

Off Western Express Highway

Goregaon (East)

Mumbai, Maharashtra 400 063

India

Worldwide Inquiries:

Phone: +91 22 6718 3000

Fax: +91 22 6718 3001

[www.oracle.com/financialservices/](http://www.oracle.com/financialservices/)

Copyright © 2018, Oracle and/or its affiliates. All rights reserved.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate failsafe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

This software or hardware and documentation may provide access to or information on content, products and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

# Table of Contents

<b>1. Preface</b> .....	<b>4</b>
1.1 Intended Audience.....	4
1.2 Documentation Accessibility.....	4
1.3 Access to Oracle Support.....	4
1.4 Structure .....	4
1.5 Related Information Sources.....	4
<b>2. Introduction</b> .....	<b>5</b>
2.1 Overview (OBAPIs-FCUBS Integration).....	5
2.2 OBAPIs Integration Model.....	5
2.3 OBAPIs Adapter Project Model.....	6
<b>3. FCUBS Adapter Implementation</b> .....	<b>7</b>
3.1 Guideline to Implement Adapter.....	7
3.2 Inquiry Operation on FCUBS.....	7
3.3 Transactional operation on FCUBS.....	9
3.3.1 Create FCUBS SOAP Client Instance.....	9
3.3.2 Get FCUBSHeader Values.....	9
<b>4. OBAPIs-FCUBS Configuration/ Installation</b> .....	<b>12</b>
4.1 Server Setup.....	13
4.1.1 Create Data source with JNDI name as defined in config/jdbc.properties file. ....	13
4.1.2 Server Arguments.....	13
4.2 Deployment .....	13
<b>5. Configuration for Integration of FCUBS Interaction with OBAPIs Mailbox</b> .....	<b>14</b>

# 1. Preface

## 1.1 Intended Audience

This document is intended for the following audience:

- Customers
- Partners

## 1.2 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

## 1.3 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

## 1.4 Structure

This manual is organized into the following categories:

*Preface* gives information on the intended audience. It also describes the overall structure of the User Manual.

The subsequent chapters describes following details

- Introduction
- Adapter Implementation
- Configuration/ Installation

## 1.5 Related Information Sources

For more information on Oracle Banking APIs Release 18.1.0.0.0, refer to the following documents:

- Oracle Banking APIs Installation Manuals

## 2. Introduction

### 2.1 Overview (OBAPIs-FCUBS Integration)

This document is intended to outline the integration of OBAPIs (Oracle Banking APIs) with FCUBS (Oracle FLEXCUBE Universal Banking).

OBAPIs is the APIs banking solution platform that enables single-view of a customer's entire banking world.

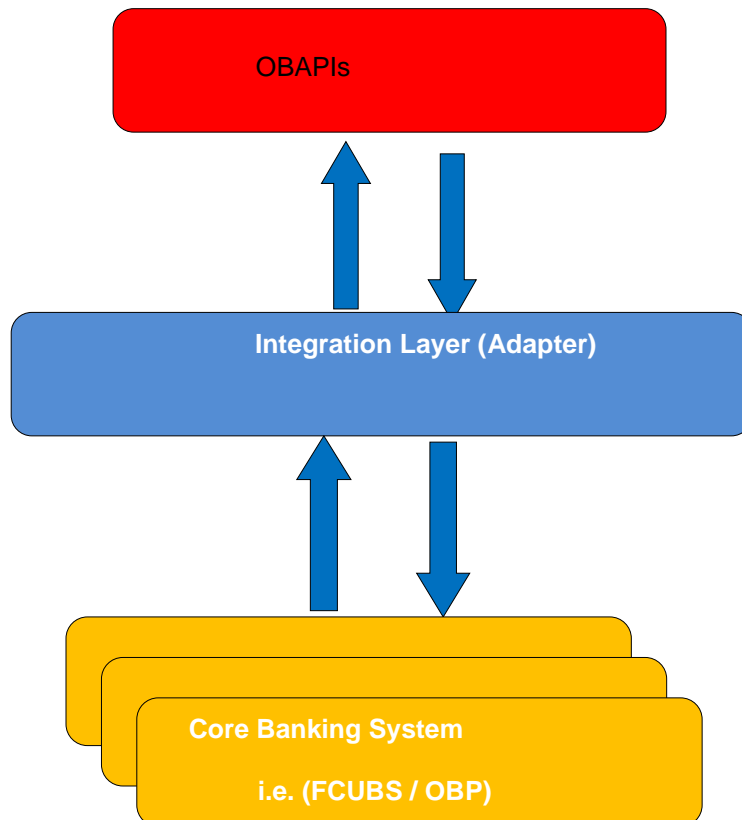
It ensures that the program is closely aligned to the business strategies identified and provides accelerated path towards realizing business value.

It provides the prerequisite operations to be performed on the customer banking world, which is exposed in the form of REST web service API's to decouple presentation and service layer. OBAPIs needs to be integrated with one of core banking systems to retrieve the customer banking details and execute the set of operations on the core banking system as per the service requirement.

OBAPIs has adapter layer to integrate with core banking operations. It provides a set of adapter specifications (Java Interfaces) which can be implemented for host specific service invocation. Adapter layer decouples the services from core banking operation. Any number of core banking system can be integrated with OBAPIs by implementing adapter classes, Adapter layer is responsible for mapping service request /response with host specific request and response.

This document exhibits the integration between core system & OBAPIs including the basic attributes involved in integration process.

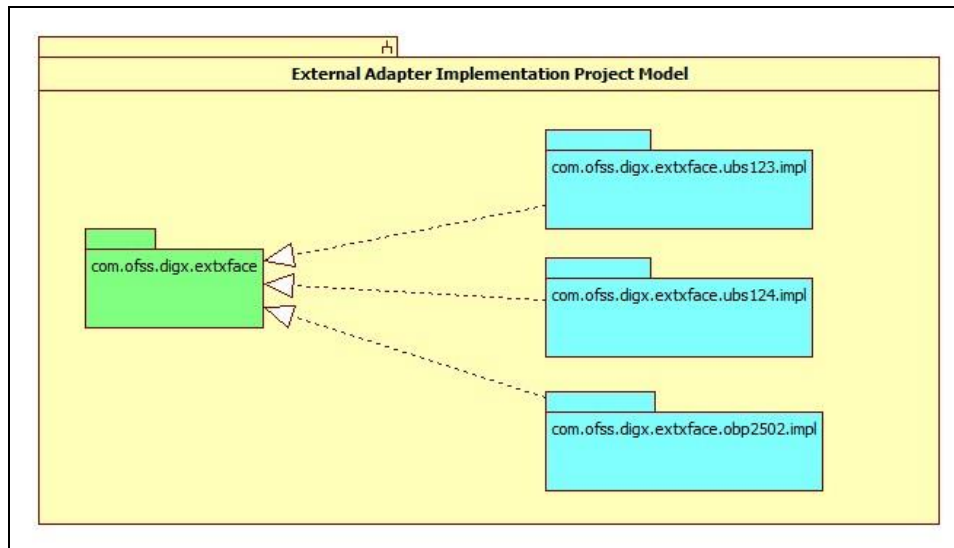
### 2.2 OBAPIs Integration Model



## 2.3 OBAPIs Adapter Project Model

Above [Integration model](#) depicts the OBAPIs adapter integration with core banking system, Integration can be accomplished by concrete adapter implementations.

Following model illustrates OBAPIs adapter specifications and its concrete adapter implementation relationship project model.



In above model, project **com.ofss.digx.extxface** contains all the adapter specifications (Java Interface) for external facing adapters. The concrete implementation classes of the adapter interfaces will reside in the host specific adapter implementation project.

Example: To integrate with FCUBS 12.4 core banking system, adapter interfaces should be implemented for host specific service invocation and concrete implementation adapter classes will reside in **com.ofss.digx.extxface.ubs124.impl** project.

[Home](#)

### 3. FCUBS Adapter Implementation

To process the request with FCUBS core banking system, OBAPIs has set of adapter specifications which would be implemented for host specific services invocation. Concrete implementation adapter classes need to be created by implementing respective adapters interface and interface defining methods should be implemented.

Concrete adapter defining methods may have two types of operation:

- Inquiry Operation
- Transactional Operation

Inquiry operation is process to interchange data between OBAPIs and FCUBS core banking system without altering customer banking state. It queries on the host system to fetch needed information required for tracking, summarizing the details or processing the transactional operation.

Example: Fetch Customer detail, Accounts detail.

Transactional operation will request to host system for altering/creating end user banking states.

Example: Payments, Account Opening.

#### 3.1 Guideline to Implement Adapter

1. Adapter implementation class must implement the respective interface and provide implementations for all methods defined in the interface.
2. Any exception while invoking core banking services must be translated into OBAPIs exception (`com.ofss.digx.infra.exceptions.Exception`) and host error code(s) should be mapped to an OBAPIs error code.

#### 3.2 Inquiry Operation on FCUBS

To inquire data on core banking system, FCUBS provides a set of database view/synonyms object to inquire the required information. A connector schema is required which hosts the required views, synonyms, functions and procedures for querying data in FCUBS. OBAPIs relies on a middleware API packaged as “com.ofss.extsystem.ubs” which provides host adapters that interact with the connector schema to fetch the required information. To invoke these host adapters, the static Java method `com.ofss.extsystem.ubs.business.extsystems.HostAdapterManager.processRequest(HostRequestDTO)` needs to be invoked from within OBAPIs adapter implementation. The `HostRequestDTO` class must be provided with the required request information.

All the FCUBS middleware adapters are configured with unique a request id in the database table `MSTHOSTINTERFACE`. `HostAdapterManager` identifies the adapter class for given request id configured in `MSTHOSTINTERFACE` table and invoke the `processRequest()` method of respective adapter class.

Following steps are required to invoke the host adapter:

1. Create the Request DTO object and fill required fields.
2. Build host request by calling `com.ofss.extsystem.ubs.business.extsystems.HostAdapterHelper.buildHostRequest(RequestDTO)` method.
3. Invoke `HostAdapterManager.processRequest(HostRequestDTO)` with the `HostRequestDTO` created by invoking the method in step 2.

**Reference:**

```

HostRequestDTO hostRequest= null;

HostResponseDTO hostResponse = null;

AccountDetailsRequest AccountDetailsRequest = new
AccountDetailsRequest();

    AccountDetailsRequest.userContext = new UserContextDTO();

    AccountDetailsRequest.userContext.idEntity = "B001";

    AccountDetailsRequest.userContext.idTxn = "PAR";

    AccountDetailsRequest.userContext.idRequest =
"PARTYACCOUNTREL";

    AccountDetailsRequest.userContext.serviceVersion = 0;

    AccountDetailsRequest.userContext.refIdEntity = "B001";

    AccountDetailsRequest.userContext.userType = "EN1";

    AccountDetailsRequest.account = new AccountNoInputDTO();

    AccountDetailsRequest.account.idCustomer = partyId;

    AccountDetailsRequest.account.acctType = accountType;

    hostRequest =
HostAdapterHelper.buildHostRequest(AccountDetailsRequest);

try {

HostResponse = HostAdapterManager.processRequest (hostRequest);

    } catch (java.lang.Exception e) {

logger.log (Level.SEVERE, formatter.format.Message ("<exception
message with request parameter>"));

```



### 3.3 Transactional operation on FCUBS

For processing transactional operations, FCUBS core banking system exposes SOAP web services. To invoke the SOAP web services, SOAP client stubs need to be generated with the help of WSDL exposed by FCUBS. The thus generated client stubs should be included in classpath and configure database entries in `DIGX_FW_CONFIG_OUT_WS_CFG_B` table. Create instance of FCUBS Soap client service using `com.ofss.fc.infra.ws.JAXWSFactory.createServiceStub(String, String)` and invoke the respective methods with required request payload.

`com.ofss.fc.infra.ws.JAXWSFactory.createServiceStub(String, String)` method will instantiate the respective SOAP client services by passing the service and operation name. It uses the `DIGX_FW_CONFIG_OUT_WS_CFG_B` database table to retrieve the SOAP WSDL URL, End point service name and proxy services name for instantiating the client services, so all the relevant database entries should be configured in database table for each service operations.

Following step to invoke the soap service:

1. Generate SOAP client stubs from WSDL file.
2. Insert the database entry in `DIGX_FW_CONFIG_OUT_WS_CFG_B` table for the respective service and operation.
3. Get the SOAP client services instance by invoking `com.ofss.fc.infra.ws.JAXWSFactory.createServiceStub(String, String)` method.
4. Create request header instance and fill the mandatory fields.
5. Create request body instance and fill the essential detail.
6. Invoke the respective SOAP method by passing the request parameter containing request header and body.

#### 3.3.1 Create FCUBS SOAP Client Instance

Create an instance of soap client services by invoking `JAXWSFactory.createServiceStub` method by passing service id and operation name arguments to identify the service.

Important: A database entry must be available for respective service and operation in `DIGX_FW_CONFIG_OUT_WS_CFG_B` database table.

```
(FCUBSAccServiceSEI)JAXWSFactory.createServiceStub(WebbserviceConstants.  
FCUBS_ACCOUNT_SERVICE_SPI, WebbserviceConstants.CREATE_TD_ACCOUNT);
```

#### 3.3.2 Get FCUBSHeader Values

Each and every FCUBS soap request requires header object of class `FCUBSHeaderType`.

The class `com.ofss.digx.ubs.adapter.impl.RequestHeader`, provides all properties to set in FCUBS SOAP request header object.

A RequestHeader object should be instantiated by invoking AbstractAdapterHelper.getRequestHeader method and set all the required properties in FCUBS soap request header object.

```
com.ofss.digx.FCUBS.adapter.impl.AbstractAdapterHelper.getRequestHeader(String,
String, String)
```

Create the Adapter helper instance and retrieve Request Header Object.

```
AbstractAdapterHelper helper = AbstractAdapterHelper.getInstance();

RequestHeader header = helper.getRequestHeader("IA", "FCUBSAccService",
"ModifyIATDCustAcc");
```

Instantiate the request header and fill the essential details:

```
MODIFYTDCUSTACCFDFSREQ createTDRequest = new MODIFYTDCUSTACCFDFSREQ();

FCUBSHEADERTYPE fcUBSHeaderType = new FCUBSHEADERTYPE();

fcUBSHeaderType.setUserID(header.getUserid());

fcUBSHeaderType.setCORRELID(header.getCorrelid());

fcUBSHeaderType.setMSGID(header.getMsgid());

fcUBSHeaderType.setDESTINATION(header.getDestination());

fcUBSHeaderType.setMSGSTAT(MsgStatType.fromValue(header.getMsgstat()));

fcUBSHeaderType.setSOURCE(header.getSource());

fcUBSHeaderType.setBRANCH(helper.getHostBranchId(termDeposit.getTermDepo
sitAccountId().getValue()));

fcUBSHeaderType.setUBSCOMP(UBSCOMPType.fromValue(header.getUbscomp()));

fcUBSHeaderType.setMODULEID(header.getModuleid());

fcUBSHeaderType.setSERVICE(header.getService());

fcUBSHeaderType.setOPERATION(header.getOperation());

fcUBSHeaderType.setSOURCEOPERATION(header.getSourceoperation());

createTDRequest.setFCUBSHEADER(fcUBSHeaderType);
```

Invoke the FCUBS SOAP service

```
FCUBSAccServiceSEI clientProcess = (FCUBSAccServiceSEI)
JAXWSFactory.createServiceStub(WebServiceConstants.FCUBS_ACCOUNT_SERVICE
_SPI, WebServiceConstants.CREATE_TD_ACCOUNT);

Host Integr MODIFYTDCUSTACCFDFSREQresponse =
```

[Home](#)

## 4. OBAPIs-FCUBS Configuration/ Installation

1. To inquire the banking information, FCUBS provides a set of database views/synonyms. These are created on a connector schema which is created at the time of installation of the product.

A data source must be created on the application server where the application has been deployed. The name of the data source must be specified in the jdbc.properties file for the property name FCON.A1.JNDI.NAME, FCON.AP.JNDI.NAME and FCON.B1A1.JNDI.NAME.

Below properties should be define in config/jdbc.properties file

```

FCAT.WEBSERVER.ID=ZZ

FCAT.APPSERVER.ID=ZZ

FCAT.ROUTER.DAEMON.NAME=ROUTER

DISPLAY.MESSAGE.ID=N

FCAT.LDB.DATABASE.NAME=ORACLE

FCON.A1.LDB.DRIVER=oracle.jdbc.driver.OracleDriver
FCON.A1.LDB.URL=%%DB_CONNECT_STRING%%
FCON.A1.JNDI.NAME=B1A1
FNDI.A1.ABCD=

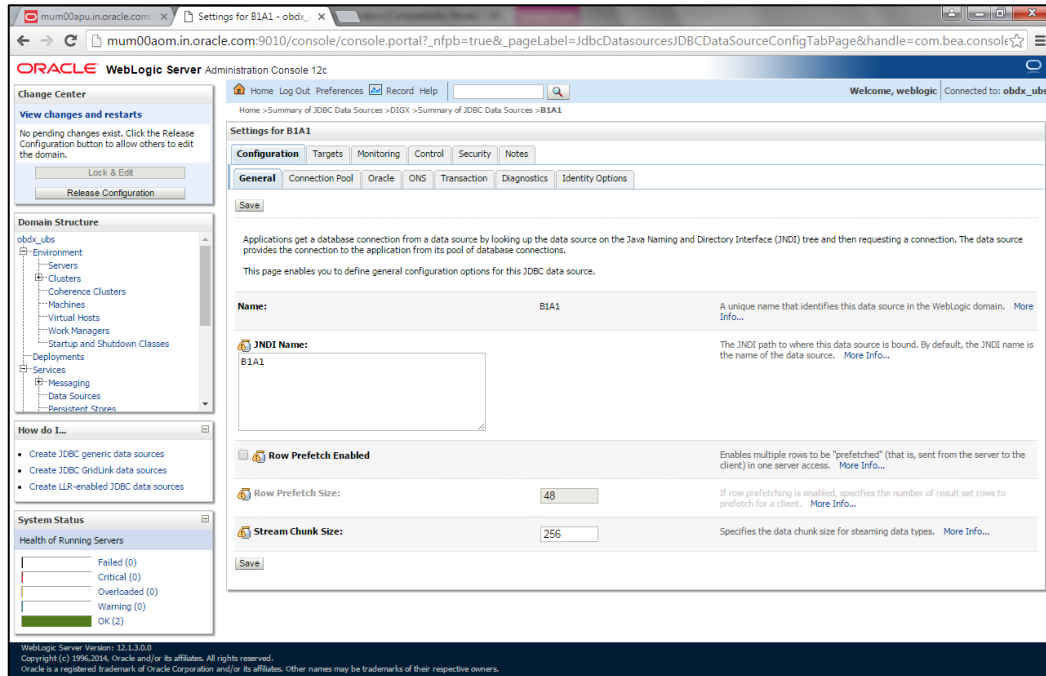
FCON.AP.LDB.DRIVER=oracle.jdbc.driver.OracleDriver
FCON.AP.LDB.URL=%%DB_CONNECT_STRING%%
FCON.AP.JNDI.NAME=B1A1
FNDI.AP.ABCD=

B001.A1=B1A1
FNDI.B1A1.ABCD=
FCON.B1A1.JNDI.NAME=B1A1
FCON.B1A1.LDB.DRIVER=oracle.jdbc.driver.OracleDriver
FCON.B1A1.LDB.URL=%%DB_CONNECT_STRING%%

```

## 4.1 Server Setup

### 4.1.1 Create Data source with JNDI name as defined in config/jdbc.properties file.



Please note that in case of multi entity scenario, the JNDI name should be in the format <ENTITY\_ID>\_B1A1. For example, for entity identifier as 'UBDX\_BU', the JNDI name will be OBAPIS\_BU\_B1A1.

### 4.1.2 Server Arguments

```
-Dfcatt.jvm.id=1
```

## 4.2 Deployment

We have FCUBS deployable ear containing all the jar files required to invoke the FCUBS adapter.

Following deployable should be deployed on OBAPIS server:

**obapis.extsystem.domain.ear**

It contains all the related libraries required to process FCUBS system request.

[Home](#)

## 5. Configuration for Integration of FCUBS Interaction with OBAPIs Mailbox

Out of the box installation OBAPIs provided with the mailbox to interact within OBAPIs i.e. Back Office user of the banks in the OBAPIs will be able to access the mail send by the customer.

If the OBAPIs Mails by the customer need to be integrated with the FCUBS Interaction module then the below steps should be taken care of.

**Assumption:-** Installation of OBAPIs has been completed and configuration of all the entity requires in the system has been completed.

Execute below scripts in the OBAPIs Admin Schema to configure entity specific integration of mailbox with interaction module in FCUBS.

```
Insert into DIGX_FW_CONFIG_ALL_O
(PROP_ID,PREFERENCE_NAME,PROP_VALUE,DETERMINANT_VALUE,CREATED_BY,CREATION_DATE,
LAST_UPDATED_BY,LAST_UPDATED_DATE) values
('MAILBOX_PROCESSOR','MailboxProcessor','com.ofss.digx.app.collaboration.service.mailbox.message.mail.processor.RemoteMailboxProcessor','OBAPIs_BU1','superadmin',sysdate,'superadmin',sysdate);
```

```
Insert into DIGX_FW_CONFIG_ALL_O
(PROP_ID,PREFERENCE_NAME,PROP_VALUE,DETERMINANT_VALUE,CREATED_BY,CREATION_DATE,
LAST_UPDATED_BY,LAST_UPDATED_DATE) values
('MAIL_REPOSITORY_ADAPTER','RepositoryAdapterFactories','com.ofss.digx.domain.collaboration.entity.mailbox.message.mail.repository.adapter.RemoteMailRepositoryAdapter,com.ofss.digx.domain.collaboration.entity.mailbox.message.mail.repository.adapter.LocalMailRepositoryAdapter','OBAPIs_BU1','superadmin',sysdate,'superadmin',sysdate);
```

Highlighted values can be varied based on the entity configuration require to be integrated with FCUBS interaction module.

[Home](#)