

Development Workbench - Administration  
Oracle FLEXCUBE Investor Servicing  
Release 14.7.4.0.0  
Part No. F94456-01  
[March] [2024]



---

# Table of Contents

1. Preface .....	3
1.1 Audience.....	3
1.2 Related Documents .....	3
2. Introduction .....	4
3. Administration .....	5
3.1 First Time Log in .....	5
4. Release .....	7
4.1 Release Detailed .....	7
4.2 Release Summary .....	12
5. Environment.....	13
5.1 Environment Detailed.....	13
5.2 Environment Summary .....	18
6. User .....	19
6.1 User Detailed.....	19
6.1.1 User Releases .....	20
6.1.2 Release Administrator.....	20
6.2 Developer .....	21
6.3 TCM User .....	21
6.4 Vercon .....	21
6.5 User Summary.....	23
6.6 Key Points .....	23
7. Appendix.....	24
7.1 File Manager.....	24
6.1.1 File Manager Deployment .....	24
6.1.2 Maintenance in Development Workbench.....	25

---

# 1. Preface

This document describes the Administration options available in Oracle FLEXCUBE Development Workbench for Universal Banking and guides the developers on how to use this feature.

## 1.1 Audience

This document is intended for FLEXCUBE Application developers/users that use Development Workbench to develop various FLEXCUBE components.

To Use this manual, you need conceptual and working knowledge of the below:

Proficiency	Resources
FLEXCUBE Technical Architecture	Training programs from Oracle Financial Software Services.
Working knowledge of Web based applications	Self-Acquired
Working knowledge of Oracle Database	Oracle Documentations

## 1.2 Related Documents

[01\\_ODT\\_Installation.pdf](#)

[03-Development\\_WorkBench\\_Getting\\_Started.pdf](#)

---

## 2. Introduction

The information in this document includes:

- [Chapter 2 , "Introduction"](#)
- [Chapter 3 , "Administration"](#)
- [Chapter 4 , "User Releases"](#)

## 3. Administration

Workbench segregates the developmental activity of the developers into different releases. This allows the tool to track the changes done in each release and helps the developer to follow an extensible approach to development.

Administration screens of Development Workbench are as follows:

- i) Release Creation
- ii) Environment Creation
- iii) User Creation

### 3.1 First Time Log in

After successful installation, user can login to the Tool using the following credentials

User Name: **RADTOOL**

Password: **RADTOOL**

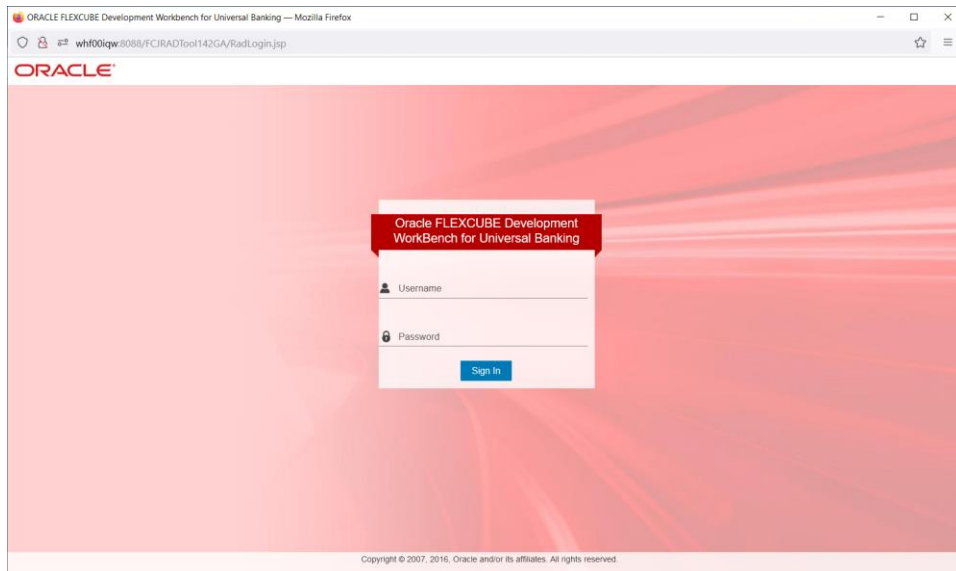


Fig: Login Screen

RADTOOL user is initially mapped to Default Release. This user is only for initial login to the tool. Developers should not use this user to design new screen or to modify existing screen.

After successful login click on Administration node in left side of Tree under browser Tab.

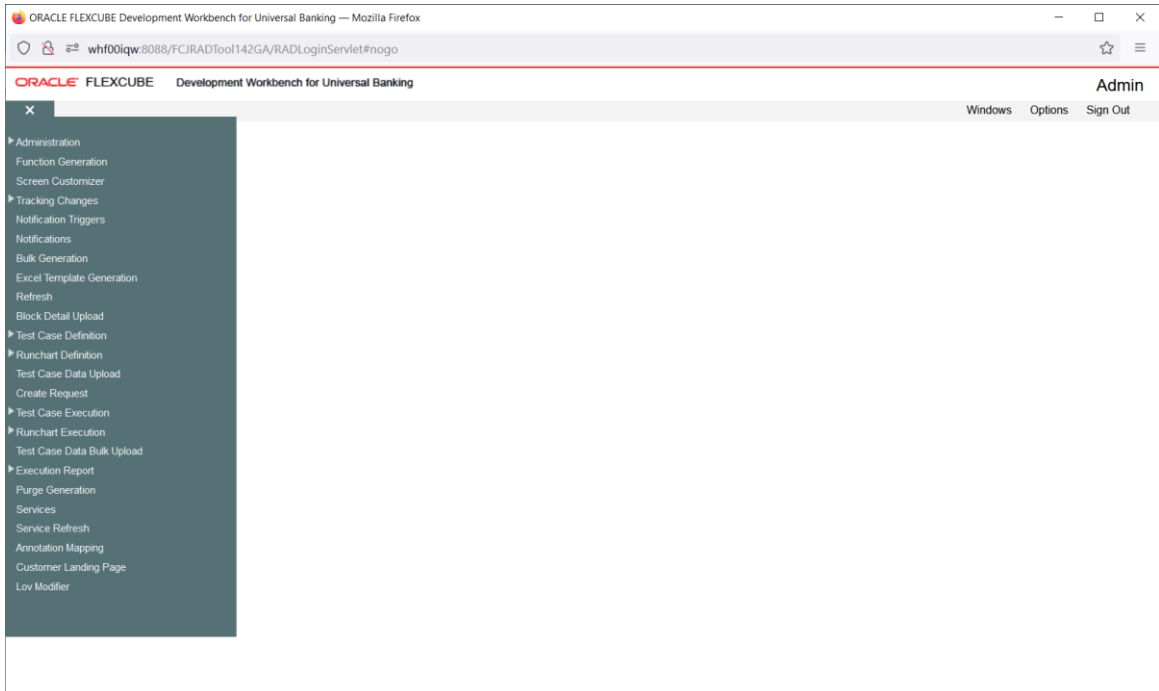


Fig: The Browser tab with Administration option

We will find 3 options In Administration. Release Environment and User.

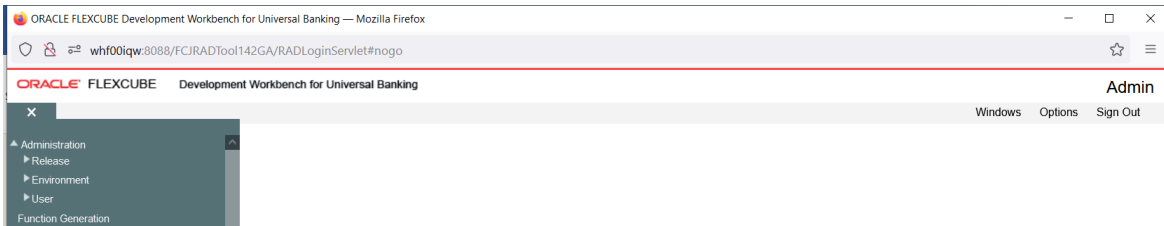


Fig: Options under Administration

## 4. Release

Expand the Release node under administration. We will get Detailed and summary options.

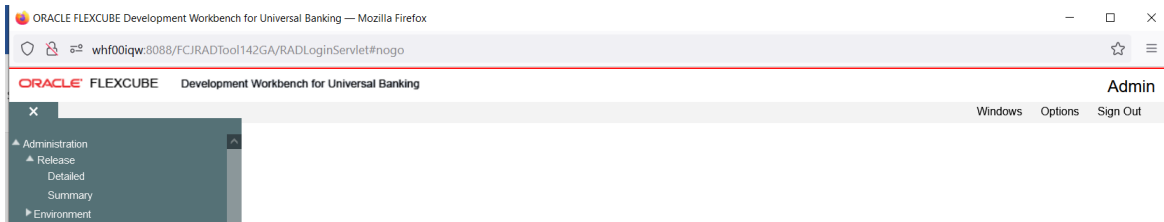


Fig: The options under 'Release'

Click on Detailed option to create new release. Release screen will be launched.

### 4.1 Release Detailed

Fig: The Release detailed Screen

Only a user with Administrator rights can create Release. It is recommended to use RADTOOL user for creating new releases

- **Release Code:** Release code/Project Code is mandatory field. It should follow FLEXCUBE naming convention.  
Ex: **FC\_UBS\_V.UM\_11.4.US.1.0.0.0**
- **Description:** Information about the release. Meaningful description of release can be provided here

- **Release Type:** Select the release type. This is mandatory field.
  - **Kernel:** This option should be used by kernel team only.
  - **Cluster:** A regional development team has to select this option.
  - **Custom:** Either offshore development team for client changes or development in Onsite has to select this option.
  
- **Release No:** Enter the version number of FLEXCUBE development.
  
- **Base Release:** Select base release from the list of values. All available releases will be shown in the List of values. Base release is of significance for migrating test case data  
*Example: If developer is working on customization on top of 11.3EU Cluster pack, base release will be 11.3EU*
- **Environment:** Select default environment. While creating new release ignore
  
- **Remarks:** Enter if any additional info required regarding Release. This is information field.
  
- **Release SPC:** This would be used for in house developments. This is not required for custom developments
  
- **Stream Name:** Stream name should be same as DDL stream name. This is not applicable if DDL integration not required
  
- **Cluster Name:** This is an information field. If the release is a Cluster pack, name of the Cluster release can be provided here .Same name as maintained in DDL Tool.
  
- **Custom Name:** This is an information field. If the release is a Customization, name of the customer can be provided here .Same name as maintained in DDL Tool
  
- **Release Stage:** This is information field. Release stage can be Development, SQA, and ITR etc.
- **Application Name:** Provide the name of application for which the release is.  
*Example: FLEXCUBE, FCIS, FGL etc.*
  
- **Migrate Test Case Data from Base Release:** If check box is checked ,all the test case data from the base release will be migrated to the new release



The below figure shows a sample entries for creating custom release done for MODEL BANK

The screenshot shows the 'Release Master' application window. The 'Release Detailed' section contains the following fields:

- Release Code: FCIS\_145\_SUPPORT
- Description: 14.5 Support
- Release Type: Kernel
- Base Release: FCIS\_145\_SUPPORT
- Environment: FCIS\_145\_SUPPORT
- Remarks: (empty)
- Release SPC: (empty)
- Stream Name: (empty)
- Cluster Name: (empty)
- Custom Name: (empty)
- Release Stage: (empty)
- Application Name: (empty)

At the bottom of the form, there is a checkbox labeled 'Migrate Test Case Data From Base Release' which is unchecked. Below the form, there is a summary box containing:

- Modification Number: 2
- Release Status: Open
- Maker Id: RADTOOL
- Maker Date Stamp: 2022-11-18 17:57:49

Fig: Creating a Release

The screenshot shows the 'Release Master' application window with an 'Information' dialog box open. The dialog box contains the following information:

- Information Description: RD-SAVE-004 | Record Successfully Updated
- Information Code: (empty)

The dialog box has an 'Ok' button at the bottom right. The background shows the 'Release Master' form with the same fields as in the previous screenshot, but the 'Maker Date Stamp' is now 2022-11-18 16:33:20.

Fig: Saving a Release

### Querying a Release

If user want to modify existing release Details click on Release Detailed node in tree and click enter query option.

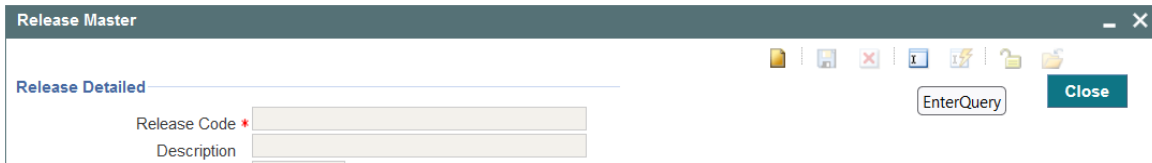


Fig: Querying details of an existing Release

Release code field gets enabled. If release name known already enter directly or select release code from provided List of values.

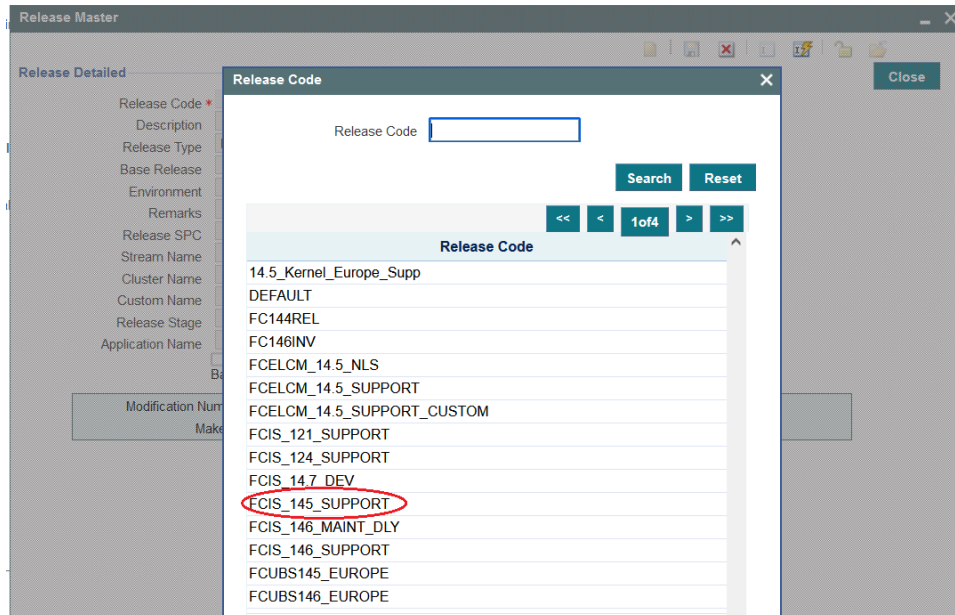


Fig: Selecting Release from LOVs

After selecting release code click on execute query.

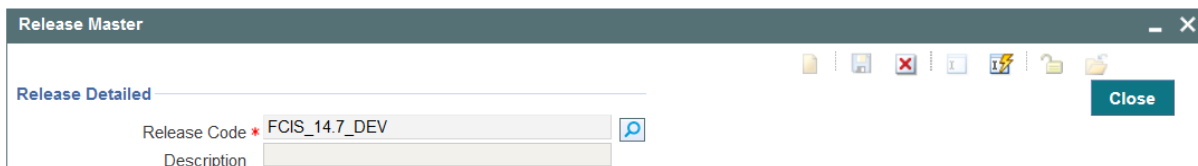


Fig: The *ExecuteQuery* button to be clicked after entering release code

**Modifying a Release:**  
Click on unlock button.

Release Master

Release Detailed

Release Code \* FCIS\_145\_SUPPORT

Description 14.5 Support

Release Type Kernel

Base Release FCIS\_145\_SUPPORT

Environment FCIS\_145\_SUPPORT

Remarks

Release SPC

Stream Name

Cluster Name

Custom Name

Release Stage

Application Name

Migrate Test Case Data From Base Release

Modification Number 2

Release Status Open

Maker Id RADTOOL

Maker Date Stamp 2022-11-18 17:57:49

Close

Fig: The Details of a Release

After unlock button clicked except release code all fields will be enabled. Release administrator can update the required fields. Click on save.

Release Master

Release Detailed

Release Code \* FCIS\_145\_SUPPORT

Description 14.5 Support

Release Type Kernel

Base Release FCIS\_145\_SUPPORT

Environment FCIS\_145\_SUPPORT

Remarks

Release SPC gayathri.loganathan@oracle.com

Stream Name

Cluster Name

Custom Name

Release Stage

Application Name

Migrate Test Case Data From Base Release

Modification Number 2

Release Status Open

Maker Id RADTOOL

Maker Date Stamp 2022-11-18 17:57:49

Close

Fig: Release after unlock

## 4.2 Release Summary

This screen will be used to get details of all releases already existing in Workbench. Click on execute query button, it will display all available releases in grid view. Double click on the particular release code it will take us to detailed screen.

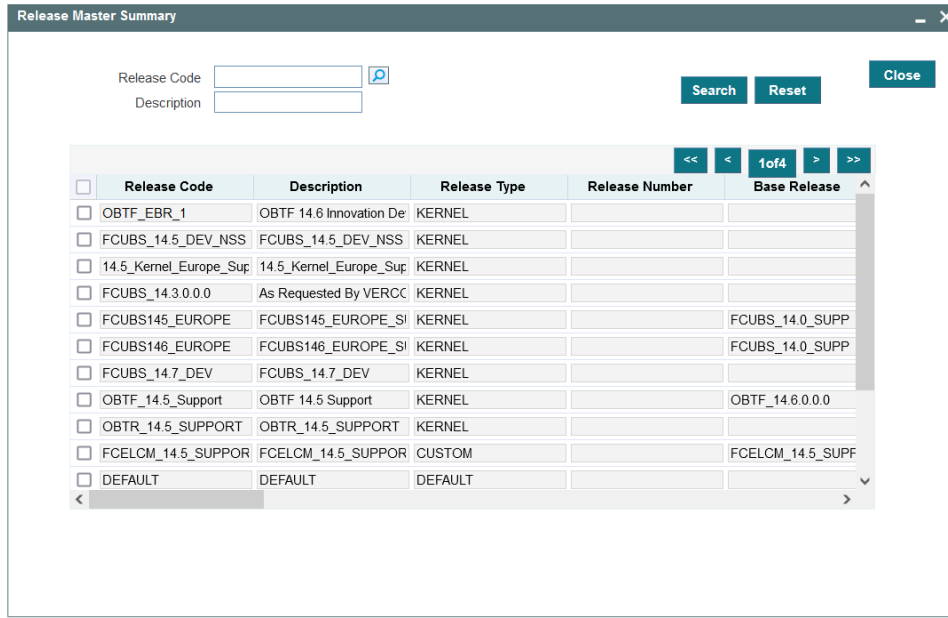


Fig: The Summary of a Release

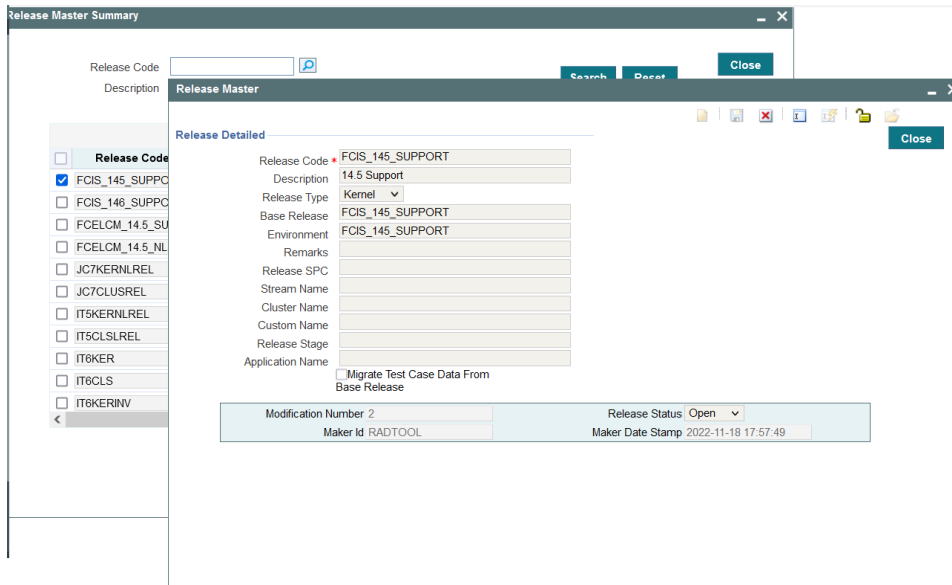


Fig: Details view on Double clicking

## 5. Environment

Workbench requires at least one environment for each release and the below environment details need to be maintained. Multiple environments can be mapped to a single release.

For instance, different environments can be maintained for different stages of the same release i.e. development, testing etc.

Note that Workbench can interact with multiple FLEXCUBE links .Each environment correspond to a FLEXCUBE environment

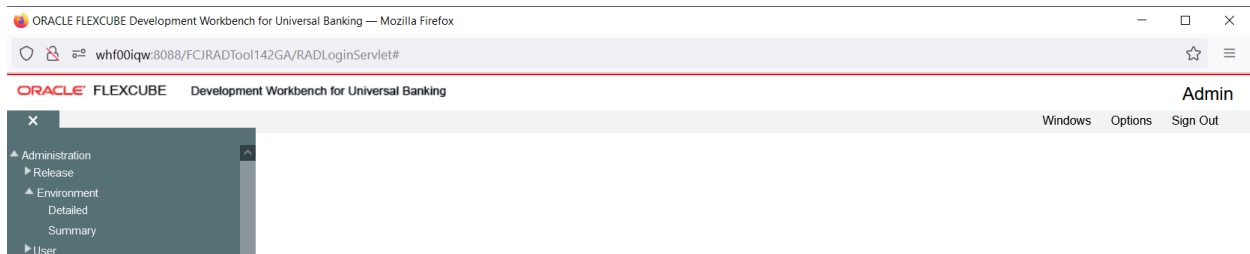


Fig: Options under Environment

Click on detailed node of environment. Click new button all fields will get enabled.

### 5.1 Environment Detailed

Fig: The Detailed Screen for Environment

- **Environment Code:** This is mandatory field. Naming convention would be <release code>\_ENV.  
For Example: FCIS\_14.7\_DEV
- **Release Code:** This is a **mandatory** field. Select the correct release code from the list of values. This field identifies the release to which the environment is mapped
- **Language:** This is **mandatory** field. Select the required language from LOV. This field is very important in environment creation as screen xml will be generated based on the language set up at the environment level.  
List of values fetches the available languages from RDTM\_LANGUAGE. Any new language, if required, has to be maintained in this table
- **Description:** Information field. Meaningful description to environment code.
- **JNDI Name:** Enter valid jndi name. This is **mandatory**. It should match with jndi name used while creation of Data Source for FLEXCUBE in app server. It's case sensitive. Connection to the FLEXCUBE schema is established from Workbench using the JNDI name maintained in environment definition.  
If JNDI name does not match data base connection to FLEXCUBE schema won't happen.  
For instance:  
*If server is Apache Tomcat, JNDI provided in environment creation should match with jndi provided in server.xml and context.xml*  
*If server is web logic, JNDI provided in environment creation should match with jndi of the data source created;*

#### **Dynamic Registering of Data Source with JNDI**

Dynamic Data Source Registering feature avoids the need of creating Data Source manually in the Application Server. To enable this feature, Provider URL value has to be provided during installation .A new data source will be added to the JNDI context using the Data Base details provided while creating Environment (explained below).

*An Example of Properties to be specified in odt.properties for webLogic Server is given below*

**INITIAL\_CONTEXT\_FACTORY=weblogic.jndi.WLInitialContextFactory**  
**PROVIDER\_URL=t3://localhost:7101**

*Note that this feature won't be available if the JNDI context is read only.*

*Example: Apache tomcat Server*

### **Data Base Details:**

The FLEXCUBE database server details of the environment can be provided here .These are information fields. *Data base connection is achieved through jndi maintained and not with help of data provided in these fields unless dynamic registering of Data Source feature is available*

- **Data Base Instance:** Enter the valid Data base instance name.
- **Data Base Port:** Enter data base port number.
- **Data Base IP Address:** Enter data base IP address.
- **Data Base Host Name:** Enter host name or IP address of data base.
- **Data Base Name:** Enter schema name.
- **Data Base password:** Enter schema password.

*If dynamic registering of Data Source feature is not available then the following has to be taken care*

- 1) *If the password of FLEXCUBE schema is changed, merely changing the password in the Workbench environment wouldn't be of any help. Developer will have to update the data source in the server with the latest credentials.*
- 2) *If jndi of the data source is changed, Application server has also to be updated with the same*

### **Application Details:**

- **Application URL:** Enter valid FCIS url.
- **Application IP Address:** Enter application IP address.
- **Application Name:** Enter application name. Information field.
- **Application Operating System:** Select on which operating system FLEXCUBE is running; two options are provided: windows or UNIX.
- **Application transfer Type:** If user requires Deploy option (Check the document [05-Development WorkBench Screen Development-II.pdf](#) to get more details about deploy option), file transfer type has to be selected.  
File Transfer type depends on the operating system of application server in which FLEXCUBE is hosted
  - Windows:** File manager/File Copy
  - UNIX:** File Manager
  - File Copy:** Directly copies files into specified location.
  - File Manager:** It is a Servlet (please check the File manager section in appendix to get more details) running in app server where FLEXCUBE is deployed. This Servlet has to be deployed in the same server where FLEXCUBE is hosted for copying files from Workbench

server. This has to be selected if operating system is UNIX. Refer *Appendix* section on further details on File Manager

- **JS Directory Path:** Enter shared path of JavaScript files in FLEXCUBE server. This is also required for deploy feature of Workbench .All the system JavaScript files generated will be copied to the path mentioned in this field

*Example:*

**Windows** → [\\\\10.184.46.209\\js\\](#) (*Each forward slash should be appended by one more*)

**UNIX**→

*/oraint1/web1034/Oracle/Middleware/user\_projects/domains/FCISDevDomain/servers/FC114EXT/tmp/\_WL\_user/FC114EXT/eiq6wn/war/Script/JS/ (It should contain only single backward slash).*

**Note that slash has to be provided, at the end, in the path provided. Make sure write permission is provided on this folder.**

- **UIXML Directory Path:** Enter shared path of UIXML (language xml) files. This is also required for deploy feature of WORKBENCH .All the system JavaScript files generated will be copied to the path mentioned in this field

*Example:*

**Windows** → [\\\\10.184.46.209\\eng\\](#)

**UNIX**→

*/oraint1/web1034/Oracle/Middleware/user\_projects/domains/FCISDevDomain/servers/FC114EXT/tmp/\_WL\_user/FC114EXT/eiq6wn/war/UIXML/ENG/*

**Note that slash has to be provided, at the end, in the path provided. Make sure write permission is provided on this folder.**

If Transfer Type is File manager then the below details has to be provided mandatorily

**Server User Name:** Enter application server user name.

**Server Password:** Enter application server password.

**File Manager URL:** Enter file manager url as shown below.

**Format:** <http://<ipaddress>:<portnumber>/FileManager/FileManageServlet>

**Eg:** <http://10.184.74.143:7755/FileManager/FileManageServlet>

- **File Manager User Name:** Enter user name. This is optional field
- **File Manager Password:** Enter password. This is optional field

The below figure shows a sample environment with data input.



Fig: Creating a new Environment

Fig: After Saving Environment details

### Modify Environment

We can modify the existing environment details. Click on detailed node of environment list. Click enter query .Environment code field will get enabled. Enter the environment code directly or select from List of values. Click unlock button and modify required fields. Click on save.

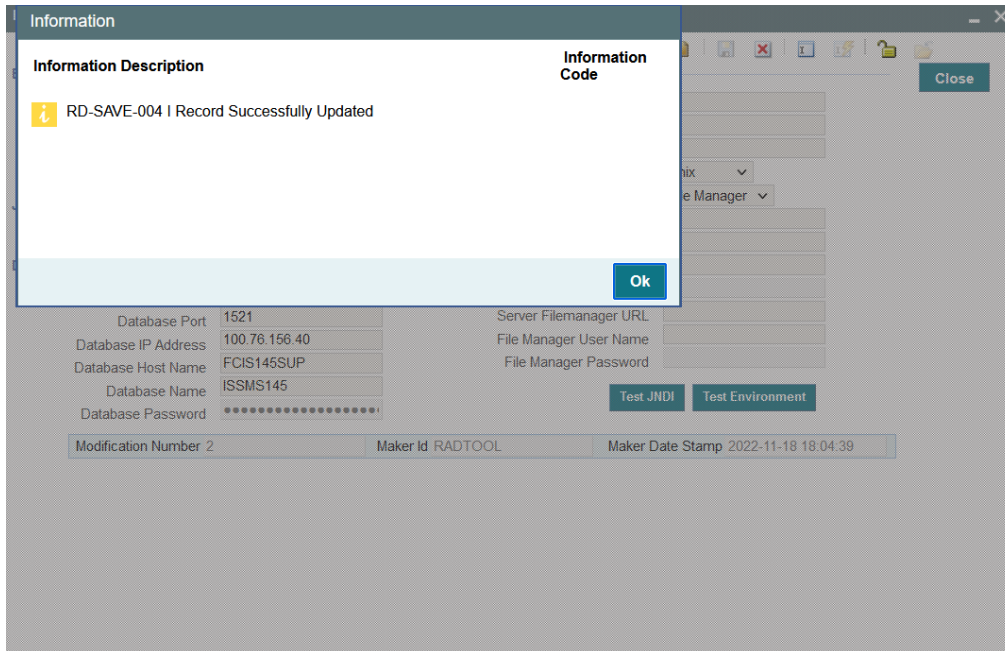


Fig: Modifying an environment by using Query and Unlock

## 5.2 Environment Summary

This screen will be used to get details of all environments which already exist in Workbench. Click on execute query button, it will display all available releases in grid view. Double click on the particular environment code; it will take us to detailed screen.

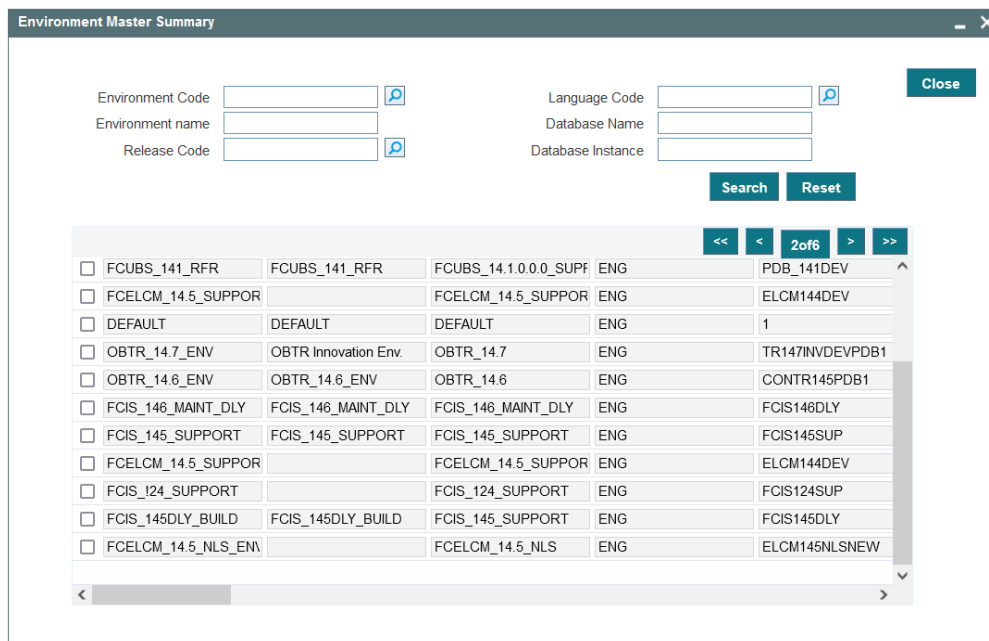
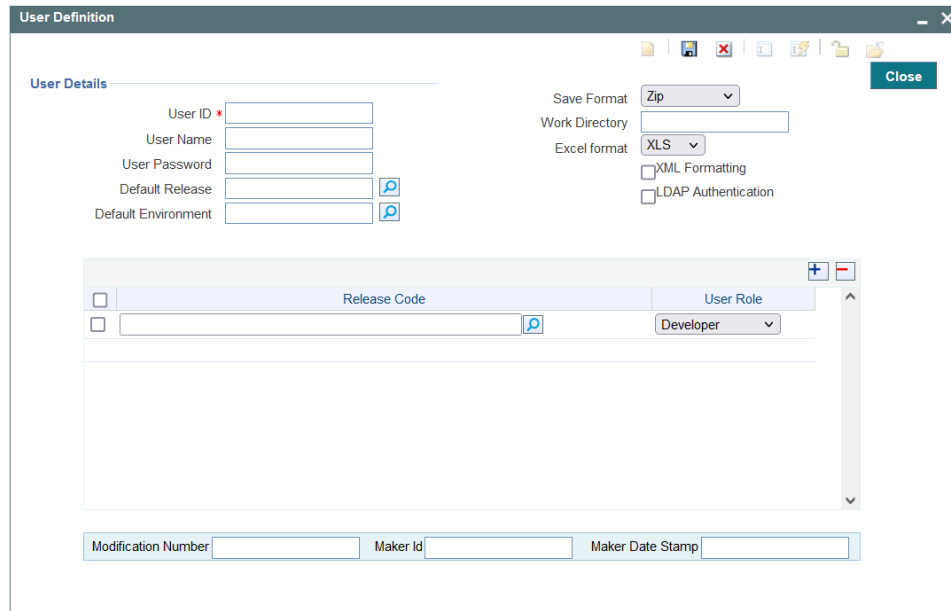


Fig: Environment Summary Screen

## 6. User

User screen is used for creating new user for Workbench. Only Administrator or Release Administrator can create new users. Releases can be attached to the particular user and roles for the user on the attached release code can also be maintained



The screenshot shows a 'User Definition' window with the following fields and options:

- User Details:**
  - User ID \* (text input)
  - User Name (text input)
  - User Password (text input)
  - Default Release (text input with a search icon)
  - Default Environment (text input with a search icon)
- Save Format:** Zip (dropdown menu)
- Work Directory:** (text input)
- Excel format:** XLS (dropdown menu)
- XML Formatting
- LDAP Authentication

Below these fields is a table for selecting release codes and roles:

Release Code	User Role
(text input with search icon)	Developer (dropdown menu)

At the bottom of the window are three fields: Modification Number, Maker Id, and Maker Date Stamp.

Fig: User Detailed Screen

### 6.1 User Detailed

- **User ID:** This is the unique ID given to each user, used to login into Workbench
- **User Name:** Enter User Name.
- **User Password:** The password the user has to enter to login to Workbench
- **Default Release:** Select Release code from the List of values. This will be the release to which user will be mapped on logging in to the Tool. If user mapped to more than one release, user can switch between the releases using User Preferences screen.
- Refer [03-Development WorkBench Getting Started.pdf](#) for further details on User Preferences
- **Default Environment:** Select the corresponding environment code created for the selected default release. If not selected user can set environment in User Preferences screen after logging in
- **Save Format :** User can access the generated files in one of the following modes
  - **Zip:** Files will be zipped and downloaded from the server to the client. This is the default save format.
  - **Server Path:** If user has access to Server, then this mode can be selected. A path in Server has to be specified as Work Directory. Files will be copied to this path from where user can pick it up
  - **Client Path:** For ease of use for users of Older Versions, the earlier mode has also been retained. Here user has to provide a path in his machine as the Work Directory. Note that this

mode uses ActiveX Scripting; hence settings have to be set accordingly. This option is available only in Internet Explorer.

- **Work Directory:** It is the path of the folder where the Workbench generated files will be saved. User can specify default directory where all his work should be saved. This field is applicable only if Save format is either Server Path or Client Path  
If the Save Format is Server Path, a path in the server has to be specified.  
If the Save Format is Client Path, a path in the client machine has to be specified.  
If value is specified as **CURRENT\_DIRECTORY** generated files will be saved to location path specified at the design screen level.
- **Excel Format:** This field defines the default extension of the excel files generated from the Tool. XLS and XLSX are the supported formats
- **XML Formatting:** Any XML file which is generated by Workbench will be formatted.
- **LDAP Authentication:** This option can be selected if the user has to be authenticated against a LDAP. Password need not be specified in this case. LDAP properties has to be specified in the **odt.properties** file for availing this feature

**Sample LDAP Properties**

```
LDAPSSLEn = N  
LDAP_DOMAIN=MODELBANK.COM  
LDAP_SERVER_URL=ldap://10.184.xx.xx.389
```

### 6.1.1 User Releases

Single user can be mapped to many releases. **Make sure that selected default release is available here.** Along with release code user role should be specified

The tool has below User Roles for controlling the access rights

- Release Administrator
- Developer
- TCM User
- VERCON

User will be allowed to perform various tasks based on the Role assigned to the user. Same user can have different role for different releases.

### 6.1.2 Release Administrator

- This role is meant for project leaders and team leaders and allows them to perform release administration activities
- Users with this role would be allowed to perform the below tasks
  - Creation of Environment(s) for the Release
  - Creation of users
  - Provide access to the Release for required User

## 6.2 Developer

- This Role is for Developers. Users mapped with this role would be able to access the Function development related features of the Workbench
- User will also be able to Switch between the releases and Environments using the “User Preferences” Option.

## 6.3 TCM User

- This Role is for meant for users of TCM. Users mapped with this role would be able to access only the TCM screens through the console
- User will also be able to Switch between the releases and Environments using the “User Preferences” Option.

## 6.4 Vercon

- This Role is for meant for Vercon Team. Users mapped with this role would be able to access only the bulk gen operation through the console
- User will also be able to Switch between the releases and Environments using the “User Preferences” Option.

New User will be created by RADTOOL user. After adding one user as Release Administrator, using same user we can create as many users. Use RADTOOL user to create only one user with role as Release Administrator.

The screenshot shows a 'User Definition' window with the following details:

- User Details:**
  - User ID: KARTHEEK
  - User Name: KARTHEEK
  - User Password: [Redacted]
  - Default Release: FCIS\_145\_SUPPORT
  - Default Environment: FCIS\_145\_SUPPORT
- Save Format:** Zip
- Work Directory:** [Empty field]
- Excel format:** XLS
- XML Formatting
- LDAP Authentication

Release Code	User Role
FCIS_145_SUPPORT	Developer

At the bottom of the window, the following information is displayed:

- Modification Number: 5
- Maker Id: RADTOOL
- Maker Date Stamp: 2022-11-18 18:16:36

Fig: Creating New User by RADTOOL user

## Error Information screen

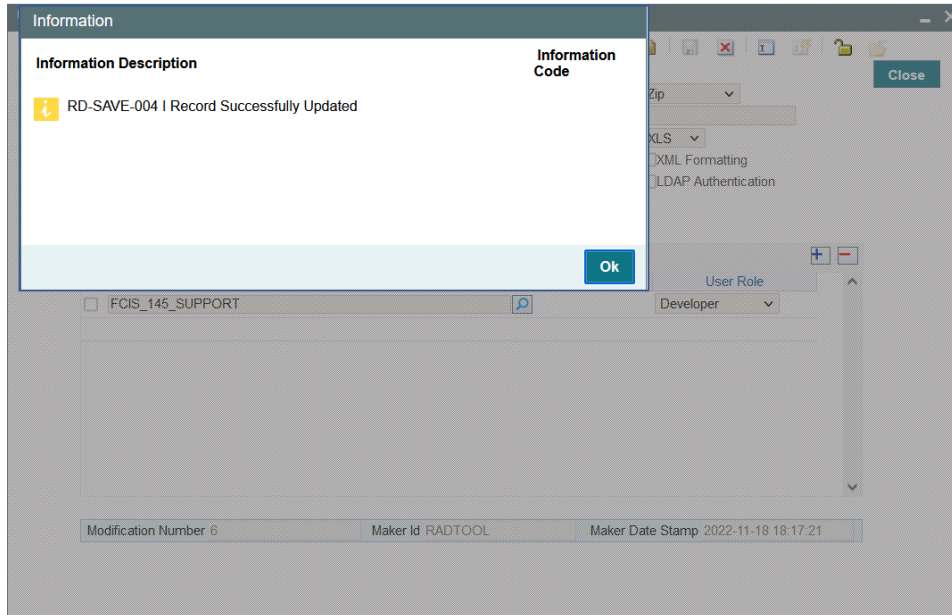


Fig: After Successful Creation of New User

## Modifying User

User can modify by launching detailed user creation screen; Click on enter query; Enter the user id and click on execute query button .It will retrieve user details and display. Except user id all fields can be modified.

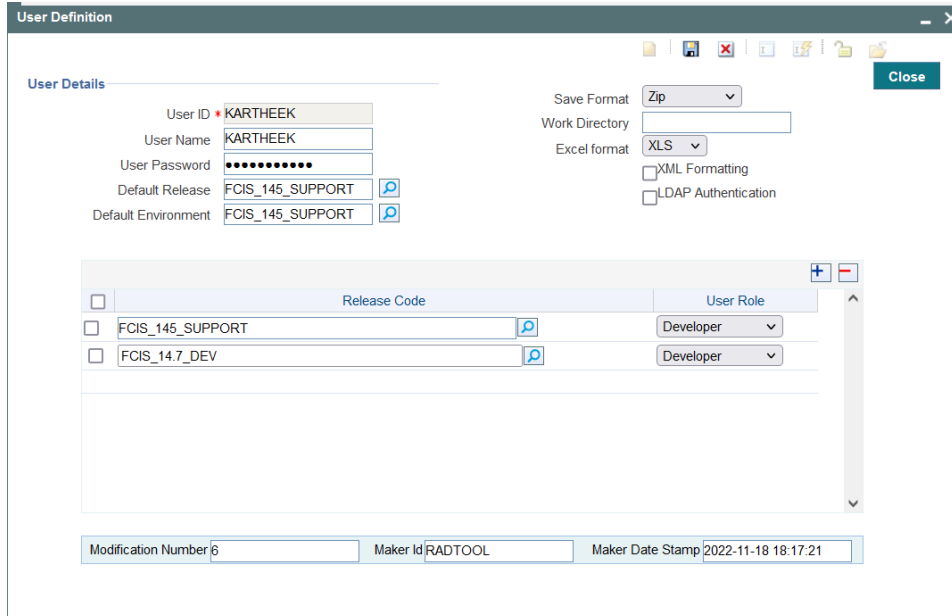


Fig: Unlocked User for Modification

## 6.5 User Summary

This screen will be used to get details of all users already exists in the Workbench. Click on execute query button, it will display all available releases in grid view. Double click on the particular user it will take us to detailed screen.

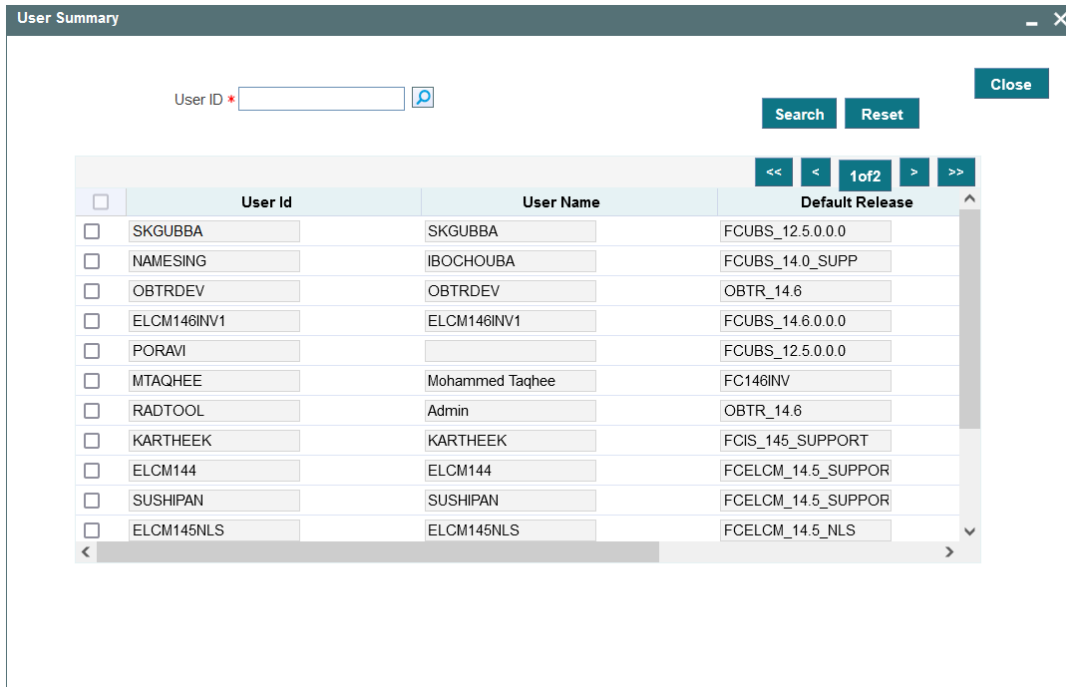


Fig: Summary Screen for User

## 6.6 Key Points

1. Use user name RADTOOL to create new release.
2. In Release Creation, Release Code and Release type are mandatory.
3. In Environment creation Environment Code, Release Code, Language and JNDI Name are mandatory.
4. In user creation provide User Id, Password, Default Release, Default environment, Save Format ,Work Directory
5. Default release selected should be available in the user releases multi record grid. Otherwise Login would be un successful

## 7. Appendix

### 7.1 File Manager

File Manager Servlet will be shipped along with Workbench sources. This application helps in copying files from one machine to another

This application has to be deployed for successfully deploying files to the FLEXCUBE application server from Workbench

#### 6.1.1 File Manager Deployment

File Manager has to be deployed in the server hosting FLEXCUBE (for which environment is created in Workbench)

IP address of the Workbench server has to be mentioned in the property file of File Manager

Path: **FileManager\WEB-INF\classes\com\ofss\manager**

File: **fileupload.properties**

This file should have the IP address of the server where ODT is hosted. If more than one Workbench server is accessing the same FLEXCUBE application (or in case of servers in cluster), multiple IP address can be provided separated by semi colon

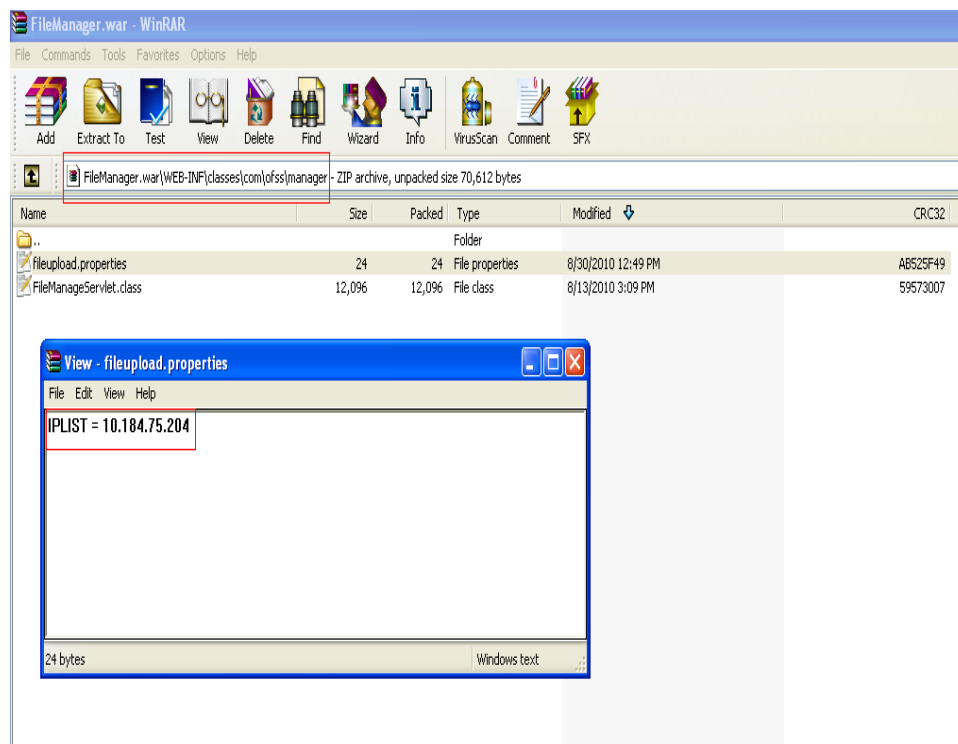


Fig: ODT File Manager path of fileupload.properties

After modifying the property file, file manager has to deploy in the server where FLEXCUBE is hosted.



## 6.1.2 Maintenance in Development Workbench

File Manager has to be maintained in the environment.(which links to the particular FLEXCUBE environment) .

File Manager url has to be provided in the Server File Manager url as shown in the figure

**Format:** `http://<ipaddress>:<portnumber>/FileManager/FileManageServlet`

**Example:** <http://10.184.74.143:7755/FileManager/FileManageServlet>

The screenshot displays the 'Environment Master' application window, which is divided into several sections for configuring an environment. The 'Environment Details' section includes fields for Environment Code (FCIS\_145\_SUPPORT), Release Code (FCIS\_145\_SUPPORT), Language Code (ENG), and Description (FCIS\_145\_SUPPORT). The 'JNDI name' section shows the JNDI Name as jdbc/FCIS\_145\_SUPPOR. The 'Database Details' section contains fields for Database Instance (FCIS145SUP), Database Port (1521), Database IP Address (100.76.156.40), Database Host Name (FCIS145SUP), Database Name (ISSMS145), and Database Password (masked with dots). The 'Application Details' section includes Application URL (http://10.184.74.143:7755), Application IP Address (10.184.74.143), Application Name (FCIS\_14\_5\_SUPP), Application OS (Unix), Application Transfer Type (File Manager), JS Directory Path (/scratch/app/w1032/user/), UI XML Directory Path (/scratch/app/w1032/user/), Server User Name (server1), Server Password (masked), Server Filemanager URL (http://10.184.74.143:7755), File Manager User Name, and File Manager Password. At the bottom, there are fields for Modification Number (3), Maker Id (RADTOOL), and Maker Date Stamp (2022-11-18 18:05:55). Buttons for 'Test JNDI', 'Test Environment', and 'Close' are also visible.

Fig: Workbench Environment Detailed Screen



Development Workbench - Administration  
[March] [2024]  
Version 14.7.4.0.0

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 © [2007], [2024], 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.