

Oracle® Banking Treasury Management

Development Workbench Rest Services Development



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ORACLE®

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Preface

This document describes the steps to develop the notification XML and notification trigger using Oracle FLEXCUBE Development Workbench.

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Purpose

This manual is designed to help FLEXCUBE Application developers/users to familiarize with ORACLE FLEXCUBE Development Workbench.

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:

Table 1 Proficiency and Resources

Proficiency	Resources
FLEXCUBE Functional Architecture	Training programs from Oracle Financial Software Services.
FLEXCUBE Technical Architecture	Training programs from Oracle Financial Software Services.
FLEXCUBE Object Naming Conventions	Development Overview Guide
Working knowledge of Web based Applications	Self-Acquired
Working knowledge of Oracle Database	Oracle Documentations

Table 1 (Cont.) Proficiency and Resources

Proficiency	Resources
Working knowledge of PLSQL developer	Respective vendor documents
Working knowledge of PLSQL and SQL Language	Self-Acquired
Working knowledge of XML files	Self-Acquired

Conventions

The following text conventions are used in this document:

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, text that appears on the screen, or text that you enter.

Critical Patches

Oracle advises customers to get all their security vulnerability information from the Oracle Critical Patch Update Advisory, which is available at [Critical Patches, Security Alerts and Bulletins](#). All critical patches should be applied in a timely manner to ensure effective security, as strongly recommended by [Oracle Software Security Assurance](#).

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>.

Access to Oracle Support

Oracle customers that have purchased support 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.

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve.

Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Prerequisite

Specify **User ID** and **Password**, and log in to **Home Screen**.

Related Resources

The functions of ORACLE FLEXCUBE Development Workbench for Investor Servicing system is organized into various guides, each discussing a component.

For more information, see these Open Development Tool documents:

- *Open Development Tool Installation*
- *Development Workbench - Getting Started*
- *Development Workbench - Administration*
- *Development Workbench - Screen Development I*
- *Development Workbench - Screen Development II*
- *Development Workbench - Screen Customizer*
- *Development Workbench - Notifications*
- *Development Workbench - Bulk Generation*
- *Development Workbench - Source Upgrade*
- *Development Workbench - Tracking Changes*
- *Child and Screen Childs - Concept and Design*
- *Development of Maintenance Form*
- *Development of Online Form*
- *Development of Call Form*
- *Development of Launch Forms and Other Screens*
- *Development of Dashboard Form*
- *Development Workbench Service XML Development*
- *Development Workbench Performance Tuning Enhancements*
- *Development Workbench - Rest Services Development*

Screenshot Disclaimer

Personal information used in the interface or documents is dummy and does not exist in the real world. It is only for reference purposes.

Symbols and Icons

The following symbols and icons are used in the screens.

Table 2 Symbols and Icons - Common










Symbol/Icon	Function
	Minimize
	Maximize
	Close
	Perform Search
	Open a list
	Add a new record
	Navigate to the first record
	Navigate to the last record
	Navigate to the previous record

Table 2 (Cont.) Symbols and Icons - Common








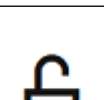
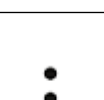
Symbol/Icon	Function
	Navigate to the next record
	Grid view
	List view
	Refresh
	Click this icon to add a new row.
	Click this icon to delete an existing row.
	Click to view the created record.
	Click to modify the fields.
	Click to unlock, delete, authorize or view the created record.

Table 3 Symbols and Icons - Audit Details









Symbol/Icon	Function
	A user
	Date and time
	Unauthorized or Closed status
	Authorized or Open status

Table 4 Symbols and Icons - Widget

Symbol/Icon	Function
	Open status
	Unauthorized status
	Closed status
	Authorized status

1

Set up Rest services

This topic describes the steps involved in setting up Rest services.

The purpose of this user manual is to guide users on the end-to-end setup of the REST Services. The following are the steps involved in setting up REST Services:

1. Enable REST in RADXML using ODT
2. Generate REST Artifacts using Silent ODT
3. Build REST Property files using Installer
4. Generate EXEC sources using Installer
5. EAR building using Installer

This topic contains the following sub-topics:

- [Enable Rest in RADXML](#)
This topic provides the systematic instructions to enable REST in RADXML.
- [Generation of REST Artifacts Using Silent ODT](#)
This topic gives an overview on generation of REST Artifacts using Silent ODT.
- [ODT Silent Utility](#)
This topic gives an overview of the operations of ODT Silent Utility.

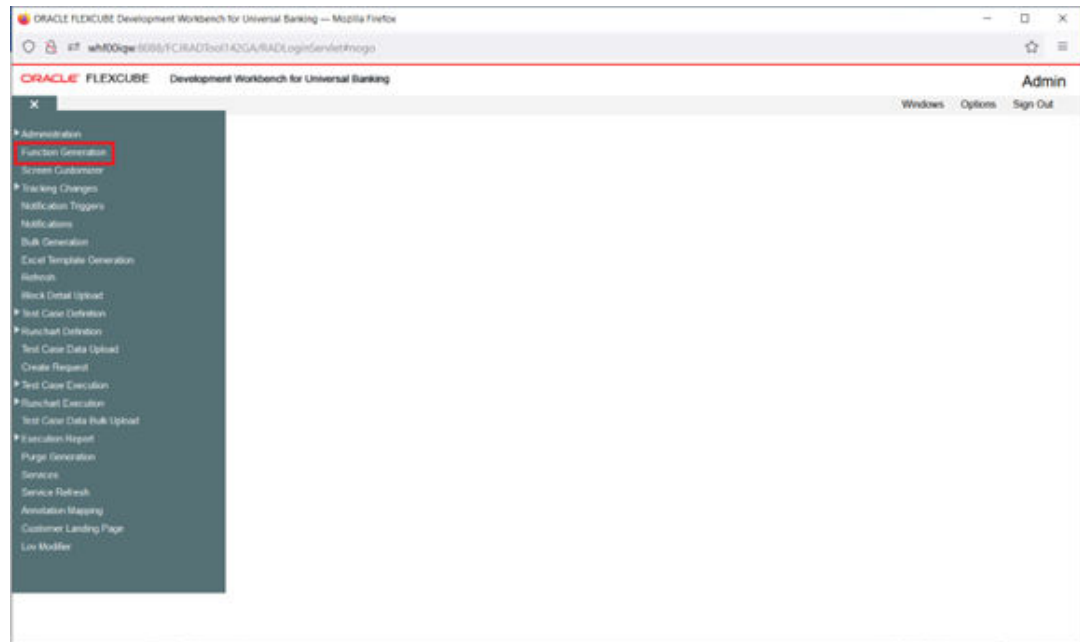
1.1 Enable Rest in RADXML

This topic provides the systematic instructions to enable REST in RADXML.

On the Development Workbench login page, specify the **Username** and **Password** and login to the Development Workbench landing page.

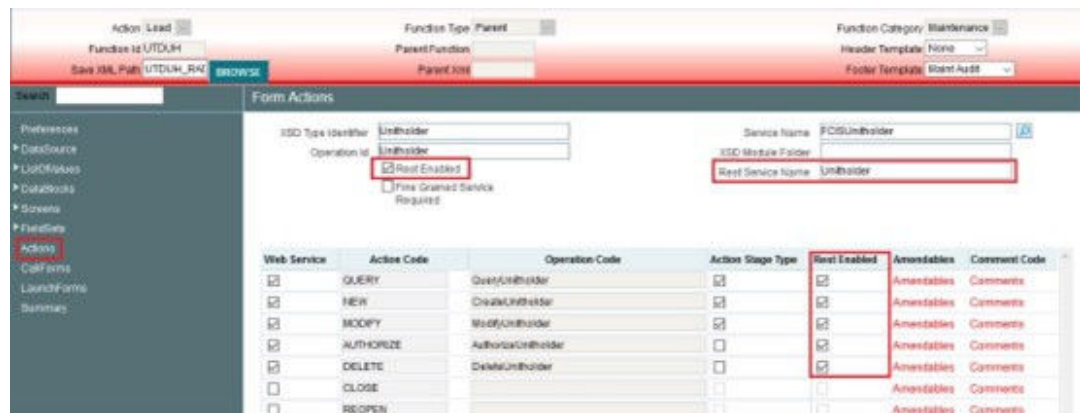
1. On **Home Screen**, click **Function Generation** node under the **Browser** menu.
The **Function Generation** screen is displayed.

Figure 1-1 Function Generation



2. Click the **Actions** node at the left panel.
The **Form Actions** screen is displayed.

Figure 1-2 Form Actions



3. On the **Form Actions** screen, specify the fields.
Refer to the topic *Create Action Screen* for the detailed information.
4. On the **Form Actions** screen, select the **Rest Enabled** checkbox to enable REST Services for a function ID.
5. Specify the **Rest Service Name**.
6. Select the **Action Code** in the **Rest Enabled** column which needs to be enabled as part of REST Services.
7. Specify the **Service Name** and **Operation ID** fields which are mandatory for REST Services to generate static data.
8. Compile all the INC's generated as part of RAD Artifacts.

1.2 Generation of REST Artifacts Using Silent ODT

This topic gives an overview on generation of REST Artifacts using Silent ODT.

This topic contains the following sub-topics:

- [Components of REST Services](#)
This topic gives an overview of components of the Oracle FLEXCUBE Investor Servicing REST Services.

1.2.1 Components of REST Services

This topic gives an overview of components of the Oracle FLEXCUBE Investor Servicing REST Services.

Components of REST Services

The following are the components of the Oracle FLEXCUBE Investor Servicing REST Services:

- **dto files** - REST Messages and Data Transfer Objects. In Patterns of EnterpriseApplication Architecture, Martin Fowler defines a Data Transfer Object (DTO) as: An object that carries data between processes in order to reduce the number of method calls.
- **Service File** - File used to perform the actual actions of the REST Service.
- **Util File**
- **Web.xml**

1.3 ODT Silent Utility

This topic gives an overview of the operations of ODT Silent Utility.

This topic contains the following sub-topics:

- [Prerequisites](#)
Before the run utility operation in Open Development Tool, ensure the installation of the following technologies:
- [Utility Run on Windows/Unix](#)
This topic gives an overview on Utility Run on Windows/Unix.
- [Configuration of SilentODTUtility](#)
This topic gives an overview on configuration of SilentODTUtility.
- [Generation of REST Service Artifacts through SilentOdtUtility](#)
This topic gives an overview on generation of REST Service Artifacts through SilentOdtUtility.

1.3.1 Prerequisites

Before the run utility operation in Open Development Tool, ensure the installation of the following technologies:

The following are the prerequisites for ODT Silent Utility:

1. JDK Instructions

2. apache-ant-1.10.1 Instructions
3. Silent Utility Instructions

JDK Instructions

Installer requires JDK version to be downloaded in the system and the same should be set as environmental variable.

Library required for executing **ANT jaxb-xjc-2.3.5.jar, jakarta.xml.bind-api-2.3.3,jakarta.activation-api-1.2.2,jaxb-impl-2.3.9** and **ojdbc8.jar**.

apache-ant-1.10.15 Instructions

Installer requires **ANT 1.10.15** version to be downloaded in the system and the same should be set as environmental variable.

Set JAVA_HOME and ANT_HOME in CMD or set in environment variable (Java version need to be used as per the release).

Set JAVA_HOME=D:\JAVA18_161\JDK18161

Set ANT_HOME= ..\INSTALLER\SOURCE\Library\installer\apache-ant-1.10.1

Set PATH=%PATH; ANT_HOME\bin

Silent Utility Instructions

SilentUtility.jar is required for executing silent ODT.

Copy the **SilentUtility.jar** from /INSTALLER/SOURCE/Library/odt to /TOOLS/ODT/SOURCE/Consol/SilentUtility/lib before executing.

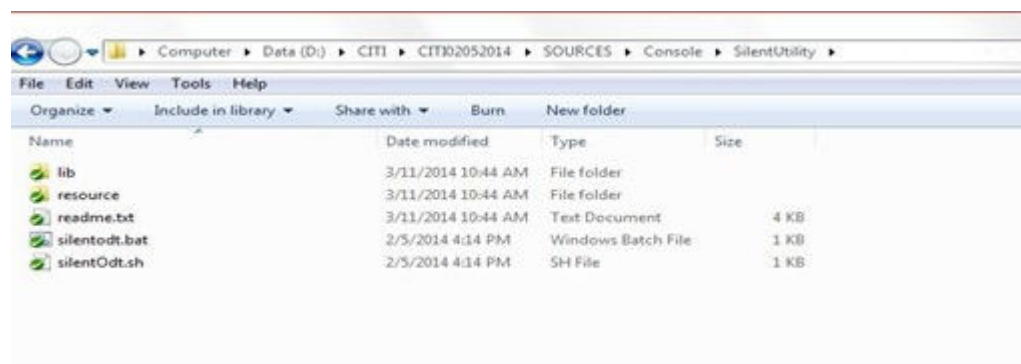
1.3.2 Utility Run on Windows/Unix

This topic gives an overview on Utility Run on Windows/Unix.

After copying the installer sources and library folder to the local system, make sure to uncheck the read-only check box in source properties and apply the same to all the subfolders.

The figure below shows the source folder in the local system:

Figure 1-3 Path of SilentODTUtility Source



1.3.3 Configuration of SilentODTUtility

This topic gives an overview on configuration of SilentODTUtility.

All Configuration files can be found inside/resource folder of the utility.

This topic contains the following sub-topics:

- [SilentOdt.properties](#)
This topic gives an overview on SilentOdt.properties.
- [OdtOperations.properties](#)
This topic gives an overview on OdtOperations.properties.

1.3.3.1 SilentOdt.properties

This topic gives an overview on SilentOdt.properties.

SilentOdt.properties

Table 1-1 SilentOdt.properties

Field	Description
ODT Data Source Detail Credentials	This section displays the following fields.
OdtJdbcUrl	JDBC <i>jdbc:oracle:thin:@10.184.xx.xx:1521:FCDEMO</i> (should be encrypted using utility)
OdtDbUser	DB User name (should be encrypted using utility)
OdtDbPassword	DP Password (should be encrypted using utility)
Logger Properties	This section displays the following fields.
Logreqd	Y/N , Default set to N . If the value is set to Y the logger will be enabled for the generation of the log. If the value is set to N logger will be disabled.
Logpath	Provide the path where the Logger files will be generated.
Level	Provide the Logger Level. This can be either DEBUG/INFO/WARNING/SEVERE . Provide as DEBUG for writing detailed log. Default value would be set to INFO .
System Properties	This section displays the following fields.
JAVA_HOME	Maintain the Java installed location.
WEBLOGIC_HOME	Maintain the oracle Weblogic installed location.
WAS_HOME	Maintain the IBM Websphere installed location.

JAVA_HOME, **WEBLOGIC_HOME**, **WAS_HOME** are optional and can be used for generating template Ant scripts.

1.3.3.2 OdtOperations.properties

This topic gives an overview on OdtOperations.properties.

Configure the Operations files as per requirement.

The following operations are supported in the silent utility of ODT:

1. LOGIN

2. **SETRELEASE**: Setting Release and Environment Details
3. **BULKGENERATION**: Bulk Generation of RADXML units
4. **REFRESH**: Bulk refresh of RADXML
5. **SXML_REFRESH**: Bulk refresh of Service XMLs
6. **SXML_UPDATER**: Bulk Updater of service XMLs based on the changes in RADXMLs
7. **SXML_BULKGENERATION**: Bulk Generation of web service artifacts.
8. **REST_GENERATION**: Bulk Generation of Rest Service Artifacts

Execution of Operation will be as per the sequence maintained in **OdtOperations.properties**.

For Example:

1. Operation = **LOGIN**
2. Operation= **SETRELEASE**
3. Operation= **REST_GENERATION**

If the sequence of operations is as above, then **LOGIN**, **SETRELEASE**, and **REST_GENERATION** Operations would be processed in the respective sequence.

① Note

LOGIN and **SETRELEASE** are mandatory operations to be performed.

All Configuration files can be found inside/resource folder of the utility.

1. LOGIN

User ID: Provide the ODT User ID which is created in the ODT Application.

Password: Provide the ODT Password which is created in the ODT Application.

Login should always be the first operation to be configured as part of any execution.

Figure 1-4 Login Operation

```

1  ###Login to Tool
2  ## 1.operation = LOGIN
3  ## 1.userId=RADTOOL
4  ## 1.password=PASSWORD
5

```

Table 1-2 LOGIN Operation

Field	Description
Operation	LOGIN
User Id	ODT User Id which is created in the ODT Application.
Password	ODT Password which is created in the ODT Application (should be encrypted using Utility).

2. SETRELEASE

This operation is used for setting Release and Environment Preferences for SilentODTUtility. Connection to the FLEXCUBE schema would be established based on data maintained in ODT or through the data in **env_config.xml** as explained in an earlier section.

Figure 1-5 SETRELEASE Operation

```
### Set the Release and Environment ( Operation ==> SETRELEASE)
2.operation= SETRELEASE
2.relCode=FCIS140
2.envCode=FCIS140
2.langCode=ENG
```

Table 1-3 Release and Environment Details for User

Field	Description
Operation	SETRELEASE
relCode	ODT Release Code which is created in the ODT Application.
envCode	ODT Environment Code which is created in the ODT Application.
langCode	Lang code for the above-mentioned release code.

3. REST_GENERATION

Web service artifacts can be generated through this operation.

Table 1-4 REST_GENERATION

Field	Description
radxmlListFile	Prepare text file which contains absolute path of all RADXMLs which are used for those services.
srcPath	Provide source folder path which is an option (Tool will create radxmlListFile by itself from the srcPath . Note that if srcPath is provided, radxmlListFile need not be provided.
destpath	Provide the path where the files will be generated.
gen	Provide the type of files to be Generated (separated by comma). Options are REST .

Table 1-5 Service XML Component Generator

Input	Output
operation	REST in destination path
radxmlListFile	REST in destination path
srcPath	REST in destination path
fileType	REST in destination path
destpath	REST in destination path
gen	REST in destination path

1.3.4 Generation of REST Service Artifacts through SilentOdtUtility

This topic gives an overview on generation of REST Service Artifacts through SilentOdtUtility.

To generate Rest service artifacts for a service, configure the property files of the utility as explained in the previous section.

Following operations needs to be configured in **OdtOperations.properties** in the respective sequence:

1. **LOGIN**
2. **SETRELEASE**
3. **REST_GENERATION**

Provide the following values for **gen** parameter of **REST_GENERATION**. To generate Rest service Artifacts, the user has to double click on the batch file **silentOdt.bat/sh** present in the ODT source.

SilentODT Sources Folder

Figure 1-6 SilentODT Sources Folder

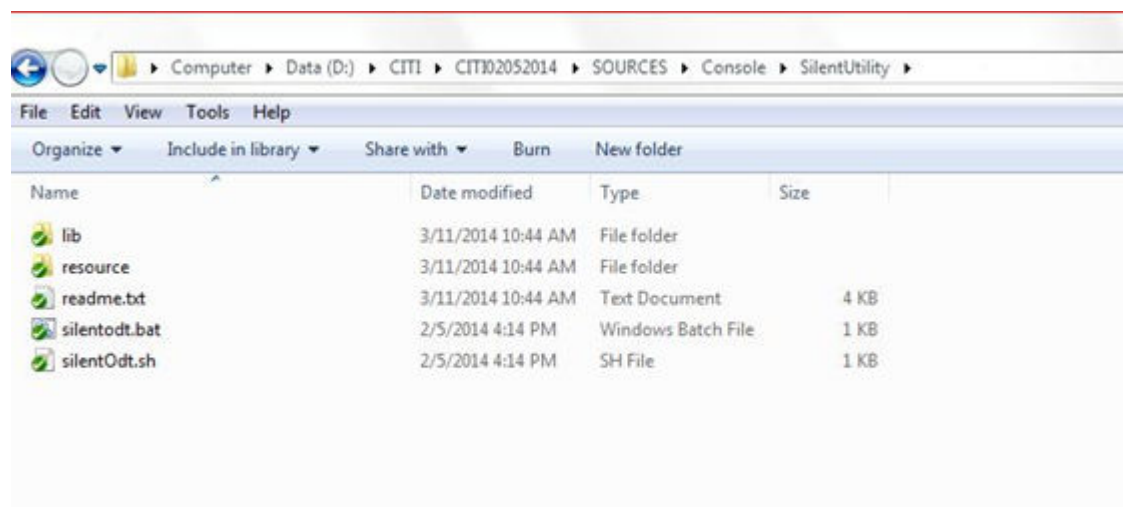


Figure 1-7 Path of silentOdt.bat

```

SOURCE\Consol\SilentUtility>silentodt.bat

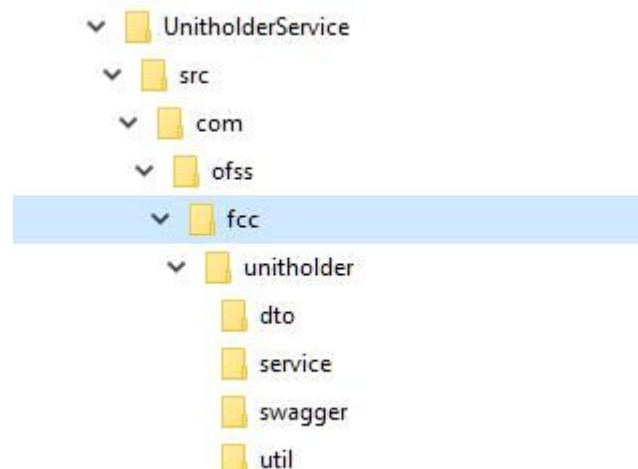
Developer WorkBench For FLEXCUBE Investor Servicing

Copyright (c) 2017, Oracle Financial Services Software Ltd. All rights reserved.
SilentODT version : 14.0
java home is D:\JAVA18_101\JDK18101
Dec 05, 2018 11:00:42 AM com.ofss.tools.odt.login.ODTLoginAction doLogin
INFO: Logging In
Dec 05, 2018 11:00:43 AM com.ofss.tools.odt.login.ODTLoginAction doLogin
INFO: Successfully logged in as SRANARAD
Dec 05, 2018 11:00:43 AM com.ofss.tools.odt.login.ODTLoginAction doLogin
INFO: Release Code: FCIS141
Dec 05, 2018 11:00:43 AM com.ofss.tools.odt.login.ODTLoginAction doLogin
INFO: Env Code: FCIS141
Dec 05, 2018 11:00:43 AM com.ofss.tools.odt.login.ODTSetRelease doSetRelease
INFO: Setting Preferences
Dec 05, 2018 11:00:44 AM com.ofss.tools.odt.dao.DBConnection lookup
WARNING: Lookup failed for:jdbc/FCIS141_DISTB140ITR2
Dec 05, 2018 11:00:44 AM com.ofss.tools.odt.login.ODTSetRelease doSetRelease
INFO: User Preferences Set Successfully
Dec 05, 2018 11:00:44 AM com.ofss.tools.odt.login.ODTSetRelease doSetRelease
INFO: Release Code: FCIS141
Dec 05, 2018 11:00:44 AM com.ofss.tools.odt.login.ODTSetRelease doSetRelease
INFO: Env Code: FCIS141
Dec 05, 2018 11:00:44 AM com.ofss.tools.odt.util.FileUtil getFileList
INFO: Fetching List of RADXMLs from D:\FCIS_REST\WorkFolder\RADREST\UTDFPHNT\RADXML
Dec 05, 2018 11:00:45 AM com.ofss.tools.odt.rest.RestRadGenerator process
INFO: Generating units for UTDFPHNT
Dec 05, 2018 11:00:46 AM com.ofss.tools.odt.rest.RestRadGenerator process
INFO: Generating SYS JS for UTDFPHNT
Dec 05, 2018 11:00:50 AM com.ofss.tools.odt.dao.RadOracleDao clearUser
INFO: Clearing User
Press any key to continue . . .

```

SilentODT in Command Prompt

After the successful built operation, The Rest artifacts files will be generated in the destination directory specified.

Figure 1-8 SilentODT in Command Prompt

Glossary

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