Oracle® Banking Platform

Product Upgrade Guide

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Preface

This guide explains the process of planning and executing upgrades of Oracle Banking products.

This preface contains the following topics:

- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Audience

This guide is intended for system administrators or anyone who plans or execute upgrade.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/us/corporate/accessibility/index.html.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/us/corporate/accessibility/support/index.html#info or visit http://www.oracle.com/us/corporate/accessibility/support/index.html#trs if you are hearing impaired.

Related Documents

For more information, see the following documentation:

- For installation and configuration information, see the Oracle Banking Platform Installation Guide - Silent Installation.

- For the complete list of licensed products and the third-party licenses included with the license, see the Oracle Banking Licensing Guide.

- For information related to setting up a bank or a branch, and other operational and administrative functions, see the Oracle Banking Administrator's Guide.

- For information related to customization and extension, see the Oracle Banking Extensibility Guide.

- For information on the functionality and features, see the respective Oracle Banking Functional Overview documents.

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.
italic	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.

1 About this Guide

This guide is applicable for the following products:

- Oracle Banking Platform
- Oracle Banking Enterprise Product Manufacturing
- Oracle Banking Enterprise Originations
- Oracle Banking Enterprise Collections

References to Oracle Banking Platform or OBP in this guide apply to all the above mentioned products. The sections that are not applicable for any of the products are listed in this chapter.

2 Overview

This chapter provides an overview of the process of planning and executing upgrades of Oracle Banking products.

2.1 Features

The features of the upgrade process are as follows:

- Restart Capability: You can re-initiate the upgrade process in case of failure. If execution fails at particular point, then changes are committed till that point. While restarting execution again, the process starts from next step.

- Traceability: It is easy to trace the status of execution. In case of failure, user-friendly error is logged into error table or file. It provides the exact script, which has failed and exact error of failure.

- Repairable: You can repair the failure on the spot and again start the execution.

- Reconciliation: You can reconcile the upgrade schema with previously upgraded schema and provide the conclusion that upgrade is done as per expected.

2.2 Backup Strategy

It is mandatory to take backup before upgrade. In case of No-Go, restore the backup to return to previous version. For backup and restore strategy, refer to the bank's backup/restore process/documents.

3 Upgrade Pack

This chapter explains the installation process of the Upgrade Pack.

The Upgrade Pack contains the upgrade scripts and Oracle Banking Upgrade Assistant (OBUA) GUI interface.

3.1 Installation Process

Perform the following steps to install the upgrade pack.

1. Copy the upgrade-pack.zip.

2. Unzip and extract upgrade-pack.zip to a directory.

   The upgrade-pack contains:

   - schemaupgrade
   - upgradescripts
   - OracleBankingUpgradeAssistant.jar

3. Copy upgradescripts to DB server machine.

4. Choose upgrade method:

   - For manual upgrade, see Section 4.2 Manual Upgrade Method
   - For GUI, see Section 4.1 Oracle Banking Upgrade Assistant (OBUA)

5. For GUI, go to command prompt, upgrade-pack folder and then execute java -jar OracleBankingUpgradeAssistant.jar command (for Windows machine, double-click OracleBankingUpgradeAssistant.jar).

4 Schema Upgrade Processs

This chapter includes an overview of the main steps required to upgrade an existing version schema to the new version schema. These procedures transform an existing Oracle Banking product schema into new version of Oracle Banking product schema.

Schema upgrade supports following tools and methods for upgrading an existing Oracle Banking product schema to new version of Oracle Banking product.

- **Oracle Banking Upgrade Assistant (OBUA)**

  The Oracle Banking Upgrade Assistant (OBUA) provides a graphical user interface (GUI) that guides you through the upgrade of a schema. It can be launched as a standalone tool at any time. It interactively takes you through the upgrade process step-by-step and configures the schema for the new Oracle Banking product release. It automates the upgrade process by performing all of the tasks normally performed manually.

  For more information, see Section 4.1 Oracle Banking Upgrade Assistant (OBUA)

- **Manual upgrade using SQL scripts and utilities**

  A manual upgrade consists of running SQL scripts and utilities from a command line to upgrade a schema to the new Oracle Banking product release. While a manual upgrade gives you finer control over the upgrade process, it is more susceptible to error if any of the upgrade or pre-upgrade steps are not followed or are performed out of order.

  For more information, see Section 4.2 Manual Upgrade Method

The following sections explain the above two methods in detail.

4.1 Oracle Banking Upgrade Assistant (OBUA)

The following section guides you through the process of upgrading an Oracle Banking product schema using the Oracle Banking Upgrade Assistant (OBUA)

The OBUA provides a graphical user interface (GUI) to guide you through the upgrade of a schema, or you can invoke it in silent mode, which does not abort the process in case of script execution failure.

The OBUA does not begin the upgrade until all of these pre-upgrade steps are completed. While the upgrade is running, the OBUA shows the upgrade progress. The OBUA writes detailed trace and logs files for later reference. Some component schemas must be entered manually as shown in the following procedure.

To upgrade using OBUA, perform the following steps:

1. In the OBUA Welcome page, click **Next**.

Figure 4–1 Oracle Banking Upgrade Assistant Welcome page
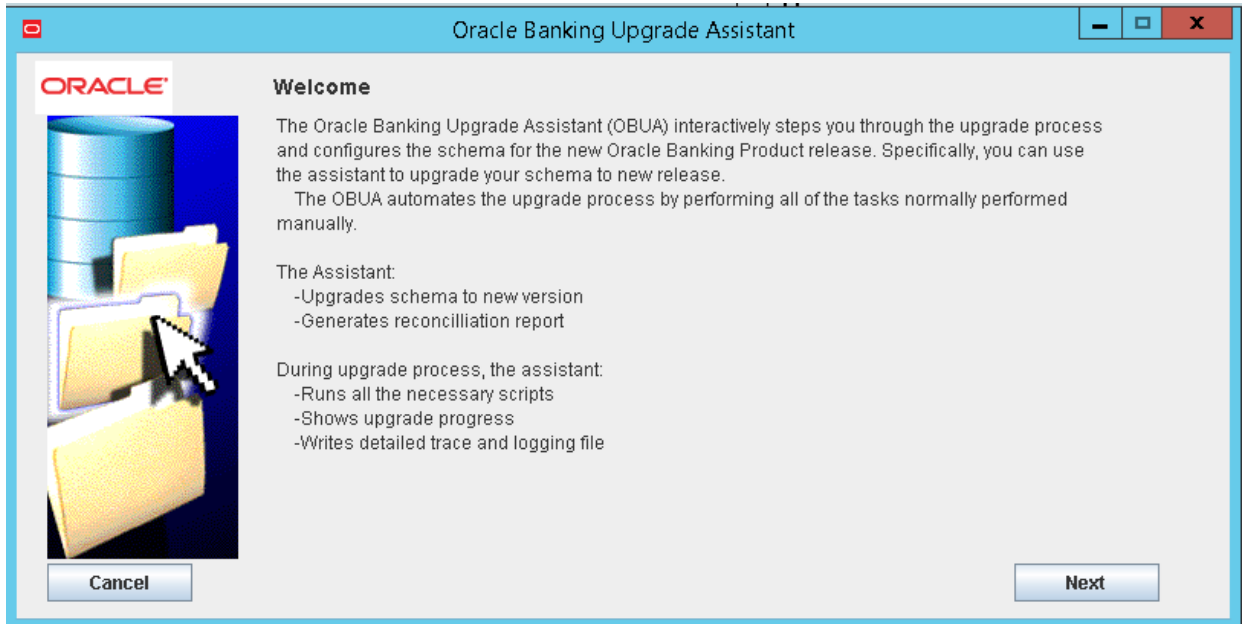
2. In Step 1, fill the following details.

Figure 4–2 Fill Details
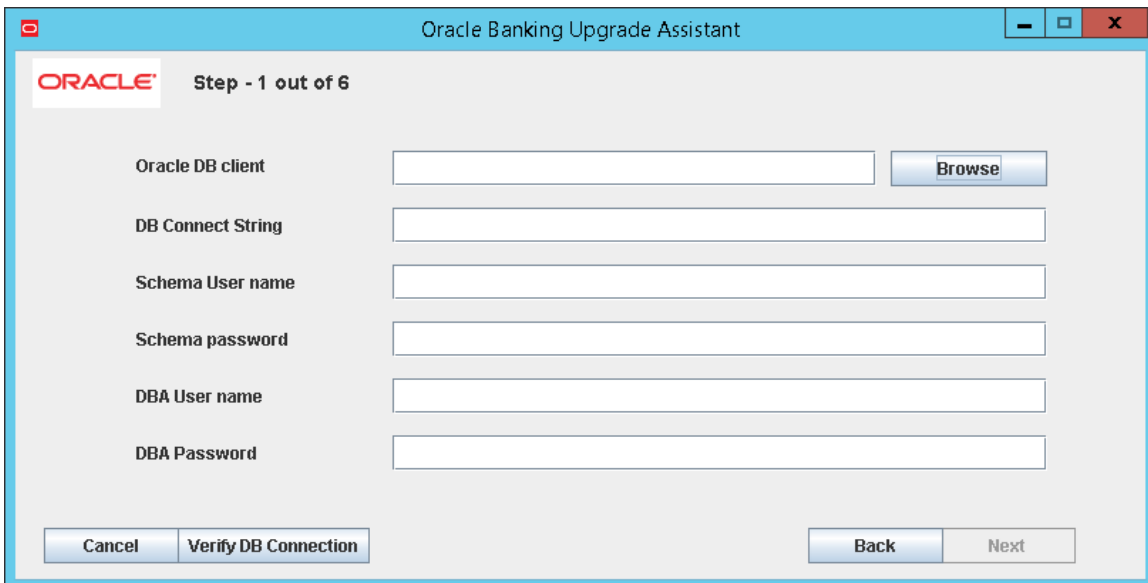
Table 4–1 OBUA Elements

Element	Description
Oracle DB client directory	Enter/Browse the SQLPlus from the installed directory
DB Connection String	Enter the location of the database. For example, if you are selecting an Oracle database, the following URL format could be used: host:port/db_service_name
Schema User Name	Enter the schema username used to connect to the database.
Schema Password	Enter the password associated with the specified schema user name.
DBA User Name	Enter the database username used to connect to the database. For Oracle database users, the user of Upgrade Assistant must be granted the Oracle "DBA" role.
DBA Password	Enter the password associated with the specified DBA database user.

3. Click **Verify**. Post successful connection establishment, click **Next**.

Figure 4–3 Click Verify

4. In Step 2, fill the following details and click **Next**.

You can choose an option for silent upgrade and reconciliation. By default, it is checked. Choose a path to script till root of the script. For example. "/scratch/backup/"

Figure 4–4 Enter product version and database details
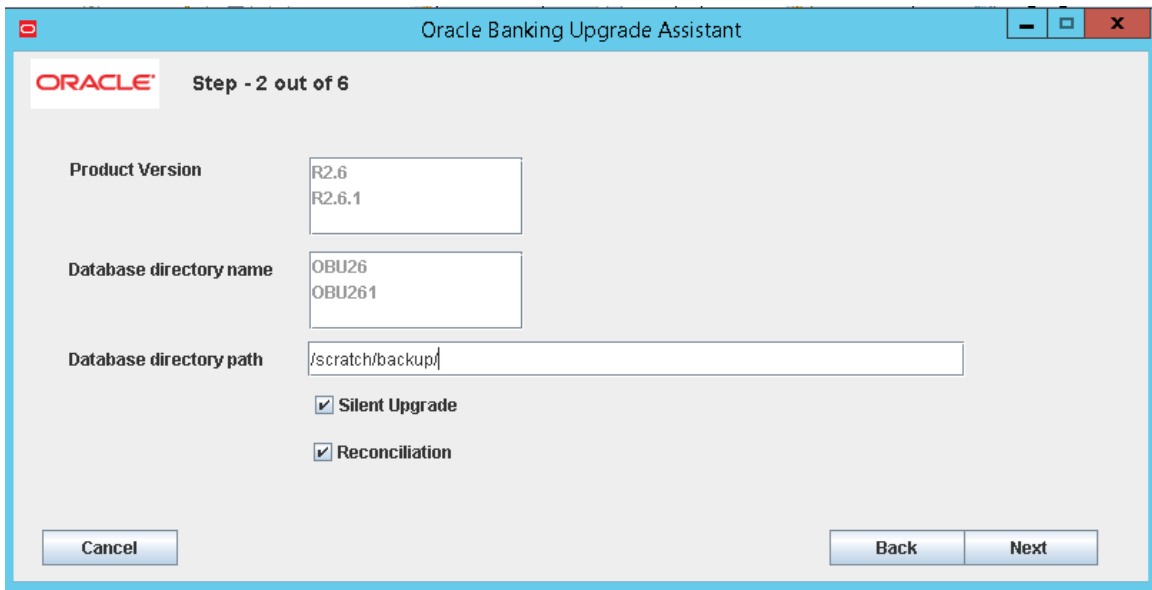
Table 4–2 OBUA Elements

Element	Description
Database directory name	Enter database directory name.(Default directory name is 'OBU26')
Product Version	Oracle Banking Product version you want to upgrade is already present in jar (versions.properties)
Util Path	Utility should be present with jar

5. In Step 3, click **View Logs** to see the logs.

Figure 4–5 View logs and Start Deployment
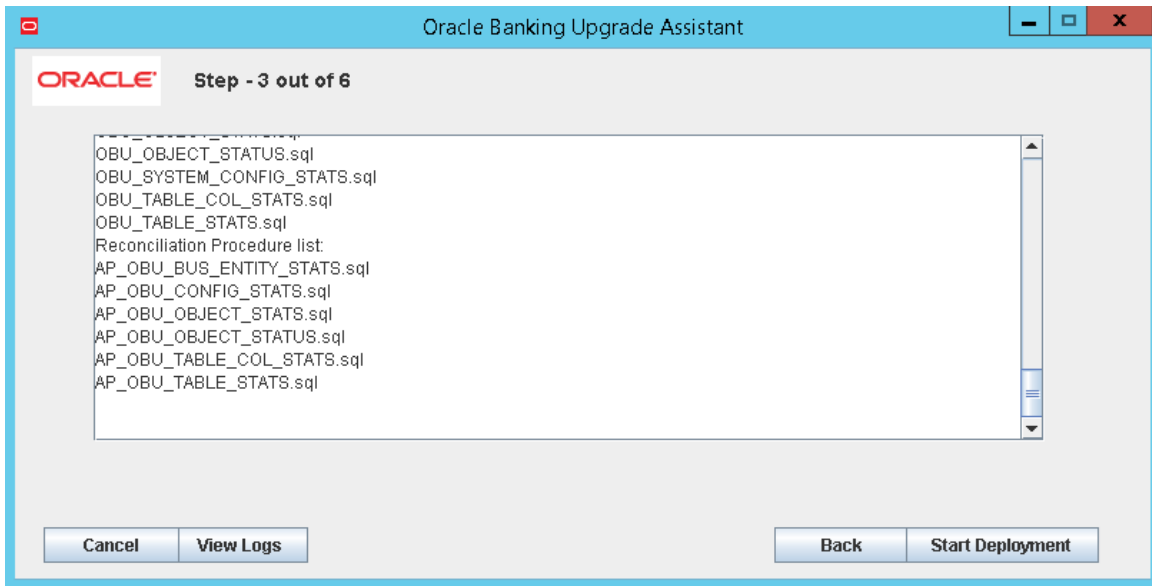
6. Click **Start Deployment**.

7. In Step 4, the script required for an upgrade is deployed on the given schema. Once script deployment is over, the Initialize Upgrade button is enabled.

Figure 4–6 Script Deployment
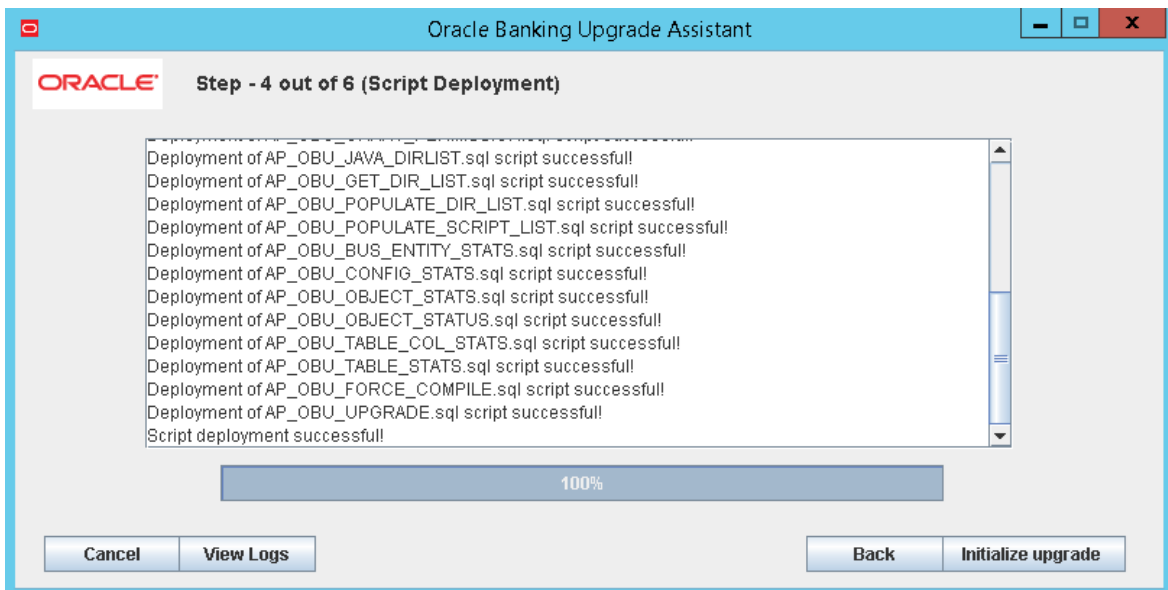
8. Click **Initialize Upgrade**. Once initialization is over, the Start Upgrade button is enabled.

Figure 4–7 Initailize Setup
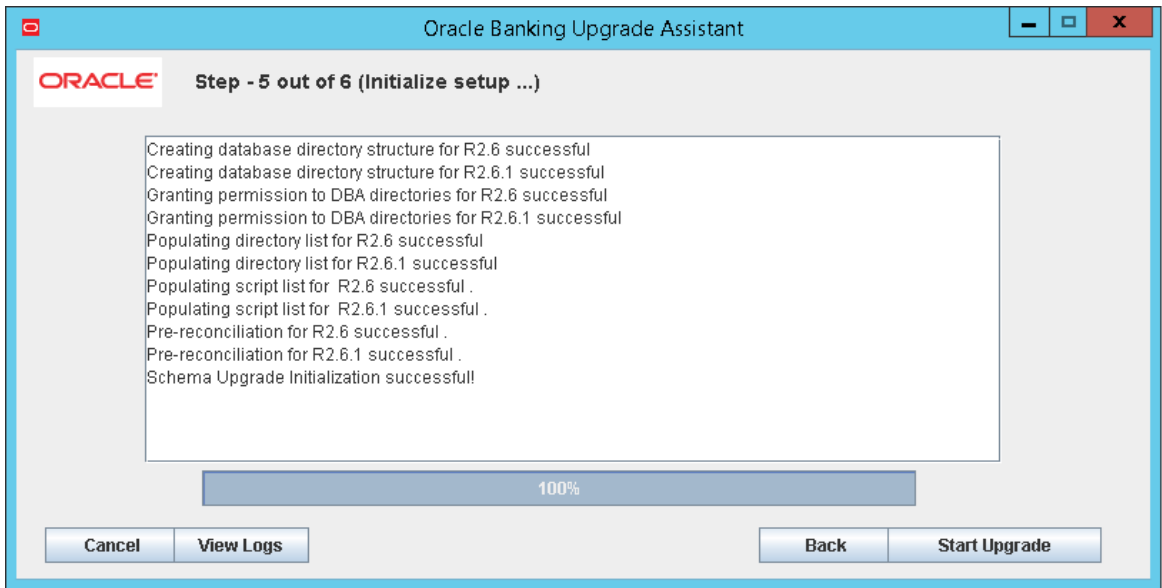
9. In Step 5, click **Start Upgrade** to start the upgrade process.

Figure 4–8 Upgrade process
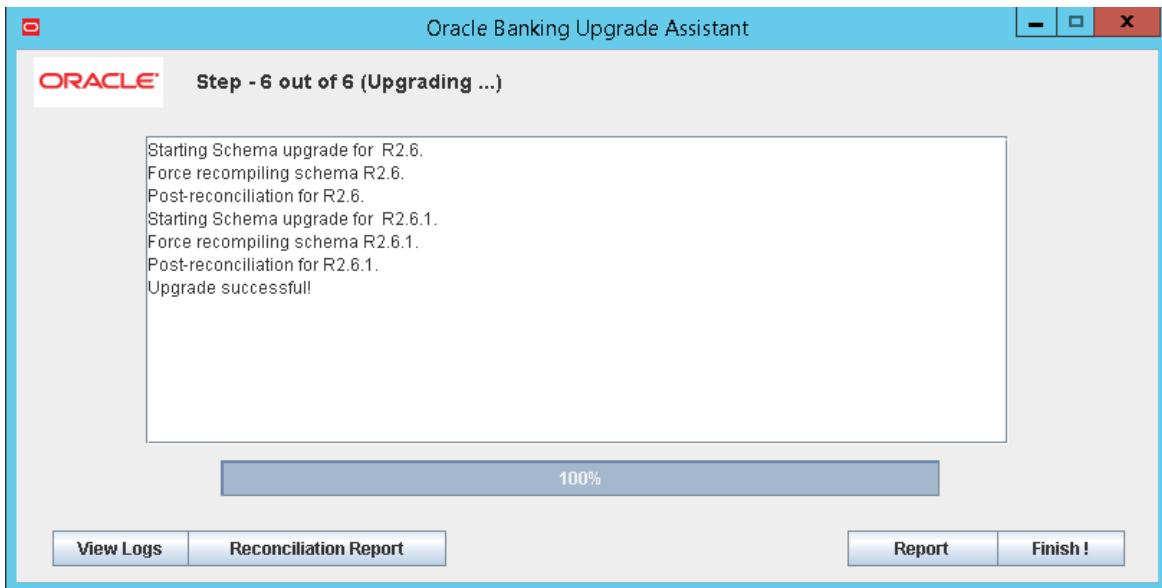
10. Click **Finish** to exit OBUA.

    ■ Click **Reconciliation Report** to view reconciliation report.

    ■ Click **Report** to export the schema upgrade report and save it the required location.

4.2 Manual Upgrade Method

The manual upgrade method consists of running SQL scripts and utilities from a command line to upgrade a schema to the new version of Oracle Banking product schema.

To perform manual upgrade, perform the following steps:

Step 1 Before the Upgrade

1. Back up your schema.
2. Generate reports. For more information, see Section 4.3 Reports

Step 2 Initial Configuration

1. Start SQL*Plus to execute the SQL scripts.
2. Copy the upgrade scripts (release wise) on desired folder in your target DB machine, which you need to upgrade. Typical structure would be /scratch/upgrade/<Release number>. For example, /scratch/upgrade/R262
3. Deploy objects present under the folder in the below order:
    - schemaupgrade\configuration\tables\
    - schemaupgrade\configuration\procedure\
    - schemaupgrade\executor\procedure\
    - schemaupgrade\reconciliation\tables\
    - schemaupgrade\reconciliation\procedure\
4. If you want reconciliation for objects, you must deploy reconciliation objects.
5. Connect to DB using sys credentials and create a directory on the database using below script. Procedure accepts directory name and path of the directory.

```
BEGIN
AP_OBU_CREATE_DIRECTORY(<directory name>,<directory path>);
END;
/
e.g.
directory name = OBU_DIR_262
directory path = /scratch/upgrade/R262
```

6. Grant permission using below script (using sys). Input is schema name and directory name.

```
BEGIN
AP_OBU_GRANT_PERMISSION (<schema name>,<directory name>);
END;
/
e.g.
schema name = OBU_SCHEMA_262
directory name = OBU_DIR_262
```

7. Populate the list using below script. It takes directory name and release number. This will populate the table OBU_DIR_LIST. Verify the table after execution.

```
GRANT SELECT ON dba_directories TO <schema_name>;
BEGIN
AP_OBU_POPULATE_DIR_LIST (<directory name>,<release number>);
```

```
END;
/
e.g.
directory name = OBU_DIR_262
release number =R262
```

8. Execute below block to populate OBU_SCRIPT_LIST table with scripts and running sequence. Input to this procedure is directory name.

```
BEGIN
AP_OBU_POPULATE_SCRIPT_LIST(<directory name>,<release
number>);
END;
/
e.g.
directory name = OBU_DIR_262
release number =R262
```

Step 3 Start Upgrade

1. Once you have successfully completed initialization steps, execute below script to start upgrade.

```
BEGIN
AP_OBU_UPGRADE('Y');
END;
/
```

Procedure accepts varchar value as Input. Accepted values are Y and N.

- Y: Pass Y for silent upgrade. All the errors, warning will be logged in the table OBU_SCRIPT_ LIST. Pass N to enable upgrade with restart logic

- N: Pass N to enable restart capability. Upgrade will abort if any of the script fail.

2. Execute below block to compile objects using sys. Procedure accepts varchar value as input. Expected value is schema name.

```
BEGIN
AP_OBU_FORCE_COMPILE(<schema name>);
END;
/
e.g.
schema name = OBU_SCHEMA_262
```

Note: Post upgrade, some of the objects might be in invalid state, recompile manually.

Step 4 Generate Reports

Generate reports after the upgrade. For more information, see Section 4.3 Reports

Step 5 Rollback Strategy

Guaranteed restore point (Flashback) or back up of before upgrade should be used as the primary backup method to restore DB in case of No GO.

4.3 Reports

As part of upgrade process, it is recommended that you take following reports before and after upgrade.

- GL280-BalanceReport: This is an OBP Report for Customer Account and GL balances.
- GL282-BalanceReport: This is an OBP Report for Customer Account and GL balances.

4.4 Perf-Parallel SQL Execution

You can enable parallel SQL execution with an ALTER SESSION ENABLE PARALLEL DML|DDL|QUERY statement. Subsequently, when a PARALLEL clause or parallel hint is associated with a statement, those DML, DDL, or query statements will execute in parallel. By default, parallel execution is enabled for DDL and query statements.

A DML/DML statement can be parallelized only if you specifically issue an ALTER SESSION statement to enable parallel DML:

```
ALTER SESSION FORCE PARALLEL DML;

ALTER SESSION FORCE PARALLEL DDL;

ALTER SESSION FORCE PARALLEL QUERY;
```

For more information, see the following references:

- https://docs.oracle.com/database/121/ADMIN/manproc.htm#ADMIN11000
- https://docs.oracle.com/database/121/ARPLS/d_resmgr.htm#ARPLS67603

5 Reconciliation

This chapter explains the reconciliation process. The reports that are generated as part of the reconciliation process are categorized as follows:

- Non Functional Reports
- Functional Reports

5.1 Non Functional Reports

The non functional reports provide the following details:

- **Object Statistics:** Shows number of objects present in the schema before and after the upgrade.
- **Object Status:** Shows Status (invalid, valid) of an object in the schema before and after the upgrade.
- **Table Column Statistics:** Shows the data about the column data type, nullable, data length changes before and after the upgrade.
- **Table Records Statistics:** Shows the number of records present in tables before and after the upgrade.

5.2 Functional Reports

The functional reports provide the following details:

- **Core Business Entity Statistics:** Shows the number of rows present in the core business entities before and after the upgrade. Core business entities includes
  - Party
    - Parties
    - Party to Account Relationship
    - Party to Party Relationship
  - Transaction Accounts
    - Accounts
    - Statements
    - Balances and History
    - Standing instructions
    - EOD and BOD actions
    - Earmarks
  - Term Deposit
    - Accounts
    - Deposits

- Statements
- Payout instructions
- Lending
  - Accounts
  - Statements
  - Balances and History
  - Interest computation actions and Log
  - EOD and BOD actions
  - Arrears
  - Schedule
- Origination
  - Submission
  - Application
  - Drafts
  - Applicants
  - Credit decision submission
  - Debit decision submission
  - Application product group linkage
  - Application offer linkage
- **System Configuration Statistics:** Shows the number of rows present in the system configuration before and after the upgrade.
- **Business Configuration Statistics:** Shows the number of rows present in the business configuration before and after the upgrade. It includes:
  - Product manufacturing
  - Accounting
  - Pricing
  - Payments

5.3 Reconciliation Process

To enable reconciliation, you need to deploy reconciliation scripts. You can find the scripts at upgrade-pack/schemaupgrade/reconciliation/

Reconciliation procedures accept schema name and stats type. Expected value for stats type is PRE, POST. Gather stats before start reconciliation process.

Gather Stats

```
BEGIN
FOR tab in (select table_name from dba_tables where owner =<Schema
name>) loop
BEGIN
```

```
dbms_stats.gather_table_stats(ownname => <Schema name>,tabname =>
tab.table_name);
END;
END LOOP;
END;
```

To perform reconciliation:

1. Run script to get the object stats count of the schema. Once you run the script, it populates data in OBU_OBJECT_STATS table. It gives the count of objects in the schema. You need to run it twice, before and after upgrade.

   ```
   BEGIN
   AP_OBU_OBJECT_STATS(<schema_name>,<stats_type>,<release_ver>);
   END;
   /
   ```

2. Run script to get the object status of the schema. Once you run the script, it populates data in OBU_OBJECT_STATUS table. It gives the status of object present in schema. You need to run it twice, before and after upgrade.

   ```
   BEGIN
   AP_OBU_OBJECT_STATUS (<schema_name>,<stats_type>,<release_
   ver>);
   END;
   /
   ```

3. Run script to get the table column stats of the schema. Once you run the script, it populates data in OBU_TABLE_COL_STATS table. It gives you the column level statistics like data type change etc.

   ```
   BEGIN
   AP_OBU_TABLE_COL_STATS (<schema_name>,<stats_type>,<release_
   ver>);
   END;
   /
   ```

4. Run the script to get the table level statistics of the schema. Once you run the script, it populates data in OBU_TABLE_STATS table. It gives you the count of rows before and after upgrade.

   ```
   BEGIN
   AP_OBU_TABLE_STATS (<schema_name>,<stats_type>,<release_ver>);
   END;
   /
   ```

5. Run the script to get the business and system configuration table statistics.

   ```
   BEGIN
   AP_OBU_CONFIG_STATS (<schema_name>,<stats_type>);
   END;
   /
   ```

6. Run the script to get the business entities statistics.

```
BEGIN
AP_OBU_BUS_ENTITY_STATS (<schema_name>,<stats_type>);
END;
/
```

6 Troubleshooting

This chapter provides information on troubleshooting to help diagnose and remedy problems encountered during the upgrade process.

6.1 Issues and Solutions

The following table lists the issues and their solutions.

Table 6–1 Issues and Solutions

Sr. No	Issue	Solution
1	SQL> begin 2 AP_OBU_POPULATE_DIR_LIST ('UPGRADE_26','R2.6'); 3 end; 4 / Begin * ERROR at line 1: ORA-29532: Java call terminated by uncaught Java exception: java.lang.StringIndexOutOfBoundsException: String index out of range: -1 ORA-06512: at "TEST26_OBP_HOST.AP_OBU_GET_DIR_LIST", line 1 ORA-06512: at "TEST26_OBP_HOST.AP_OBU_POPULATE_DIR_LIST", line 10 ORA-06512: at line 2 Cause : DirList class unable to find scripts at location 'UPGRADE_26' ('/scratch/**/R2.6'), scripts are missing. So getting Null values.	1. Please check if the path and sequential scripts are present before executing the procedure. 2. GRANT SELECT ON dba_directories TO 'SchemaName'; Issue grants to schema for accessing the DBA_DIRECTORIES

2	SQL> BEGIN
	AP_OBU_POPULATE_DIR_LIST ('UPGRADE_26','R2.6');
	END;
	BEGIN
	*
	ERROR at line 1:
	ORA-29532: Java call terminated by uncaught Java exception:
	java.lang.StringIndexOutOfBoundsException:
		Sequential scripts and Upgrade utility should be kept in a separate directory.

Sr. No	Issue	Solution
	String index out of range: -1 ORA-06512: at "TEST26_OBP_HOST.AP_OBU_GET_DIR_LIST", line 1 ORA-06512: at "TEST26_OBP_HOST.AP_OBU_POPULATE_DIR_LIST", line 10 ORA-06512: at line 2 Cause : R2.6 directory contains other files and directory which cause the OutOfBoundsException	
3	59266 [SwingWorker-pool-2-thread-2] ERROR com.ofss.obp.installer.view.UpgradeCofiguration - Exception occured at UpgradeConfiguration.AP_OBU_POPULATE_SCRIPT_LISTjava.sql.SQLException: ORA-29289: directory access denied ORA-06512: at "SYS.UTL_FILE", line 41 ORA-06512: at "SYS.UTL_FILE", line 478 ORA-06512: at "UPGRADE261_12C.AP_OBU_POPULATE_SCRIPT_LIST", line 10 ORA-06512: at line 1	Grant issue: GRANT READ, WRITE ON DIRECTORY <DIRECTORY_NAME>TO <SCHEMA_NAME>;
4	Package Invalid.	Check if there are comments in the source code. Remove the comments (–) and then deploy.
5	ORA-00600: internal error code, arguments: [kglidinsi1], [2], [], [], [], [], [], [], [], [], [], [] ORA-06512: at "SYS.DBMS_SQL", line 1185 ORA-06512: at "UPGRADE261DEV.AP_OBU_UPGRADE", line 67 ORA-06512: at line 2	Timeout Issue occures with Sql developer. Try to execute procedure AP_OBU_UPGRADE with SqlPlus client.
6	The "DirList" procedure is not compiling in Oracle 12.2.0.1 but working fine in earlier versions such as Oracle 12.1.0.1.	In upgrade utility 2 procedures are provided. ■ For earlier versions (Oracle 12.1.0.1): schemaupgrade/configuration/procedure/AP_OBU_JAVA_DIRLIST.sql ■ For latest versions (Oracle 12.2.0.1): schemaupgrade/configuration/procedure/AP_OBU_JAVA_DIRLIST_12.2.sql