

Regression Testing Tool  
Oracle Financial Services Lending and Leasing  
Release 14.7.0.0.0  
Part No. F16599-01  
[May] [2019]



## Glossary

| <b>Term</b> | <b>Description</b>                            |
|-------------|-----------------------------------------------|
| OFSLL       | Oracle Financial Services Lending and Leasing |
| DLS         | Oracle Daybreak Lending Suite                 |
| BI          | Business Intelligence Publisher               |
| XML         | Extensible Mark-up Language                   |
| UI          | User Interface                                |
| WSDL        | Web services Description Language             |
| API         | Application Programming Interface             |
| SQL         | Structured Query Language                     |

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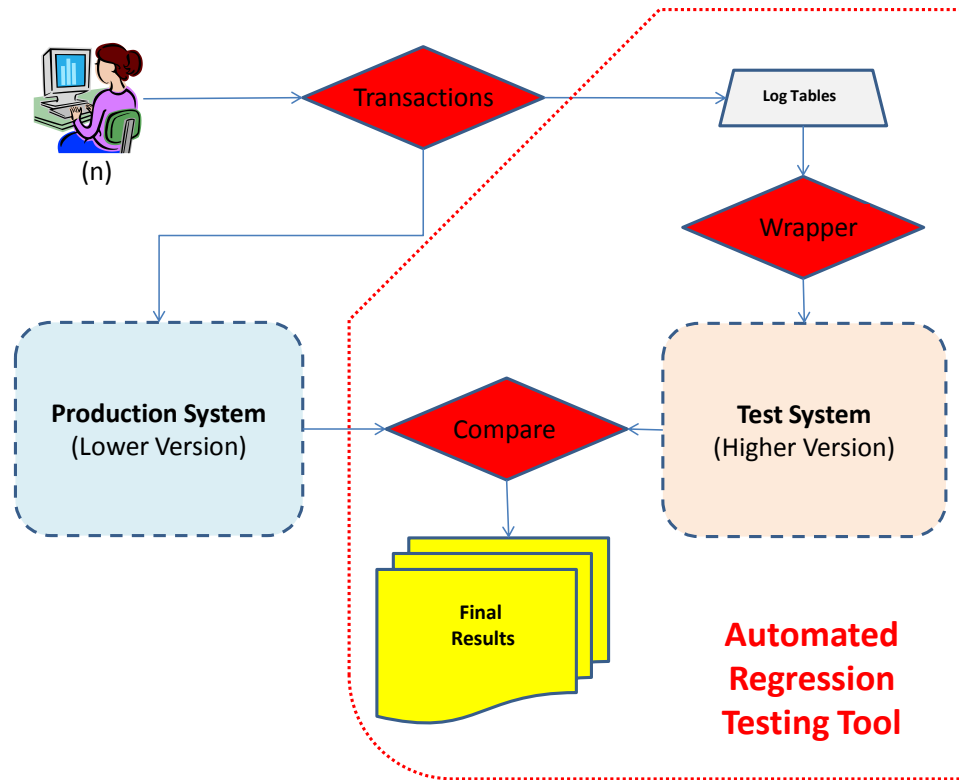
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# 1. Regressions testing tool

The purpose of this document is to outline the high level requirements of the scope of the Testing tool for regression tests during DLS/OFSLL upgrades by performing a parallel testing between a lower version of DLS/OFSLL (production) and a higher one (test).

## 2. Scope

The testing tool will log certain operations done in the production system and replicate them in the Test system. This will enable parallel testing by comparison of the production and test systems, specifically with regards to the General Ledger transactions. The aim is not to replicate user keystrokes in the Production system but instead is to ensure that the eventual Posted values are captured in the Test system in the same way they were in the Production system.



This tool was designed to work for all DLS/OFSLL upgrades, independently of versions and customizations.

The Testing Tool covers the Origination (App Entry, Funding, Account Creation) and Customer Service, as detailed below:

### 2.1 Origination

The testing tool will perform the following: -

#### **App Entry:**

1. Applications entered in Production on that day will be replicated in the Application tables of the Test system.
2. The application will pass through the Data Entry and Pre screen edits

3. The application will pull the Credit bureau as defined by the current system parameter configuration
4. The application will be placed in a New: Review Required status

**Funding:**

1. All applications funded in Production on that day will be replicated in the Test environment. The application in the Test environment will be funded using the same values that were used to fund the application in Production.

**Assumptions/Restrictions:**

- Changes to the application values by the users in the Underwriting screen will not be replicated in the Test Environment.
- Intermediate steps between Application Entry and Funding viz. Fax/Letters on Status change, NADA pulls will not be replicated in the test system. This will require manual testing efforts. (The final values in the Production system will be used to fund the application)
- As part of the manual testing the user will not set the Application to Approved: Funded since it is possible that the values used by the user in the test system will be different from the values used in Production resulting indifferent GL entries.
- As part of the manual testing, the Fax numbers of all producers must be set to an internal fax number to avoid fax documents being set back to producers.

## 2.2 Customer Service

The testing tool will perform the following: -

Monetary Transactions posted on Accounts in Production will be replicated in Test for that particular day. This will allow comparison of the Transaction history on Accounts in the Test and Production instances. To replicate the monetary transactions, the Testing tool will perform the following

1. Payments applied to Accounts in Production will be replicated in Test
  - Payment batches and details will be created in the replicated in the test system (TXNS\_GROUP\_TEMP, TXNS\_TEMP table will be created)
2. Monetary transactions posted on Accounts in Production will be replicated in Test
  - Corresponding entries in the Customer Service > Maintenance tab will be available (BATCH\_MODE\_TXNS, BATCH\_MODE\_TXNS\_TEMP)
3. Assessment of Work Order expenses on an Account will be handled as a monetary transaction on an account.

**Assumptions**

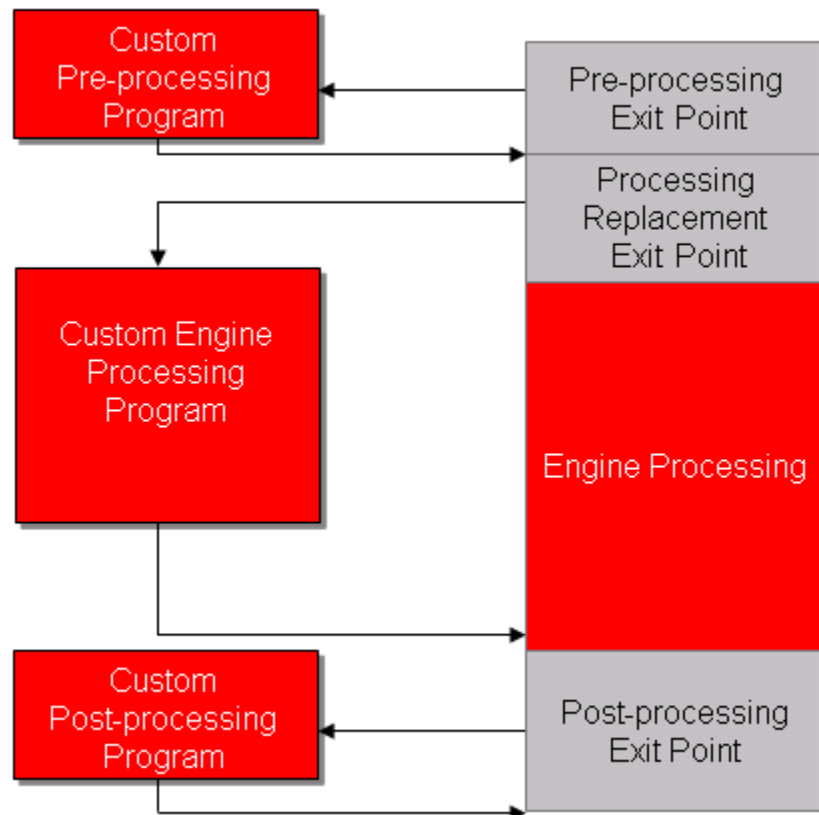
- Work Order actions will not be replicated. Work Order Expenses assessed on an account will be handled by the monetary transactions replication.
- A one-time refresh at the beginning of the testing will be done instead of a daily refresh. The only caveat would be that any errors, that affect data found during the testing, would remain in the database till the fix is received.
- The need for subsequent refreshes during the testing period will be discussed.

- Test environment Setup will be in sync with the setup in the Production environment. Setup changes to the production environment during the day will be replicated in the Test environment, before the Testing tool is run for that day.

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### 3. Architecture / Technical Design

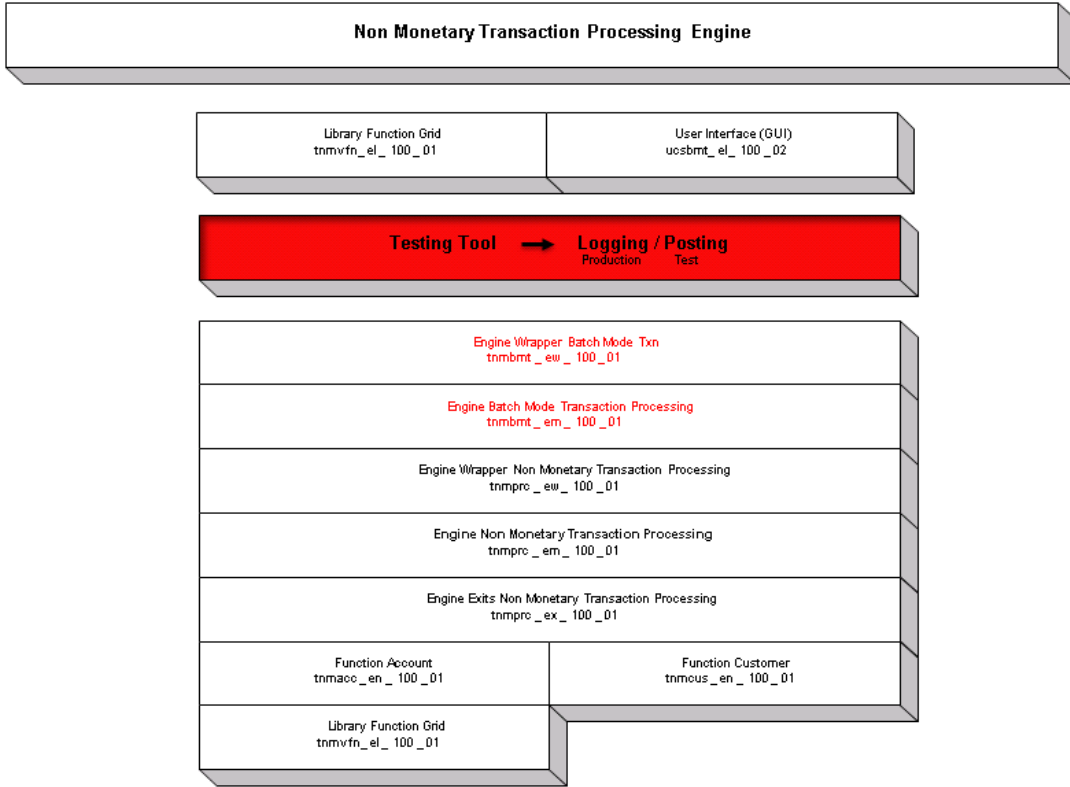
The Testing Tool was only possible due to OFSLL architecture, based on a wrapper- engine model. Like in OFSLL customizations, the Testing Tool takes advantage of the existing Exit Points to log and re-post the actions done by the users, allowing an automated parallel testing between the Production (lower version) and Test (higher version) environments of OFSLL.



(Exit Point Diagram)



The next two Diagrams show where in the Transaction Processing Engine the Testing Tool was introduced:



| Monetary Transaction Processing Engine                                                                                                     |                                                                     |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------------|-------------------------------------|----------------------------------|--------------------------------------|
| Batch Job Accrual<br>bnacbj_100_01                                                                                                         | Batch Job Billing<br>bnobj_100_01                                   | Batch Job Charge Off<br>bnchbj_100_01                     | Batch Job First Pmt deduction<br>bnfdbj_100_01                 | Batch Job Rate Change<br>bnrat_100_01                                 | <table border="1"> <tr> <td>Wrapper Advance<br/>bnadv_ew_100_01</td> <td>Wrapper Advance<br/>bnadv_ew_100_02</td> </tr> <tr> <td>Wrapper Payment<br/>bnprmt_ew_100_01</td> <td>Wrapper Payment<br/>bnprmt_ew_100_02</td> </tr> <tr> <td>Wrapper First Pmt Refund<br/>bnfrfr_ew_100_01</td> <td>Wrapper Payment<br/>bnprmt_ew_100_03</td> </tr> <tr> <td>Wrapper Batch<br/>bnbmt_ew_100_01</td> <td>Main Engine Batch<br/>bnbmt_ew_100_01</td> </tr> </table> |                                                                        |                                                                    |                                                                    |                                                                     | Wrapper Advance<br>bnadv_ew_100_01 | Wrapper Advance<br>bnadv_ew_100_02 | Wrapper Payment<br>bnprmt_ew_100_01 | Wrapper Payment<br>bnprmt_ew_100_02 | Wrapper First Pmt Refund<br>bnfrfr_ew_100_01 | Wrapper Payment<br>bnprmt_ew_100_03 | Wrapper Batch<br>bnbmt_ew_100_01 | Main Engine Batch<br>bnbmt_ew_100_01 |
| Wrapper Advance<br>bnadv_ew_100_01                                                                                                         | Wrapper Advance<br>bnadv_ew_100_02                                  |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Wrapper Payment<br>bnprmt_ew_100_01                                                                                                        | Wrapper Payment<br>bnprmt_ew_100_02                                 |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Wrapper First Pmt Refund<br>bnfrfr_ew_100_01                                                                                               | Wrapper Payment<br>bnprmt_ew_100_03                                 |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Wrapper Batch<br>bnbmt_ew_100_01                                                                                                           | Main Engine Batch<br>bnbmt_ew_100_01                                |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Batch Account Activation<br>bnactbj_100_01                                                                                                 | Batch Job Account Close<br>bnclbj_100_01                            | Batch Mode Tin Post<br>bnbmtbj_100_01                     | Batch Job Month To Date<br>bnmtdbj_100_01                      | Batch Job Termination in Progress<br>bnltpbj_100_01                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Batch Job Anniversary<br>bnannbj_100_01                                                                                                    | Batch Job Payment Posting<br>bnppbj_100_01                          | Batch Job Schedule for Chgoff<br>bnschbj_100_01           | Batch Job Promotion<br>bnprmbj_100_01                          | Batch Job YTD<br>bnayd_100_01                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Batch Job First Payment Refund<br>bnfrbj_111_01                                                                                            | Batch Job Advance Posting<br>bnadvbj_112_01                         | Batch Job Late Charge<br>bnlcbj_100_01                    | Batch Job Promotion Cancel<br>bnprmcbj_100_03                  |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| <b>Testing Tool → Logging / Posting</b><br>Production Test                                                                                 |                                                                     |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Engine Wrapper Monetary Transaction Processing<br>bnprc_ew_100_01                                                                          |                                                                     |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Engine Monetary Tin Processing<br>bnprc_em_111_01                                                                                          | Engine Monetary Tin Processing<br>bnprc_em_112_01                   | Engine Monetary Tin Processing<br>bnprc_em_121_01         | Engine Payment Processing<br>bnprmt_em_100_01                  | Engine Payment Processing<br>bnprmt_em_100_02                         | Engine Payment Processing<br>bnprmt_em_100_03                                                                                                                                                                                                                                                                                                                                                                                                                | Engine Payment Processing<br>bnprmt_em_100_04                          | Engine First Pmt Refund Processing<br>bnfrp_em_111_01              | Engine Advance Processing<br>bnadv_em_100_01                       |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Engine Exits Monetary Transaction Processing<br>bnprc_ex_111_01, bnxxx_ex_111_01, bnxxx_ex_112_01, bnxxx_ex_121_01 (xxx = engine function) |                                                                     |                                                           |                                                                |                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Engine Exits Non Performing Transactions<br>bnnpf_ex_111_01            |                                                                    |                                                                    |                                                                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Accrual Stop<br>bnacc_en_100_01                                                                                                   | Function Account Close<br>bnacc_en_100_01                           | Function Credit Bureau<br>bnacrb_en_100_01                | Function Credit Refund<br>bnacrf_en_100_01                     | Function Dlg Counter<br>bnacd_en_100_01                               | Function Delinquency<br>bnadq_en_100_01                                                                                                                                                                                                                                                                                                                                                                                                                      | Function Error Processing<br>bnerr_en_100_01                           | Function Error Processing<br>bnerr_en_100_02                       | Function Expense Processing<br>bnexp_en_100_01                     | Function Payable<br>bnfap_en_100_01                                 |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Fee<br>bnfee_en_100_01                                                                                                            | Function Fee Calc<br>bnfee_en_100_01                                | Function FTP<br>bnftp_en_100_01                           | Function Funding<br>bnfun_en_100_01                            | Function GL<br>bn gla_en_100_01                                       | Function Interest<br>bnint_en_100_01                                                                                                                                                                                                                                                                                                                                                                                                                         | Function Interest (Calculation)<br>bninc_en_100_01                     | Function YTD<br>bnayd_en_100_01                                    | Function MTD<br>bnmtd_en_100_01                                    | Function Insert Tin<br>bnitc_en_100_01                              |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Advance<br>bnadv_en_11n_01                                                                                                        | Function Advance (Before and After)<br>bnadv_en_11n_02              | Function Anniversary<br>bnann_en_11n_01                   | Function Anniversary (Before and After)<br>bnann_en_11n_02     | Create Related Txns<br>bnact_en_11n_01                                | Create Related Txns (Before and After)<br>bnact_en_11n_02                                                                                                                                                                                                                                                                                                                                                                                                    | Function Due Date<br>bnadd_en_11n_01                                   | Function Due Date (Before and After)<br>bnadd_en_11n_02            | Function Extension<br>bnext_en_11n_01                              | Function Extension (Before and After)<br>bnext_en_11n_02            |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Insurance<br>bnins_en_11n_01                                                                                                      | Function Insurance<br>bnins_en_11n_03                               | Function Maturity<br>bnmat_en_11n_01                      | Function Payment<br>bnprmt_en_11n_01                           | Function Payoff<br>bnprmt_en_11n_01                                   | Function Payment (Before and After)<br>bnprmt_en_11n_02                                                                                                                                                                                                                                                                                                                                                                                                      | Function Promotion<br>bnprpm_en_11n_01                                 | Function Promotion (Before & After)<br>bnprpm_en_11n_02            | Function Rate Change<br>bnrat_en_11n_01                            | Function Rate Change (Before and After)<br>bnrat_en_11n_02          |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Reschedule<br>bnpsc_en_11n_01                                                                                                     | Function Reschedule (Before and After)<br>bnpsc_en_11n_02           | Function Securitization<br>bnsec_en_11n_01                | Function Status Change<br>bnstls_en_11n_01                     | Function Status Change (Before and After)<br>bnstls_en_11n_02         | Function Statement<br>bnstm_en_11n_01                                                                                                                                                                                                                                                                                                                                                                                                                        | Update Account<br>bnupd_en_11n_01                                      | Function/Validate Other<br>bnval_en_11n_01                         | Function Reschedule<br>bnpsc_en_111_04                             | Function Reschedule (PC2SI)<br>bnpsc_en_111_05                      |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Credit Limit<br>bncl_en_112_01                                                                                                    | Function CTD<br>bnctd_en_112_01                                     | Function Insurance<br>bnins_en_112_01                     | Function Loss Gain<br>bnlga_en_121_01                          | Function Lease Riv<br>bnlrv_en_121_01                                 | Function Rent<br>bnrent_en_121_01                                                                                                                                                                                                                                                                                                                                                                                                                            | Function Sale of Asset<br>bnsoa_en_121_01                              | Function Tax<br>bnntax_en_121_01                                   | Function Terminate<br>bntrm_en_121_01                              | Function Receivable<br>bnrcv_en_100_01                              |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Due Date (Escrow)<br>bnadd_en_111_03                                                                                              | Function Statements (Escrow)<br>bnstm_en_111_03                     | Function Payments (Escrow)<br>bnprmt_en_111_03            | Function Status (Escrow)<br>bnstls_en_111_03                   | Function Reschedule (Escrow)<br>bnpsc_en_111_03                       | Function Reschedule (Escrow)<br>bnpsc_en_111_05                                                                                                                                                                                                                                                                                                                                                                                                              | Function Escrow Transactions<br>bnesc_en_111_01                        | Function Non-Performing Transactions<br>bnnpf_en_111_01            | Function Non-Performing (Before & After)<br>bnnpf_en_111_02        | Function Dealer Loss Reserve<br>bnrls_en_111_01                     |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |
| Function Insurance Processing<br>bnins_en_111_01                                                                                           | Function Insurance Processing (Before and After)<br>bnins_en_111_02 | Function Insurance Processing (Refund)<br>bnins_en_111_03 | Function Rate Change Processing (BackDated)<br>bnrat_em_100_02 | Function Rate Change Processing (Before and After)<br>bnrat_en_111_02 | Function Billing Processing (Stage Funding Draw Period)<br>bnbrw_en_111_01                                                                                                                                                                                                                                                                                                                                                                                   | Function Stage Funding Draw Period (Before & After)<br>bnbrw_en_111_01 | Function Billing Parameters (Change Parameters)<br>bnblp_en_112_01 | Function Rate Processing (Soldier & Sailor Act)<br>bnrsr_en_11n_01 | Function Rate Processing (SCRA) (Before & After)<br>bnrsr_en_11n_02 |                                    |                                    |                                     |                                     |                                              |                                     |                                  |                                      |

The Testing Tool is divided in 3 main processes:

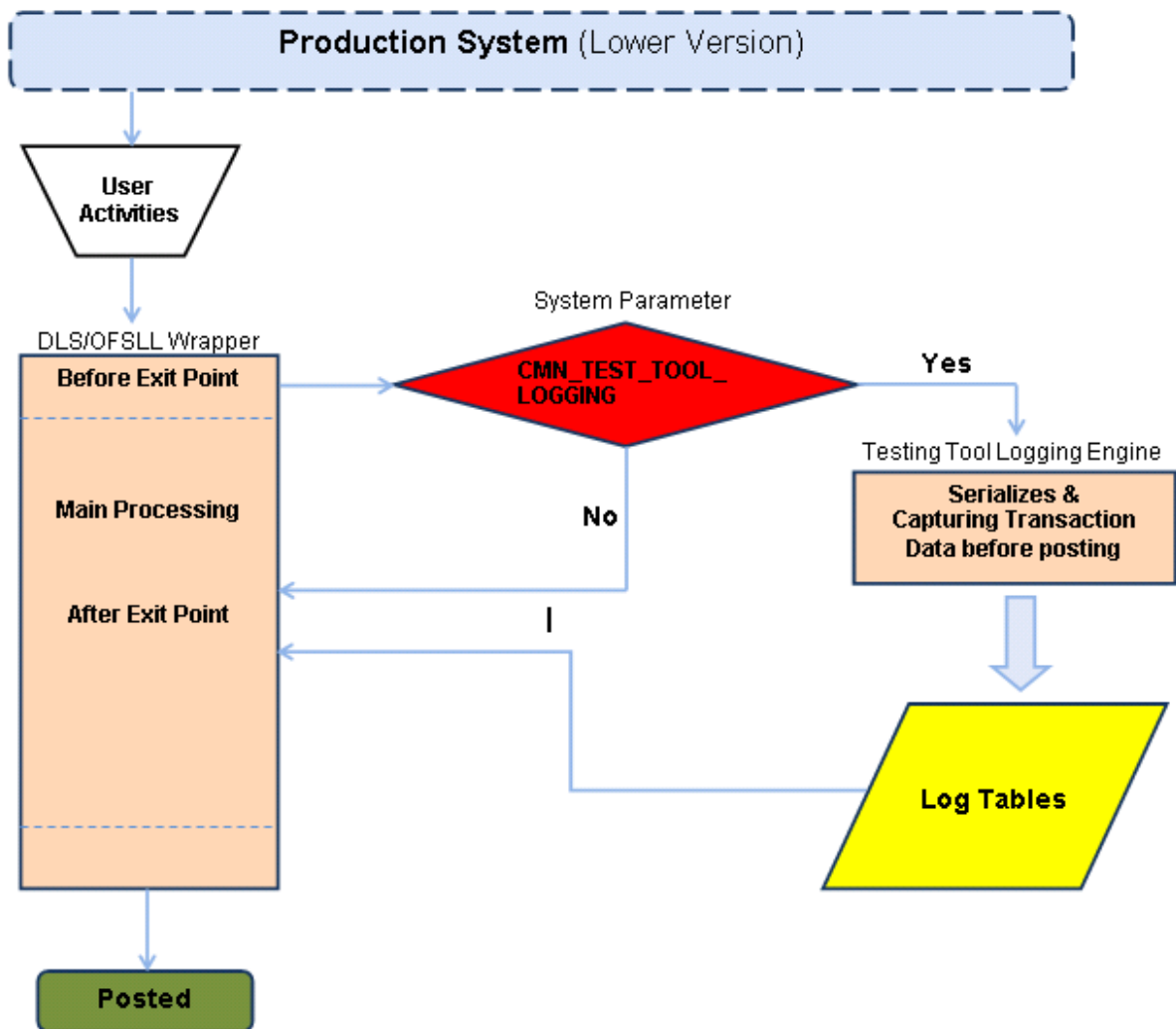
➤ **Logging:** Transactions done by users in Production environment  
CMN\_TEST\_TOOL\_LOGGING (Y/N)

➤ **Posting:** done sequentially and automatically by the Testing Tool in Test environment

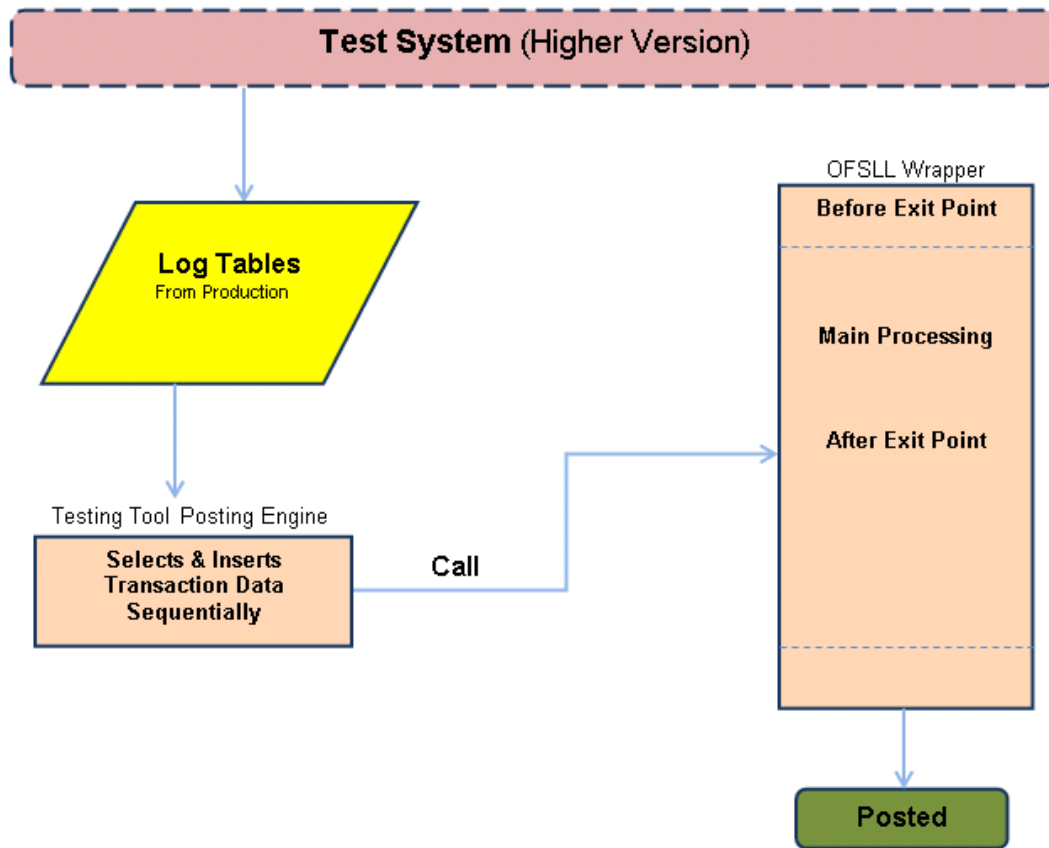
➤ **Reporting:** Comparison between Production and Test Environments

## I. Logging: Transactions done by users in Production environment

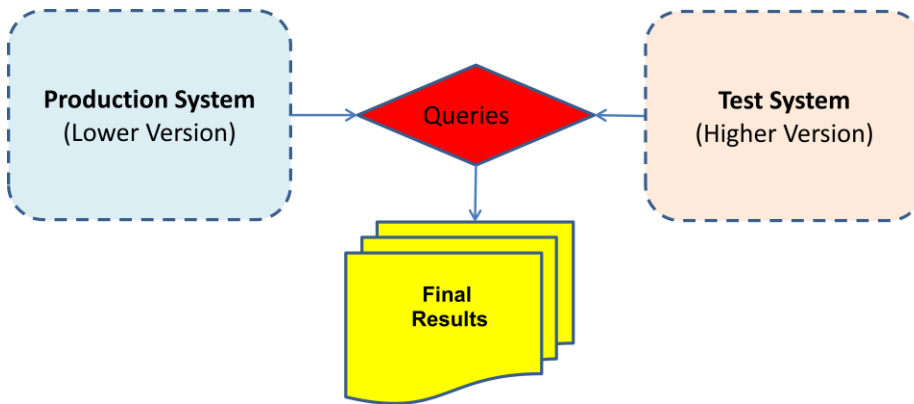
The logging process in Production environment can be turned on/off by setting the System Parameter `CMN_TEST_TOOL_LOGGING`. When its value is "N" system will behave normally. When its value is "Y", the system will log all the transactions done by the users.



Posting: Done sequentially and automatically by the Testing Tool in Test environment



## Reporting: Comparison between Production and Test Environments



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## 4. Steps to Clone Base OFSSL Environment

1. Copy x\* packages and so from production to test after patch up of test schema. (some of these objects in production are newer versions than ones in upgrade patches.)
2. Perform export from production schema.
3. Confirm that CMN\_SERVER\_HOME path is identical between test and production servers.
4. Run 'alter table' and 'alter index' scripts against production schema.
5. Run 'compare schema' scripts between the production and test schemas. Reconcile differences.
6. Perform export (no data) from test (upgraded) schema.
7. Perform import (ignore=yes) on production schema from step five's export. Confirm that packages, views, and types are correct versions.
8. Perform export from test (upgraded) schema of 'setup' tables (LESS producers tables!).
9. Copy schema specific system parameters values from production schema
10. Truncate 'setup' tables on production schema.
11. Perform import on production schema from step seven's export.
12. Overlay system parameters value from step 8
13. Create backup copies of folders in the CMN\_SERVER\_HOME tree on production app server.
14. Copy CMN\_SERVER\_HOME tree from test to production app servers. Consider results of step two.
15. Copy any other patch objects (.so's, etc.) into production environment. (If step 1 is done, we can copy without risk of overwriting newer versions in prod)
16. Restore any X\* packages necessary. (if step 1 is done, we can copy without risk of overwriting newer versions in prod).

## 5. Automated Testing Procedure

Following is the 'suggested' sequence of steps that would need to be performed on a daily basis as part of the 'Automated Testing'

|                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Day 1</b>                                                                                                                                             |
| Test Database to be refreshed with Production values *                                                                                                   |
| 1. Truncate the Log tables in Production                                                                                                                 |
| 2. Logging is Turned On in Production after last job has completed                                                                                       |
| Cut of time for manual transactions/user activities in the Production Environment. Logging by testing tool will be turned off.                           |
| 1. Take a Production database snapshot (S1) of the required tables                                                                                       |
| 2. Ensure sequences on test match sequences on Production (for applications and accounts)                                                                |
| 3. Dat files and log tables are moved to the Test database                                                                                               |
| 4. Testing tool is Run on Test instance (Ensure previous files are removed)                                                                              |
| Comparison/Validation scripts are run against S1 and the Test database. Report (R1) is generated. (This gives us the comparison before the jobs are run) |
| A copy of input file in Production (lockbox) should be available in Test                                                                                 |
| Batch jobs are run (Batch job setup is identical to production) on both Test & Production                                                                |
| Take a Production database snapshot (S2) of the required tables                                                                                          |
| Comparison Scripts are run against S2 and the Test database. Report (R2) is generated. (This gives us the comparison before the jobs are run)            |
| <b>Day 2</b>                                                                                                                                             |
| Validates R1 & R2 and reports discrepancies to OFSLL                                                                                                     |
| Investigate the discrepancies. Some may be reconciled and some may require a fix                                                                         |
| Manual testing proceeds in the interim                                                                                                                   |
| Next run is planned                                                                                                                                      |

Test Database to be refreshed with Production values.

\* Refresh Test database

**Example:** To run the testing tool in the Test environment on 4/23, a snapshot of the Production database AFTER the batch jobs have completed on the morning of 4/23 and before any other user activity for 4/23 begins needs to be taken. This snapshot will be used to refresh the test database for the testing tool to be run on the evening of 4/23.



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## 6. Steps to Run

|   | <b>On production environment</b>                                                       |
|---|----------------------------------------------------------------------------------------|
| 1 | Turn off Logging (after SET-LBT3)                                                      |
| 2 | Take snapshot of prod before end of day batch jobs have run                            |
| 3 | Remove old .dat files                                                                  |
| 4 | Run SET-TST1->GET APPLICATION DATA to create the .dat files                            |
| 5 | Move .dat files to test system                                                         |
| 6 | Move log tables to test system (execute steps 2-6 on test environment as listed below) |
| 7 | Run batch jobs                                                                         |
| 8 | Take snapshot of prod after end of day batch jobs have run                             |

|   | <b>On Test environment</b>                                                                            |
|---|-------------------------------------------------------------------------------------------------------|
| 1 | Refresh from backup of Production data.                                                               |
| 2 | Run after_refresh_before_import.sql – This steps needs to be executed ONLY for a fresh export-import. |
| 3 | Run all_refreshes.sql                                                                                 |
| 4 | Run before_import_log.sql                                                                             |
| 5 | Fetch the log tables                                                                                  |
| 6 | Copy the .dat files from the production environment.                                                  |
| 7 | Run after_import_log.sql                                                                              |

|   | <b>Tool execution (on Test)</b>                           |
|---|-----------------------------------------------------------|
| 1 | Reset the sequences (reset_sequences_origination_log.sql) |
| 2 | Run Jobs under SET-TST1                                   |

|   |                                                           |
|---|-----------------------------------------------------------|
|   | APPLICATION DATA LOAD                                     |
|   | FUNDED DATA LOAD                                          |
|   | GENERATE ACCOUNTS FOR TESTING TOOL                        |
| 3 | Run SET-TST2                                              |
| 4 | Run Testing Tool reports - save results (Test before EOD) |
| 5 | Turn the Scheduler on - Run the required batch jobs       |
| 6 | Run Testing Tool reports - save results (Test after EOD)  |
| 7 | Compare the 3 reports extracted during the process        |

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## 7. Validations and Checks

| <b>Before txns posting</b> |                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|                            | Set logging parameter to 'N'                                                                                                   |
|                            | Turn scheduler off on Test system                                                                                              |
|                            | Ensure that setup tables are not truncated before refresh (only in case of a new refresh).                                     |
|                            | Ensure that jobs, job_sets, job_threads and job_buckets are copied over from Prod onto test (only in the case of new refresh). |
|                            | Make sure that the batch jobs are setup the same in Prod and Test.                                                             |
|                            | Ensure sequences are in sync with Production                                                                                   |
|                            | Bump up sequences - recreate sequences                                                                                         |
|                            | Ensure that the Test specific setup scripts are run for 1) all seed data 2) DML scripts to create data in the new tables       |
|                            | Check GL post date                                                                                                             |
|                            | Check log tables have just one day's transactions                                                                              |
|                            | Query by txn_tcd_code, check numbers match on Prod and Test                                                                    |
|                            | Drop index TXNT_LOG_UDX                                                                                                        |
|                            | Make sure that the batch jobs have no sequence numbers overlapping - the scheduler might not start because of this.            |
|                            | Run all the DML scripts - for seed data and others                                                                             |
|                            | Check for database locks on both test systems                                                                                  |
|                            | Check run_dt_next on all batch jobs - should be updated correctly                                                              |

## 8. Comparing Results

Once the tool run, we will be able to start comparing the results. Below is an example of a high level results extracted from a Production and a Test environment, where the tool replicated all the user actions executed during one day.

| PRODUCTION              |                 |  | TEST                   |                 |
|-------------------------|-----------------|--|------------------------|-----------------|
| TXN_TCD_CODE            | SUM(TXN_AMOUNT) |  | TXN_TCD_CODE           | SUM(TXN_AMOUNT) |
| ACCRUAL_STOP            | 0               |  | ACCRUAL_STOP           | 0               |
| ACC_MAINT_MONETARY_CBT  | -1              |  | ACC_MAINT_MONETARY_CBT | -1              |
| ACTIVE                  | 0               |  | ACTIVE                 | 0               |
| ADV_RECOURSE_CHGOFF_CBT | 5.25            |  | CHGOFF                 | 0               |
| ADV_WAIVE               | 7               |  | CREDIT_REFUND_REV      | 6312.85         |
| CHGOFF                  | 0               |  | DDT                    | 29034.13        |
| CREDIT_REFUND           | 2875.01         |  | DDT_REV                | 12494.97        |
| CREDIT_REFUND_REV       | 6762.65         |  | ERPO                   | 15262           |
| DDT                     | 403310.84       |  | ERPO_REV               | 855             |
| DDT_REV                 | 12494.97        |  | ERPO_WAIVE             | 90              |
| ERPO                    | 18762           |  | ERPO_WAIVE_REV         | 5               |
| ERPO_REV                | 4355            |  | ESVC                   | 175             |
| ERPO_WAIVE              | 108.42          |  | ESVC_REV               | 75              |
| ERPO_WAIVE_REV          | 5               |  | EXTENSION              | 606.9           |

|               |           |  |               |           |
|---------------|-----------|--|---------------|-----------|
| ESVC          | 175       |  | EXTENSION_REV | 0         |
| ESVC_REV      | 75        |  | FEXT          | 2093.28   |
| ESVC_WAIVE    | 0.2       |  | FEXT_REV      | 68.18     |
| EXTENSION     | 606.9     |  | FIN_1         | 2521.19   |
| EXTENSION_REV | 0         |  | FIN_2         | 2357.28   |
| FEXT          | 2093.28   |  | FIN_3         | 10605     |
| FEXT_REV      | 68.18     |  | FLC           | 263.63    |
| FIN_1         | 2521.19   |  | FLC_REV       | 195.15    |
| FIN_2         | 2357.28   |  | FLC_WAIVE     | 15        |
| FIN_3         | 10210     |  | FNSF          | 0         |
| FLC           | 8071.77   |  | FUN_1         | 658203.33 |
| FLC_REV       | 209.44    |  | FUN_2         | 14259.2   |
| FLC_WAIVE     | 15        |  | FUN_3         | 85        |
| FNSF          | 0         |  | FUN_4         | 305.55    |
| FOTH1_WAIVE   | 5         |  | INT           | 88904.16  |
| FPHP          | 1659      |  | INT_ESTIMATED | 128900.35 |
| FUN_1         | 630790.18 |  | INT_REBATE    | 8654.78   |
| FUN_2         | 13648.2   |  | INT_REV       | 3038.93   |
| FUN_3         | 85        |  | LNR           | 788796.75 |
| FUN_4         | 284.55    |  | NP_EXCESS     | 2388.78   |

Based on the results above, we are able to investigate further the reason for each discrepancy, if any.

---

## 9. Testing Tool Exceptions

Following is the list of exceptions/limitations of the testing tool

1. Direct Reversal of an Indirect transaction
2. Multiple Payment Hold Assessments/Reversals
3. Payment not allocated to Phone Pay Fee

### **Direct Reversal of an 'Indirect' transaction.**

An Indirect transaction is one that is created by a different transaction. For example, FNSF is an indirect transaction created by the PAYMENT\_VOID transaction. The tool replicates the PAYMENT\_VOID transaction that in turn creates the FNSF. Along the same lines, reversal of the PAYMENT\_VOID transaction will result in the reversal of the FNSF transaction (This is normal Ofsl processing) and will be replicated by the tool.

However when the FNSF transaction is reversed directly, by using the Reverse button on the Transactions screen, the tool is unable to replicate that.

Another example is the PAYMENT\_NONCASH created by modifying the PAYMENT\_ERROR transaction on the Payment Maintenance screen. The non-cash transaction is an indirect transaction and directly reversing it or further modifying it will not get replicated in the Test environment. To summarize direct reversal/modification of the 'child' transaction is not replicated.

Note, the above restriction applies only for the same dataset. If the database is refreshed after the creation of the 'child' transaction and before its direct reversal, the tool replicates the reversal.

### **1. Multiple Payment Hold Assessment/Reversals**

Since the tool is not recording the call activities, multiple payment holds applied or removed on the same day is NOT replicated. To paraphrase, the existence/absence of the Payment Hold condition will match that in production, however intermediate changes will not be reflected.

#### **Examples**

### **9.1 A) Scenario 1**

#### **Production**

- Pmt Hold condition exists on an Account
- Payment applied, payment goes into PAYMENT\_ERROR
- Pmt Hold removed on the same day
- Payment reapplied from Payment Maintenance > Suspense screen. Payment successfully applied to the account as a PAYMENT\_NONCASH

#### **Test**

- Removal of Pmt hold is replicated on Test
- Payment will be applied successfully to the Account as a PAYMENT.
- No PAYMENT\_ERROR is created

## 9.2 **B) Scenario 2 – This scenario results in an exception due to mismatch of balances**

### **Production**

- Pmt Hold condition exists on an Account
- Payment applied, payment goes into PAYMENT\_ERROR
- Pmt Hold removed on the same day
- Payment reapplied from Payment Maintenance > Suspense screen. Payment successfully applied to the account as a PAYMENT\_NONCASH
- Payment Hold condition reapplied

### **Test**

- Since the final state of the account is a PMT HOLD condition no change will be made to the account in test
- Consequently the payment will go into a PAYMENT\_ERROR and will not get applied to the account

In this scenario the account balances DO NOT match.

### **Phone Pay Fee**

Currently in Production One time Phone Pays created during the day are picked up by the SET-CBT-ACH0 > ACCOUNT ACH PROCESSING JOB in the middle of the day (3:15 pm). This job creates the Phone Pay fee (FPHP) (The payment batch is created by the same job). The payments, which post later in the day, get allocated to the FPHP.

On the test environment, the tool posts transactions including Phone pay payments for the entire day. The SET-CBT-ACH0 > ACCOUNT ACH PROCESSING JOB runs AFTER the tool posting is complete. When the payment hits the account, the FPHP is not present on the account. This results in: -

\$7 - additional Principal (ADV) being paid

\$.01 – less interest being accrued since additional principal has been paid

## 10. Testing Tool Test Cases

| Module           | Function  | Sl. No | Test cases                                                                                                                                            |
|------------------|-----------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Origination      |           |        |                                                                                                                                                       |
|                  | App Entry |        |                                                                                                                                                       |
|                  |           | 1      | Direct loan                                                                                                                                           |
|                  |           | 2      | Indirect loan                                                                                                                                         |
|                  |           | 3      | With CRB pull                                                                                                                                         |
|                  |           | 4      | Without CRB pull                                                                                                                                      |
|                  |           | 5      | Application in different stages: New Review Required, Auto Approved, Approved Blank, Approved Verifying, Approved Verified                            |
|                  | Funding   |        |                                                                                                                                                       |
|                  |           | 6      | Loan with Insurances                                                                                                                                  |
|                  |           | 7      | Loan without Insurances                                                                                                                               |
|                  |           | 8      | Loan with Dealer's commission                                                                                                                         |
|                  |           | 9      | PreCompute loan                                                                                                                                       |
|                  |           | 10     | Simple interest loan                                                                                                                                  |
| Customer Service |           |        |                                                                                                                                                       |
|                  | Payments  |        |                                                                                                                                                       |
|                  |           | 11     | Back dated payment posting across billing for Simple Interest Loan.                                                                                   |
|                  |           | 12     | Back dated payment reversal across billing for Simple Interest Loan<br>Payment reversal from Payment Maintenance screen.                              |
|                  |           | 13     | Back dated payment reversal across billing for Simple Interest Loan<br>Already existing payment.<br>Payment reversal from Payment Maintenance screen. |



| Module | Function | Sl. No | Test cases                                                                                                                                                                            |
|--------|----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |          | 14     | Back dated payment posting across billing for PreCompute Loan.                                                                                                                        |
|        |          | 15     | Back dated payment reversal across billing for PreCompute Loan<br>Payment reversal from Payment Maintenance screen.                                                                   |
|        |          | 16     | Back dated payment reversal across billing for PreCompute Loan<br>Already existing payment.<br>Payment reversal from Payment Maintenance screen.                                      |
|        |          | 17     | Overpayment to an account within tolerance.                                                                                                                                           |
|        |          | 18     | Overpayment to an account outside tolerance.                                                                                                                                          |
|        |          | 19     | Erroneous Payment Batch posting.                                                                                                                                                      |
|        |          | 20     | ACH Payment Batch posting.                                                                                                                                                            |
|        |          | 21     | Post backdated payment across billing and NSF the same.<br>NSF from Payment Maintenance screen.                                                                                       |
|        |          | 22     | NSF already existing payment.<br>NSF from Payment Maintenance screen.                                                                                                                 |
|        |          | 23     | Create a Payment Batch and Hold the same.                                                                                                                                             |
|        |          | 24     | Erroneous Payment Batch posting.<br>Correct the same erroneous transaction and repost successfully.                                                                                   |
|        |          |        | Already existing erroneous Payment Batch posting.<br>Correct the same erroneous transaction:<br>Add one row<br>Update one row for date as well as for amount and repost successfully. |
|        |          |        | Already existing Open/Hold payment batch:<br>Add one row<br>Remove one row<br>Update one row for date as well as for amount and repost successfully.                                  |
|        |          | 25     | Create open Payment Batch and posting the same by running SET-LBT: PAYMENT POSTING                                                                                                    |
|        | Payments |        |                                                                                                                                                                                       |

| Module | Function     | Sl. No | Test cases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|--------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Combinations |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|        |              | 26     | Create sequence of Payment Batch & post the same, having mix of valid and erroneous batches. Few erroneous payment batches not corrected and reposted and few corrected and reposted.                                                                                                                                                                                                                                                                                                                                 |
|        |              | 27     | Post payments thru lock box with the ach file having: <ul style="list-style-type: none"> <li>- non-existing a/c no</li> <li>- closed a/c</li> <li>- a/c having payment hold condition</li> <li>- a/c having non-accrual condition, and txn date for the payment is before non-accrual</li> </ul> Correct the erroneous payment batches ( suspense payments) and repost it.<br>Reverse the payments: <ul style="list-style-type: none"> <li>- posted correctly first time</li> <li>- corrected and reposted</li> </ul> |
|        |              | 28     | Post the already existing hold payment batch. Reverse the payment.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|        |              | 29     | Create an erroneous payment batch. Correct the payment batch. Put it on hold. Post the payment batch. Reverse the payment                                                                                                                                                                                                                                                                                                                                                                                             |
|        |              | 30     | Create a payment batch with: <ul style="list-style-type: none"> <li>- more than one payments</li> <li>- correct and incorrect payments</li> </ul> Post the payment batch. Reverse payments: <ul style="list-style-type: none"> <li>- one which was valid initially</li> <li>- one which was invalid initially</li> </ul>                                                                                                                                                                                              |
|        |              | 31     | Crete payment batches with: <ul style="list-style-type: none"> <li>- more than one payments</li> <li>- correct and incorrect payment batches</li> </ul> Run the SET-LBT batch job. Reverse the payments: <ul style="list-style-type: none"> <li>- one which was valid initially</li> <li>- one which was invalid initially</li> </ul>                                                                                                                                                                                 |
|        | Transactions |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|        |              | 32     | PreCompute loan put into non-performing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|        |              | 33     | PreCompute loan to Simple Interest conversion.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Module | Function | Sl. No | Test cases                                                                                                |
|--------|----------|--------|-----------------------------------------------------------------------------------------------------------|
|        |          | 34     | Simple Interest loan put into non-performing                                                              |
|        |          | 35     | Work order Service Expense assessment.                                                                    |
|        |          | 36     | Post Extension.                                                                                           |
|        |          | 37     | Post Due Date Change.                                                                                     |
|        |          | 38     | Charge off an account.                                                                                    |
|        |          | 39     | Pay off an account.                                                                                       |
|        |          | 40     | Insurance cancellation on a PreCompute loan a/c.                                                          |
|        |          | 41     | Insurance cancellation on a Simple Interest loan a/c.                                                     |
|        |          | 42     | Waive Late Charge on an a/c.                                                                              |
|        |          | 43     | Waive Advance on an a/c.                                                                                  |
|        |          | 44     | Waive Interest on an a/c.                                                                                 |
|        |          | 45     | Reduce Interest Rebate for PreCompute loan a/c.                                                           |
|        |          | 46     | A/c Monetary maintenance on an a/c to change the advance, rate, payment amount and maturity dates.        |
|        |          | 47     | Account Due Paid Amount Maintenance posted on an a/c to update the amount paid in due buckets 1 through 4 |
|        |          | 48     | Post any of the non-monetary transaction.                                                                 |
|        |          | 49     | Reverse any of the already existing monetary transaction.                                                 |
|        |          | 50     | Post and reverse any of the monetary transaction.                                                         |
|        |          | 51     | Reverse the charge off transaction for an a/c already charged off.                                        |
|        |          | 52     | Post and reverse the charge off transaction.                                                              |
|        |          | 53     | Reverse the paid off transaction for an a/c already paid off.                                             |
|        |          | 54     | Post and reverse the paid off transaction.                                                                |
|        |          | 55     | Post a monetary erroneous transaction from maintenance screen.                                            |

| Module | Function                  | Sl. No | Test cases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------|---------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                           | 56     | Post a non-monetary erroneous transaction from maintenance screen.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |                           | 57     | Post an erroneous monetary transaction for which we get the error result in the results pane, correct the same and repost successfully.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|        |                           | 58     | Post an erroneous monetary transaction for which we get the popup error message, correct the same and repost successfully.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                           | 59     | Void any monetary transaction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|        |                           | 60     | Void any non-monetary transaction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        | Transactions Combinations |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|        |                           | 61     | Put a PreCompute loan into non-performing. Convert the same to Simple Interest. Put the converted loan into non-performing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|        |                           | 62     | Sequence of monetary transactions from maintenance screen, having mix of: <ul style="list-style-type: none"> <li>- erroneous monetary transaction, for which we get the error result in the results pane</li> <li>- successful non-monetary transactions</li> <li>- erroneous monetary transaction, for which we get the error result in the results pane, corrected and reposted successfully</li> <li>- erroneous transactions for which we get the popup error message</li> <li>- erroneous transactions for which we get the popup error message, corrected and reposted successfully</li> <li>- void monetary transactions</li> <li>- successful monetary transactions</li> </ul> |
|        | Full Run                  | 63     | <ul style="list-style-type: none"> <li>- Fund a new backdated loan from scratch.</li> <li>- Post payments.</li> <li>- Post monetary transactions.</li> <li>- Post non-monetary transactions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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## 11. For Next Releases

Though the Testing Tool is totally dynamic and automates the tests by logging all actions executed on a Production environment, then replicating them in a Test environment, which will have a higher version of OFSLL. This tool still requires technical people, with technical knowledge of OFSLL processes and architecture to be installed and run. For future releases, we can create an installation package and a user friendly front end in order to users to be able to do all the tests independently. Also, some of the current exceptions and limitations could be worked on in order to incorporate to the tool's functionalities.



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