

Oracle Financial Services Liquidity Risk Management

User Guide

Release 8.0.0.0.0

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Financial Services

Oracle Financial Services Liquidity Risk Management User Guide, Release 8.0.0.0.0

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ABOUT THE GUIDE

This section provides a brief description of the scope, the audience, the references, the organization of the user guide and conventions incorporated into the user guide. The topics in this section are organized as follows:

- Disclaimer
- Scope of the guide
- Intended Audience
- Documentation Accessibility
- Access to Oracle Support
- Related Information Sources

DISCLAIMER

This user guide does not include the UI changes that have occurred due to the Media Pack release. That is, this guide will refer to AAI user guide for the sections pertaining to AAI. The other changes that has come for the 8.0 release that is, Liquidity Risk Reports, are part of this guide.

SCOPE OF THE GUIDE

The objective of this user guide is to provide a comprehensive working knowledge on Oracle Financial Services Liquidity Risk Management, Release 8.0. This user guide is intended to help you understand the key features and functionalities of Oracle Financial Services Liquidity Risk Management (LRM) release 8.0 and details the process flow and methodologies used in the computation and management of Liquidity Risk.

INTENDED AUDIENCE

Welcome to release 8.0 of the Oracle Financial Services Liquidity Risk Management user guide. This manual is intended for the following audience:

- Business User: This user reviews the functional requirements and information sources, like reports.
- Strategists: This user identifies strategies to maintain an ideal liquidity ratio and liquidity gap based on the estimated inflow and outflow of cash.
- Data Analyst: This user would be involved with cleaning, validation, and importing of data into the OFSAA Download Specification Format.

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RELATED INFORMATION SOURCES

- OFSAA Treasury Risk 8.0 Installation Guide – Refer [OTN](#).
- Oracle Financial Services Advanced Analytical Applications Infrastructure (OFSAAI) User Guide – Refer [OTN](#).

What's New in this Release

The Oracle Financial Services Liquidity Risk Management Release 8.0.0.0.0 is an enhancement of the existing Oracle Financial Services Liquidity Risk Management Release 3.0.0.0.0 which has the following enhanced features:

- Liquidity Coverage Ratio calculations in accordance with US Federal Reserve guidelines
- Enhancement to Liquidity Coverage Ratio calculation in accordance with BIS guidelines
- Pre-configured US Federal Reserve and BIS LCR scenarios
- Generation of FR 2052 a and FR 2052 b liquidity reports
- Flexible and parameterized business assumption definition with multiple assumption categories and sub-categories
- Enhanced user interface supporting multiple time bucket definitions, workflows, and versioning
- Liquidity transferability restrictions and consolidation calculations
- Calculation of impact of assumptions on interest cash flows
- The liquidity risk reports, which were earlier being packaged along with OFS Asset Liability Management Analytics, are now available as part of OFS Liquidity Risk Management. The reports continue to be available as part of OFS ALM Analytics up to version 6.2 to support reporting for OFS LRM v3.0. This change is applicable from version 8.0 onwards.

1 Introduction to Oracle Financial Services Liquidity Risk Management (OFS LRM)

Liquidity Risk Management (LRM) has emerged as a critical risk management function for banking institutions, as regulators increasingly require banks to have a robust liquidity management framework in place. As per the Basel Committee on Banking Supervision (BCBS), “liquidity is the ability of a bank to fund increases in assets and meet obligations as they come due, without occurring unacceptable losses”. Oracle Financial Services Liquidity Risk Management, Release 8.0, is designed to address liquidity risk of banking institutions across the world. It helps financial institutions to

- Drive liquidity ratio regulatory compliance and adhere to tight regulatory deadlines through pre-packaged rules and computations
- Engage in enterprise-wide comprehensive stress testing that feeds into the contingency funding planning process
- Improve risk reporting practices by leveraging an extensive set of reports and dashboards built out of a unified data model

1.1 Overview

Oracle Financial Services Liquidity Risk Management comprehensively addresses an organization's liquidity risk requirements, both regulatory and management, through a flexible user interface, robust calculations, and advanced reporting. It supports pre-configured calculations, scenarios, and reporting templates to ensure full compliance with BIS Basel III guidelines, US Liquidity Coverage Ratio calculation and 4G liquidity reporting guidelines (popularly known as US Federal Reserve FR 2052 a and FR 2052 b Liquidity Monitoring templates).

The Liquidity Risk Management Application among others contains the following functionalities:

- Liquidity Gap Calculations
- Liquidity Ratio (as per BIS and US Federal Reserve Guidelines) and Funding Concentration Calculation
- Counterbalancing
- Stress Testing
- Run Management

An overview of the above functionalities in the Liquidity Risk Management Application is given in the following sections:

1.1.1 Liquidity Gaps

Liquidity gap is the mismatch in a bank's inflows and outflows from various assets and liabilities, due to the difference in the behavior exhibited by the customers. This gap can be positive or negative, depending on if the bank has more inflows than outflows and vice versa.

For banks, the liquidity gap can change over the course of the day as deposits and withdrawals are made. This means that the liquidity gap is more of a quick snapshot of a bank's risk.

Liquidity Gap can also be depicted by the formula, Cash Inflows – Cash Outflows.

1.1.2 Liquidity Ratio and Funding Concentration

Various parameters in Liquidity Risk Management help in analyzing the liquidity status of the bank. Liquidity ratios are one such parameter prescribed in the Basel III Guidelines. There are three types of ratios calculated by the LRM Application, which are as follows:

- **Liquidity Coverage Ratio:** Liquidity coverage ratio addresses the short-term liquidity needs of an institution during a stress situation. It estimates whether the stock of high quality liquid assets is sufficient to cover the net cash outflows under stress situations over a specified future period, in general, lasting 30 calendar days (or LCR horizon). Liquidity coverage ratio is calculated at the legal entity level on a standalone and consolidated basis. Liquidity coverage ratio is also calculated at the level of each significant currency in order to identify potential currency mismatches, which is known as Foreign Currency Liquidity Coverage Ratio.
- **Net Stable Funding Ratio:** This addresses the medium and long-term liquidity needs of a bank during a stress situation. It specifies the minimum amount of stable funding required to be maintained in order to promote stable long term funding.
- **Funding Concentration:** Wholesale funding from significant sources is calculated in order to monitor the liquidity risk arising from the withdrawal of such funds. Funding concentration is calculated on the basis of following dimensions:
 - Concentration by Significant Counterparties
 - Concentration by Significant Products
 - Concentration by Significant Currencies

1.1.3 Counterbalancing

As part of their liquidity governance process, financial institutions are required to have formal contingency funding plans for addressing liquidity needs during periods of stress. The Counterbalancing Strategy module of Oracle Financial Services Liquidity Risk Management aids banks in developing such contingency funding plans to address the liquidity hotspots observed during stress scenarios of varying magnitudes.

A counterbalancing strategy consists of one or multiple counterbalancing positions covering the fire sale of marketable and fixed assets, creation of new repos, rollover of existing repos and raising fresh deposits or borrowings. These can be easily configured by selecting the individual instrument, asset or product and specifying the parameters such as haircuts, sale percent, rollover rate and so on, based on the type of position. Once, the counterbalancing positions are specified, the strategy is applied to the existing liquidity gaps in order to assess its impact.

1.1.4 Stress Testing

Stress testing is now an integral part of a bank's risk measurement system and plays an important role in estimating the effects of potential financial crises on a bank's operations. Stress testing or risk estimation technique refers to the process of examining the stability of a system or entity in adverse conditions. It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results.

Stress testing is an integrated framework of OFSAI which supports the stress testing requirements across the entire suite of OFSAI products including Liquidity Risk Management. It allows banks to define shocks and assess the impact of such shocks across multiple business areas.

Stress testing provides adverse values of business assumptions such as rollover rates, run-off rates and so on, and replaces the Business As Usual (BAU) assumptions with these stress assumptions.

1.1.5 Run Management

Run Management allows you to define, approve, and execute Runs in the LRM Application. Different types of Runs are defined using the Run Framework of the Oracle Financial Services Analytical Applications Infrastructure (OFSAI) and executed using the Run Management window in the LRM Application.

The types of Runs are as follows:

- **Contractual Run**

This is the first Run defined using the Run Management window of the LRM Application.

A contractual Run allows you to estimate liquidity gaps based on the contractual cash flows received as a download from the bank. All inflows and outflows of cash are assumed to be generated based on the terms of the contract. The liquidity metrics, both gaps and ratios, are estimated on a standalone (Solo) basis for each selected legal entity or on a consolidated basis at the level of the selected legal entity. The gap report enables the analysis of the current liquidity gaps in each time bucket purely based on contractual terms. Contractual Execution caters to the as of date liquidity status of the organization without the application of any business assumption. Contractual Runs are defined for long term buckets.

The purpose of defining contractual Run in LRM 8.0 is to execute BIS Basel III Liquidity Runs to calculate Gap to report liquidity gaps in each time bucket (Cash Inflow – Cash Outflow).

This forms the base for BAU Run with combination of single or multiple business assumptions.

Assumptions are applied either on original balance or cash flows or the changing balance or cash flows across business assumptions.

- **Business As Usual**

After defining and executing a contractual Run, business assumptions such as rollovers, Run-offs, prepayments, delinquencies, haircuts and so on, are to be defined and applied to the contractual cash flows, through BAU execution. This execution computes the liquidity position of the organization under business – as – usual or normal conditions by assessing the impact of the BAU assumptions on the contractual cash flows. The contractual Run forms the base for BAU

Run with combination of single or multiple business assumptions. The assumptions are applied either on original balance or cash flows or the changing balance or cash flows across business assumptions.

- **Stress Run**

After defining and executing business assumptions, a stress Run is created through the Stress Definition module of AAI. A business-as-usual Run is selected as the baseline Run and the BAU assumptions which are part of the selected baseline Run are replaced by stress business assumptions. Replacement of a set of BAU assumptions with another set of stress assumptions constitutes a scenario for stress testing within LRM. Stress business assumptions are similar to BAU assumptions, but with adverse or stressed values. On execution of the stress Run, the business assumptions are applied to contractual cash flows to assess the impact of the scenario on the liquidity metrics.

1.2 LRM Process Flow

The following is the Liquidity Risk Management process flow:

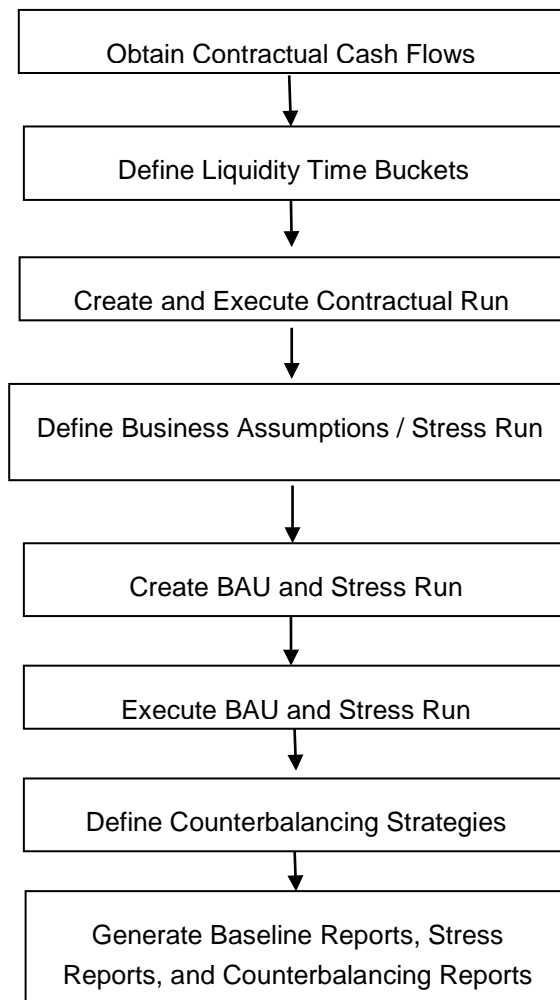


Figure 1 LRM Process Flow

- a. **Obtaining Contractual Cash Flows and Liquidity Buckets:** The process of liquidity risk management begins in OFS LRM, after obtaining the contractual cash flows as a download from the ALM systems. If OFS ALM is installed, the required cash flows can be selected from the Application Preferences window of OFS LRM. Once, the contractual cash flows are selected, liquidity time buckets need to be defined. The liquidity buckets may be multi-level time buckets. The contractual cash flows need to be bucketed, in order to calculate the liquidity gaps, ratios, and to perform other analysis. These may be estimated on solo basis or consolidated basis.
- b. **Executing Contractual Run:** The Contractual Run is then executed. A Contractual Run does not anticipate any change from the normal behavior and goes according to the contractual terms. For that, the cash flows are first converted to the local or reporting currency. Cash flows are then

assigned to time buckets and liquidity gaps under contractual terms are estimated. Cash flows need to be aggregated too as they will be large in number and it will take time to execute them individually. For example, during the Exadata tuning test that was conducted in October 2014, for OFS LRM, 20 billion cash flows were aggregated to 9 million cash flows. The Contractual Runs can be scheduled to run overnight as and when data arrives from each Line of Business (LOB).

- c. **Executing BAU Run:** Once the liquidity gaps are estimated under contractual terms, the changes in cash flows during the normal course of business due to consumer behavior are to be estimated. This involves defining business assumptions based on multiple rules and specifying assumption values. For example, following is an assumption: “20% of retail loans with maturity less than 6 months are prepaid in the 1-month bucket”. Assumption values specified for each dimension member combination, is selected from pre-defined business hierarchies/dimensions. Once these assumptions are defined, they are grouped together and applied to contractual cash flows as part of the BAU Run or Baseline Run execution process. BAU Runs are scheduled to run overnight as and when, data arrives from each LOB. The impact of these business assumptions on liquidity gaps, ratios, and other metrics is estimated.
- d. **Executing Stress Run:** The next step in the liquidity risk process is stress testing, which begins with defining stress values for business assumptions. A baseline rule is replaced by one or multiple stress rules to create stress scenarios. The stress scenario mapped to a Baseline Run, to generate a Stress Run. Stress values are specified for each dimension member combination, selected from pre-defined business hierarchies/dimensions. Stress Runs are scheduled to run overnight, intra-day, or at any other frequency. The Stress Run is executed and the impact of the scenario on liquidity gaps, ratios, and other metrics is estimated.
- e. **Counterbalancing Strategies:** Once the Runs are executed, the liquidity gaps are analyzed to identify liquidity mismatches which could cause potential losses. These are managed by defining and applying counterbalancing strategies. Counterbalancing strategies can be applied to Contractual Runs, BAU Runs, and Stress Runs.

Counterbalancing strategies are a combination of one or multiple counterbalancing positions which include sale of assets, creation or rollover of repos, new funding, and so on.
- f. **LRM Reports:** Finally, LRM generates reports like Baseline Reports, Stress Reports, and Counterbalancing Reports that enable a detailed view of the liquidity risk metrics.

2 Getting Started with OFS LRM

To access the LRM application you need to log into OFSAAI environment using the following window.



Figure 2 OFSAAI Log in

Tag	Description
Language	Select the language in this field.
User ID	Enter the User ID to Login.
Password	Enter the password to Login.
Login	Click the Login Button after providing User ID and Password for Login.

Table 1 OFSAAI Log In

When you log into OFSAAI, the first screen which appears is illustrated below.

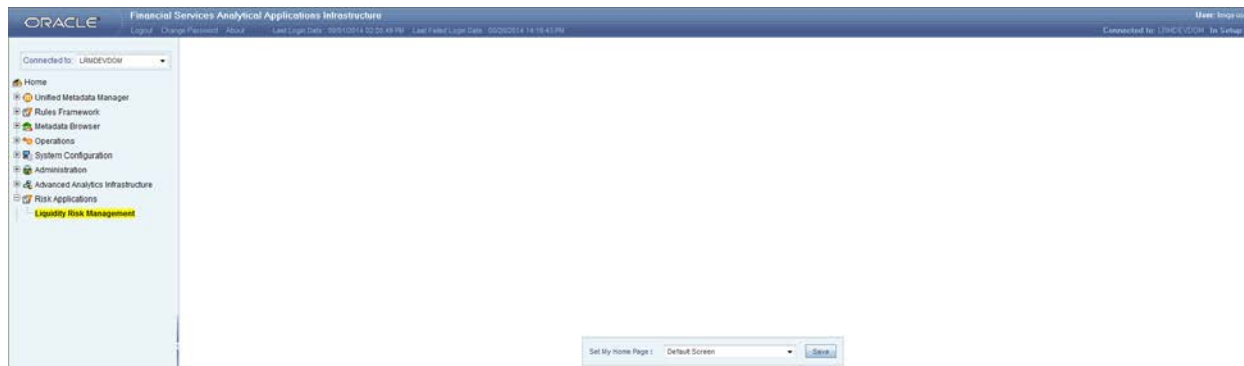


Figure 3 OFSAAI - Liquidity Risk Management Link

Tag	Description
Logout	Click this button to logout of OFSAAI.
Infodomain	Select the infodomain where the LRM Application is installed.
Liquidity risk Management Link	Click this link to access LRM Application window.

Table 2 OFSAAI

3 Application Preferences

3.1 Overview

The Application Preferences tab helps to select some set-up parameters required for LRM processing. These include selection of Contractual Cash Flow processes, mandatory dimensions and aggregation dimensions. LRM Functional Administrator can set the application preferences.

3.2 Understanding Application Preferences

To open the **Application Preferences** window, in **Oracle Financial Services Analytical Applications Infrastructure** window choose, **Risk Applications > Liquidity Risk Management > Application Preferences** on the Left-Hand Side (LHS) menu.

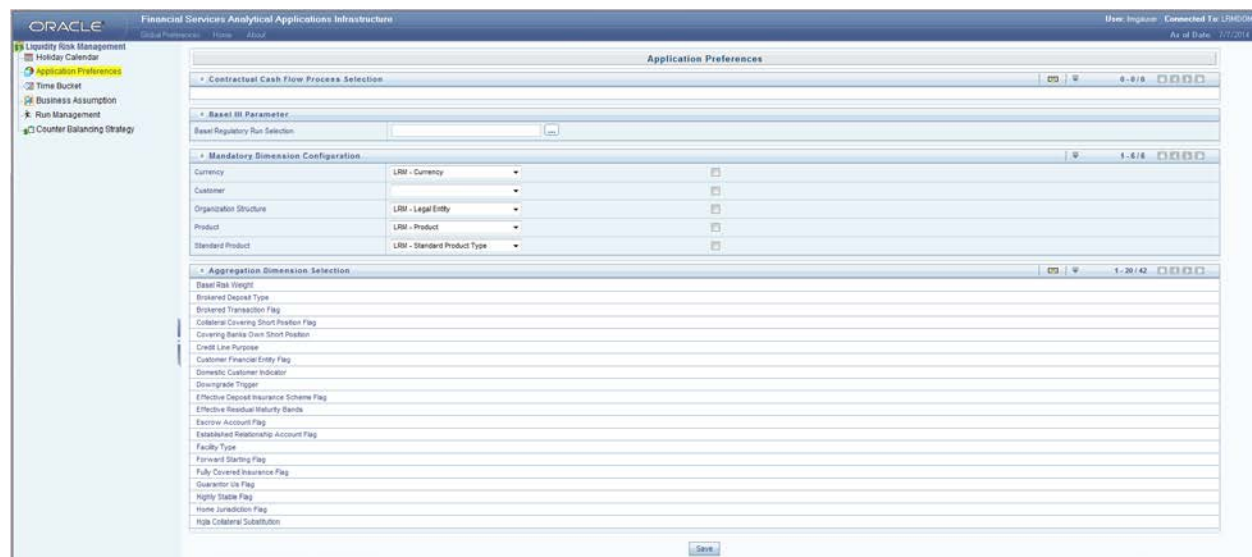


Figure 4 Application Preferences

The Application Preferences window has the following sections:


- Contractual Cash Flow Process Selection
- Mandatory Dimension Configuration
- Aggregation Dimension Selection

3.3 Contractual Cash Flow Process Selection

Note: This section is applicable only when both OFS LRM and OFS ALM are installed in the same information domain (infodom).

Contractual Cash Flow Process Selection displays a list of ALM Processes which are executed for cash flow generation. The cash flow engine in ALM can be executed in one or multiple processes; these can be Contractual or Scenario based. Each of them generates cash flows for various asset and liability products. LRM processes these cash flows and this list displays the available ALM cash flows processes.

To select the process for Contractual Cash Flow Process, perform the following steps.

1. On the Application Preferences window, under Contractual Cash Flow Process Selection, click  to select the process. The browser is displayed.

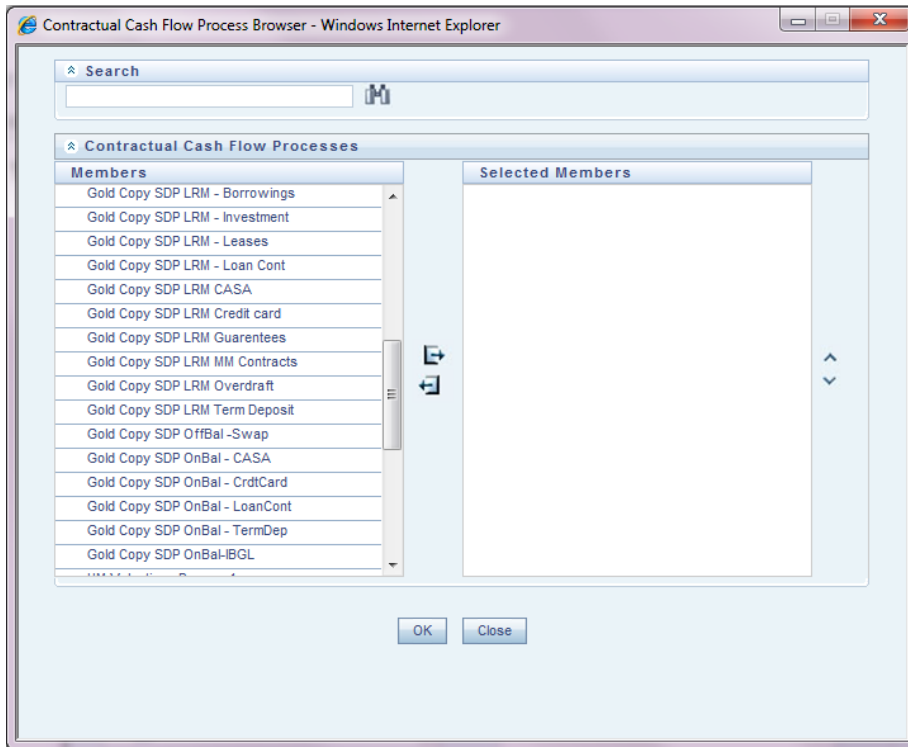


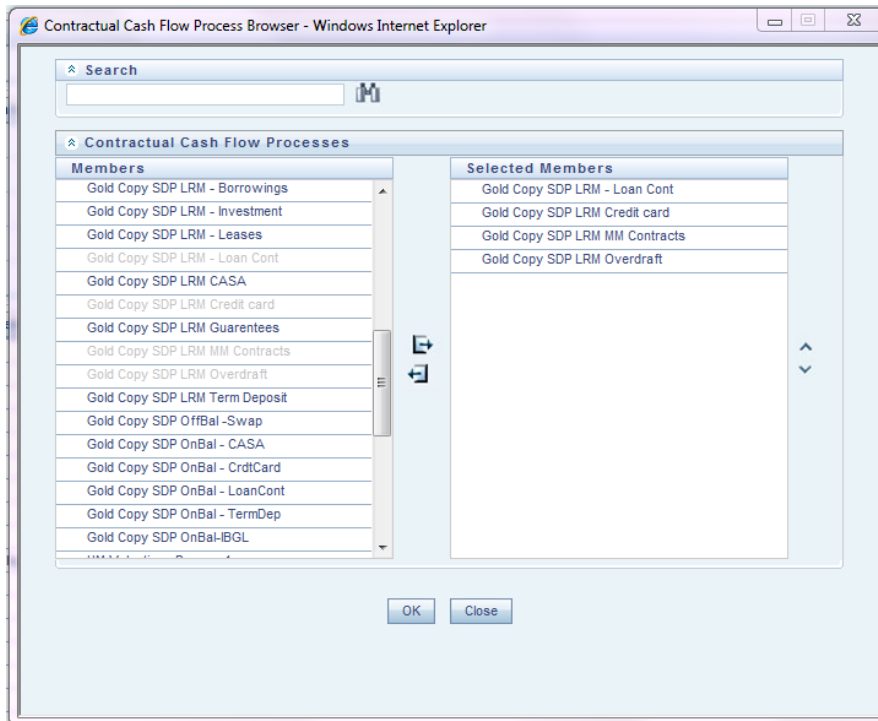


Figure 5 Contractual Cash Flow Process Selection

2. Select one or multiple contractual cash flow processes, the outputs of which will be used by LRM.
3. Double click the members or click  to move them to Selected Members section.
4. Using  up or down arrows, you can sequence the contractual cash flow processes.
5. Click **OK**. The process IDs are stored in appropriate tables. The application selects all the cash flows that have a ALM cash flow engine's process IDs which are associated with this and picks up these IDs that is, once it is stored, it picks up the relevant cash flows against the process IDs.



3.4 Mandatory Dimension Configuration

The LRM application requires some dimensions to be selected mandatorily for downstream calculations. These include currency, organization structure, and standard product. The parameters selected as part of this field are displayed in the BAU window under the Dimension browser.

The Mandatory Dimension Configuration section has the following fields:

- Currency
- Customer
- Organization Structure
- Netting Agreement Flag
- Non-Contractual Obligation Type
- Product
- Standard Product

Mandatory Dimension Configuration	
Currency	LRM - Currency ▼
Customer	▼
Netting Agreement Flag	▼
Non-Contractual Obligation Type	LRM - Non Contractual Obligation ▼
Organization Structure	LRM - Org Structure Country Flag ▼
Product	LRM - LRM Product ▼
Standard Product	LRM - LRM Standard Product Type ▼

Figure 6 Mandatory Dimension Configuration

1. **Currency:**

For Currency, only one hierarchy is present. LRM - Currency is automatically selected in the Currency field.

2. **Customer:**

To identify the intercompany cashflows, customer dimension is mandatory. However there is no hierarchy selection required.

3. **Organization Structure:**

For Organization Structure, there are multiple selections. Select either of the following:

- LRM – Legal Entity: This is a BI Hierarchy where all the legal entities appear in a single level.
- LRM – Legal Entity – Parent Child: This is a parent child hierarchy where the legal entities are displayed in ascending/descending order of their parentage. The root being BHU (Business Holding Unit).
- LRM – Org Structure Country Flag: This is a Non-BI Hierarchy used in 4G reporting line reclassification. Ignore this hierarchy in this selection.

For example, if the LRM – Legal Entity is selected as Organization Structure, in the Application Preferences as shown in the following figure,



The selected Organization Structure (LRM – Legal Entity) along with the aggregation dimension members appear under the Dimension Selection section in BAU window as shown in the following figure:

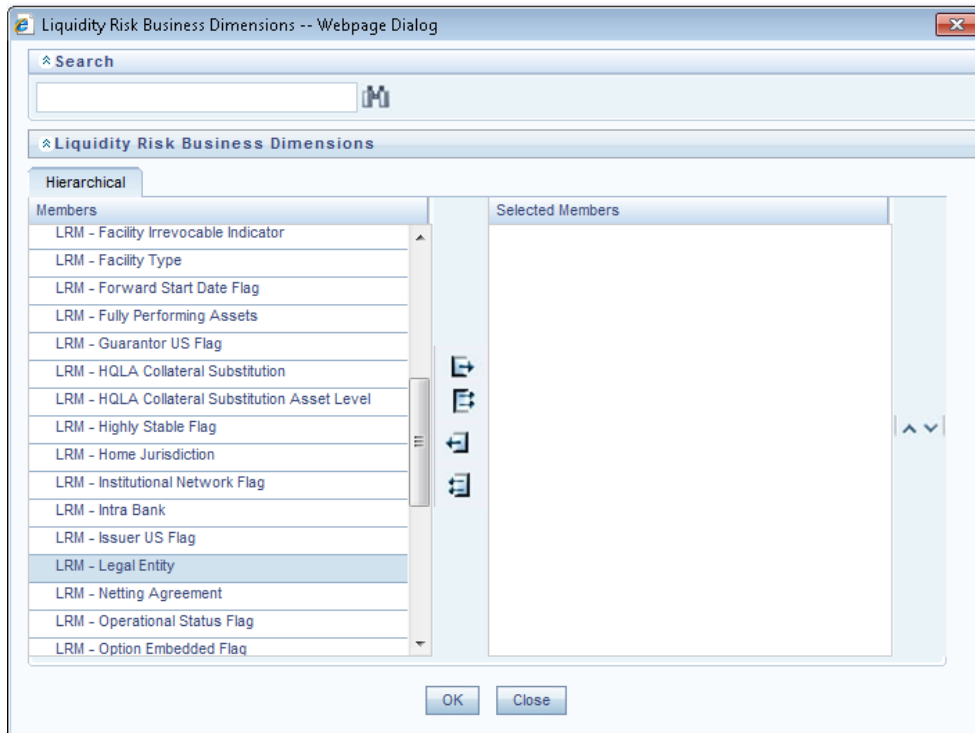


Figure 7 Dimension Selection

4. **Netting Agreement Flag:**

This dimension identifies whether the derivative contract is part of netting agreement. Based on this flag, the net derivative cash inflow/out flows are determined. Hierarchy selection is not required for this dimension.

5. **Non-Contractual Obligation Type:**

This dimension identifies the non contractual obligations part of LRM Instrument table.

6. **Product:**

For Product, there are two hierarchies present in out-of-box,

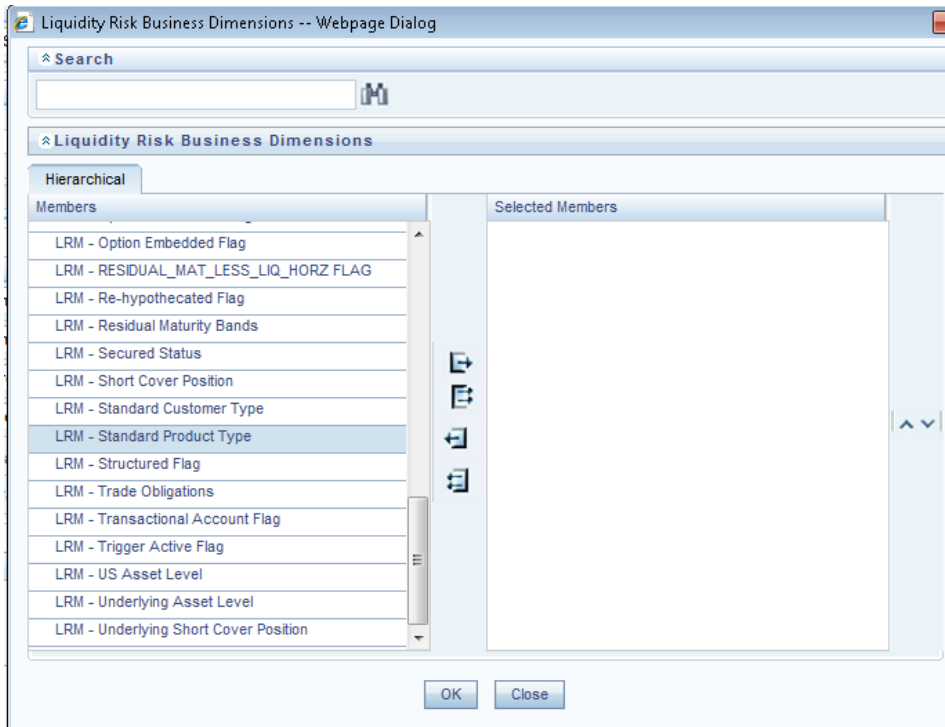
LRM – Product: This is a single level hierarchy which lists all the products at the lowest level. This is default selection OOB.

LRM – Product Balance Sheet Category: This is a five level hierarchy describing the higher levels of the products.

7. **Standard Product:**

For Standard Product, only one hierarchy is present. LRM – Standard Product Type is automatically selected in the Standard Product field.

The mandatory dimensions selected as part of this section appear in the dimension browser to support liquidity risk calculations.



3.5 Aggregation Dimension Selection

The aggregation dimension selection is done in order to aggregate the cash flows for business assumption application. All cash flows will be aggregated on the basis of Aggregation Dimension Selection. For example, if you require cash flows to be aggregated at a very high level, you can select lesser number of dimensions. In case, you require cash flows to be aggregated at a very granular, then all dimensions are selected. Further, the business assumption works on the dimensions selected and is restricted to the dimensions selected in this particular selection.

The application preferences made in this field are displayed in the BAU window under the Dimension browser. You are allowed to select the required dimension. For a detailed list of dimensions refer section [Annexure A: LRM Data Flow and Dimensions](#).

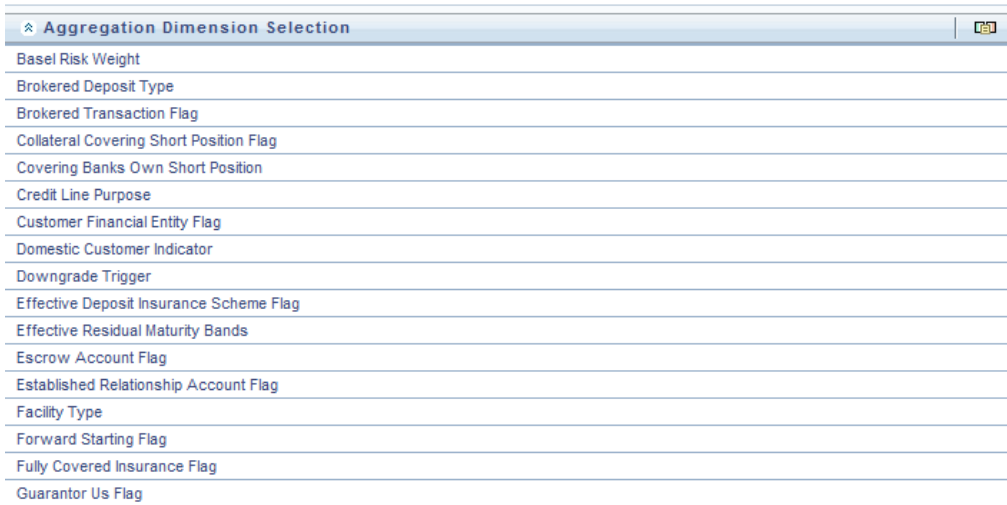

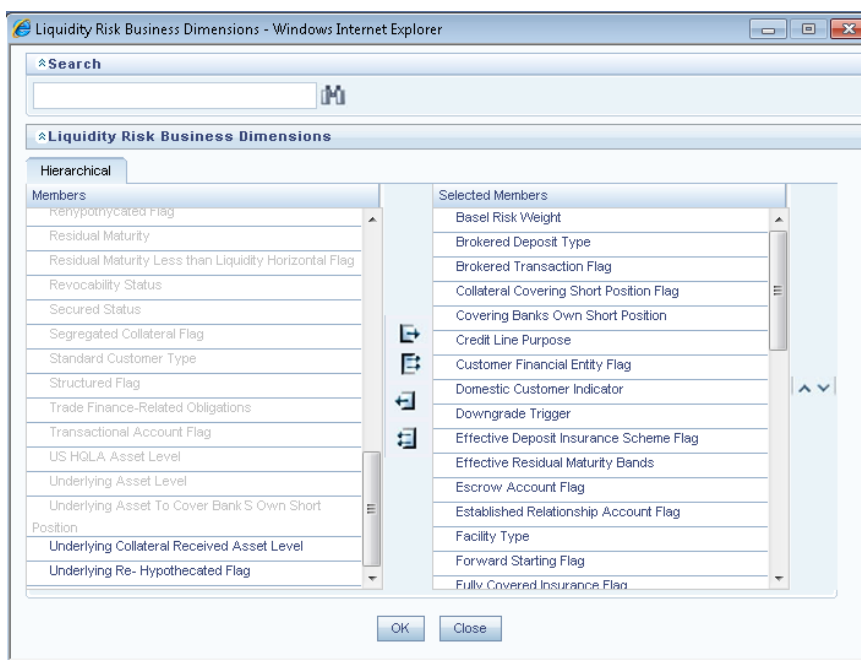




Figure 8 Aggregation Dimension Selection

To select the required dimensions, perform the following steps:

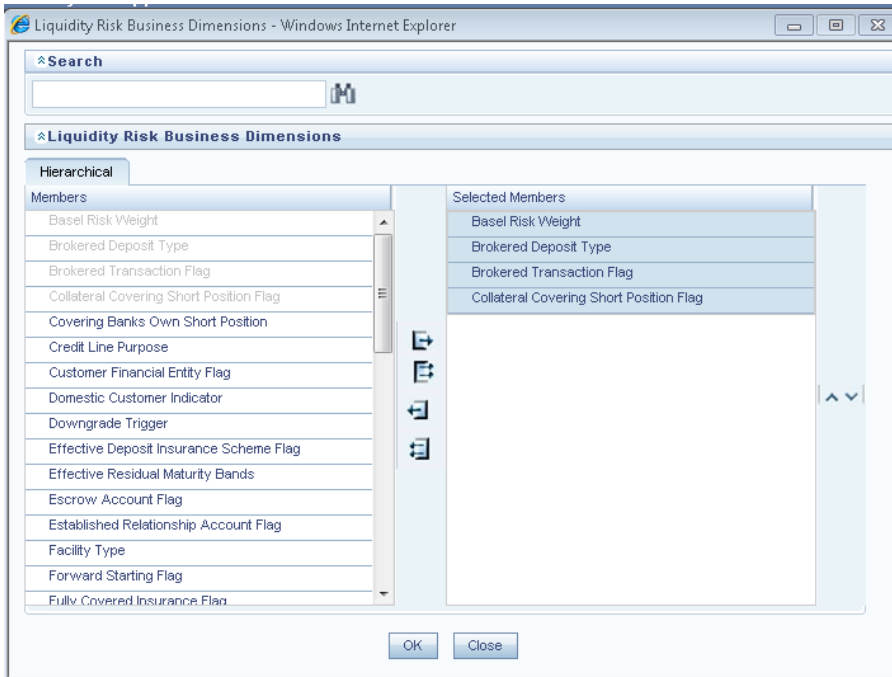
1. In the Application Preferences window, under Aggregation Dimension Selection, click  to select the members. The browser is displayed.



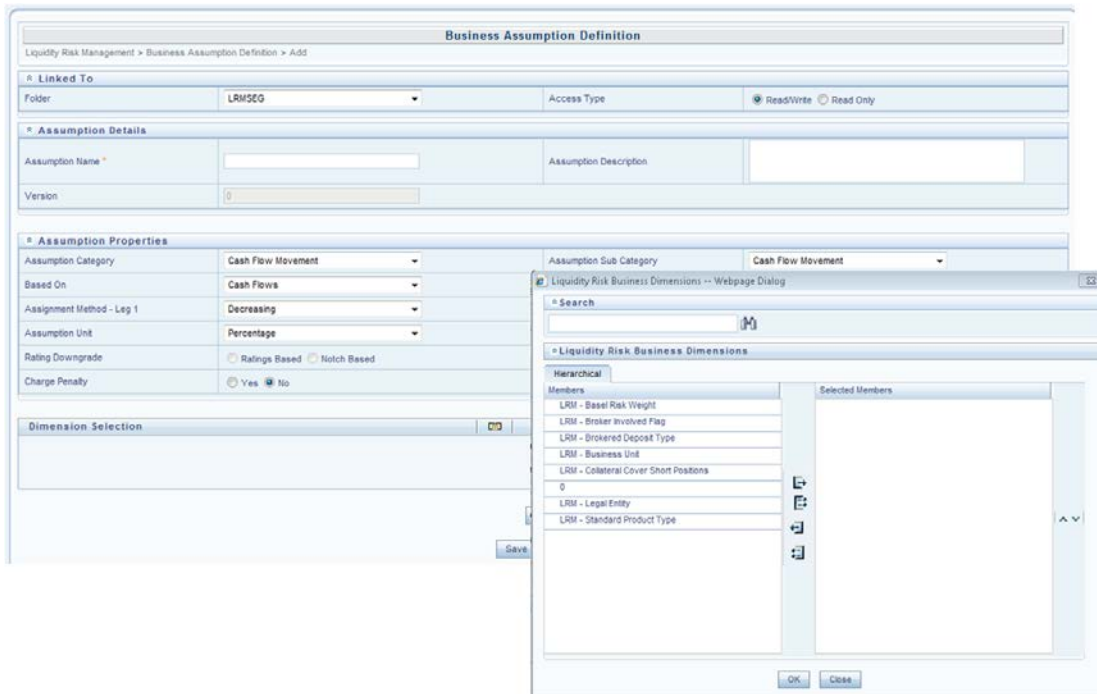
2. Select the required members.
3. Double click the members or click  to move them to Selected Members section.
4. Using  up or down arrows, you can sequence the dimensions.
5. Click **OK** to complete the selection.
6. To save the selection, click **Save** and use it for liquidity risk calculations.

Only the selected dimensions appear under the Dimension browser in BAU window.

For example, in the following window only four members are selected in the application preferences dimension browser.



Only the selected aggregation dimensions along with the mandatory dimensions appear under the Dimension Selection section in BAU window as shown in the following figure:



4 Holiday Calendar

This chapter discusses the procedure for creating a Holiday Calendar and generating a list of weekend and holiday dates.

4.1 Overview of Holiday Calendar

A Holiday is a day designated as having special significance for which individuals, a government, or some religious groups have deemed that observance is warranted and thus no business is carried on this day. The Holiday Calendar code can range from 1 to 99999.

The procedure for working with and managing a Holiday Calendar is similar to that of other OFSAA business rules. It includes the following steps:

- Searching for a Holiday Calendar.
- Viewing and Updating a Holiday Calendar.
- Copying a Holiday Calendar.
- Deleting a Holiday Calendar.
- Check Dependencies in the Holiday Calendar definitions.
- Refresh the Holiday Calendar summary page.

Note: Check Dependencies functionality is not supported for LRM 8.0.

4.2 Searching for a Holiday Calendar

Search for a Holiday Calendar to perform any of the following tasks:

- View
- Edit
- Copy
- Delete
- Check Dependencies
- Refresh

4.2.1 Prerequisites

Predefined Holiday Calendar

4.2.2 Procedure

1. In Oracle Financial Services Analytical Applications Infrastructure window choose, **Risk Applications > Liquidity Risk Management > Holiday Calendar** on the Left-Hand Side (LHS) menu. This page is the gateway to all Holiday Calendars and related functionality. You can navigate to other pages relating to Holiday Calendar from this page.
2. Enter the Search criteria.
 - Enter the name of the Holiday Calendar.

- Click the Search icon.

Only holiday calendars that match the search criteria are displayed.

Note: You can control the number of rows to display on screen by selecting the "Pagination Options" icon from the action bar.

4.3 Creating a Holiday Calendar

You create holiday calendars to capture holidays for a given date range for any organization. It is possible to create and use multiple holiday calendars.

4.3.1 Procedure

1. In Oracle Financial Services Analytical Applications Infrastructure window choose, **Risk Applications > Liquidity Risk Management > Holiday Calendar** on the Left-Hand Side (LHS) menu.
2. Click Add Holiday Calendar. The Holiday Calendar details page is displayed.
3. Enter a code value for the new holiday calendar.

Note: The code is a numeric identifier for the holiday calendar. The code value must be a number between 1 and 99999. The code value you assign to the new holiday calendar must be unique.

4. Enter the name and a brief description for the holiday calendar.

Note: The name you assign to the holiday calendar must be unique. Name can hold a maximum of 30 characters.

5. In the Holiday Properties grid, select not more than two weekend days. Then choose the Holiday Period. The Holiday Period can be defined for a range of up to 40 years less than the current date and 40 years greater than the current date, totally spanning a maximum of 80 years.
6. In the Holiday Details grid, define the Holiday details for the any period within the holiday range defined in step 6. There are two types of holidays that can be defined, Fixed and Moving.

A fixed holiday is one which is deemed as a holiday for every year in the holiday period, for that particular day.

Example 25th December – Christmas, is a fixed holiday.

Note: To define a fixed holiday, input the holiday date for the first occurrence in the date range. For example, if your Date Range Runs from 01-JAN-2000 to 31-DEC-2050, you should input the fixed holiday, Christmas, as 25-DEC-2000. The holiday calendar procedure will populate all subsequent 25-DEC entries in the holiday list table (FSI Holiday List).

The holiday calendar procedure will also ensure that holiday and weekend entries are not duplicated. For example, if weekends are defined as Saturday/Sunday and Christmas falls on a weekend day, there will be only one entry in the FSI Holiday List table.

A moving holiday is one which is deemed as a holiday only for that particular date and year, and not for every year in the holiday period. All occurrences of a moving holiday must be input manually.

Example 20th August 2012 is a moving holiday on account of the Muslim festival, Ramzan.

7. Once the holiday calendar definition is saved, its status in the summary page is marked as defined.
8. A holiday calendar created can also be deleted. Select one or more rows of holiday calendar definitions and click the Delete control.

4.3.2 Excel Import / Export

Excel import/export functionality is used for adding/editing holiday calendar definitions.

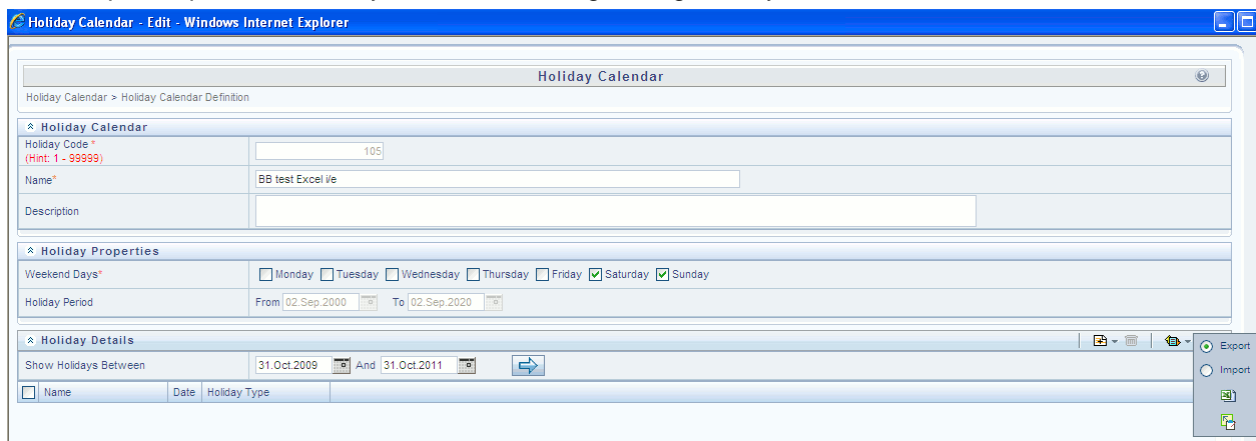


Figure 9 Holiday Calendar – Excel Import / Export

4.4 Executing Holiday Calendar

You execute a holiday calendar definition to generate calendar dates listing the various types of holidays for a given holiday period.

4.4.1 Prerequisites

Predefined Rules

4.4.2 Procedure

1. In Oracle Financial Services Analytical Applications Infrastructure window choose, **Risk Applications > Liquidity Risk Management > Holiday Calendar** on the Left-Hand Side (LHS) menu.
2. Search for a rule.
3. Select a Holiday Calendar and Click the Generate Calendar Dates icon to execute the selected holiday calendar. Holiday list for holiday ID #1 generated successfully message appears (where #1 is the holiday calendar code). The holiday list can be confirmed by querying the FSI Holiday List table.

The status of a holiday calendar where holiday dates have been generated displays as "processed" in the status column in the summary page.

Important: In case you do not want to Generate Calendar dates immediately, you can select that particular holiday calendar anytime later from the summary page with its status defined, and then click the Generate Calendar Dates icon to execute the selected holiday calendar.

4. The generated holiday list is no longer valid if:
 - I. There is a change in the definition of the holiday calendar.
 - II. There is any update or modification to the Holiday Exceptions defined for that holiday calendar.

In such a case, the user will get a message "This holiday calendar has been modified, Please generate the holiday list again" and the holiday calendar state will be changed to "Defined" until the holiday list is regenerated with new definition.

4.5 Holiday Exceptions

1. You can specify exceptions to holidays. As a prerequisite, a holiday calendar should have been properly defined and the status of the holiday calendar in the summary page should be 'Processed'. Generating the holiday list will populate the holidays (weekends, fixed and moving) along with the working days. Then the Show Exceptions button is enabled in the detail page. Any changes in the holiday definition will disable the "Show Exceptions" button. The user must generate the holiday list again to define or view the exceptions.
2. Click Show Exceptions in the Holiday Exceptions grid. The Holiday Exceptions window opens.
3. The search block in the Exceptions page has 6 fields: From (Year), To (year), Fixed Holidays, Moving Holidays, Holiday Date and All Exceptions.

From and To - Denotes the range of years which is a subset out of the holiday list generated, for which exceptions are required to be defined.

- I. Fixed Holidays – You can filter the list of holidays by the type of Fixed Holidays.
- II. Moving Holidays – You can filter the list of holidays by the type of Moving Holidays.
- III. Holiday Date – For a particular known holiday date, exceptions can be defined.
- IV. All Exceptions - This checkbox when selected lists all the exceptions, if already defined, for the holidays within the From, To Date range.

The search result gives the list of all holidays based on the selection of the above search criteria fields.

4. In the Holiday Exceptions block, there are two types of exceptions that can be defined: Not a holiday and Shift to.

Any holiday can be marked as not a holiday, in which case that day is removed from the Holiday List. If the dropdown in the exception type is selected as "Not a Holiday", then the "shift to" date picker field is disabled.

Example

Spring earlier considered as a holiday in the holiday calendar can be marked as Not a Holiday in the Exceptions Window. Further the user can write his comments or remarks in the Notes Text Box next to the Exception Type dropdown. Any holiday can be shifted to another day, in which

case the earlier declared holiday is removed from the Holiday List, while the shifted to day is included as a holiday.

4.5.1 Excel Import/ Export

Excel import/export functionality is used for adding/editing holiday exceptions.

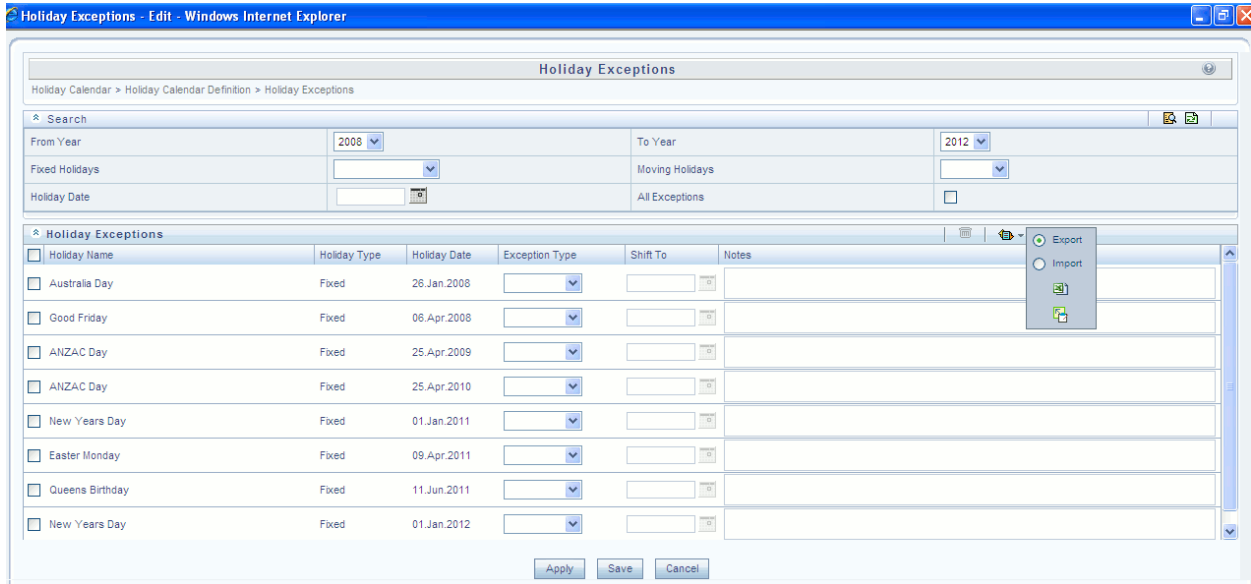


Figure 10 Holiday Calendar - Holiday Exceptions

Note: To use the holiday code configurations for LRM processing refer section [Annexure C: Create/Execute LRM Batch from Command Line.](#)

5 Time Buckets

5.1 Overview

Time Bucketing is the process of allocating cash flows to defined time intervals to identify, measure, and manage liquidity risk. The purpose of time bucketing is to increase operational efficiency as it helps in processing and reporting efficiently. One of the preliminary steps in data preparation for the LRM processing is to bucket the cash flows into the time buckets which are defined. Since the basic functionality of ALM liquidity buckets and LRM liquidity buckets are the same, there is a provision for a common bucket definition for OFS ALM and OFS LRM applications.

The summary of the enhancements introduced in the Time Buckets module of the OFS LRM application are as follows:

- **Multiple time bucket definition**

OFS LRM allows you to define multiple time bucket definitions and use them for different reporting purposes. For instance, FR 2052 a, FR 2052 b and LCR reporting requires time buckets of different granularities.

- **Additional bucket levels supported**

OFS LRM supports 5 time bucket levels for each bucket definition. This is performed by grouping the level 0 buckets defined. There is a window to define multiple levels.

- **Reporting time bucket definition**

OFS LRM allows you to define multiple reporting time buckets on a selected computational bucket definition. The Level 0 buckets of the computational and reporting time buckets are the same. The granularity of the other levels of reporting time buckets are different from that of the computational buckets. These are used for aggregating cash flows for reporting purposes. They are not used for defining business assumptions or for carrying out computations.

In the Time Bucket summary window, there is an icon to define the reporting time bucket for the selected time bucket. When you click the icon, a new bucket definition screen appears with level 0 buckets same as the selected time bucket. You can define the name and higher levels through the new window.

- **Pre-configured LRM Time Buckets**

The list of pre-packaged definitions is as follows:

- FR 2052 b Reporting Buckets - This time bucket definition is used to address US Regulatory report - FR 2052 b
- FR 2052 a Reporting Buckets - This time bucket definition is used to address US Regulatory report - FR 2052 a
- LRM time bucket - This time bucket definition is used in OOB assumptions.

- **User specific time buckets**

OFS ALM and OFS LRM users have access to their respective time bucket definitions only.

5.2 Time Buckets Required for LRM Application

The default time buckets which are mandatorily required by the LRM application are as follows:

- **Open maturity time bucket** – All products which do not have a maturity associated with them are bucketed here. This is the time bucket used to bucket all cash flows that have an open maturity. This will be the first time bucket in the list. The start date and end date is not displayed for this time bucket. The start days and end days are set to -99999. These include products such as Current Account, Savings Account (CASA), and so on.
- **Overnight Bucket** - This will be the second time bucket in the list. The frequency and multiplier are 0 and days respectively. The start date and end date are set to as of date.
- **Unspecified bucket** - This is bucket where all cash flows that are not included in normal computations such as the delinquent cash flows which will not be recovered are moved. This bucket is provided to view these cash flows and not for calculation purpose. This is available at all bucket levels and will not have a time period associated with it. The unspecified bucket will be the last time bucket in the list. The start date and end date is not displayed for this time bucket. The start days and end days are set to 99999.

5.3 Inputs Required for Bucketing Cash Flows

The inputs required for bucketing cash flows are as follows:

- Defining time buckets.
- Cash flows and cash flow dates.
- Legal entity details of the account to which the cash flow relates.
- Legal entity specific holiday list.

5.4 Types of Time Buckets

Oracle Financial Services Liquidity Risk Management supports multiple time bucket definitions.

Time bucket definitions are segregated into two types:

- Computational Time Buckets
- Reporting Time Buckets

5.4.1 Computational Time Buckets

Computational time buckets are defined to enable business assumption definition and for the purpose of carrying out liquidity risk calculations. Multiple sets of computational buckets are supported with each set containing multiple time bucket levels. Users are allowed to define and maintain a library of such time bucket definitions and use it across business assumptions and Runs for satisfying the varied regulatory as well as management requirements.

Time buckets are defined in terms of days and displayed in hierarchical format. The definition of a day, whether business day or calendar day, will be a set-up parameter.

Note:

- There is no restriction on the number of bucket sets allowed to be defined.
- Number of bucket levels is restricted to 5 for a given computational bucket set.
- You are allowed to provide bucket names for all bucket levels other than level 0. Level 0 bucket names will be displayed as a combination of the start and end days as the bucket. For instance, 2 - 2 Day for a 1-day bucket starting on day 2.

The example of Computational Time Bucket Definition 1 is as follows:

Level 2	Level 1	Level 0
1 Year	0 – 6 Months	0 – 3 Months
		3 – 6 Months
	6 – 12 Months	6 – 8 Months
		8 – 10 Months
		10 – 12 Months

Table 3 Computational Time Bucket Definition Example 1

The example of Computational Time Bucket Definition 2 is as follows:

Level 2	Level 1	Level 0
1 Year	1 – 3 Months	0 – 1 Week
		1 – 4 Week
		1 – 3 Months
	4 – 6 Months	12 – 16 Weeks
		4 – 6 Months
	7 – 12 Months	6 – 9 Months
		9 – 12Months

Table 4 Computational Time Bucket Definition Example 2

5.4.2 Reporting Time Buckets

Reporting time buckets are defined over an existing computational time bucket set for the purpose of cash flow aggregation and reporting. This functionality allows liquidity gaps and cumulative gaps to be viewed across aggregation levels different from that of the computational bucket without re-executing the computations. This is enabled by ensuring that level 0 buckets of both the computational time buckets and the corresponding reporting time buckets are consistent.

In order to define a reporting time bucket set, Level 0 buckets of an existing computational time bucket set are obtained and are further grouped into multiple levels in case of computational buckets. Multiple reporting time bucket sets, consisting of multiple levels, are allowed to be defined for each computational time bucket set. The cash flows computed based on the contractual, baseline, or stress Runs are

aggregated based on the reporting buckets and displayed in the LRM BI Analytics on selection of the relevant reporting bucket. Time buckets are to be displayed in hierarchical format.

Note:

- These buckets are used purely for aggregation and reporting purposes. Business assumptions are not allowed to be defined based on reporting time buckets.
- The computational bucket set is automatically saved as a reporting bucket set.
- The user is allowed to view the reporting bucket sets in the Metadata browser.
- There is no restriction on the number of reporting bucket sets defined based on a single computational bucket set.
- Number of bucket levels is restricted to 5 for a given reporting bucket set.
- You are allowed to provide bucket names for all bucket levels other than level 0. Level 0 bucket names will be displayed as a combination of the start and end days as the bucket name. For instance, 2 - 2 Day for a 1-day bucket starting on day 2.

The example of a reporting time bucket set 1 is as follows:

Based on: Computational Time Bucket Set 2			
Level 3	Level 2	Level 1	Level 0
0 – 1 Year	0 – 4 Months	0 – 4 Weeks	0 – 1 Week
			1 – 4 Week
		1 – 4 Months	1 – 3 Months
			12 – 16 Weeks
	4 – 12 Months	4 – 6 Months	4 – 6 Months
		6 – 12 Months	6 – 9 Months
			9 – 12Months

Table 5 Reporting Time Bucket Set Example 1

The example of a reporting time bucket set 2 is as follows:

Based on: Computational Time Bucket Set 2		
Level 2	Level 1	Level 0
0 – 1 Year	0 – 1 Weeks	0 – 1 Week
	1 – 16 Weeks	1 – 4 Week
		1 – 3 Months

Based on: Computational Time Bucket Set 2		
Level 2	Level 1	Level 0
		12 – 16 Weeks
	4 – 9 Months	4 – 6 Months
		6 – 9 Months
	9 – 12 Months	9 – 12 Months

Table 6 Reporting Time Bucket Set Example 2

5.5 Time Bucketing Process Flow

Time bucket definitions are uploaded in the Dimension Result Bucket table.

Once time buckets are uploaded, they can be viewed in the Time Buckets window in LRM application.

The process flow for Time Bucketing is as follows:

1. Calculate the number of holidays between the execution date and cash flow date.
2. Calculate number of business days for a cash flow on the basis of cash flow date and holidays.
3. Assign the cash flow to the time buckets on the basis of the business days.

5.6 Understanding Time Buckets Summary

To open the **Time Bucket Summary** window, in **Oracle Financial Services Analytical Applications Infrastructure** window choose, **Risk Applications > Liquidity Risk Management > Time Bucket** on the Left-Hand Side (LHS) menu.

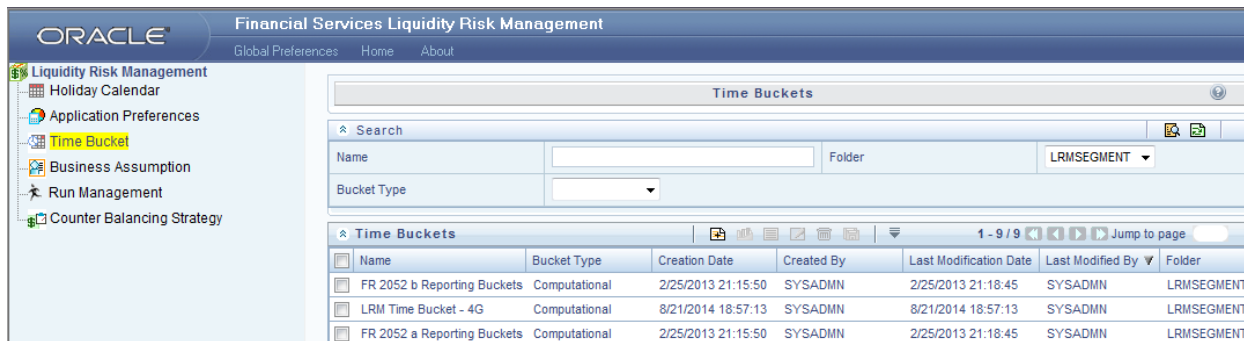


Figure 11 Time Buckets Summary

The Time Bucket Summary window displays the following fields. The definitions based on the search criteria are listed under list of Time Buckets.

This is the search section which contains multiple parameters. You can specify one or multiple search criteria in this section. When you click the search icon, depending up on the search criteria, this filters and displays the relevant search combination parameters under the Time Bucket summary as a list.









Search	
Field\Icon	Description
Search 	This icon allows you to search the time buckets on the basis of the search criteria specified. Search criteria include a combination of the Time Bucket Name, Folder, and Bucket Type. The time bucket displayed in the list of time bucket table are filtered based on the search criteria specified on clicking of this icon.
Reset 	This icon allows you to reset the search section to its default state that is, without any selections. Resetting the search section displays all the existing time bucket definitions in the list of time buckets table.
Name	This field allows you to search the pre-defined time bucket definitions on the basis of the time bucket name. Enter the time bucket name.
Folder	This field allows you to search for the pre-defined time bucket definitions on the basis of the selected folder. This field displays a list of folders that you have access to as a drop-down. Selection of a folder from the drop down list displays only those time buckets that have been defined within the selected folder/segment in the List of Time Bucket table.
Bucket Type	This is a drop-down selection of one of the following options: Computation and Reporting.


Table 7 Time Bucket - Search

List of Time Buckets		
Icon Name	Icon	Description
Add		This icon allows you to define a new time bucket set.
Create Reporting Bucket		This icon opens the reporting time bucket window. The Level 0 buckets of the reporting time is same as the selected time bucket.
View		This icon allows you to view the selected time bucket definition.
Edit		This icon allows you to edit the selected time bucket definition.
Delete		This icon allows you to delete the selected time bucket definition.
Copy		The icon allows the selected definition to be copied and resaved as a new definition.
Check		Select a time bucket definition and then click Check Dependencies

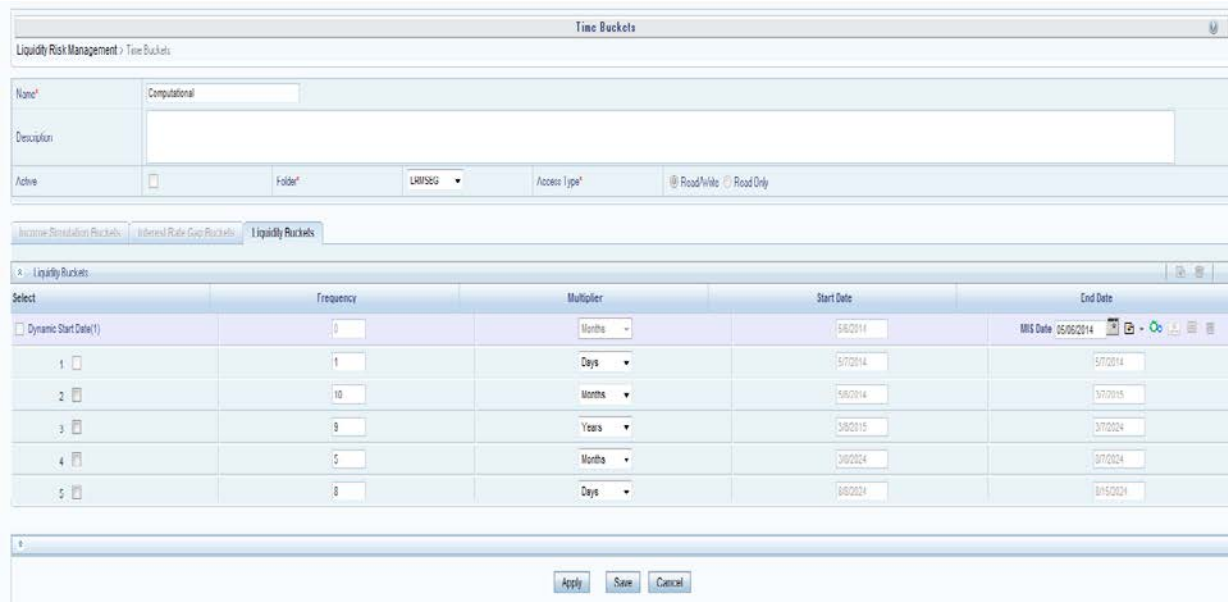
List of Time Buckets		
Icon Name	Icon	Description
Dependencies		control to generate a report on all dimension members that utilize your selected time bucket definition.

Table 8 Time Buckets Summary

5.7 Defining a New Time Bucket

On the **Liquidity Risk Management** window under Time Bucket Summary window, click  icon to add a new time bucket definition.

The Time Bucket Details – New window is displayed, perform the following steps:












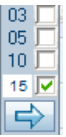

Select	Frequency	Multiplier	Start Date	End Date
<input type="checkbox"/> Dynamic Start Date(1)	0	Months	5/8/2014	MIS Date: 05/05/2014
1 	1	Days	5/7/2014	5/7/2014
2 	10	Months	5/8/2014	5/7/2015
3 	9	Years	5/8/2015	5/7/2024
4 	5	Months	5/8/2024	5/7/2024
5 	8	Days	5/8/2024	5/5/2024



Figure 12 Time Bucket

1. Enter the time bucket definition **Name**.
2. Enter the time bucket **Description**.
Note: Active option and dynamic start date selection is disabled for LRM users.
3. Select the **Folder** from the drop-down list.
4. Define the **Frequency** (number of days) and **Multiplier** (Dates/Months/Years).
Note: The time buckets tab name must be Liquidity Buckets for the purpose of defining time buckets used in LRM.
5. Click the  icon to select the Start Date from the MIS Date format.
6. You are allowed to add the bucket rows in the following ways:
 - a. Click  icon to add individual bucket rows and specify the frequency and multiplier.

Or,

- b. Add multiple bucket rows by clicking  icon. Clicking the  icon displays  where you can select 3, 5 or 10 pre-specified bucket rows to be added or add a custom number of rows by specifying the number and clicking . In this case, frequency and multiplier must be specified by the user individually for each bucket row added.


Or,

- c. Specify multiple time buckets of varying lengths by clicking  icon. Clicking the  icon opens up a window that allows you to specify multiple time buckets in a single instance as a combination of number of buckets, frequency and multiplier as illustrated below.

Select	Number of Buckets	Frequency	Multiplier
1 <input checked="" type="checkbox"/>	10	2	Days
2 <input checked="" type="checkbox"/>	20	5	Months
3 <input checked="" type="checkbox"/>	30	7	Years
4 <input checked="" type="checkbox"/>	40	6	Days
5 <input checked="" type="checkbox"/>	50	9	Months


Ok Cancel

Figure 13 Time Bucket Liquidity Buckets

Click the  icon to add new rows. Each row allows you to specify the number of buckets of a particular size to be generated. In the above example, you can define 10 one day buckets by specifying the number of buckets as 10, the bucket size frequency as 2 and bucket size multiplier as 'days'. The application automatically generates 10 rows of time buckets, each with a bucket size of 2 days as part of the level 0 bucket definition.






7. Click **OK**. The application saves the bucket definition and the defined time bucket appears in the time bucket summary window.

Once you define Level 0 time buckets, you are allowed to create multiple levels for this definition up to a maximum of 5 levels inclusive of level 0 buckets. This is optional. The time bucket definition is still saved with one level.

8. Once you define Level 0 time buckets, to define multiple bucket levels click **Apply**. The Time Bucket Grouping icon is now enabled to create less granular time bucket levels.
9. Click  icon. The Liquidity Bucket Grouping window is displayed.

Liquidity Bucket Grouping			
Level 1 Bucket Definition			
Select	Level 0 Bucket Name	Bucket Size	Level 1 Bucket Name
<input type="checkbox"/>	Open Maturity	99999 Day(s)	Week 1
<input type="checkbox"/>	Overnight	0 Day(s)	Week 1
<input type="checkbox"/>	1-1 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	2-2 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	3-3 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	4-4 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	5-5 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	6-6 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	7-7 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	8-8 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	9-9 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	10-10 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	11-11 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	12-12 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	13-13 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	14-14 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	15-15 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	16-16 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	17-17 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	18-18 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	19-19 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	20-20 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	21-21 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	22-22 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	23-23 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	24-24 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	25-25 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	26-26 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	27-27 Day(s)	1 Day(s)	Week 4

Figure 14 Liquidity Bucket Grouping

10. Click  against a time bucket and click  to group the time buckets. You can select multiple time buckets which form a single higher level bucket at a single instance by clicking the last time bucket. A dialog box is displayed to define the Level 1 Bucket name that is, a user-specified name for the higher level time bucket is created.
11. Enter the Node Name and then click **OK**. Repeat steps 10 and 11 to group the other level 0 buckets into level 1 bucket.
12. Click  icon to reset all the levels defined for the time bucket definition.
13. Once all level 0 buckets are grouped, click the  icon to save the grouping. On clicking the  icon, the level 1 grouping is displayed in a new section named Level 2 Bucket Definition.
The process of grouping level 1 bucket to level 2 buckets is similar to that detailed in points 10 through 12.
14. Once you have defined your multi-level time buckets, click **OK** to save the definition. The hierarchy for the specified time bucket definition is now created and can be used for further computations.


Note:

- The application supports up to 5 levels.
- Multi-level time bucket definition is optional. Users are allowed to save the time bucket with level less than or equal to 5.



5.8 Creating Reporting Bucket

The Time Bucket definition screen allows you to define multi-level time buckets. Reporting time buckets are defined over an existing computational time bucket set.

To create a reporting bucket, perform the following steps:






1. On the **Oracle Financial Services Analytical Applications Infrastructure** window under **Time Bucket Summary** window, select a Computational Time Bucket already created and then click  icon to create a reporting bucket.

The Time Bucket Details – Edit window is displayed.

2. Enter the time bucket **Name**.
3. Enter the time bucket **Description**.
Note: Active option and dynamic start date selection is disabled for LRM users.
4. Select the **Folder** from the drop-down list.
5. Under Liquidity Buckets section, the level 0 buckets defined as part of the selected computational bucket are displayed.
6. Click the  icon to select the Start Date from the MIS Date format.
7. In order to group, click **Apply**. The Time Bucket Grouping icon is now enabled to group different levels. Only the Level 0 buckets defined in computational time bucket are displayed. Hence you must define new higher levels. It is possible to group up to 5 levels. Once the grouping is done you can save it.
8. Click  icon. The Time Bucket Grouping window is displayed.

The process of grouping more granular buckets in higher level buckets is consistent for all bucket levels.

Liquidity Bucket Grouping			
Level 1 Bucket Definition			
Select	Level 0 Bucket Name	Bucket Size	Level 1 Bucket Name
<input type="checkbox"/>	Open Maturity	99999 Day(s)	Week 1
<input type="checkbox"/>	Overnight	0 Day(s)	Week 1
<input type="checkbox"/>	1-1 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	2-2 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	3-3 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	4-4 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	5-5 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	6-6 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	7-7 Day(s)	1 Day(s)	Week 1
<input type="checkbox"/>	8-8 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	9-9 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	10-10 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	11-11 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	12-12 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	13-13 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	14-14 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	15-15 Day(s)	1 Day(s)	Week 2
<input type="checkbox"/>	16-16 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	17-17 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	18-18 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	19-19 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	20-20 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	21-21 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	22-22 Day(s)	1 Day(s)	Week 3
<input type="checkbox"/>	23-23 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	24-24 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	25-25 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	26-26 Day(s)	1 Day(s)	Week 4
<input type="checkbox"/>	27-27 Day(s)	1 Day(s)	Week 4

9. Click  against a time bucket and click  to group the time buckets. You can select multiple time buckets which form a single higher level bucket at a single instance by clicking the last time bucket. A dialog box is displayed to define the Level 1 Bucket name that is, a user-specified name for the higher level time bucket is created.
10. Enter the Node Name and then click **OK**. Repeat steps 10 and 11 to group the other level 0 buckets into level 1 bucket.
11. Click  icon to reset all the levels defined for the time bucket definition.
12. Once all level 0 buckets are grouped, click the  icon to save the grouping. On clicking the  icon, the level 1 grouping is displayed in a new section named Level 2 Bucket Definition.
The process of grouping level 1 bucket to level 2 buckets is similar to that detailed in points 10 through 12.
13. Once you have defined your multi-level time buckets, click **OK** to save the definition. The hierarchy for the specified time bucket definition is now created and can be used for further computations.

Note:

- a. In case of all bucket types you are allowed to specify a bucket called Unspecified Bucket. This is available at all bucket levels and will not have a time period associated with it.
- b. The Overnight bucket will be the second time bucket in the list. The frequency and multiplier are 0 and days respectively. The start date and end date are set to as of date.
- c. Additionally, a time bucket called Open Maturity is present. This is the time bucket used to bucket all cash flows from accounts that have do not have a maturity associated with them.
- d. On execution of a Run, the start and end date is stored against each time bucket. This is for reporting purpose only. All definitions will use bucket names.

6 Business Assumptions

6.1 Overview

Business assumptions are behavior patterns exhibited by a bank's customers or by the bank itself, which result in a change in the cash flows that occur purely under contractual terms. These include run-offs, prepayments, rollovers, draw downs, asset sale, delinquencies, recoveries, haircuts, and so on. The application allows business assumptions to be defined under normal conditions. That is, business-as-usual or under multiple stress conditions, through a parameterized and flexible graphical user interface.

The assumptions defined under multiple conditions will differ in the magnitude of the behavior exhibited, which results in either change in the cash inflows and outflows. For instance, the run-off rate under normal conditions for certain deposits may be 2%, under a mild stress scenario it may be 8%, and under a severe and prolonged stress scenario, it may be 20%. The application allows you to define and maintain a library of such business assumptions of varying magnitudes and with different parameters. Once saved and approved, a business assumption is registered as a Process in the Rules Framework of Oracle Financial Services Analytical Applications Infrastructure and can be used across multiple scenarios, Runs and time periods for computing liquidity risk metrics.

The assumptions can be used to compute liquidity gaps and liquidity ratios under BAU and stress scenarios. The application supports pre-packaged business assumption required for computing liquidity coverage ratio in accordance with the BIS Basel III and US Federal Reserve liquidity coverage ratio guidelines.

On execution of a BAU or stress Run, one or multiple business assumptions are applied to the contractual cash flows whose attributes correspond to the dimensions specified in the assumption. The application of an assumption results in an increase or decrease in cash flows, movement of cash flows from one bucket to another, change in the value or the encumbrance status of an account depending on the type of business assumption.

6.2 Business Assumptions Supported

The application supports the following types of business assumptions:

- a. Cash Flow Movement
 - Cash Flow Movement
 - Asset Sale
 - Cash Flow Delay
 - Delinquency
 - Prepayment
 - Recovery
 - Rollover
 - Run-off
- b. Encumbrance

- Encumbrance
 - Ratings Downgrade
 - Valuation Changes
- c. Incremental Cash Flow
- Incremental Cash Flow
 - Drawdown
 - New Business
 - Ratings Downgrade
 - Run-off
 - Secured Funding/Financing
 - Valuation Changes
- d. Value Change
- Available Stable Funding Factor
 - Haircut
 - Required Stable Funding Factor

The computations related to each assumption category and sub-category is explained in detail, in the following sections.

6.2.1 Cash Flow Movement

Cash Flow Movement is a category of Business Assumptions that moves the cash flows move from the original time bucket to a prior bucket or a subsequent time bucket, based on the Assumption Sub Category, which is selected.

6.2.1.1 Cash Flow Movement

This is a generic assumption, which enables you to define cash flow movements based on all combinations available as part of Cash Flow Movement category. That is, it is a superset of all the functionality supported by each sub category in this assumption category.

This assumption moves the cash flows occurring in the original time bucket to a new user specified time bucket, occurring prior to or post the original time bucket, based on the assumption value specified.

Refer section [Cash Flow Movement](#) for information on the steps involved in specifying this assumption.

6.2.1.2 Asset Sale

This assumption is a specific case of cash flow movement category where cash flows posted in the original maturity bucket of an asset are moved to a prior bucket due to a sale. This assumption allows you to specify a sale of unencumbered marketable, fixed, or other assets to advance the cash inflows. Sale can be specified on each individual asset or as a combination of dimensions. This assumption allows you to specify a partial sale of assets by specifying the sale amount. The assumption reverses all original cash flows that occur between the sale bucket and maturity bucket and posts the market value less haircut in the sale bucket.

Refer section [Asset Sale](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the asset sale assumption to cash flows are as follows:

- a. The new inflows are calculated due to sale based on the current market or fair value (in case of marketable and fixed assets) or current outstanding balance (in case of other assets such as loans) and haircut.

For instance, if the face value of a bond is 100, market value is 120 and sale is specified as 50%, then new inflows are 60 (i.e. $120 \times 50\%$). Similarly if the outstanding balance of a loan is 10000 and sale is specified at 75% with a haircut of 5%, the new inflow is 7125 [$10000 \times 75\% \times (1 - 5\%)$].

- b. The original time bucket(s) are identified in which the asset(s) matures and the original cash inflows, both principal and interest, in each time bucket.
- c. The original cash inflows to be reversed are calculated. This is proportionate to the sale amount and is calculated based on the original value.

In the example of the bond it will be 50 (i.e. $100 \times 50\%$). In the example of the loan, it will be 75% of the original principal and interest payments.

- d. The cash inflows are assigned due to sale to the sale bucket and reverse the proportionate original cash flow in the respective original buckets.
- e. The number of units held is updated post sale in case of marketable assets and the outstanding balance in case of other assets. For all further computations, the revised asset balance is used.

If a sale is specified as an amount or in terms of units, it is converted into a percentage of the market value or outstanding balance for the purpose of reversing the original cash flows. For instance, a bank has 10 bonds whose total market value is \$1200 and original value is \$1000.

- a. When sale is specified as \$900 pre-haircut value, the percentage sold is 75% (i.e. $900/1200$). The original cash flow to be reversed is \$750 ($1000 \times 75\%$).
- b. When sale is specified as 5 units, the percentage sold is 50% (i.e. $5/10$). The original cash flow to be reversed is \$500 ($1000 \times 50\%$).

Note:

- Assets can only be sold in buckets that are prior to the original bucket. That is, their maturity bucket.
- If an asset is currently encumbered but its encumbrance period is less than its maturity, it can be sold in the time bucket occurring between the last day of encumbrance and its maturity.
- Other assets include unencumbered loans and other non-marketable assets.
- A sale of assets removes all future cash flows, both principal and interest and results in a new inflow at the sale bucket.
- Haircut is applied to the sale value only that is, market value in case of marketable and fixed assets and outstanding balance in case of other assets. Original cash flow reversal will not include haircut.
- If sale is specified as an amount, it is considered as the pre-haircut amount.
- When converting the sale amount to a percentage, the pre-haircut amount is to be considered.

An illustration of the asset sale business assumption is provided below. This example is based on the equal cash flow assignment methodology. The original value of the asset in the 1-5 year bucket is 48000 and > 5 year bucket is 32000. The current market value is 1245 per unit and the number units held is 100.

Business Assumption Definition					Cash Flow Assignment		
Product Type	Rating	Sale Amount / Percentage	Haircut	Time Bucket	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Bond	BBB	40%	10%	8-15 Days	10000	Overnight	24940 [= 10000 + {(1245*100*40%*90%)/3}]
					5000	1-7 Days	19940 [= 5000 + {(1245*100*40%*90%)/3}]
					8000	8-15 Days	22940 [= 8000 + {(1245*100*40%*90%)/3}]
					119870	1-5 Years	100670 [=119870 – (48000*40%)]
					200907	> 5 Years	188107 [=200907 – (32000*40%)]

Table 9 Cash Flow Movement - Asset Sale

6.2.1.3 Cash Flow Delay

Due to market conditions the payments or receipts that are expected at a particular time are delayed thereby giving rise to liquidity risk. In such a scenario the payments or receipts that were expected as on date will now be available at a future date. This assumption moves the expected cash flows in a particular time bucket to one or multiple future time buckets based on a percentage of the cash flow occurring in that bucket. In a cash flow delay assumption, cash flow movement happens from previous buckets to the future buckets.

Refer section [Cash Flow Delay](#) for information on the steps involved in specifying this assumption.

The following steps are involved in applying the delay in cash flow timing assumption to cash flows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption. This is the delayed payment or receipt amount excluding penalty which is reversed.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties on the delayed payments or receipts, if any.

In cash flow delay assumption, the cash flow movement is always to a future time bucket. Therefore, 0% is assigned to the previous buckets in case of Increasing/Decreasing assignment as illustrated below:

Illustration: Delays assigned to a selected time bucket

Business Assumption Definition						Computation Assignment			
Product	Currency	From Bucket	To Bucket	Delayed Amount	Penalty	Contractual Cash flow (From Bucket)	Contractual Cash flow (To Bucket)	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Vehicle Loan	US Dollars	10-10 Days	12-12 Days	10%	5%	30000	23000	27000 [=(30000-30000*10%)]	26150 [=23000+(30000*10%) + {(30000*10%)*5%}]

Table 10 Cash Flow Movement - Cash Flow Delay

6.2.1.4 Delinquency

This assumption caters to the large and non large customers. This assumption is based on the anticipation of the bank that there can be an emergency loss due to delinquency of its customers which will affect the future cash flows. When a customer becomes delinquent, the cash flows of the delinquent buckets (as specified in percentage and amount) are moved to the overnight bucket. If you want to specify delinquency on large customers, then large customer dimension is selected; however the computation of cash flows is same for both large and non large customers. In a delinquency assumption, cash flow movement happens from forward bucket/s to the previous bucket (Overnight).

Refer section [Delinquency](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Cash flow assignment is done in the following manner:

$$\begin{aligned} \text{Cash Flow}_{\text{for Original Bucket}} &= -1 * (\text{Cash Flow}_{\text{Original Bucket}}) \\ \text{Cash Flow}_{\text{for Overnight Bucket}} &= (\text{Cash Flow}_{\text{Overnight Bucket}}) + (\text{Cash Flow}_{\text{Original Bucket}}) \end{aligned}$$

An example of the assumption applied to product type (Business loan), and currency (USD) for Large and Non Large Customers is illustrated below:

Illustration 1: Delays assigned to a selected time bucket

Business Assumption Definition				Computation Assignment				
Product	Customer	From Bucket	Delinquent Value	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (Overnight Bucket)	Delinquent (Value)	Revised Cash flow - From Bucket	Revised Cash flow (Overnight Bucket)
Business Loans	Large Customer	8-8Days	10%	30000	23000	3000 [=(30000*10%)]	27000 [=(30000-3000)]	40600 [=(23000+3000+5000+9600)]
		9-9Days	20%	25000		5000 [=(25000*20%)]	20000 [=(25000-5000)]	
		10-10Days	30%	32000		9600 [=(32000*30%)]	22400 [=(32000-9600)]	

Illustration 2: Delays assigned to a selected time bucket

Business Assumption				Computation Assignment				
Product	Customer	From Bucket	Delinquent Value	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (Overnight Bucket)	Delinquent (Value)	Revised Cash flow - From Bucket	Revised Cash flow (Overnight Bucket)
Home Loans	Non- Large Customer	3-3 Days	15%	15000	23000	2250 [=(15000*15%)]	12750 [=(15000-2250)]	27350 [=(23000+2250+2100)]
		4-4 Days	10%	21000		2100 [=(21000*10%)]	18900 [=(21000-2100)]	

Table 11 Cash Flow Movement – Delinquency

6.2.1.5 Prepayment

Prepayment is a situation where the customer repays the loan in part or full, at any time before the maturity of the loan. Prepayment would lead the bank to lose out on the interest component that it would have received if the loan was not pre-paid. Prepayment results in a cash inflow in a time bucket prior to the original time bucket and reduced cash inflow in the original time bucket. The percentage of prepayment is to be specified by you and the balance is payable only when it is due.

The prepayment supports prepayments on liabilities as well as assets in a single business assumption definition.

If a prepayment is specified on an asset or liability backed by collateral, the encumbrance period of the underlying collateral is re-calculated based on time bucket in which the asset or liability is completely paid up.

Refer section [Prepayment](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Cash flow assignment is done in the following manner:

$$\begin{aligned}
 &\text{Cash Flow for Original Bucket} \\
 &= -1 \\
 &\quad * (\text{Cash Flow}_{\text{Original Bucket}} \\
 &\quad * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})
 \end{aligned}$$

$$\begin{aligned}
 &\text{Cash Flow for Revised Bucket} \\
 &= (\text{Cash Flow}_{\text{Original Bucket}} \\
 &\quad * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})
 \end{aligned}$$

An example which explains the Assumption Value Based on Original Cash Flows across Business Assumptions is illustrated below.

A prepayment of 10% from 8-15 Day bucket to 1-7 Day bucket and a 20% rollover is defined from 1-7 Day bucket to 8-15 Day bucket. The contractual cash flow in 1-7 Day bucket is 5000 and 8-15 Day bucket is 8000. The impact on the 1-7 Day bucket based on original cash flows is illustrated below:

Cash Flow Assignment			
Assumption	Contractual Cash Flow in 1-7 Day Bucket	Impact of Assumption	Post-Assumption Cash Flow
No Assumption	5000	0	5000 [=5000 – 0]
Prepayment	5000	800 [= (8000*10%)]	5800 [=5000 + 800]
Rollover	5800	– 1000 [= – (5000*20%)]	4800 [= 5800 – 1000]

Table 12 Cash Flow Movement Prepayment

In this case, even though the cash flow has changed after applying the prepayment assumption, the original cash flow is used for estimating the impact of the rollover assumption.

6.2.1.6 Recovery

Recovery assumes part/full amount recovered from delinquent/ defaulted accounts. In this assumption, the contractual cash flows assigned to the overnight time bucket is considered. Even though contractually it is due immediately, the actual recovery takes place only over a period of time. In this assumption, the contractual cash flows assigned to the overnight time bucket is considered. Hence, based on past experiences you are allowed to specify the percentage of recovery in each time bucket. The balance percentage which is not specified by you is placed in the unspecified time bucket. Hence, the contractual cash flow is first deducted from the overnight time bucket and assigned to various other time buckets based on the defined percentages.

Refer section [Recovery](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Cash flow assignment is done for delinquent/defaulted cash flows in the following manner:

$$\begin{aligned}
 & \text{Cash Flow}_{\text{for Overnight Bucket}} \\
 & = -1 \\
 & * (\text{Cash Flow}_{\text{Overnight Bucket}} \\
 & * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified}) \\
 \\
 & \text{Cash Flow}_{\text{for Selected Bucket}} \\
 & = (\text{Cash Flow}_{\text{Original Bucket}} \\
 & * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified}) \\
 \\
 & \text{Cash Flow}_{\text{for Unspecified Bucket}} = (\text{Remaining Cash Flow}_{\text{Overnight Bucket}})
 \end{aligned}$$

An example of the assumption applied to product type (loan), legal entity (LE 1) and currency (USD) is illustrated below:

Business Assumption Definition						Cash flow Assignment			
Product Type	Legal Entity	Currency	Loan Status	Time Bucket	Business Assumption	Time Bucket	Default Cash Flow	Business Assumption	Adjusted Cash flow
Product 01	LE 1	USD	Default	1 – 30 days	10%	Overnight	10000		0 [=(10000-10000)]
						1 – 30 days		10%	1000 [= (10% *10000)]
				30 – 60 days	15%	30 – 60 days		15%	1500 [=(15%* 10000)]
				60 – 180 days	25%	60 – 180 days		25%	2500 [=(25% * 10000)]
						Unspecified i.e. 180 -			5000 [=(10000-1000-1500-2500)]

Table 13 Cash Flow Movement - Recovery

6.2.1.7 Rollover

Rollover refers to the rescheduling of a certain percentage of cash flows to a future time bucket. This occurs when an asset/liability is renewed for an additional term. The amount of cash flow rolled over is thus reduced/increased from the original time bucket and assigned to the new time bucket in the future.

Earlier in 2.0 Rollover of Assets and Rollover of Liabilities were two different assumptions. Now, a single assumption allows you to select both assets and liabilities and the assumption takes care of the assigning the assignment.

The assumption specification and computation method for this sub category remain unchanged. This sub category allows rollovers to be specified even on repos, reverse repos and swaps. In case of rollover of swaps, the user is required to select the transaction legs option as two.

If a rollover is specified on an asset or liability that has underlying collateral, then the availability of the underlying should be determined. Only if the underlying collateral is available during the extended period, the assumption should be allowed to be saved

Rollover of assets impacts the inflow amount and rollover of liabilities impacts the cash outflow amount. The signage and computation depends on the product type selected. In a rollover assumption, cash flow movement happens from previous bucket/s to the forward buckets.

Refer section [Rollover](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Rollover of Assets refers to the rescheduling of a certain percentage of cash flows to a future time bucket. This occurs when an asset is renewed for an additional term. The amount of cash flow rolled over is thus reduced from the original time bucket and assigned to the new time bucket. The effect of this assumption would be an altered final cash flow in the affected time buckets. Rollover of assets impacts the inflow amount.

Cash flow assignment is done in the following manner:

$$\begin{aligned}
 & \text{Cash Flow}_{\text{for Original Bucket}} \\
 & = -1 \\
 & * (\text{Cash Flow}_{\text{Original Bucket}} \\
 & * \text{Percentage Specified}_{\text{for Revised Bucket}}) \\
 \\
 & \text{OR (Amount Specified}_{\text{for Revised Bucket}})
 \end{aligned}$$

$$\begin{aligned}
 & \text{Cash Flow}_{\text{for Revised Bucket}} \\
 &= (\text{Cash Flow}_{\text{Original Bucket}} \\
 & \quad * \text{Percentage Specified}_{\text{for Revised Bucket}}) \\
 \\
 & \text{OR (Amount Specified}_{\text{for Revised Bucket}})
 \end{aligned}$$

For instance, Rollover of Assets is explained in the following example of the assumption applied to product type (Loan), legal entity (LE 1) and currency (USD).

Business Assumption Definition						Cash flow Assignment		
Product Type	Legal Entity	Currency	Original Maturity Bucket	Revised Time Bucket	Rollover %	Contractual Cash flow	Time Bucket	Revised Cash flow amount
Loan	LE 1	USD	15-30 Days	60-90 Days	10%	10000	15-30 Days	3000 [= 10000 – (10%* 10000) – (60% * 10000)]
						5000	60-90 Days	6000 [(= 5000 + (10* 10000)]
					180-360 Days	60%	7000	180-360 Days

Table 14 Cash Flow Movement - Rollover

Rollover of liabilities refers to the rescheduling of a certain percentage of cash flows to a future time bucket. It occurs when the liabilities are renewed for an additional term. The amount of cash flow rolled over is thus increased in the original maturity time bucket and assigned to the new maturity time bucket. The effect of the business assumption would be an altered final cash flow in the various time buckets. Rollover of liabilities impacts the cash outflow amount.

Cash flow assignment is done in the following manner:

$$\begin{aligned} & \text{Cash Flow}_{\text{for Original Bucket}} \\ & = -1 \\ & * \left(\text{Cash Flow}_{\text{Original Bucket}} \text{ Percentage Specified}_{\text{for Revised Bucket}} \right) \\ & \text{OR} \left(\text{Amount Specified}_{\text{for Revised Bucket}} \right) \\ & \text{Cash Flow}_{\text{for Revised Bucket}} \\ & = \left(\text{Cash Flow}_{\text{Original Bucket}} \right. \\ & \quad \left. * \text{Percentage Specified}_{\text{for Revised Bucket}} \right) \\ & \text{OR} \left(\text{Amount Specified}_{\text{for Revised Bucket}} \right) \end{aligned}$$

6.2.1.8 Run-Off

In a Run-off assumption the bank assumes that a certain percentage of deposits/liabilities will be withdrawn by their customers before the scheduled maturity of the deposit. This business assumption would result in an additional outflow in an earlier time bucket and a reduction in the contractual cash outflow in the original time bucket. The assumption can also be applied to assets as well, where the impact on cash flows will be opposite to that specified for deposits above.

The cash flow movement happens from forward bucket/s to the previous bucket/s since cash flows which were expected to be withdrawn at a future date are getting withdrawn as on date.

Refer section [Run-Off](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Cash flow assignment is done in the following manner:

<p><i>Cash Flow</i> for Original Bucket = -1 * (<i>Cash Flow</i> Original Bucket * Percentage Specified) OR (Amount Specified)</p> <p><i>Cash Flow</i> for Revised Bucket = (<i>Cash Flow</i> Original Bucket * Percentage Specified) OR (Amount Specified)</p>
--

An illustration is as follows:

Business Assumption Definition								
Legal Entity	Customer	From Bucket	To Bucket	Assumption Unit	Run-off	Assignment Method	Assumption Category	Based On
Legal Entity 1	Customer 2	6-6Days	3-3Days	Percentage	10%	Equal	Cash Flow Movement : Run - off	Cash Flows

Cash flow Assignment					
To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Overnight	20000	10000	500 [=(20000*10%)/4]	18000 [(20000-20000*10%)]	10500 [=(10000+500)]
1-1 Day		11000	500 [=(20000*10%)/4]		11500 [=(11000+500)]
2-2 Days		22000	500 [=(20000*10%)/4]		22500 [=(22000+500)]
3-3 Days		12000	500 [=(20000*10%)/4]		12500 [=(12000+500)]

Table 15 Cash Flow Movement - Run-off

6.2.2 Encumbrance

6.2.2.1 Encumbrance

This is a generic assumption which can be defined and caters to the different combinations available as part of rating downgrade and valuation changes of collateral.

Refer section [Encumbrance](#) for information on the steps involved in specifying this assumption.

The following steps are involved in applying the delay in cash flow timing assumption to cash flows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

6.2.2.2 Ratings Downgrade

In a bank, because of some financing transactions or derivatives with embedded downgrade triggers, downgrade in a bank's rating by a recognized credit rating institution will require the bank to post additional collateral. This assumption will impact the numerator of LCR that is, decrease in the market value of HQLA.

For some financing transactions or derivatives with embedded downgrade triggers, downgrade in a bank's rating by a recognized credit rating institution will require the bank to post additional collateral. The encumbrance assumption category assumes that the asset required to be posted as additional collateral is already available with the bank and will be encumbered. This will result in deduction of the relevant amount from the stock of high quality liquid assets as it is now no longer unencumbered.

Note: The assumption specification and computation method for this sub category corresponds to that available as part of the Additional Collateral - Rating Downgrade Decrease in Asset assumption type in version 2.0. This assumption is renamed as Ratings Downgrade in this version.

Refer section [Ratings Downgrade](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

New Stock of *HQLA* assignment is done in the following manner:

<i>Stock of High Quality Liquid Asset to be reduced</i>
--

$$= (\textit{Collateral Amount}_{\textit{for the specified notch}} * \textit{Percentage Specified}_{\textit{for Revised Bucket}})$$

OR $(\textit{Amount Specified}_{\textit{for Revised Bucket}})$

Assuming a downgrade trigger of 3-Notches, this assumption is specified as follows:

Business Assumption Definition		Cash Flow Assignment		
Asset Level	Downgrade Impact Value	Downgrade Impact Amount	Downgrade	Decrease in HQLA
Level 1 Asset	80%	11000	1 Notch	8800 [= (11000*80%)]
Level 1 Asset	100%	9000	2 Notches	9000 [= (9000*100%)]
Level 1 Asset	80%	80000	3 Notches	64000 [= (80000*80%)]

Table 16 Encumbrance - Ratings Downgrade

6.2.2.3 Valuation Changes

This is based on the assumption that a bank would require posting additional collateral because of a decrease in the value of current assets.

This assumption impacts the numerator of LCR that is; it results in a decrease in the stock of HQLA. In this assumption, the additional collateral posted will result in the selected assets being marked as encumbered. The relevant amount is deducted from the stock of high quality liquid assets where applicable. These assets will not be available for the purpose of counterbalancing or for estimating the cash inflows for LCR.

This assumption supports changes in the value of the collateral posted due to changes in market valuation of transaction or changes in the contract value. This further leads to cash outflow.

This assumption impacts the denominator of LCR that is, increase in the outflow for the Legal Entity. Some derivatives are secured by collateral to cover losses arising from changes in mark-to-market valuations. For changes in the value of the derivative, additional collateral is posted resulting in a cash outflow. The valuation changes can be with Natural currency or Selected Currency. Valuation changes can be specified in Amount or Percentage. Here, both ratings and notches downgrade are not applicable. The time buckets selected as part of the assumption parameters are the impacted time buckets.

Note: The assumption specification and computation method for this sub category corresponds to that available as part of the Additional Collateral - Valuation Changes – Asset Value Decrease assumption type in version 2.0. This assumption is renamed as Valuation Changes in this version.

Refer section [Valuation Changes](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

An example is as follows:

Based On	Assumption Unit	Assignment Method
Market Value	Percentage	Selected

Legal Entity	Product	Valuation Change Impact
LE 1	P4	100%
LE 2	P5	50%
LE 3	P4	20%
LE 4	P5	30%

Legal Entity	Product Type	Original Market Value	Revised Market Value
LE 1	P4	520000	0 [=520000-(100% * 520000)]
LE 2	P5	610000	305000 [610000- (50%*610000)]
LE 3	P4	160000	128000 [160000-(20% * 160000)]
LE 4	P5	120000	84000 [120000-(30% * 120000)]

Table 17 Encumbrance – Valuation Changes

6.2.3 Incremental Cash Flow

6.2.3.1 Incremental Cash Flow

This is a generic assumption which enables you to define and caters to the different combinations available as part of Incremental Cash Flow.

Refer section [Incremental Cash Flow](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

6.2.3.2 Drawdown

The assumption types Drawdown of Unutilized Credit and Drawdown of Funding Line of Credit, available as part of version 2.0, have been merged as part of the drawdown sub category. The assumption specification and computation method for this sub category remain unchanged. This sub category allows drawdown to be specified on lines of credit extended as well as received by banks in a single business assumption.

There is an amount line given to the bank or received by the banks which are allowed to drawdown. This allows drawdown to be specified on lines of credit extended as well as received by Banks.

Drawdown of Unutilized Credit: Banks generally allow its customers to withdraw a certain amount which is a percentage of the value specified as the limit. This business assumption is applied to the undrawn portion, the assumption being that certain portion of the undrawn amount is drawn by the customer at the specified time bucket thus leading to additional cash outflows. This assumption also allows you to specify the corresponding cash inflow for the specified cash outflow.

Drawdown of Funding Line of Credit: Banks also receive lines of credit from other banks and financial institutions. The bank can drawdown these lines as per its requirement at anytime during the tenure of the facility. A percentage of the total undrawn amount is assumed to be drawn down over each time bucket. Drawdown of funding line of credit results in cash inflow first and outflow at a later date. This assumption also allows you to specify the corresponding cash outflow for the specified cash inflow

This assumption also allows you to specify the corresponding cash inflow for the specified cash outflow.

Refer section [Drawdown](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Various options for cash flow assignment are available. Refer section [Cash Flows](#).

An illustration for drawdown is as follows:

$$\text{Cash Inflow} = \text{Undrawn Amount} \times \text{Drawdown \%}$$

$$\text{Cash Outflow} = \text{Cash Inflow} \times \text{Outflow \%}$$

Business Assumption Definition					Cash Flow Assignment		
Product Type	Primary Bucket	Off-Set Bucket	Undrawn amount	Drawdown Value	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Loan	1-7 Days	8-15 Days	10000	30%	5000	1-7 Days	8000 [= 5000 +30%* 10000]

Business Assumption Definition					Cash Flow Assignment		
Product Type	Primary Bucket	Off-Set Bucket	Undrawn amount	Drawdown Value	Contractual Cash Flow	Time Bucket	Revised Cash Flow
					8000	8-15 Days	5000 [=8000 - 30%*10000]

Here,

Primary bucket = Inflow bucket

Offset bucket = Outflow bucket

Table 18 Incremental Cash Flow – Drawdown

6.2.3.3 New Business

The new business assumption accounts for both the initial outflows as well as corresponding inflows occurring due to growth in the business represented by Leg 1 and Leg 2. This assumption also accounts for both the outflows and corresponding inflows occurring due to the growth in business represented by Leg 1 and Leg 2.

The Growth/New Business assumption category merges the following assumption types supported in version 2.0.

- Deposit Balance Growth (when Based on = Cash Flows)
- Asset Book Growth (when Based on = Cash Flows)
- Liability Book Growth (when Based on = Cash Flows)
- EOP Balance Growth of Assets (when Based on = EOP Balance)
- EOP Balance Growth of Liabilities (when Based on = EOP Balance)

The earlier assumptions which were supported in 2.0 maps to this assumption. The change is the earlier deposit balance growth assumption is now the new business assumption. In case you select the assumption type as Deposit Balance Growth, select Based On is selected as Cash Flows under this assumption.

In version 2.0 there were five different assumptions for New Business. These five assumptions have been merged into a single assumption and this how u can cater to each assumption:

- **Deposit Balance Growth (Based on = Cash Flows)**

Deposits balance refers to the cash in hand and the deposits maintained by the bank with other institutions including the central bank. Increase in deposit balance results in an increased cash inflow in the maturing time bucket. Note: Deposits Balance Growth can either be positive or negative.

- **Asset Book Growth (Based on = Cash Flows)**

Asset book refers to the balances of loans and advances given by the bank. Increase in the asset balance results in an increased cash outflow in the selected time bucket and corresponding inflows in future time buckets. This assumption accounts for both the initial outflows as well as corresponding inflows occurring due to growth in the business represented by Leg 1 and Leg 2.

- **Liability Book Growth (Based on = Cash Flows)**

Liability Book Growth refers to the growth in the value of deposits which are maintained by the bank’s customers or borrowings that have been taken by the bank. The growth in the value of deposits results in an additional cash outflow in the maturing time bucket. This assumption also accounts for both the outflows and corresponding inflows occurring due to the growth in business represented by Leg 1 and Leg 2.

- **EOP Balance Growth of Assets (Based on = EOP Balance)**

EOP Asset Balance of Growth assumption estimates new businesses based on the EOP balance of assets. It accounts for both legs of the transactions, that is, inflows as well as outflows.

- **EOP Balance Growth of Liabilities (Based on = EOP Balance)**

EOP Liability Balance Growth assumption estimates new businesses based on the EOP balance of liabilities. It accounts for both legs of the transactions, that is, inflows as well as outflows.

Refer section [New Business](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- If time specific or critical obligation, record the delay and indicate a breach.

Various options for cash flow assignment are available. Refer section [Cash Flows](#).

An illustration for Asset Book Growth is as follows:

Business Assumption Definition						Cash Flow Assignment			
Product Type	Legal Entity	Primary Bucket	Off-set Bucket	Growth	Off-set value	Contractual Cash flow (Primary Bucket)	Revised Contractual Cash flow (Primary bucket)	Contractual Cash flow (Off-set Bucket)	Revised Contractual Cash flow (Off-set Bucket)
Loans	LE1	3-3 Days	60-60 Days	15%	60%	20000	17000 [=20000-(20000*15%)]	25000	26800 [= (20000*15%*60%)+25000]

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			90-90 Days		20%			27000	27600 [=(20000*15%*20%)+27000]
			120-120 Days		20%			32000	32600 [=(20000*15%*20%)+32000]

Here,

Outflow Amount = Cash Flow * Growth %

Inflow Amount = Outflow Amount * Inflow %

Table 19 Incremental Cash Flow – New Business Example 1

An example for Liability Book Growth is as follows:

Business Assumption Definition						Computation			
Product Type	Legal Entity	Primary Bucket	Off-set Bucket	Growth	Off-set value	Contractual Cash flow (Primary Bucket)	Revised Contractual Cash flow (Primary bucket)	Contractual Cash flow (Off-set Bucket)	Revised Contractual Cash flow (Off-set Bucket)
Deposits	LE1	3-3 Days	4-4 Days	25%	60%	20000	25000 [=(20000+(20000*25%))]	25000	22000 [=(25000-(20000*25%*60%))]
			5-5 Days		40%			32000	30000 [=(32000-(20000*25%*40%))]

Here,

Inflow Amount = Cash Flow * Growth %

Outflow Amount = Inflow Amount * Outflow %

Table 20 Incremental Cash Flow – New Business Example 2

Note:

1. With reference to columns titled "Cash Flow" , if the value is positive, it is a cash inflow. If the value is negative, it will be a cash outflow.
2. 'Contractual cash flow- Primary' and 'Contractual cash flow- Secondary' refers to cash flows which are already present in the respective buckets. Similarly, revised column represents cash flows after application of this business assumption.
3. The cash flow signage explanation provided before holds good for both asset growth and liability growth.
4. In case of a liability growth, i.e. deposits, a growth from the bank's perspective means that there will be an inflow of funds first (bank receives deposits from customer first) and then there will be a corresponding outflow later (Bank returns deposit proceeds on maturity to customer). The converse holds good for asset growth. Please note that the first transaction bucket is always the primary bucket. In the example above on deposits, 3-3 days is defined as a primary bucket i.e. the first bucket where in this case, since it is a liability would result in an inflow in this bucket. The offset bucket will have an outflow.
5. The growth amount (delta) in the primary buckets and the offset buckets would be the same. Eg: In the example on deposits above, growth amount in primary bucket is 5000 (25% of 20000). The offset buckets have an amount of 5000 as well which is the sum of 3000 and 2000.

6.2.3.4 Ratings Downgrade

This assumption supports both rating based and notch based downgrade. These downgrades are specified for each legal entity within the bank's organization structure. This can come from multiple sources like Moody's, S&P and can be both short term and long term or a combination thereof. Since these rating downgrades are defined at a legal entity level, legal entity is a mandatory dimension for this assumption. If the downgrade is same across all legal entities, no individual legal entity is required to be selected.

For some financing transactions or derivatives with embedded triggers for downgrade, a downgrade of the bank's rating by a recognized credit rating institution requires the bank to post additional collateral. This will result in an increase in cash outflow for all the accounts that are triggered based on the corresponding downgrade impact amount and downgrade impact value specified by the bank. The downgrade trigger and the corresponding downgrade impact amount are available as part of the account information. For calculation of downgrade impact amount refer section [Other Calculations](#).

Note: The assumption specification and computation method for this sub category corresponds to that available as part of the Additional Collateral - Rating Downgrade Cash Flow Increase assumption type in version 2.0. This assumption is renamed as Ratings Downgrade in this version.

Refer section [Ratings Downgrade](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- c. If time specific or critical obligation, record the delay and indicate a breach.

Cash flow assignment is done in the following manner:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{Downgrade Impact Amount}_{\text{of the particular account which is triggered}} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})$$

The following example illustrates the impact of a notch based downgrade. Suppose legal entity 1 has 5 instruments whose downgrade triggers are specified as follows:

Account	Rating Type	Rating Source	Downgrade Trigger	Trigger Type	Impact Amount
Account 1	Short Term	Moody's	P-3	And	1000000
	Long Term	Moody's	A3	Or	
	Long Term	S&P	A-		
Account 2	Short Term	Moody's	P-2	And	250000

Account	Rating Type	Rating Source	Downgrade Trigger	Trigger Type	Impact Amount
	Long Term	S&P	BBB+		
Account 3	Short Term	Internal	A-3	Or	3000000
	Long Term	Moody's	Baa2		
Account 4	Long Term	Moody's	Baa1		750000
Account 5	Short Term	Moody's	P-2		1250000

The downgrade assumption is specified as follows:

Rating Type	Rating Source	Downgrade Trigger	Impact %	Time Bucket
Short Term	Moody's	2-Notches	100%	7 Days
Long Term	Moody's	3-Notches		

The new rating post downgrade is assessed as follows:

Rating Type	Rating Source	Current Rating	Rating post Downgrade
Short Term	Moody's	P-1	P-3 [= P-1 – 2 Notches]
Long Term	Moody's	Aa3	A3 [= Aa3 – 3 Notches]

The impact of the downgrade assumption, considering weekly time buckets, is calculated as follows:

Account	Applicability of Assumption	Reason	Cash Outflow / Encumbrance	Outflow Bucket
Account 1	Applicable	Both parts of the first condition are fulfilled. The second condition is Or, hence not required to be fulfilled if the first one is.	1000000 [=1000000*100%]	5 – 5 Week [=(7+15 Days)/5 Business Days]
Account 2	Not Applicable	The second part of the condition is not fulfilled.		
Account 3	Not Applicable	Either of the conditions is not fulfilled.		
Account 4	Not Applicable	The condition is not fulfilled		

Account	Applicability of Assumption	Reason	Cash Outflow / Encumbrance	Outflow Bucket
Account 5	Applicable	The condition is fulfilled as the quantum of downgrade specified as part of the assumption is greater than the downgrade trigger set for this instrument.	1250000 [=1250000*100%]	3 – 3 Week [=(7+5 Days)/5 Business Days]

The total impact of this assumption is a cash outflow or asset encumbrance of 2250000.

Table 21 Incremental Cash Flow - Ratings Downgrade

6.2.3.5 Run-off

Incremental Cash Flow Run-off is applied to the End of Period (EOP) balances indicating the amount that are withdrawn prior to their scheduled maturity. The computation methodology has one additional step that is, if cash flows exist for the dimension combination for which Run-off is specified, they are deleted and then the new cash outflows are generated.

Refer section [Run Off](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- If time specific or critical obligation, record the delay and indicate a breach.

For instance incremental cash flow Run-off is applied to Time Deposits whose EOP balance is \$ 10000. The assumption is applied on original balance to selected time buckets as follows:

Business Assumption Definition			Cash Flow Assignment		
Product Type	To Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	1-7 Days	10%	5000	1-7 Days	1000 [=5000 – 5000 +10000*10%]
	8-15 Days	20%	8000	8-15 Days	2000 [=8000 – 8000 +10000*20%]

Table 22 Incremental Cash Flow – Run-Off

6.2.3.6 Secured Funding/Financing

This assumption is based on debt backed or secured by collateral securities associated with lending. This assumption category refers to the generation of secured funding or creation of secured financing

transactions including secured loans, repos and so on. An example would be a mortgage, your house is considered collateral towards the debt. If you default on repayment, the bank seizes your house, sells it and uses the proceeds to pay back the debt.

Functionally, this assumption is similar to the new business assumption except for the inclusion of the underlying collateral and encumbrance status into picture.

Note:

- Assets can only be posted as collateral or specified as underlying only if they are unencumbered during the period between the Primary and Off-set bucket.
- The ability to filter assets based on their encumbrance period is supported.

The following steps are involved in applying the secured funding/financing assumption to cash flows:

1. Map inflows and outflows of the transaction to respective time buckets.
2. Calculate the corresponding interest amount.
3. Mark the assets selected as collateral/underlying as encumbered and update the encumbrance period.

Refer section [Secured Funding/Financing](#) for information on the steps involved in specifying this assumption.

For example: If a bank is giving out an additional loan with reference to an existing loan by taking in some collateral. This is an example of a secured funding transaction, as the bank receives collateral in exchange for the cash given out. Let's assume that the outstanding end of period balance of the original loan is 10,000. The bank extends another 10% of the loan by taking in a collateral against it say Borrow_1. Further the 10% being extended is completely offset as a bullet payment in a single bucket (100% in offset bucket).

The above scenario is defined in the business assumption as follows:

Business Assumption Definition						
Standard product type	Primary bucket	Primary value-leg 1	Offset bucket	Offset value- leg 1	Collateral/underlying	Encumbered value
Loans	7-7 days	10	15-15 days	100	Borrow_1	50%

Table 23 Incremental Cash Flow – Secured Funding/Financing

- Note:**
1. See [Secured Funding/Financing](#) for the User Interface details.
 2. The encumbered value represents the portion of the collateral which is used to secure the loan.

The cash flow computation for the above definition is explained as follows:

Buckets		Cash flow	
		Contractual	BaU
Primary bucket	7-7 days	5000	4000 (5000- (10%*10000))

Buckets		Cash flow	
		Contractual	BaU
Offset bucket	15-15 days	8000	9000 (8000+(10%*10000))

Given that the example is based on loans, the primary leg involves a deduction in cash and the secondary leg involves an addition in cash flow. The deduction/addition will be reverse in nature if the product type is an asset. The application identifies whether to deduct/add in primary bucket and offset bucket based on the product type chosen.

6.2.3.7 Valuation Changes

This assumption supports changes in the value of the collateral posted due to changes in market valuation of transaction or changes in the contract value. This further leads to cash outflow.

This assumption impacts the denominator of LCR that is, increase in the outflow for the Legal Entity.

Some derivatives are secured by collateral to cover losses arising from changes in mark-to-market valuations. For changes in the value of the derivative, additional collateral is posted resulting in a cash outflow. The valuation changes can be with Natural currency or Selected Currency. Valuation changes can be specified in Amount or Percentage. Here, both ratings and notches downgrade are not applicable.

The time buckets selected as part of the assumption parameters are the impacted time buckets.

Note: The assumption specification and computation method for this sub category corresponds to that available as part of the Additional Collateral - Valuation Changes assumption type in version 2.0. This assumption is renamed as Valuation Changes in this version.

Refer section [Valuation Changes](#) for information on the steps involved in specifying this assumption.

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- If time specific or critical obligation, record the delay and indicate a breach.

An example is as follows:

Based On	Assumption Unit	Assignment Method
Market Value	Percentage	Selected

Legal Entity	Product Type	Time Bucket	Valuation Change Impact
LE 1	PT 1	6-6 Days	100%

LE 2	PT 1	6-6 Days	80%
------	------	----------	-----

Account	Legal Entity	Product Type	Market Value	Valuation Change Impact
Account 1	LE 1	PT 1	100000	100000 [=100% *100000]
Account 2	LE 2	PT 1	200000	160000 [=80%*200000]
Account 3	LE 1	PT 1	300000	300000[=100%*300000]
Account 4	LE 2	PT 1	400000	320000[=80%*400000]

Legal Entity	Product Type	Outflow
LE 1	PT 1	400000[=100000 + 300000]
LE 2	PT 1	480000[=160000+ 320000]

Table 24 Incremental Cash Flow - Valuation Changes

Note:

Each of these does not calculate the impact of interest and have been explained in a principle perspective.

The examples provided for business assumption do not illustrate the impact of interest cash flows.

For information on interest cash flow calculations from the perspective of assumptions, refer section [Impact of Assumptions on Interest Cash Flows](#).

The example depicted in the section depicts only the additional outflow (delta) in the respective buckets due to the application of the assumption.

6.2.4 Value Change

6.2.4.1 Available Stable Funding Factor

Available stable funding (ASF) factors are the multiplication factors specified for liabilities and equities for the purpose of calculating the Net Stable Funding Ratio (NSFR). This assumption does not affect the cash flows for the purpose of computing liquidity gaps, but is used only for calculating the total available stable funding. This business assumption allows you to specify the ASF factor in percentage terms only. The percentage specified is applied to the selected combination in order to calculate the NSFR.

Refer section [Available Stable Funding Factor](#) for information on the steps involved in specifying this assumption

The steps involved in applying the delay in cash flow timing assumption to cash flows are as follows:

- a. Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- b. Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.

- c. If time specific or critical obligation, record the delay and indicate a breach.

Business Assumption Definition			Cash flow Assignment	
Product	Currency	ASF Factor	EOP Balance	Available Stable Funding
P1	USD	85%	10000000	8500000 [=(1000000*85%)]
P 2	USD	100%	200000	200000 [=(200000*100%)]
Term deposits from retail	USD	90%	320000	288000 [=(320000*90%)]
Unsecured funding from non-financial corporates	USD	50%	21000	10500 [=(21000*50%)]

Table 25 Value Change - Available Stable Funding Factor

6.2.4.2 Haircut

Haircuts are applied to high quality liquid assets in order to determine the stock of high quality liquid assets. This assumption does not affect the cash flows. Haircuts are allowed to be specified in percentage terms only. The haircut percentage specified will be applied to all assets with the dimensional attributes specified in order to calculate the stock of high quality liquid assets for the purpose of computing the Liquidity Coverage Ratio (LCR).

Refer section [Haircut](#) for information on the steps involved in specifying this assumption

Business Assumption		
Product Type	Asset Level	Haircut
Cash	Level 1	0%
Covered bond	Level 1	0%
Covered bond	Level 2A	15%
Common Equity	Level 2B	50%

Table 26 Value Change – Haircut

The assumption stores these haircuts at the account level granularity for further use while calculating the stock of HQLA for the purpose of LCR computation. The application then computes the haircut adjusted values of assets for inclusion in the stock of HQLA as follows:

Product Type	Asset Level	Haircut	Market Value	Haircut Adjusted Market Value
Cash	Level 1	0%	3000000	3000000 [=3000000*(1-0%)]
Covered bond	Level 1	0%	220000	187000 [=220000*(1-15%)]
Covered bond	Level 2A	15%	550000	412500 [=550000*(1-25%)]
Common Equity	Level 2B	50%	110000	55000 [=110000*(1-50%)]

6.2.4.3 Required Stable Funding Factor

Required stable funding factors are the multiplication factors specified for assets for the purpose of calculating the NSFR. This business assumption does not affect the cash flows for the purpose of computing liquidity gaps, but is used for calculating the total required stable funding only. This assumption allows you to specify the amount in percentage only. The percentage specified is applied to the selected combination in order to calculate the Net Stable Funding Ratio (NSFR).

Refer section [Required Stable Funding Factor](#) for information on the steps involved in specifying this assumption.

The following steps are involved in applying the delay in cash flow timing assumption to cash flows:

- Identify the original time bucket and calculate the cash outflow occurring in it due to the assumption.
- Identify the corresponding revised time buckets and the cash inflow occurring in it, including penalties, if any.
- If time specific or critical obligation, record the delay and indicate a breach.

Business Assumption		Computation	
Product	RSF Factor	EOP Balance	Required Stable Funding
Non-renewable loans to financial entities and financial corporates	0%	200000	0 [= (200000*0%)]
Gold	50%	150000	75000 [= (150000*50%)]

Business Assumption		Computation	
Product	RSF Factor	EOP Balance	Required Stable Funding
Corporate bonds rated A+ to A-	40%	220000	0 [= (220000*40%)]

Table 27 Value Change - Required Stable Funding Factor

6.3 Impact of Assumptions on Interest Cash Flows

In 2.0 the impact of business assumptions was only on principal cash flows. OFS LRM considers the impact on both principal and interest cash flows. This is treated in following three ways:

- When business assumption values are applied on both principal and interest cash flows.
- When assumption values are applied on principal cash flows only and interest is approximated.
- When interest is calculated and is not approximated.

When you select the approximate Interest parameter in the Run Definition window as Yes, then interest is approximated as explained below. If the parameter is selected as No, then the assumption values are applied on both principal and interest cash flows.

The following are the steps involved in approximating interest:

1. Obtain the principal and interest cash flows under contractual terms.
2. Bucket the contractual cash flows based on the time buckets selected while distinguishing between interest and principal cash flows in each time bucket.
3. Calculate the outstanding balance in each bucket under contractual terms. The outstanding balance in the first time bucket will be the EOP balance. The formula for calculating the outstanding balance for each subsequent bucket is as follows:

$$\begin{aligned}
 O/S\ Balance_{Bucket\ n,Contractual} \\
 &= O/S\ Balance_{Bucket\ n-1,Contractual} \\
 &\quad - Principal\ CF_{Bucket\ n-1,Contractual}
 \end{aligned}$$

Here,

O/S Balance: Outstanding Balance

CF: Cash Flows

4. Apply the business assumption to estimate principal cash flows. In case of balance based assumptions, this applies to the EOP balance. In case of cash flow based assumptions, this applies to the principal cash flows in a given bucket.

- Calculate the outstanding balance in each bucket under business-as-usual or stress terms. The outstanding balance in the first time bucket will be the EOP balance. The formula for calculating the outstanding balance for each subsequent bucket is as follows:

$$\begin{aligned}
 O/S\ Balance_{Bucket\ n,Assumption} &= O/S\ Balance_{Bucket\ n-1,Contractual} - Principal\ CF_{Bucket\ n-1,Contractual} \\
 &\quad - \sum_{i=0}^{n-1} Principal\ CF_{i,Assumption}
 \end{aligned}$$

- Calculate the proportionate impact on interest cash flows in each bucket under business-as-usual or stress terms as per the following formula:

$$\begin{aligned}
 Interest\ CF_{Bucket\ n,Assumption} &= \left(\frac{O/S\ Balance_{Bucket\ n-1,Assumption} \times Interest\ CF_{Bucket\ n-1,Contractual}}{O/S\ Balance_{Bucket\ n-1,Contractual}} \right) \\
 &\quad - Interest\ CF_{Bucket\ n-1,Contractual}
 \end{aligned}$$

- Calculate the total principal and interest cash inflows and outflows in each time bucket post assumption.
- Calculate the total inflows, outflows and net gap in each time bucket post assumption.

Note:

This computation is not applicable for the assumption types Rollover of Repos and Reverse Repos and Creation of Repos as the interest calculations are explicitly defined in these cases.

The tables below explain the impact of assumptions on Interest Cash Flows. The standard time buckets are Overnight, 1-7 Days, 8-15 Days, 16-30 Days, 1-3 Months, 3-6 Months, 6-12 Months, and > 1 Year. All examples consider an EOP balance of 5000 for time deposits.

Example 1: Impact on Interest Cash Flows under Growth Assumption

In this case a growth of 10 % on the EOP balance is defined in the 8-15 Days bucket. The offset bucket for this growth is a single bucket at 3-6 months. The cash flows are as shown below. The numbers for Contractual Principal and Interest cash flow are examples. The rest of the rows are computed values as per equations provided earlier in this section.

Condition	Measure	Cash Outflow							
		Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months	3-6 Months	6-12 Months	> 1 Year
Contractual	Principal Cash Flow	221.00	195.00	244.00	283.00	163.00	263.00	257.00	3374.00
	Interest Cash Flow	112.00	129.00	87.00	147.00	65.00	88.00	84.00	1477.42

Condition	Measure	Cash Outflow							
		Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months	3-6 Months	6-12 Months	> 1 Year
	O/S Balance	5000.00	4779.01	4584.00	4340.00	4057.00	3894.00	3631.00	3374.00
Business Assumption	Principal Cash Flow			-500.00			500		
	O/S Balance	5000.00	4779.00	4584.00	4840.00	4557.00	4394.00	3631.00	3374.00
	Proportionate Interest Cash Flow	0.00	0.00	0.00	0.0	16.94	8.01	11.30	0

Table 28 Impact on Interest Cash Flows under Growth Assumption

Note:

The assumption cash flows provide the impact of the assumption only and not the change in the original cash flows due to the assumption.

Example 2: Impact on Interest Cash Flows under Rollover Assumption

In this case a rollover of 10% is defined on the cash flows from the 1-7 Days bucket to the 3-6 Months bucket. The cash flows are as shown below. The numbers for Contractual Principal and Interest cash flow are examples. The rest of the rows are computed values as per equations provided earlier in this section.

Condition	Measure	Cash Outflow							
		Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months	3-6 Months	6-12 Months	> 1 Year
Contractual	Principal Cash Flow	221.00	195.00	244.00	283.00	163.00	263.00	257.00	3374.00
	Interest Cash Flow	112.00	129.00	87.00	147.00	65.00	88.00	84.00	1477.42
	O/S Balance	5000.00	4779.00	4584.00	4340.00	4057.00	3894.00	3631.00	3374.00
Business Assumption	Principal Cash Flow		-19.50				19.50		
	O/S Balance	5000.00	4779.00	4603.50	4359.50	4076.50	3913.50	3631.00	3374.00
	Proportionate Interest Cash Flow	0.00	0.00	0.0	0.37	0.66	0.31	0.44	0.00

Table 29 Impact on Interest Cash Flows under Rollover Assumption

Example 3: Impact on Interest Cash Flows under Run-off Assumption

In this case, a 10% EOP Balance Run-off is defined from the 3-6 Months bucket to the 1-7 Days bucket. The cash flows are as shown below. The numbers for Contractual Principal and Interest cash flow are examples. The rest of the rows are computed values as per equations provided earlier in this section.

Condition	Measure	Cash Outflow							
		Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months	3-6 Months	6-12 Months	> 1 Year
Contractual	Principal Cash Flow	221.00	195.00	244.00	283.00	163.00	263.00	257.00	3374.00
	Interest Cash Flow	112.00	129.00	87.00	147.00	65.00	88.00	84.00	1477.42
	O/S Balance	5000.00	4779.00	4584.00	4340.00	4057.00	3894.00	3631.00	3374.00
Business Assumption	Principal Cash Flow		500.00				-500.00		
	O/S Balance	5000.00	4779.00	4084.00	3840.00	3557.00	3394.00	3631.00	3374.00
	Proportionate Interest Cash Flow	0.00	0.00	0	-9.49	-16.94	-8.01	-11.3	0.00

Table 30 Impact on Interest Cash Flows under Run-off Assumption

When interest is calculated and is not approximated,

In case Include Interest Cash Flow is selected as Yes and Approximate Interest is selected as No, the application includes the interest cashflow. If you have selected cashflow type in dimension and node as Principal then assumption impacts only principal cashflows. If you have selected cashflow type in dimension and node as Interest then assumption impacts only Interest cashflows. In case you have not selected cashflow type in dimension, then assumption ignores the cashflow type. This means, it will include both principal and interest cash flows.

Note:

Interest cash flows occurring contractually are considered during calculations and the impact of assumptions on interest is calculated under BAU and stress conditions if the option 'Yes' is selected as part of the Include Interest Cash Flows field in the Run Definition window. Refer [Run Management Definition](#) section.

6.4 Cash Flow Assignment Methodologies

The complete list of cash flow assignment methods are as follows:

1. Selected time bucket only.
2. Equally to all time buckets up to and including the selected bucket.
3. In decreasing order to all time buckets up to and including the selected bucket.
4. In increasing order to all time buckets up to and including the selected bucket.
5. In proportion to the bucket size.

Detailed in the following sections are illustrations for each cash flow assignment method. The standard Level 0 time buckets are Overnight, 1-7 Days, 8-15 Days, 16-30 Days, 1-3 Months, 3-6 Months, 6-12 Months, 1-5 years and > 5 Years. All examples consider an EOP balance of 500000 for time deposits.

1. Selected Time Bucket

In this case, the assumption unit is applied to the cash flows and the assumption cash flows are mapped to the time bucket selected. If the assumption is not specified on Level 0 buckets, then the assignment to the lower buckets is done proportionately to the bucket size.

2. Equal Assignment

Here cash flows assigned to each bucket are up to the selected bucket. Assignments are made equally to the selected level and further assignment is done till the most granular level. The formulae under different conditions are as follows:

- a. EOP Balance Based Assumptions, Assumption Unit = Percentage

$$\begin{aligned}
 \text{Cash Flow}_{\text{Equal,Balance Based,}\%} &= \frac{\text{EOP Balance} \times \text{Assumption \%}}{\text{Number of LO Buckets}} \\
 \text{Cash Flow}_{\text{Equal,Balance Based,}\%} &= \frac{\text{EOP Balance} \times \text{Assumption \%}}{\text{Number of Level X Buckets}}
 \end{aligned}$$

Where,

Level X Buckets: Higher granular buckets

Business Assumption			Cash Flow Assignment		
Product	From Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	- 2500 [= 10000 - {(500000*5%)/2}]
			5000	1-7 Days	- 7500 [= 5000 - {(500000*5%)/2}]

Table 31 Equal Assignment under Balance Based Assumptions, %

- b. Cash Flow Based Assumptions, Assumption Unit = Percentage

$$\begin{aligned}
 \text{Cash Flow}_{\text{Equal,CF Based,}\%} &= \frac{\text{Cash Flow}_n \times \text{Assumption \%}}{\text{Number of LO Buckets}} \\
 \text{Cash Flow}_{\text{Equal,CF Based,}\%} &= \frac{\text{Cash Flow}_n \times \text{Assumption \%}}{\text{Number of Level X Buckets}}
 \end{aligned}$$

Where, n: Selected bucket

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	9800 [= 10000 – {(8000*5%)/2}]
			5000	1-7 Days	4800 [= 5000 – {(8000*5%)/2}]

Table 32 Equal Assignment under Cash Flow Based Assumptions, %

c. Assumption Unit = Value

$$Cash\ Flow_{Equal,\$} = \frac{Assumption\ Value}{Number\ of\ LO\ Buckets}$$

$$Cash\ Flow_{Equal,\$} = \frac{Assumption\ Value}{Number\ of\ Level\ X\ Buckets}$$

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	3000	10000	Overnight	8500 [= 10000 – (3000/2)]
			5000	1-7 Days	3500 [= 5000 – (3000/2)]

Table 33 Equal Assignment, Value

3. Proportionate Assignment

Cash flows are assigned to each bucket up to the selected bucket in proportion to the bucket size. Assignments are made proportionately to the selected level and further assignment is done till the most granular level. The formulae under different conditions are as follows:

a. EOP Balance Based Assumptions, Assumption Unit = Percentage

$$CashFlow_{Proportionate,BalanceBased,\%} = (EOPBalance \times Assumption\%) \times \frac{t}{T}$$

Where,

t: Number of days in the given Level X bucket

T: Total number of days up to the selected bucket

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	10000 [= 10000 – {(500000*5%)*0/7}]
			5000	1-7 Days	- 20000

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
					[= 5000 - {(500000*5%)*7/7}]

Table 34 Proportionate Assignment under Balance Based Assumptions, %

- b. Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Proportionate,CF\ Based\ \%} = (Cash\ Flow_n \times Assumption\ \%) \times \frac{t}{T}$$

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	10000 [= 10000 - {(8000*5%)*0/7}]
			5000	1-7 Days	4600 [= 5000 - {(8000*5%)*7/7}]

Table 35 Proportionate Assignment under Cash Flow Based Assumptions, %

- c. Assumption Unit = Value

$$Cash\ Flow_{Proportionate,\$} = Assumption\ Value \times \frac{t}{T}$$

Business Assumption			Cash Flow Assignment		
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Revised Cash Flow
Time Deposits	8-15 Days	3000	10000	Overnight	10000 [= 10000 - (3000*0/7)]
			5000	1-7 Days	2000 [= 5000 - (3000*7/7)]

Table 36 Proportionate Assignment, Value

4. Decreasing Assignment

Cash flows are assigned to each bucket up to the selected bucket in decreasing order based on ranks assigned to cash flows. Assignments are made in decreasing order to selected level and further assignment is done till the most granular level. The formulae under different conditions are as follows:

- a. EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Decreasing,Balance\ Based\ \%} = (EOP\ Balance \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

Where,

Bucket Rank: This is the rank assigned to each Level X bucket within the bucket set. The rank is assigned in decreasing order that is, 1 is assigned to the last bucket in the set, 2 is assigned to the previous bucket and so on.

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	1-3 Months	5%	10000	Overnight	4	0 [= 10000 – (500000*5%)*4/10]
			5000	1-7 Days	3	- 2500 [= 5000 – (500000*5%)*3/10]
			8000	8-15 Days	2	3000 [= 8000 – (500000*5%)*2/10]
			3000	16-30 Days	1	500 [= 3000 – (500000*5%)*1/10]

Table 37 Decreasing Assignment under Balance Based Assumptions, %

b. Cash Flow Based Assumptions, Assumption Unit = Percentage

$$\begin{aligned}
 & \text{Cash Flow}_{\text{Decreasing, CF Based, \%}} \\
 & = (\text{Cash Flow}_n \times \text{Assumption \%}) \times \left(\frac{\text{Bucket Rank}}{\sum \text{Bucket Rank}} \right)
 \end{aligned}$$

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	1-3 Months	5%	10000	Overnight	4	9880 [= 10000 – (6000*5%)*4/10]
			5000	1-7 Days	3	4910 [= 5000 – (6000*5%)*3/10]
			8000	8-15 Days	2	7940 [= 8000 – (6000*5%)*2/10]
			3000	16-30 Days	1	2970 [= 3000 – (6000*5%)*1/10]

Table 38 Decreasing Assignment under Cash Flow Based Assumptions, %

c. Assumption Unit = Value

$$Cash\ Flow_{Decreasing,\$} = Assumption\ Value \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	1-3 Months	3000	10000	Overnight	4	8800 [= 10000 – (3000*4/10)]
			5000	1-7 Days	3	4100 [= 5000 – (3000*3/10)]
			8000	8-15 Days	2	7400 [= 8000 – (3000*2/10)]
			3000	16-30 Days	1	2700 [= 3000 – (3000*1/10)]

Table 39 Decreasing Assignment, Value

5. Increasing Assignment

Cash flows are assigned to each bucket up to the selected bucket in increasing order based on ranks assigned to cash flows. Assignments are made in increasing order to the selected level and further assignment is done till the most granular level. The formulae under different conditions are as follows:

a. EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Increasing,Balance\ Based,\%} = (EOP\ Balance \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

Where,

Bucket Rank: Rank assigned to each Level 0 bucket within the bucket set. The rank is assigned in increasing order i.e. 1 is assigned to the first bucket in the set, 2 is assigned to the next bucket and so on.

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	1	1666.67 [= 10000 – (500000*5%)*1/3]
			5000	1-7 Days	2	- 11666.67

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
						[= 5000 – (50000*5%)*2/3]

Table 40 Increasing Assignment under Balance Based Assumptions, %

b. Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Increasing,CF\ Based,\%} = (Cash\ Flow_n \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	8-15 Days	5%	10000	Overnight	1	9866.67 [= 10000 – (8000*5%)*1/3]
			5000	1-7 Days	2	4733.33 [= 5000 – (8000*5%)*2/3]

Table 41 Increasing Assignment under Cash Flow Based Assumptions, %

c. Assumption Unit = Value

$$Cash\ Flow_{Increasing,\$} = Assumption\ Value \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

Business Assumption			Cash Flow Assignment			
Product	Time Bucket	Run-off	Contractual Cash Flow	Time Bucket	Bucket Rank	Revised Cash Flow
Time Deposits	8-15 Days	3000	10000	Overnight	1	9000 [= 10000 – (3000*1/3)]
			5000	1-7 Days	2	3000 [= 5000 – (3000*2/3)]

Table 42 Increasing Assignment, Value

Note:

If assumptions are specified on bucket levels other than Level 0, the assignment is done at the selected level and further assignment is done at the higher granular levels, using the same cash flow assignment methodology selected, till assignment has been made to Level 0 buckets. The only exception is the selected time bucket method where the cash flow is assigned proportionately to higher granular bucket levels based on the bucket size. In version 2.0 the assignment to more granular levels was done equally.

An illustration of assignment across multiple levels is provided in the following table. Suppose \$1000 is assigned in increasing order to buckets at multiple levels. The assignment is done as follows:

Level 2 Bucket	Rank	Amount Assigned	Level 1 Bucket	Rank	Amount Assigned	Level 0 Bucket	Rank	Amount Assigned
1 – 3 Week	1	333.33 [= (1000*1/3)]	1 Week	1	111.11 [= (333.33*1/3)]	1 Week	1	111.11 [= (111.11*1/1)]
			2 – 3 Week	2	222.22 [= (333.33*2/3)]	2 Week	1	74.07 [= (222.22*1/3)]
						3 Week	2	148.15 [= (222.22*2/3)]
4 – 8 Week	2	666.67 [= (1000*2/3)]	4 – 5 Week	1	222.22 [= (666.67*1/3)]	4 Week	1	74.07 [= (222.22*1/3)]
						5 Week	2	148.15 [= (222.22*2/3)]
			6 – 8 Week	2	444.44 [= (666.67*1/3)]	6 Week	1	74.07 [= (444.44*1/6)]
						7 Week	2	148.15 [= (444.44*2/6)]
						8 Week	3	222.22 [= (444.44*3/6)]

Table 43 Cash Flow Assignment to Multiple Bucket Levels

6. New Business

End of Period (EOP) Asset Balance of Growth assumption allows you to select the method for cash flow assignment. Various options for cash flow assignment available are as follows:

- Decreasing – In decreasing order to all time buckets up to and including the selected time bucket.
- Equal – Equally to all time buckets up to and including the selected time bucket.
- Proportional – In proportion to the time bucket size.
- Selected – Selected time bucket only.

Decreasing Cash flow assignment is done using the following formula:

<p><i>Cash Flow</i> <small>for Bucket n</small> = EOP amount * Percentage Specified * (1 – Percentage Specified)⁽ⁿ⁻¹⁾</p>

where n = number of time buckets

Equal cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Total number of Time Buckets}}$$

Proportional Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Number of days in Time bucket } n} * \frac{\text{Total number of days in all the considered Time buckets}}$$

Selected Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})$$

EOP Liability Balance Growth assumption allows you to select the method for cash flow assignment. Various options for cash flow assignment available are as follows:

- Decreasing – In decreasing order to all time buckets up to and including the selected time bucket.
- Equal – Equally to all time buckets up to and including the selected time bucket.
- Proportional – In proportion to the time bucket size.
- Selected – Selected time bucket only.

Decreasing Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \text{EOP amount} * \text{Percentage Specified} * (1 - \text{Percentage Specified})^{(n-1)}$$

where n = number of time bucket

Equal Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Total number of time buckets}}$$

Proportional Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Number of days in Time bucket } n} * \frac{\text{Total number of days in all the considered Time buckets}}$$

Selected Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{EOP amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})$$

7. Drawdown

Funding Line of Credit allows you to select the method for cash flow assignment. This business assumption also allows you to select the method for cash flow assignment. Various options for cash flow assignment available are as follows:

- Decreasing – In decreasing order to all time buckets up to and including the selected time bucket.
- Equal – Equally to all time buckets up to and including the selected time bucket.
- Proportional – In proportion to the time bucket size.
- Selected – Selected time bucket only.

Decreasing Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \text{Undrawn amount} * \text{Percentage Specified} * (1 - \text{Percentage Specified})^{(n-1)}$$

where n = number of time bucket

Equal Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Total number of Time Buckets}}$$

Proportional Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified}) * \frac{\text{Number of days in Time bucket } n}{\text{Total number of days in all the considered Time buckets}}$$

Selected Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})$$

Credit Line Draw down allows you to select the method for cash flow assignment. This assumption also allows you to specify the corresponding cash outflow for the specified cash inflow.

Various options for cash flows assignment available for this assumption are as follows:

- Decreasing – In decreasing order to all time buckets up to and including the selected time bucket.
- Equal – Equally to all time buckets up to and including the selected time bucket
- Proportional – In proportion to the time bucket size
- Selected – Selected time bucket only.

Decreasing Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \text{Undrawn amount} * \text{Percentage Specified} * (1 - \text{Percentage Specified})^{(n-1)}$$

where n = number of time bucket

Equal Cash flow assignment is done using following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = \frac{(\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})}{\text{Total number of Time Buckets}}$$

Proportional Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified}) * \frac{\text{Number of days in Time bucket } n}{\text{Total number of days in all the considered Time buckets}}$$

Selected Cash flow assignment is done using the following formula:

$$\text{Cash Flow}_{\text{for Bucket } n} = (\text{Undrawn amount} * \text{Percentage Specified}) \text{ OR } (\text{Amount Specified})$$

6.4.1 Assumption Calculation

In the Run Definition window, assumptions can either be “Applied To” Changing Balance/Cash Flows or Original Balance/Cash Flows. This calculation is applied across business assumptions in a single Run. It is applicable across business assumptions based on the option selected as part of the Assumption Applied To field in the Run Definition window. This means that all assumptions are now executed sequentially and the effects of the previous assumption are taken into account if the Changing Balance/Cash Flows option is selected in the Run Definition window.

1. Original Balance/ Cash Flows:

When the user selects Original Balance/Cash Flows as a Run level parameter, it calculates the assumption based on the original balance. It has a standalone effect i.e. assumption value is always applied on the original balance. This basis is applicable to each subsequent business assumption where the effects of the previous assumption are ignored for the purpose of estimating the impact of an assumption i.e. the assumption cash flows arising out of the given assumption.

Example 1: In case of original balance, when a Run is executed with two assumptions, the assumption value is defined on the original balance and not on the revised balance of the selected bucket (Refer table 2 – Customer 2)

Run 1: Original Balance (Run-off and Rollover)

Assumption 1: Run-off

Business Assumption Definition								
Legal Entity	Customer	From Bucket	To Bucket	Assumption Unit	Run-off	Assignment Method	Assumption Category	Based On
Legal Entity 1	Customer 2	6-6Days	3-3Days	Percentage	10%	Equal	Cash Flow Movement : Run - off	Cash Flows

Computation					
To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Overnight	20000	10000	500 $(20000*10\%)/4$	18000 $(20000-2000)$	10500 $(10000+500)$
1-1 Day		11000	500 $(20000*10\%)/4$		11500 $(11000+500)$
2-2 Days		22000	500 $(20000*10\%)/4$		22500 $(22000+500)$
3-3 Days		12000	500 $(20000*10\%)/4$		12500 $(12000+500)$

Table 44 Assumption Calculation - Original Balance/ Cash Flows(Run-off)

Assumption 2: Rollover

Business Assumption Definition								
Legal Entity	Customer	From Bucket	To Bucket	Assumption Unit	Rollover	Assignment Method	Assumption Category	Based On
Legal Entity 1	Customer 1	6-6Days	7-7 Days	Percentage	10%	Selected	Cash Flow Movement : Rollover	Cash Flows
	Customer 2		8-8 Days		20%			

Computation					
To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Rollover	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
7-7 Days	20000	7000	2000 (20000*10%)	14000 (20000-2000-4000)	9000 (7000+2000)
8-8 Days		10500	4000 (20000*20%)		14500 (10500+4000)

Table 45 Assumption Calculation - Original Balance/ Cash Flows (Rollover)

2. Changing Balance/Cash Flows:

This takes into account the cascading effect of an assumption on cash flows and EOP balance at a Run level parameter. Cascading effect refers to the scenario where the impact of the assumption value is calculated based on changing balance across assumptions and “not within an assumption”. However, cascading effect can be seen across assumptions at Run level taking into consideration the impact of the previous assumption on the EOP balance or cash flows. In this case, the cash flows or EOP balances are recalculated after each assumption and the subsequent assumption values are calculated based on the updated cash flows or balances.

Example 1: In case of changing balance, when a Run is executed with two assumptions, the assumption value is defined on the revised balance of the selected buckets.

Run 2: Changing Balance (Run-off and Cash Flow Delay)

Assumption 1: Run-off

Business Assumption Definition									
Legal Entity	Customer	From Bucket	To Bucket	Assumption Unit	Applied to	Run-off	Assignment Method	Assumption Category	Based On
Legal Entity 2	Customer 3	6-6 Days	3-3 Days	Percentage	Changing Balance	10%	Equal	Cash Flow Movement : Run - off	Cash Flows

Computation

To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Overnight	20000	10000	500 (20000*10%)/4	18000 (20000- 2000)	10500 (10000+500)
1-1Days		11000	500 (20000*10%)/4		11500 (11000+500)
2-2Days		22000	500 (20000*10%)/4		22500 (22000+500)
3-3Days		12000	500 (20000*10%)/4		12500 (12000+500)

Table 46 Assumption Calculation - Changing Balance/Cash Flows (Run-off)

Assumption 2: Cash Flow Delay

Business Assumption Definition							
Customer	From Bucket	To Bucket	Assumption Unit	Applied to	Assignment Method	Assumption Category	Based On
Customer 3	6-6 Days	12-12 Days	Percentage	Changing Balance	Selected	Cash Flow Movement : Cash Flow Delay	Cash Flows

Computation				
Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Delay + Penalty	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
18000	23000	10% + 5%	16200 (18000- 10%*18000)	24890 {23000+ (18000*10%) + (1800*5%)}

Table 47 Assumption Calculation- Cash Flow Delay

In the above computation, when Run is executed with a new assumption category, assumption value is applied on the changing balance.

6.5 Business Assumption Definition

The Business Assumption Definition window has the following sections for the purpose of defining assumption parameters:

- Linked To
- Assumption Details
- Assumption Properties
- Dimension Selection
- Time Bucket Definition Selection
- Assumption Parameter Specification

6.5.1 Linked To

The details must be specified as follows:

- **Folder:** Select the **Folder** which is specific to the business assumption definition.
- **Access Type:** Choose the access type option, Read/Write or Read Only.

6.5.2 Assumption Details

The details for each business assumptions are entered here as follows:

- **Assumption Name:** Specify the Assumption Name.
- **Assumption Description:** Enter the assumption description.

6.5.3 Assumption Properties

Assumption properties are the basic parameters required for defining a business assumption. They include:

- Assumption Category
- Assumption Sub-Category
- Based On
- Assumption Legs
- Assignment Method – Leg 1
- Assignment Method – Leg 2
- Assumption Unit
- Assumption Currency
- Ratings Downgrade
- Transaction Legs
- Charge Penalty
- Specify Collateral/Underlying
- Sale Specification By

6.5.3.1 Assumption Category

The application supports multiple types of business assumptions, each of which are classified into 4 broad categories based on the behavior exhibited by the individual business assumptions. These categories are selected from a drop down list as follows:

- Cash Flow Movement
- Encumbrance
- Incremental Cash Flow
- Value Change

The other assumption properties required to be specified by a user as part of this section will depend on the selection of the assumption category.

6.5.3.2 Assumption Sub-category

The application supports multiple types of business assumptions, each of which are classified into sub-categories based on the behavior exhibited by the individual business assumptions. These sub-categories are selected from a drop down list as follows:

- a. Cash Flow Movement
 - Asset Sale
 - Cash Flow Delay
 - Cash Flow Movement
 - Delinquency
 - Prepayment
 - Recovery
 - Rollover
 - Run-off
- b. Incremental Cash Flow
 - Drawdown
 - Incremental Cash Flow
 - New Business
 - Ratings Downgrade
 - Run-off
 - Secured Funding/Financing
 - Valuation Changes
- c. Encumbrance
 - Encumbrance
 - Ratings Downgrade
 - Valuation Changes

- d. Value Change
 - Available Stable Funding Factor
 - Haircut
 - Required Stable Funding Factor

6.5.3.3 Based On

This option determines the measure that the assumption values are applied to in order to obtain cash flows. From the drop-down list, you are allowed to select the option on which different assumption values are applied.

The table below helps to understand the set of parameters for each assumption sub-category and sub-category.

Assumption Category	Assumption Sub-Category	Based On
Cash Flow Movement	Cash Flow Movement	<ol style="list-style-type: none"> 1. Cash Flows 2. EOP Balance 3. Fair Value 4. Fair Value of Collateral Posted 5. Fair Value of Collateral Received 6. High Run-off Category 1 Balance 7. High Run-off Category 2 Balance 8. High Run-off Category 3 Balance 9. Highly Stable Balance 10. Insured Balance 11. Less Stable Balance 12. Market Value 13. Market Value of Collateral Posted 14. Market Value of Collateral Received 15. Stable Balance 16. Uninsured Balance
	Run-Off	<ol style="list-style-type: none"> 1. Cash Flows 2. EOP Balance 3. High Run-off Category 1 Balance

Assumption Category	Assumption Sub-Category	Based On
		<ol style="list-style-type: none"> 4. High Run-off Category 2 Balance 5. High Run-off Category 3 Balance 6. Highly Stable Balance 7. Insured Balance 8. Less Stable Balance 9. Stable Balance 10. Uninsured Balance
	Prepayment	Cash Flows
	Cash Flow Delay	Cash Flows
	Delinquency	Cash Flows
	Recovery	Cash Flows
	Rollover	<ol style="list-style-type: none"> 1. Cash Flows 2. Fair Value of Collateral Posted 3. Fair Value of Collateral Received 4. Market Value of Collateral Posted 5. Market Value of Collateral Received
	Asset Sale	<ol style="list-style-type: none"> 1. EOP Balance 2. Fair Value 3. Market Value
Encumbrance	Encumbrance	<ol style="list-style-type: none"> 1. Downgrade Impact Value 2. Fair Value 3. Fair Value of Collateral Posted 4. Fair Value of Collateral Received 5. Fair Value of Excess Collateral 6. Fair Value of Required Collateral 7. Largest 30 Day Cumulative Collateral Amount

Assumption Category	Assumption Sub-Category	Based On
		<ul style="list-style-type: none"> 8. Market Value 9. Market Value of Collateral Posted 10. Market Value of Collateral Received 11. Market Value of Excess Collateral 12. Market Value of Required Collateral
	Ratings Download	Downgrade Impact Value
	Valuation Changes	<ul style="list-style-type: none"> 1. Fair Value 2. Fair Value of Collateral 3. Fair Value of Collateral Posted 4. Fair Value of Collateral Received 5. Fair Value of Excess Collateral 6. Fair Value of Required Collateral 7. Largest 30 Day Cumulative Collateral Amount 8. Market Value 9. Market Value of Collateral Posted 10. Market Value of Collateral Received 11. Market Value of Excess Collateral 12. Market Value of Required Collateral
<p>Incremental Cash Flow</p>	<p>Cash Incremental Cash Flow</p>	<ul style="list-style-type: none"> 1. Available Undrawn Amount 2. Cash Flows 3. Downgrade Impact Value 4. EOP Balance 5. Fair Value 6. Fair Value of Collateral Posted 7. Fair Value of Collateral Received 8. Fair Value of Excess Collateral 9. Fair Value of Required Collateral

Assumption Category	Assumption Sub-Category	Based On
		<ul style="list-style-type: none"> 10. General Ledger Balance 11. High Run-off Category 1 Balance 12. High Run-off Category 2 Balance 13. High Run-off Category 3 Balance 14. Highly Stable Balance 15. Highly Stable Balance Withdrawal Nonpenalty 16. Insured Balance 17. Largest 30 Day Cumulative Collateral Amount 18. Less Stable Balance 19. Market Value 20. Market Value of Collateral Posted 21. Market Value of Collateral Received 22. Market Value of Excess Collateral 23. Market Value of Required Collateral 24. Non Operational Balance 25. Stable Balance 26. Stable Balance Withdrawal Nonpenalty 27. Undrawn Balance 28. Uninsured Balance
	Run-Off	<ul style="list-style-type: none"> 1. Available Undrawn Amount 2. EOP Balance 3. EOP amount with significant penalty or withdrawal 4. Fair Value of Collateral Posted 5. Fair Value of Collateral Received 6. General Ledger Balance 7. High Run-off Category 1 Balance

Assumption Category	Assumption Sub-Category	Based On
		<ul style="list-style-type: none"> 8. High Run-off Category 2 Balance 9. High Run-off Category 3 Balance 10. High run-off category 1 Amount Withdrawal without penalty 11. High run-off category 2 Amount Withdrawal without penalty 12. High run-off category 3 Amount Withdrawal without penalty 13. Highly Stable Balance 14. Highly Stable Balance Withdrawal Nonpenalty 15. Insured Amount Withdrawal without penalty 16. Insured Balance 17. Less Stable Balance 29. Market Value of Collateral Posted 30. Market Value of Collateral Received 18. Non Operational Balance 19. Stable Balance 20. Stable Balance Withdrawal Nonpenalty 21. Uninsured Amount Withdrawal without penalty 22. Uninsured Balance
	Drawdown	<ul style="list-style-type: none"> 1. Adjusted Undrawn Amount 2. Available Undrawn Amount 3. Undrawn Balance
	New Business	<ul style="list-style-type: none"> 1. Cash Flows 2. EOP Balance
	Ratings Downgrade	Downgrade Impact Value

Assumption Category	Assumption Sub-Category	Based On
	Secured Funding / Financing	<ol style="list-style-type: none"> 1. Cash Flows 2. EOP Balance
	Valuation Changes	<ol style="list-style-type: none"> 1. Fair Value 2. Fair Value of Collateral Posted 3. Fair Value of Collateral Received 4. Fair Value of Excess Collateral 5. Fair Value of Required Collateral 6. Largest 30 Day Cumulative Collateral Amount 7. Market Value 8. Market Value of Collateral Posted 9. Market Value of Collateral Received 10. Market Value of Excess Collateral 11. Market Value of Required Collateral
Value Change	Available Stable Funding Factor	EOP Balance
	Haircut	<ol style="list-style-type: none"> 1. Fair Value 2. Market Value
	Required Stable Funding Factor	EOP Balance

Table 48 Based On

6.5.3.4 Assumption Legs

This option determines if only the off-set leg or both the primary and the off-set legs are required for the purpose of specifying the business assumption value as part of the assumption specification section. This is based on the type of business assumption being specified. For instance, in case of rollover, prepayments, Run-offs etc. assumption values are applied only to the off-set leg as the primary leg of the transaction has already occurred in the past. However, in case of a new business assumption, such as deposit growth, both the primary leg (amount deposited) and the off-set leg (repayment of amount deposited) are required as both legs occur in the future. This selection is determined by the assumption sub category selected. In the case of sub categories where only one option is applicable, the selection

has been defaulted to **One** in an un-editable mode. In cases where both values are applicable, **Two** can be selected.

The following options are present:

- **One:** In case, One is selected as assumption leg, then only column appears for entering the off-set assumption value.
- **Two:** In case, Two is selected as the assumption leg, then two columns appear for entering primary assumption value and secondary or off-set value.

6.5.3.5 Assignment Method – Leg 1

This option determines how the primary assumption value is allocated to time buckets. There are specific methods in which the assumption value can be distributed across buckets. Assignment methods determine the manner in which the primary assumption values are assigned to multiple buckets in order to determine the cash flows. Leg 1 is applicable when only one leg of the transaction is affected i.e. when the assumption legs field value is selected as One.

The options are as follows:

- Selected Time Bucket
- Increasing
- Decreasing
- Equal
- Proportionate

1. Selected Time Bucket

This method assigns the cash flows only to the time buckets against which the assumption value is specified. If the assumption is not specified on Level 0 buckets, then the assignment to the more granular buckets is done proportionately to the bucket size.

The formula is as follows:

$$Cash\ Flow_{Selected\ Cash\ Flow\ Based} \% = (Cash\ Flow \times Assumption\ \%) or\ Amount$$

The time buckets used for computation are as follows:

N_BUCKET_NO	V_BUCKET_NAME	V_BUCKET_NAME_CATEGORY
1	Overnight	Overnight
2	1-10Days	1-15Days
3	11-15Days	1-15Days

N_BUCKET_NO	V_BUCKET_NAME	V_BUCKET_NAME_CATEGORY
4	16-20Days	16-30Days
5	21-25Days	16-30Days
6	26-30Days	16-30Days

The example below illustrates allocation of cash flows when the assumption value is specified for a Level 0 bucket.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Cash Flow Movement- Run-off	Percentage	Original Balance	Selected	Cash Flow

Business Assumption					Computation				
Product	Customer	From Bucket	To Bucket	Run-off %	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Time Deposits	Customer 1	10-10Days	5-5Days	10%	30000	23000	3000 (30000 * 10%)	33000 (30000+ 3000)	20000 (23000-- 3000)

Table 49 Assignment Method Leg 1 - Selected Time Bucket Example 1

However, this allocation differs for Levels other than Level 0 buckets as illustrated in the following example.

The example below illustrates, the selected Cash Flow assignment method on Level 1 buckets.

Business Assumption				Computation					
Customer	From Bucket	To Bucket	Run-off %	Contractual Cash Flow (From Bucket)	To Bucket	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Customer 1	16-30Days	1-15Days	10%	50000	1-10Days	21000	5000 (50000*10%)	45000 (50000-5000)	24333.33 {21000+(5000*10/15)}
					11-15Days	15000			16666.67 {15000+(5000*5/15)}

Table 50 Assignment Method Leg 1 - Selected Time Bucket Example 2

2. Increasing assignment:

The cash flows are assigned to each bucket up to the selected bucket in increasing order based on ranks assigned to cash flows. Assignments are made in increasing order to the selected level and further assignment is done until the most granular level.

The formulae under different conditions are as follows:

1. When, Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Increasing,CF\ Based\ \%} = (Cash\ Flow_n \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

2. When, Assumption Unit = Value

$$Cash\ Flow_{Increasing,\$} = Assumption\ Value \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

The example below illustrates, Increasing Cash Flow assignment method based on Cash Flow.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Cash Flow Movement-Run-off	Percentage	Original Balance	Increasing	Cash Flow

Business Assumption					Computation						
Product	Customer	From Bucket	To Bucket	Run-off %	To Bucket	Bucket Rank	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off (Value)	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Assets	Customer 1	10-10Days	3-3Days	10%	Overnight	1	30000	20000	300 =(30000 *10%)*1 /10	27000 =(30000- 3000)	20300 = (20000+300)
					1-1Days	2			600 =(30000 *10%)*2 /10		21600 == (21000+600)
					2-2Days	3			900 =(30000 *10%)*3 /10		19900 = (19000+900)
					3-3Days	4			1200 =(30000 *10%)*4 /10		28200 = (27000+1200)

Table 51 Assignment Method Leg 1 - Increasing assignment Example 1

1. When, EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Increasing\ Balance\ Based\ \%} = (EOP\ Balance \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum Bucket\ Rank} \right)$$

The example below illustrates, Increasing Cash Flow assignment method based on EOP Balance. Here, EOP Balance (Time Deposits) is assumed as 300000.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Incremental Cash Flow : Run-off	Percentage	Original Balance	Increasing	EOP Balance

Business Assumption				Computation				
Product	Customer	Primary Bucket	Run-off (%)	Bucket Rank	Primary Bucket	Contractual Cash Outflow (Primary Bucket)	Run-off	Revised Cash Outflow (Primary Bucket)
Time Deposits	Customer 1	1-1 Days	10	1	Overnight	20000	10000 (300000*10%)*1/3	10000
				2	1-1 Days	30000	20000 (300000*10%)*2/3	20000

Table 52 Assignment Method Leg 1 - Increasing assignment Example 2

3. Decreasing Assignment

The Cash flows are assigned to each bucket up to the selected bucket in decreasing order based on ranks assigned to cash flows. Assignments are made in decreasing order to selected level and further assignment is done until the most granular level.

The formulae under different conditions are as follows:

1. When, Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Decreasing,CF\ Based\ \%} = (Cash\ Flow_n \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum\ Bucket\ Rank} \right)$$

2. When, Assumption Unit = Value

$$Cash\ Flow_{Decreasing,\$} = Assumption\ Value \times \left(\frac{Bucket\ Rank}{\sum\ Bucket\ Rank} \right)$$

The example below illustrates, Decreasing Cash Flow assignment method based on Cash Flow.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Cash Flow Movement - Run-off	Percentage	Original Balance	Decreasing	Cash Flow

Business Assumption					Computation						
Product	Customer	From Bucket	To Bucket	Run-off %	To Bucket	Bucket Rank	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Assets	Customer 1	10-10Days	3-3Days	10%	Overnight	4	30000	20000	1200 (30000*10%) ^{4/10}	27000 (30000-3000)	21200 (20000+1200)
					1-1Days	3			900 (30000*10%) ^{3/10}		21900 (21000+900)
					2-2Days	2			600 (30000*10%) ^{2/10}		19600 (19000+600)
					3-3Days	1			300 (30000*10%) ^{1/10}		30000 (27000+300)

Table 53 Assignment Method Leg 1 - Decreasing Assignment Example 1

- When, EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Decreasing\ Balance\ Based\ \%} = (EOP\ Balance \times Assumption\ \%) \times \left(\frac{Bucket\ Rank}{\sum\ Bucket\ Rank} \right)$$

The example below illustrates, Decreasing Cash Flow assignment method based on EOP Balance. Here, EOP Balance (Time Deposits) is assumed as 300000.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Incremental Cash Flow : Run-off	Percentage	Original Balance	Decreasing	EOP Balance

Business Assumption				Computation				
Product	Customer	Primary Bucket	Run-off (%)	Bucket Rank	Primary Bucket	Contractual Cash Outflow (Primary Bucket)	Run-off	Revised Cash Outflow (Primary Bucket)
Time Deposits	Customer 1	1-1 Days	10	2	Overnight	20000	20000 (300000*10%)* 2/3	20000
				1	1-1 Days	30000	10000 (300000*10%)* 1/3	10000

Table 54 Assignment Method Leg 1 - Decreasing Assignment Example 2

4. Equal Assignment

The Cash flows are to be assigned equally up to the selected bucket. Assignments are made equally to the selected level and further assignment is done until the most granular level.

The formulae under different conditions are as follows:

1. When, Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Equal,CF\ Based,\%} = \frac{Cash\ Flow_n \times Assumption\ \%}{Number\ of\ Level\ X\ Buckets}$$

2. When, Assumption Unit = Value

$$Cash\ Flow_{Equal,CF\ Based,\$} = \frac{Assumption\ Value}{Number\ of\ Level\ X\ Buckets}$$

The example below illustrates, Equal Cash Flow assignment method based on Cash Flow. Here, Level X buckets are assumed as Higher granular bucket.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Cash Flow Movement- Run-off	Percentage	Original Balance	Equal	Cash Flow

Business Assumption					Computation					
Product	Customer	From Bucket	To Bucket	Run-off %	To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Assets	Customer 1	10-10Days	5-5 Days	10%	Overnight	30000	20000	500 (30000*10%)/6	27000 =(30000-3000)	20500 (20000+500)
					1-1Days		21000	500 (30000*10%)/6		21500 (21000+500)
					2-2Days		19000	500 (30000*10%)/6		19500 (19000+500)
					3-3Days		27000	500 (30000*10%)/6		27500 (27000+500)

Business Assumption					Computation					
Product	Customer	From Bucket	To Bucket	Run-off %	To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
					4-4Days		13000	500 (30000*10%)/6		13500 (13000+500)
					5-5Days		11000	500 (30000*10%)/6		11500 (11000+500)

Table 55 Assignment Method Leg 1 - Equal Assignment Example 1

1. When, EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Equal, Balance\ Based, \%} = \frac{EOP\ Balance \times Assumption\ \%}{Number\ of\ Level\ x\ Buckets}$$

The example below illustrates, Equal Cash Flow assignment method based on EOP Balance. Here, EOP Balance (Time Deposits) is assumed as 500000.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Incremental Cash Flow : Run-off	Percentage	Original Balance	Equal	EOP Balance

Business Assumption				Computation			
Product	Customer	Primary Bucket	Run-off (%)	Primary Bucket	Contractual Cash Outflow (Primary Bucket)	Run-off	Revised Cash Outflow (Primary Bucket)
Time Deposits	Customer 1	1-1 Days	10	Overnight	20000	50000 (500000*10%)	45000 20000+(50000/2)
				1-1 Days	30000		55000 30000 + (50000/2)

Table 56 Assignment Method Leg 1 - Equal Assignment Example 2

5. Proportionate Assignment

The Cash flows are assigned to each bucket up to the selected bucket in proportion to the bucket size. Assignments are made proportionately to the selected level and further assignment is done until the most granular level.

The formulae under different conditions are as follows.

1. When, Cash Flow Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Proportionate, CF\ Based, \%} = (Cash\ Flow_n \times Assumption\ \%) \times \frac{I}{J}$$

2. When, Assumption Unit = Value

$$Cash\ Flow_{Proportionate, \$} = Assumption\ Value \times \frac{I}{J}$$

The example below illustrates, Proportionate Cash Flow assignment method based on Cash Flow.

Here,

t = Number of days in the given Level x bucket

T= Total number of days up to the selected bucket

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Cash Flow Movement- Run-off	Percentage	Original Balance	Proportionate	Cash Flow

The time buckets which are considered for the computation are as follows:

N_BUCKET_NO	V_BUCKET_NAME
1	Overnight
2	1-10Days
3	11-15Days
4	16-20Days
5	21-25Days
6	26-30Days

Business Assumption					Computation					
Product	Customer	From Bucket	To Bucket	Run-off %	To Bucket	Contractual Cash Flow (From Bucket)	Contractual Cash Flow (To Bucket)	Run-off	Revised Cash flow - From Bucket	Revised Cash flow -To Bucket
Assets	Customer 1	26-30Days	11-15Days	10%	Overnight	30000	20000	0 (30000*10%)*0/15	27000 =(30000- 3000)	20000
					1-10Days		21000	2000 (30000*10%)*10/15		23000 (21000+2000)
					11-15Days		19000	1000 (30000*10%)*5/15		20000 (19000+1000)

Table 57 Assignment Method Leg 1 - Proportionate Assignment Example 1

3. When, EOP Balance Based Assumptions, Assumption Unit = Percentage

$$Cash\ Flow_{Proportionate, Balance\ Based} = (EOP\ Balance \times Assumption\ \%) \times \frac{t}{T}$$

The example below illustrates, Proportionate Cash Flow assignment method based on EOP Balance. Here, EOP Balance (Time Deposits) is assumed as 300000.

Assumption Category	Assumption Unit	Applied to	Assignment Method	Based On
Incremental Cash Flow :Run-off	Percentage	Original Balance	Proportionate	EOP Balance

Business Assumption				Computation				
Product	Customer	Primary Bucket	Run-off (%)	Bucket Rank	Primary Bucket	Contractual Cash Outflow (Primary Bucket)	Run-off	Revised Cash Outflow (Primary Bucket)
Time Deposits	Customer 1	1-10Days	10	1	Overnight	20000	0 (300000*10%)*0/10	20000
				2	1-10Days	30000	30000 (300000*10%)*10/10	60000 (30000 + 30000)

Table 58 Assignment Method Leg 1 - Proportionate Assignment Example 2

6.5.3.6 Assignment Method – Leg 2

This option determines how the secondary assumption value is allocated to time buckets. Secondary assumption value refers to the off-set value which can be selected in addition to the primary assumption value. Assignment methods determine the manner in which the primary assumption values are assigned to multiple buckets in order to determine the cash flows. Leg 2 is applicable when only two legs of the transaction are affected i.e. when the assumption legs field value is selected as Two. Secondary assumption value is the off-set value specified by the you in addition to the primary assumption value, and is applicable only when assumption leg is selected as Two. This is applicable only when assumption legs are selected as Two.

The options are as follows:

1. Selected Time Bucket
2. Increasing
3. Decreasing
4. Equal
5. Proportionate

The detailed calculations pertaining to each assignment method are explained in section [Assignment Method – Leg 1](#).

6.5.3.7 Assumption Unit

This option helps to identify the unit based on which the assumption is defined. The options which can be selected from the drop-down list are as follows:

- Amount
- Percentage
- Units

Note: Units are only applicable on selection of the sub category Asset Sale as part of the Cash Flow Movement assumption category).

6.5.3.8 Assumption Currency

This option is applicable only when the assumption unit is selected as Amount. In case, the assumption unit is selected as Amount then following options are displayed:

- Natural Currency
- Currency Selection

Note: In case you select Natural Currency then the currency must be selected as part of dimension selection.

6.5.3.9 Ratings Downgrade

Ratings downgrade caters to the downgrade of a legal entity's rating. This option identifies the downgrade level for the purpose of triggering the need for additional collateral. This parameter identifies the downgrade specified for a legal entity.

This downgrade can either be specified as:

- Rating Based or,
- Notches Based

Note: This is applicable only on selection of the sub category Encumbrance and Ratings Downgrade as part of the assumption categories Incremental Cash Flow or Encumbrance.

6.5.3.10 Transaction Legs

This option determines if one or two off-set legs are required for the purpose of specifying the business assumption value as part of the assumption specification section. This is based on the product type. For instance, in case of loans, deposits etc. there is only one primary leg and one off-set leg whereas in case of swaps there are two primary and two off-set legs for the same transaction.

One of the following options is selected:

- **One:** In case option One is selected, only one column for the specification of each assumption leg is displayed as part of the assumption specification table that is, one column each for primary and off-set assumption value specification.
- **Two:** In case option Two is selected, two columns are displayed for specifying each assumption leg that is two columns each for primary and off-set assumption value specification.

6.5.3.11 Charge Penalty

The Charge Penalty options are as follows:

- **Yes:** In case you select Yes, an additional column in the assumption value grid is added to specify penalty.
- **No:** If No is selected, no Penalty is required.

Note: This option is enabled only for the following assumption sub-categories under Cash Flow Movement category:

- Cash Flow Movement
- Prepayment
- Cash Flow Delay

6.5.3.12 Specify Collateral/Underlying

This option determines if existing unencumbered assets are required to be posted as collateral or underlying in the case of secured funding and repo transactions. The options are as follows:

- **Yes:** If Yes is selected, existing assets can be posted as collateral for each row in the assumption specification table.
- **No:** If No is selected, no collateral is required.

6.5.3.13 Sale Specification By

When the assumption category is selected as Cash Flow Movement and the sub category is selected as Asset Sale, Sale Specification By field is allowed for selection. The two ways to specify a sale are as follows:

- **Individual Assets** - You can specify a sale by selecting the assets individually. In the dimension browser you have only Asset browser. Here, you must select each individual asset which you need to sell.
- **Dimensions** – You can select the relevant dimensions such as Product ,Currency and Rating. You are allowed to select individual members within this and all assets which have asset dimensional attributes that are selected are sold. All individual assets that have the attributes of the selected dimensions and dimension members are sold.

6.5.4 Dimension Selection

The two steps to select Dimensions are as follows:

- **Dimension Selection:** One or multiple dimensions can be selected from a list of dimensions displayed in the dimension browser. The selected dimensions are displayed in the dimension selection section and as columns in the assumption specification table. You are allowed to drag and drop the dimensions which are displayed as part of the dimension selection section for sequencing the dimensions. In case the sequence of dimensions is changed, the respective columns in the assumption specification table get re-arranged.

In case new dimensions are added to an existing definition, the assumption specification table is re-formed and all assumption values are re-set.

- **Dimension Member Selection:** One or multiple members can be selected for each selected dimension. These are displayed as row items in the assumption specification table. In case you change any dimension member or add any new dimension to the existing definition the grid will be reset.

For explanation on how to add dimensions which are displayed in the BAU window under the Dimension browser, refer section [Aggregation Dimension Selection](#).

For more details on list dimensions, refer section [Annexure A: LRM Data Flow and Dimensions](#).

6.5.5 Time Bucket Definition Selection

The three steps to select Time Buckets are as follows:

- **Time Bucket Definition Selection:** One time bucket definition can be selected from a list of definitions displayed in the time bucket definition browser. Here it is a single selection. Only one time bucket can be selected. The values which are defined in the Time Bucket definition window are displayed here. For more information refer [Time Buckets](#) section. On selection of the time bucket definition, it is displayed in the time bucket definition selection against both <Time Bucket 1> Selection and <Time Bucket 2> Selection.
- **<Time Bucket 1> Selection:** One or multiple time buckets from the given time bucket definition can be selected as part of <Time Bucket 1> Selection. The selected time buckets are displayed as row items in the assumption specification table. The name of this parameter changes depending upon on the assumption category selected as per the mapping provided below:

Assumption Category	<Time Bucket 1> Selection
Cash Flow Movement	From Bucket Selection
Incremental Cash Flows	Primary Bucket Selection
Encumbrance	From Bucket Selection
Value Change	Not Applicable

Table 59 Time Bucket 1 Selection

- **<Time Bucket 2> Selection:** One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of <Time Bucket 2> Selection. The time buckets selected are displayed as drop-down values in the <Time Bucket 2> column in each row of the assumption specification table. The name of this parameter changes depending upon the assumption category selected as per the mapping provided below:

Assumption Category	<Time Bucket 2> Selection
Cash Flow Movement	To Bucket Selection
Incremental Cash Flows	Off-set Bucket Selection
Encumbrance	To Bucket Selection
Value Change	Not Applicable

Table 60 Time Bucket 2 Selection

Note:

- Time Bucket Selection is not applicable when the assumption category is selected as value change.
- The values which are defined in the Time Bucket definition window are displayed as part of Time Bucket Definition Selection section in the Business Assumptions Definitions window.

6.5.6 Assumption Specification

The assumption specification table is generated after all the assumption properties, dimensions and time buckets are selected. This displays the dimensions selected as column values and the dimension members as row values. Additionally, it displays one or two time bucket columns based on the assumption properties selected. The names of these columns change based on the assumption category selected as follows:

Assumption Category	<Time Bucket 1>	<Time Bucket 2>
Cash Flow Movement	From Bucket	To Bucket
Incremental Cash Flows	Primary Bucket	Off-set Bucket
Encumbrance	From Bucket	To Bucket
Asset Value Change	Not Applicable	Not Applicable

Table 61 Assumption Specification

6.6 Understanding Business Assumption Summary

Note: Time bucket definitions have to be created before defining a new business assumption. Refer section [Time Buckets](#) for more information.

To open the Business Assumptions Summary window, in **Financial Services Analytical Applications Infrastructure** window choose, **Risk Applications > Liquidity Risk Management > Business Assumptions** on the Left-Hand Side (LHS) menu.

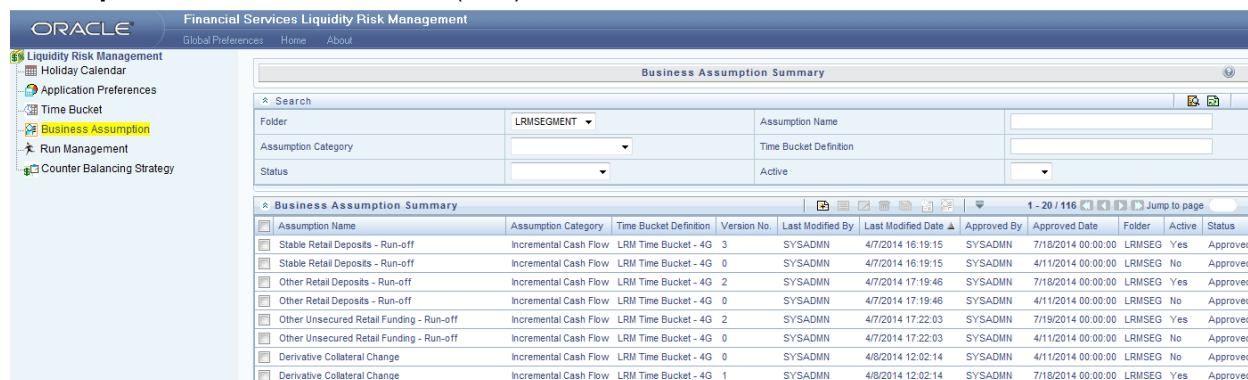




Figure 15 Business Assumption Summary







The Business Assumption Summary window displays the following fields. The definitions based on the search criteria are listed under List of Business Assumptions.

This is the search section which contains multiple parameters. You can specify one or multiple search criteria in this section. When you click the search icon, depending up on the search criteria, this filters and displays the relevant search combination parameters under the Business Assumption Summary as a list.

Search	
Field\Icon	Description
Search 	This icon allows you to search the Assumption on the basis of the search criteria specified. Search criteria include a combination of Folder, Assumption Name, Assumption Category, Time Bucket Definition, Status, and Active Status. The business assumptions displayed in the List of Business Assumptions table are filtered based on the search criteria specified on clicking of this icon.
Reset 	This icon allows you to reset the search section to its default state that is, without any selections. Resetting the search section displays all the existing business assumption definitions in the List of Business Assumptions table.
Folder	This field allows you to search for the pre-defined business assumption definitions on the basis of the selected folder. This field displays a list of folders that you have access to as a drop-down. Selection of a folder from the drop down list displays only those business assumptions that have been defined within the selected folder/segment in the List of Business Assumption table.

Search	
Field\Icon	Description
Assumption Name	This field allows you to search the pre-defined business assumption definitions on the basis of the assumption name. Enter the assumption name.
Assumption Category	This field allows you to search the pre-defined business assumption definitions on the basis of the assumption category. This field displays a list of categories that you have access to as a drop-down. Selection of a assumption category from the drop down list displays only those business assumptions that have been defined within the selected assumption category in the List of Business Assumption table.
Time Bucket Definition	This field allows you to search the pre-defined business assumption definitions on the basis of the Time Bucket Definition. Enter time bucket definition which was defined in the time bucket definition window.
Status	This field allows you to search the pre-defined business assumption definitions on the basis of approval status. This field displays a list of statuses that you have access to as a drop-down that is, Approved, Draft, In Review, Open, Pending Approval or Retired. Click the drop-down list to select Approved or Rejected status. Selection of a status from the drop-down list displays only those business assumptions that have been defined within the selected status in the List of Business Assumption table.
Active	This field allows you to search the pre-defined business assumption definitions on the basis of active status. This field displays a status that you have access to as a drop-down that is, Yes or No. Selection of a status from the drop-down list displays only those business assumptions that have been defined within the selected status in the List of Business Assumption table.

Table 62 Business Assumptions - Search

List of Business Assumptions		
Icon Name	Icon	Description
Add		This icon allows you to define a new assumption.
View		This icon allows you to view the selected assumption.
Edit		This icon allows you to edit the selected assumption.
Delete		This icon allows you to delete the selected assumption.
Copy		The icon allows a definition to be copied and resaved as a new definition.
Make Active		This icon allows activating the selected version of the assumption. The active version of the assumption is considered for Run definition.


List of Business Assumptions		
Icon Name	Icon	Description
Workflow Summary		The icon displays the approval summary for the definition.


Table 63 Business Assumptions Summary

6.7 Defining a New Business Assumption

Business Assumption Definition window allows you to define a new assumption definition in the LRM Application.

Figure 16 Business Assumption Definition

To create a new business assumption, perform the following steps:

1. Click  icon on the **Business Assumption Summary** window.
The **Business Assumption Definition** window is displayed where you can define new business assumption definition.
2. In **Linked To** section,
 - a. Select the **Folder** from the drop-down list, which is specific to the business assumption definition.
 - b. Select the **Access Type**. It either is Read/Write or Read Only option.





3. In **Assumption Detail** section,
 - a. Enter the **Assumption Name** which is unique across infodoms. This field allows special characters.
 - b. Enter the **Assumption Description**. This field allows special characters.



Note:

- Both the **Assumption Name** and **Assumption Description** fields allow special characters.
- **Version Number** for the assumption is generated automatically.

4. In **Assumption Properties** section,
 - a. Select the **Assumption Category** from the drop-down list. The drop-down list displays the following:
 - Cash Flow Movement
 - Incremental Cash Flow
 - Encumbrance
 - Value Change
 - b. Each assumption category has a sub-category associated with it, which has to be selected from the Assumption Sub-Category drop-down list. Detailed description on the assumption categories and sub-categories are provided as part of [Selecting Assumption Category](#) section.
 - c. Choose the measure to which the assumption parameter values are applied in order to calculate the cash flows from the **Based On** drop-down list. Refer to section [Based On](#) for a detailed list.
 - d. Select the number of **Assumption Legs** for which the assumption parameter values are to be specified as either One or Two. Refer to section [Assumption Legs](#) for more details on assumption legs.
 - e. Select the **Assignment Method – Leg 1** from the drop-down list, that is Selected Time Bucket, Increasing, Decreasing, Equal or Proportionate. The specific methods in which the assumption value can be assigned across multiple buckets are detailed as part of section [Assignment Method – Leg 1](#).
 - f. Select the **Assignment Method – Leg 2** from the drop-down list. That is, Selected Time Bucket, Increasing, Decreasing, Equal or Proportionate. The specific methods in which the assumption value can be assigned across multiple buckets are detailed as part of section [Assignment Method – Leg 2](#).
 - g. Select the **Assumption Unit** from the drop-down list as one of the following options: Amount, Percentage or Unit. Unit is applicable when Sale is specified. This parameter is the unit based on which the assumption values are specified. For more information refer section [Assumption Unit](#).
 - h. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. For more information refer section [Assumption Currency](#).
-

You can either select the option as Natural Currency or choose any other currency from the drop-down list which is required as part of the definition.

- i. Select the **Rating Downgrade** option. That is, Notch Based or Ratings Based. These are enabled when the assumption sub category is selected as Ratings Downgrade. For more information refer section [Ratings Downgrade](#).
 - j. Choose the **Transaction Leg** option that is, One or Two. One of the following options is selected. For more information refer section [Transaction Legs](#).
 - k. Choose the **Charge Penalty** option that is, Yes or No. In case you select Yes, an additional column in the assumption value grid is added to specify penalty. This option is enabled only for specific assumptions. For more information refer section [Charge Penalty](#).
 - l. Choose **Specify Collateral/Underlying** option as either Yes or No. This parameter determines if existing unencumbered assets are required to be posted as collateral or underlying that is, in case of secured funding and repo transactions. For more information refer section [Specify Collateral/Underlying](#).
 - m. When the assumption category is selected as Cash Flow Movement and the sub category is selected as Asset Sale, **Sale Specification By** field is allowed for selection. Choose either Individual Assets or Dimensions to specify a sale. For more information refer section [Sale Specification By](#).
5. In **Dimension Selection**, perform the following steps:
- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.
- Note:**
- In the dimension panel, you can add a maximum of seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
6. In **Time Bucket Definition Selection**, perform the following steps:
- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
-

- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Here it is a single selection. Only one time bucket can be selected. The values which are defined in the Time Bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against both <Time Bucket 1> Selection, and <Time Bucket 2> Selection.
- e. For **<Time Bucket 1> Selection**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of <Time Bucket 1> Selection. The selected time buckets are displayed as row items in the assumption specification table. The name of this parameter changes depending upon on the assumption category selected as per the mapping provided below:

Assumption Category	<Time Bucket 1> Selection
Cash Flow Movement	From Bucket Selection
Incremental Cash Flows	Primary Bucket Selection
Encumbrance	From Bucket Selection
Value Change	Not Applicable

- f. For **<Time Bucket 2> Selection**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of <Time Bucket 2> Selection. The time buckets selected are displayed as drop-down values in the <Time Bucket 2> column in each row of the assumption specification table. The name of this parameter changes depending upon the assumption category selected as per the mapping provided below:




Assumption Category	<Time Bucket 2> Selection
Cash Flow Movement	To Bucket Selection
Incremental Cash Flows	Off-set Bucket Selection
Encumbrance	To Bucket Selection
Value Change	Not Applicable

7. After the assumption parameters are selected,

- a. Click  icon on the Business Assumption Definition window.


The **Assumption Specification** table is generated. This displays the dimensions selected as column values and the dimension members as row values. Additionally, it displays one or two time bucket columns. The names of these columns change based on the assumption category selected as follows:

Assumption Category	<Time Bucket 1>	<Time Bucket 1>
Cash Flow Movement	From Bucket	To Bucket
Incremental Cash Flows	Primary Bucket	Off-set Bucket
Encumbrance	From Bucket	To Bucket
Value Change	Not Applicable	Not Applicable

- b. You are allowed to sort and filter on each dimension column.
- c. The dimensions columns are re-arranged based on drag and drop enabled in the Dimension Selection section.
- d. To delete a table row in assumption specification, select a row and then click  icon.
- e. To add a sub row to each row, for instance to specify multiple <Time Bucket 2>, select a row and then click  icon.
- f. To delete sub rows, right-click on the sub row to delete.
- g. To enable Collateral Posting, select a row and then click  icon. The **Asset Browser** window with only unencumbered assets is displayed.

Note: This icon is enabled only when the Post Collateral parameter is selected as Yes.

The assets that are unencumbered during the selected period are displayed even if they are encumbered currently. These are allowed to be posted as collateral for the unencumbered period.

- After selecting the members, click  icon to move them under Selected Members section and then click **OK**.
- The selected collateral is displayed in the respective row in Assumption Specification. Encumbrance value can be specified as a percentage against each collateral. This column enables specification of partial encumbrance. You can select one or multiple members for each selected dimension. These are displayed as sub rows against the dimensional combination row for which this is being specified in the assumption specification table.

8. To save the definition, click **Save**.
9. To go back to the Business Assumption Definition Summary window, click **Close**.

Note:

- Stress assumptions are defined in the business assumption definition window in a manner similar to that explained above. These assumptions will have adverse values for Run-offs, rollovers, draw downs, haircuts and so on. The dimensions used for stress testing may also be different from those under BAU conditions. However, the process of defining a stress business assumption does not change.
 - After you save a Business Assumption, it is registered as a process in the Rules Framework of Oracle Financial Services Analytical Applications Infrastructure.
 - A Business Assumption is available for selection in the Run Management window only after it is approved.
 - In case a Business Assumption is edited, it is saved as a new version.
 - After including additional dimension members the existing assumption specification table must not be reset.
-

6.8 Parameters Applicable to Each Assumption Category

The Assumption Category field in Business Assumption Definition window consists of the following four broad categories:

1. Cash Flow Movement
2. Encumbrance
3. Incremental Cash Flow
4. Value Change

Each of the assumption categories has a sub category which is explained in detailed below.

6.8.1 Cash Flow Movement

In Assumption Parameters, when you select the Assumption Category as **Cash Flow Movement** from the drop-down list the following sub-categories are available for selection:

- Cash Flow Movement
- Asset Sale
- Cash Flow Delay
- Delinquency
- Prepayment
- Recovery
- Rollover
- Run-off

Note: Depending upon the assumption category and sub-categories selected, assumption parameters are defined.

6.8.1.1 Cash Flow Movement

When the assumption sub-category is selected as Cash Flow Movement, perform the following steps:




1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:

- Cash Flows
- EOP Balance
- Fair Value
- Fair Value of Collateral Posted
- Fair Value of Collateral Received
- High Run-off Category 1 Balance
- High Run-off Category 2 Balance
- High Run-off Category 3 Balance
- Highly Stable Balance
- Insured Balance
- Stable Balance
- Less Stable Balance
- Market Value
- Market Value of Collateral Posted
- Market Value of Collateral Received
- Uninsured Balance

Note: If cash flows are selected, then the dimensions at cash flow and account granularity are displayed. If not, only account granularity dimensions are displayed.

2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Cash Flow Movement. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.



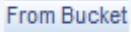
Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.

6. Choose the **Transaction Leg** option that is, One or Two.
 - If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for From and To assumption value specification.
 - If Two is selected, two columns are displayed for the specification of each assumption leg that is two columns each for From and To assumption value specification. The products for which two transaction legs are applicable are collateral swaps, inter-state swaps and similar products.
7. Choose the **Charge Penalty** option that is, Yes or No. In case you select Yes, an additional column in the assumption value grid is added to specify Amount or Percentage as per the selection.
8. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

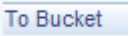
Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added


9. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against both **From Bucket** selection, and **To Bucket** selection.
- e. For **From Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- f. For **To Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.

10. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- From Bucket
- To Bucket
- Assumption Value – Leg 1 (if Transaction Legs is one)
- Assumption Value – Leg 2 (if Transaction Legs is two)
- Penalty (if charge penalty is yes)

The unique combinations of selected dimension members and the from buckets are displayed as rows.

11. To save the definition, click **Save**.

Note: Refer section [Cash Flow Movement](#) for detailed explanation and calculations.

6.8.1.2 Asset Sale

When the assumption sub-category is selected as Asset Sale, perform the following steps:






The screenshot displays the 'Business Assumption Definition' form. The 'Assumption Properties' section is expanded, showing the following settings:

- Assumption Category: Cash Flow Movement
- Based On: EOP Balance
- Assignment Method - Leg 1: Decreasing
- Assumption Unit: Percentage
- Rating Downgrade: Ratings Based Notch Based
- Charge Penalty: Yes No
- Sale Specification by: Individual Assets Dimensions
- Assumption Sub Category: Asset Sale
- Assumption Legs: One Two
- Assignment Method - Leg 2: Not Applicable
- Assumption Currency: Natural Currency
- Transaction Legs: One Two
- Specify Collateral/Underlying: Yes No



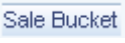
The 'Dimension Selection' section shows 'Liquidity Risk Management - Based Risk Weight' selected. The 'Time Bucket Definition Selection' section shows 'Save Bucket' and 'Based Computational Buckets' buttons.

- Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - EOP Balance
 - Fair Value
 - Market Value
- In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Asset Sale. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
- Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
- Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
- Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.


Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
- In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.

7. Select the **Sale Specification by**. It is either Individual Assets or Dimensions.
8. If you select Individual Assets, perform the following steps:
 - a. In the **Asset Browser Selection**, click  icon. The Asset Browser window appears.
 - b. Select the Asset Type, enter Name and Account ID.
 - c. Select one or multiple members from a list of members displayed.
 - d. Double-click or click  to move the members to the selected members section.
 - e. Click **OK**.
9. If you select Dimensions, in **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

 - In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
10. In **Time Bucket Definition Selection**, perform the following steps:
 - a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
 - b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against **Sale Bucket** selection.
 - e. For **Sale Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of Sale Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension (if Sale Specification by is Dimensions)
- Each selected asset (if Sale Specification by is Individual Assets)
- Sale Bucket
- Sale Value
- Haircut (in %)

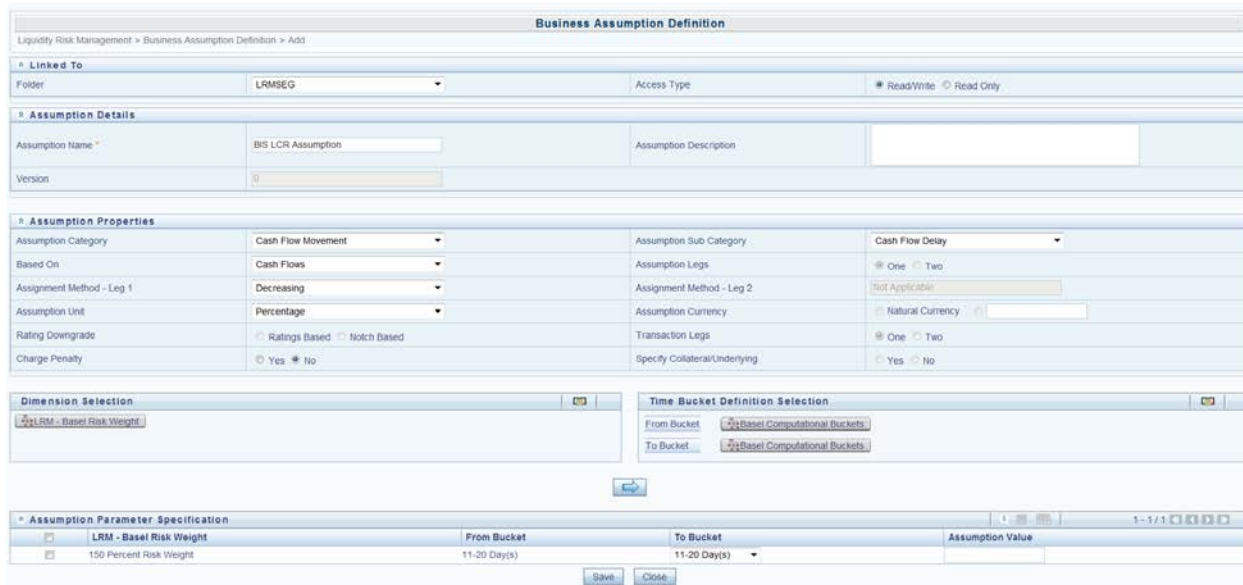
The unique combinations of selected dimension members and the from buckets are displayed as rows.

- To save the definition, click **Save**.

Note: Refer section [Asset Sale](#) for detailed explanation and calculations.

6.8.1.3 Cash Flow Delay

When the assumption sub-category is selected as Cash Flow Delay, perform the following steps:






The screenshot displays the 'Business Assumption Definition' window. The 'Assumption Properties' section shows 'Assumption Category' as 'Cash Flow Movement' and 'Assumption Sub Category' as 'Cash Flow Delay'. Under 'Assumption Legs', 'One' is selected. The 'Assumption Parameter Specification' table at the bottom contains the following data:


Assumption Name	From Bucket	To Bucket	Assumption Value
LRM - Basel Risk Weight	11-20 Day(s)	11-20 Day(s)	
150 Percent Risk Weight	11-20 Day(s)	11-20 Day(s)	


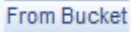
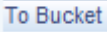

- From the **Based On** drop-down list, the parameter available for selection is **Cash Flows** which is applied on different assumption values.
- In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Cash Flow Delay. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
- Select the **Assignment Method – Leg 1** from the drop-down list:

- Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
 5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
 6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
 7. Choose the **Charge Penalty** option that is, Yes or No. In case you select Yes, an additional column in the assumption value grid is added to specify Amount or Percentage as per the selection.
 8. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

 - In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
 9. In **Time Bucket Definition Selection**, perform the following steps:
 - a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.

- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against both **From Bucket** selection, and **To Bucket** selection.
 - e. For **From Bucket**, click  icon.
One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.
 - f. For **To Bucket**, click  icon.
One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.
9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- From Bucket
- To Bucket
- Assumption Value
- Penalty (if charge penalty is yes)

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.

Note: Refer section [Cash Flow Delay](#) for detailed explanation and calculations.

6.8.1.4 Delinquency


When the assumption sub-category is selected as Delinquency, perform the following steps:



The screenshot displays the 'Business Assumption Definition' form. It is divided into several sections:

- Linked To:** Folder: LRMSEG, Access Type: Read/Write (Read/Write selected).
- Assumption Details:** Assumption Name: BIS LCR Assumption, Assumption Description: (empty), Version: 0.
- Assumption Properties:**
 - Assumption Category: Cash Flow Movement
 - Assumption Sub Category: Delinquency
 - Based On: Cash Flows
 - Assumption Legs: One (selected), Two (disabled)
 - Assignment Method - Leg 1: Not Applicable
 - Assignment Method - Leg 2: Not Applicable
 - Assumption Unit: Percentage
 - Assumption Currency: Natural Currency
 - Rating Downgrade: Ratings Based (selected), Notch Based (disabled)
 - Transaction Legs: One (selected), Two (disabled)
 - Charge Penalty: Yes (selected), No (disabled)
 - Specify Collateral/Underlying: Yes (selected), No (disabled)
- Dimension Selection:** LRM - Established Relationship Flag
- Time Bucket Definition Selection:** From Bucket: 2-2 Day(s)
- Assumption Parameter Specification:**

	LRM - Established Relationship Flag	From Bucket	Delinquent Value
YES		2-2 Day(s)	

1. From the **Based On** drop-down list, the parameter available for selection is **Cash Flows** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Delinquency. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.



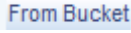
Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.

- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.


Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against **From Bucket** selection.
- e. For **From Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- From Bucket
- Delinquent Value

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.




Note: Refer section [Delinquency](#) for detailed explanation and calculations.

6.8.1.5 Prepayment

When the assumption sub-category is selected as Prepayment, perform the following steps:

1. From the **Based On** drop-down list, the parameter available for selection is **Cash Flows** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Prepayment. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.



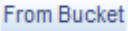
Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
7. In **Dimension Selection**, perform the following steps:

- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
- b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.

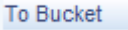
Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added


8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against both **From Bucket** selection, and **To Bucket** selection.
- e. For **From Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- f. For **To Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.

11. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension

- From Bucket
- To Bucket
- Prepayment Value
- Penalty (if charge penalty is yes)

The unique combinations of selected dimension members and the from buckets are displayed as rows.

12. To save the definition, click **Save**.

Note: Refer section [Prepayment](#) for detailed explanation and calculations.

6.8.1.6 Recovery

When the assumption sub-category is selected as Recovery, perform the following steps:




1. From the **Based On** drop-down list, the parameter available for selection is **Cash Flows** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Recovery. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.

5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.

6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.



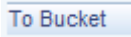
7. In **Dimension Selection**, perform the following steps:

- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
- b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.


Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against **To Bucket** selection.
- e. For **To Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.

- After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- To Bucket
- Recovery Value

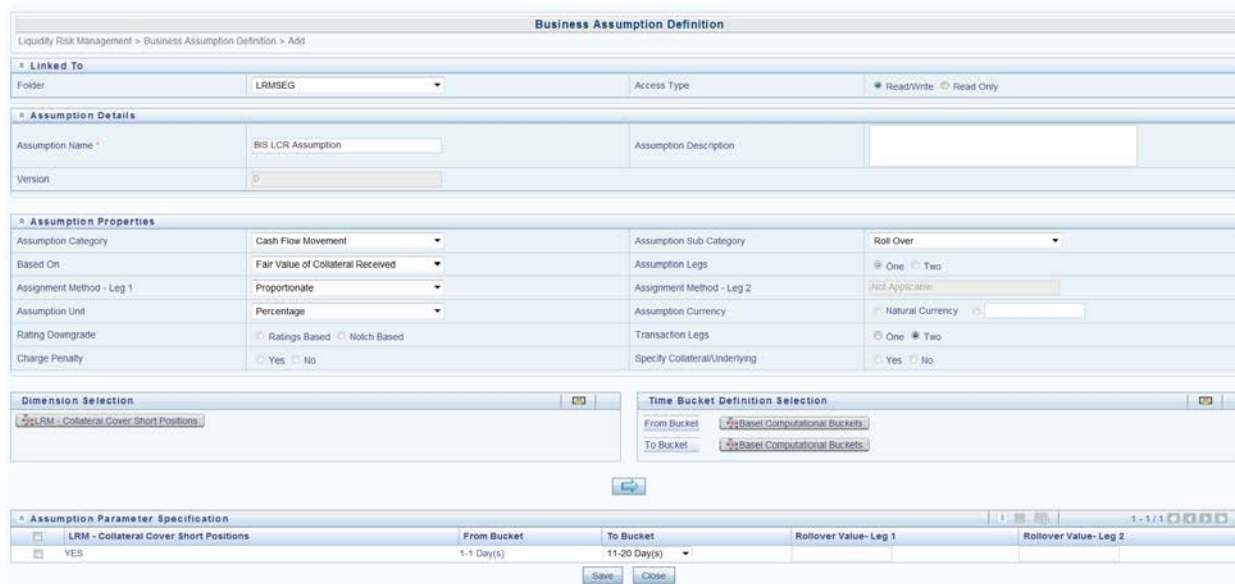
The unique combinations of selected dimension members and the from buckets are displayed as rows.

- To save the definition, click **Save**.

Note: Refer section [Recovery](#) for detailed explanation and calculations.

6.8.1.7 Rollover

When the assumption sub-category is selected as Roll Over, perform the following steps:






The screenshot shows the 'Business Assumption Definition' window. It includes sections for 'Linked To' (Folder: LRMSEG), 'Assumption Details' (Assumption Name: BIS LCR Assumption), 'Assumption Properties' (Assumption Category: Cash Flow Movement, Assumption Sub Category: Roll Over), 'Dimension Selection' (LRM - Collateral Cover Short Positions), and 'Time Bucket Definition Selection'. At the bottom, the 'Assumption Parameter Specification' table is visible with columns for From Bucket, To Bucket, and Rollover Value.

- Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Cash Flows
 - Fair Value of Collateral Posted
 - Fair Value of Collateral Received
 - Market Value of Collateral Posted
 - Market Value of Collateral Received

2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Roll Over. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.



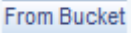
6. Choose the **Transaction Leg** option that is, One or Two.
 - If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for From and To assumption value specification.
 - If Two is selected, two columns are displayed for the specification of each assumption leg that is two columns each for From and To assumption value specification. The products for which two transaction legs are applicable are collateral swaps, inter-state swaps and similar products.
7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

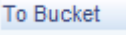
- In the dimension panel, you can add only seven dimensions.

- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.


8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against both **From Bucket** selection, and **To Bucket** selection.
- e. For **From Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- f. For **To Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.

9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- From Bucket
- To Bucket
- Rollover Value – Leg 1 (if Transaction Legs is One)
- Rollover Value – Leg 2 (if Transaction Legs is Two)

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.

Note: Refer section [Rollover](#) for detailed explanation and calculations.

6.8.1.8 Run-Off

When the assumption sub-category is selected as Run-Off, perform the following steps:




The screenshot shows the 'Business Assumption Definition' form. The 'Assumption Properties' section is expanded, showing the following fields and values:

- Assumption Category: Cash Flow Movement
- Assumption Sub Category: Run-off
- Based On: Cash Flows
- Assumption Legs: One (selected)
- Assignment Method - Leg 1: Decreasing
- Assignment Method - Leg 2: Not Applicable
- Assumption Unit: Percentage
- Assumption Currency: Natural Currency
- Rating Downgrade: Ratings Based (selected)
- Transaction Legs: One (selected)
- Charge Penalty: Yes (selected)
- Specify Collateral/Underlying: Yes (selected)



At the bottom of the form, there are two sections: 'Dimension Selection' and 'Time Bucket Definition Selection'. The 'Time Bucket Definition Selection' section has 'From Bucket' and 'To Bucket' fields. Below these sections are 'Save' and 'Close' buttons.

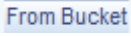
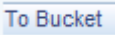

1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Cash Flows
 - Highly Stable Balance
 - Stable Balance
 - Less Stable Balance
 - High Run-off Category 1 Balance
 - High Run-off Category 2 Balance
 - High Run-off Category 3 Balance
 - Insured Balance
 - Uninsured Balance
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Run-Off. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing

- Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
 5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
 6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
 7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

 - In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
 8. In **Time Bucket Definition Selection**, perform the following steps:
 - a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
 - b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against both **From Bucket** selection, and **To Bucket** selection.

- e. For **From Bucket**, click  icon.
One or multiple time buckets from the given time bucket definition can be selected as part of From Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.
 - f. For **To Bucket**, click  icon.
One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of To Bucket selection. The time buckets selected are displayed as drop-down values in the To Bucket column in each row of the assumption specification table.
9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. . The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- From Bucket
- To Bucket
- Run-Off

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.

Note: Refer section [Run-Off](#) for detailed explanation and calculations.

6.8.2 Encumbrance

In Assumption Parameters, when you select the Assumption Category as **Encumbrance** from the drop-down list the following sub-categories are available for selection:

- Encumbrance
- Ratings Downgrade
- Valuation Changes




Note: Depending upon the assumption category and sub-categories selected, assumption parameters are defined.

6.8.2.1 Encumbrance

When the assumption sub-category is selected as Encumbrance, perform the following steps:


1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Downgrade Impact Value
 - Fair Value
 - Fair Value of Collateral Posted
 - Fair Value of Collateral Received
 - Fair Value of Excess Collateral
 - Fair Value of Required Collateral
 - Largest 30 Day Cumulative Collateral Amount
 - Market Value
 - Market Value of Collateral Posted
 - Market Value of Collateral Received
 - Market Value of Excess Collateral
 - Market Value of Required Collateral
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Encumbrance. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
4. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.

5. Choose the **Ratings Downgrade** option. That is, **Rating Based** or **Notches Based**. This parameter identifies the downgrade specified for a legal entity.
6. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

7. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Downgrade Specification** and **Assumption Parameter Specification** table is displayed.

The Downgrade Specification table has the following columns:

- Each selected dimension
- Rating Type
- Rating Source
- Downgrade

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Assumption Value

The unique combinations of selected dimension members and the from buckets are displayed as rows.

8. To save the definition, click **Save**.





Note:

- The time bucket selection is not required as they are not determined and these factors are applied to balances and market values of assets and liabilities.
- Refer section [Encumbrance](#) for detailed explanation and calculations.

6.8.2.2 Ratings Downgrade

When the assumption sub-category is selected as Ratings Downgrade perform the following steps:

1. From the **Based On** drop-down list, the parameter available for selection is **Downgrade Impact Value** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Encumbrance. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
4. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.
Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
5. Choose the **Ratings Downgrade** option. That is, **Rating Based** or **Notches Based**. This parameter identifies the downgrade specified for a legal entity.
6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
7. In **Dimension Selection**, perform the following steps:

- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.
- Note:**
- In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Downgrade Specification** and **Assumption Parameter Specification** table is displayed.

The Downgrade Specification table has the following columns:

- Each selected dimension
- Rating Type
- Rating Source
- Downgrade

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Downgrade Impact

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.

Note:

- The time bucket selection is not required as they are not determined and these factors are applied to balances and market values of assets and liabilities.
- Refer section [Ratings Downgrade](#) for detailed explanation and calculations.

6.8.2.3 Valuation Changes

When the assumption sub-category is selected as Valuation Changes perform the following steps:




The screenshot displays the 'Business Assumption Definition' form. The 'Assumption Properties' section is expanded, showing the following configuration:

- Assumption Category:** Encumbrance
- Based On:** Largest 30 Day Cumulative Collateral Am
- Assumption Sub Category:** Valuation Changes
- Assumption Legs:** One (selected), Two (disabled)
- Assignment Method - Leg 1:** Not Applicable
- Assignment Method - Leg 2:** Not Applicable
- Assumption Unit:** Amount
- Assumption Currency:** Natural Currency
- Rating Downgrade:** Ratings Based (selected), Notch Based (disabled)
- Transaction Legs:** One (selected), Two (disabled)
- Charge Penalty:** Yes (selected), No (disabled)
- Specify Collateral/Underlying:** Yes (selected), No (disabled)

The 'Dimension Selection' section shows 'LRM - Encrow Account Flag' selected.


1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Fair Value
 - Fair Value of Collateral
 - Fair Value of Collateral Posted
 - Fair Value of Collateral Received
 - Fair Value of Excess Collateral
 - Fair Value of Required Collateral
 - Largest 30 Day Cumulative Collateral Amount
 - Market Value
 - Market Value of Collateral Posted
 - Market Value of Collateral Received
 - Market Value of Excess Collateral
 - Market Value of Required Collateral
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Encumbrance. When one is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
4. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.

5. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

6. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Valuation Change Impact

The unique combinations of selected dimension members and the from buckets are displayed as rows.

7. To save the definition, click **Save**.

Note:

- The time bucket selection is not required as they are not determined and these factors are applied to balances and market values of assets and liabilities.
- Refer section [Valuation Changes](#) for detailed explanation and calculations.

6.8.3 Incremental Cash Flow

In Assumption Parameters, when you select the Assumption Category as **Incremental Cash Flow** from the drop-down list the following sub-categories are available for selection:

- Incremental Cash Flow
- Drawdown
- New Business
- Ratings Downgrade
- Run-Off
- Secured Funding/Financing
- Valuation Changes

Note: Depending upon the assumption category and sub-categories selected, assumption parameters are defined.

6.8.3.1 Incremental Cash Flow




When the assumption sub-category is selected as Incremental Cash Flow perform the following steps:

1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:

- Available Undrawn Amount
- Cash Flows
- Downgrade Impact Value
- EOP Balance
- Fair Value
- Fair Value of Collateral Posted

- Fair Value of Collateral Received
 - Fair Value of Excess Collateral
 - Fair Value of Required Collateral
 - General Ledger Balance
 - High Run-off Category 1 Balance
 - High Run-off Category 2 Balance
 - High Run-off Category 3 Balance
 - Highly Stable Balance
 - Highly Stable Balance Withdrawal Nonpenalty
 - Insured Balance
 - Largest 30 Day Cumulative Collateral Amount
 - Less Stable Balance
 - Market Value
 - Market Value of Collateral Posted
 - Market Value of Collateral Received
 - Market Value of Excess Collateral
 - Market Value of Required Collateral
 - Non Operational Balance
 - Stable Balance
 - Stable Balance Withdrawal Nonpenalty
 - Undrawn Balance
 - Uninsured Balance
2. Choose the **Assumption Legs** option that is, **One** or **Two**.
- In case, One is selected as assumption leg, then only column appears for entering the off-set assumption value.
 - In case, Two is selected as the assumption leg, then two columns appear for entering primary assumption value and secondary or off-set value.
3. Select the **Assignment Method – Leg 1** and **Assignment Method – Leg 2** from the drop-down list:
- Selected Time Bucket
 - Increasing
 - Decreasing




- Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
 5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
 6. In case you have selected Assumption Legs as Two, choose the **Transaction Leg** option that is, One or Two.
 - If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for From and To assumption value specification.
 - If Two is selected, two columns are displayed for the specification of each assumption leg that is two columns each for From and To assumption value specification. The products for which two transaction legs are applicable are collateral swaps, inter-state swaps and similar products.
 7. In case you have selected Assumption Legs as Two, choose the **Specify Collateral/Underlying** option that is, Yes or No.
 - If Yes is selected, existing assets can be posted as collateral for each row in the assumption specification table.
 - If No is selected, no collateral is required.
 8. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

9. In **Time Bucket Definition Selection**, perform the following steps:


- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against both **Primary Bucket** selection, and **Off-set Bucket** selection.
- e. For **Primary Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of Primary Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- f. For **Off-set Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of Off-set Bucket selection. The time buckets selected are displayed as drop-down values in the Off-set Bucket column in each row of the assumption specification table.

Note: If you have selected Assumptions Legs as One, in Time Bucket Definition Selection only Off-set Bucket is displayed. Whereas, if you have selected Assumptions Legs as Two, in Time Bucket Definition Selection both Primary Bucket and Off-set Bucket is displayed.

10. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Primary Bucket (if Assumption Legs is Two)
- Incremental Value – Leg 1 (if Transaction Legs is One)
- Incremental Value – Leg 2 (if Transaction Legs is Two)
- Off-set Bucket
- Off-set Value – Leg 1 (if Transaction Legs is One)
- Off-set Value – Leg 2 (if Transaction Legs is Two)
- Collateral/Underlying (if Specify Collateral/Underlying is yes)
- Encumbered Value (if Specify Collateral/Underlying is yes)

The unique combinations of selected dimension members and the from buckets are displayed as rows.

11. To save the definition, click **Save**.

Note: Refer section [Incremental Cash Flow](#) for detailed explanation and calculations.




6.8.3.2 Drawdown

When the assumption sub-category is selected as Drawdown, perform the following steps:

Assumption Parameter Specification					
<input type="checkbox"/>	LRM - Credit Line Purpose	LRM - Effective Insurance Scheme	Primary Bucket	Drawdown Value- Leg 1	Off-Set Bucket
<input type="checkbox"/>	Commitment for Mortgages	YES	11-30 Day(s)		21-35 Day(s)





1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Adjusted Undrawn Amount
 - Available Undrawn Amount
 - Undrawn Balance
2. In **Assumption Legs** option, **Two** is selected by default. Option One is disabled when you select the sub-category as Drawdown. When Two is selected as assumption leg, in assumption specification two columns are displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** and **Assignment Method – Leg 2** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.


6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

8. In **Time Bucket Definition Selection**, perform the following steps:
 - a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
 - b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against both **Primary Bucket** selection, and **Off-set Bucket** selection.
 - e. For **Primary Bucket**, click  icon.
One or multiple time buckets from the given time bucket definition can be selected as part of Primary Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.
 - f. For **Off-set Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of Off-set Bucket selection. The time buckets selected are displayed as drop-down values in the Off-set Bucket column in each row of the assumption specification table.

- After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Primary Bucket
- Downgrade Value – Leg 1
- Off-set Bucket
- Off-set Value – Leg 1

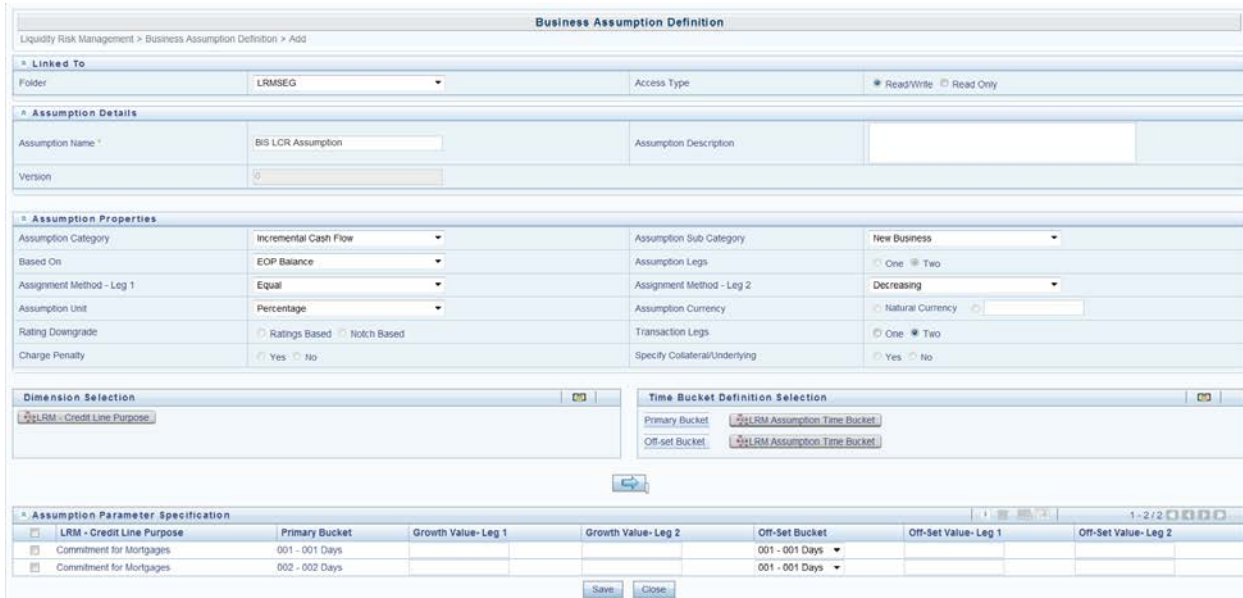
The unique combinations of selected dimension members and the from buckets are displayed as rows.

- To save the definition, click **Save**.

Note: Refer section [Drawdown](#) for detailed explanation and calculations.

6.8.3.3 New Business

When the assumption sub-category is selected as New Business perform the following steps:



The screenshot shows the 'Business Assumption Definition' window. It includes sections for 'Linked To' (Folder: LRMSEG), 'Assumption Details' (Assumption Name: BIS LCR Assumption), 'Assumption Properties' (Assumption Category: Incremental Cash Flow, Assumption Sub Category: New Business), 'Dimension Selection' (LRM - Credit Line Purpose), and 'Time Bucket Definition Selection' (Primary Bucket: LRM Assumption Time Bucket). At the bottom, the 'Assumption Parameter Specification' table is visible:




LRM - Credit Line Purpose	Primary Bucket	Growth Value- Leg 1	Growth Value- Leg 2	Off-Set Bucket	Off-Set Value- Leg 1	Off-Set Value- Leg 2
Commitment for Mortgages	001 - 001 Days			001 - 001 Days		
Commitment for Mortgages	002 - 002 Days			001 - 001 Days		

- Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:

- Cash Flows
- EOP Balance

2. In **Assumption Legs** option, **Two** is selected by default. Option One is disabled when you select the sub-category as New Business. When Two is selected as assumption leg, in assumption specification two columns are displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** and **Assignment Method – Leg 2** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.




6. Choose the **Transaction Leg** option that is, One or Two.
 - If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for From and To assumption value specification.
 - If Two is selected, two columns are displayed for the specification of each assumption leg that is two columns each for From and To assumption value specification. The products for which two transaction legs are applicable are collateral swaps, inter-state swaps and similar products.
7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:


- In the dimension panel, you can add only seven dimensions.

- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.


8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against both **Primary Bucket** selection, and **Off-set Bucket** selection.
- e. For **Primary Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of Primary Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

- f. For **Off-set Bucket**, click  icon.

One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of Off-set Bucket selection. The time buckets selected are displayed as drop-down values in the Off-set Bucket column in each row of the assumption specification table.

9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Primary Bucket
- Growth Value – Leg 1 (if Transaction Legs is 1)
- Growth Value – Leg 2 (if Transaction Legs is 2)
- Off-set Bucket
- Off-set Value – Leg 1 (if Transaction Legs is 1)
- Off-set Value – Leg 2 (if Transaction Legs is 2)


The unique combinations of selected dimension members and the from buckets are displayed as rows.







10. To save the definition, click **Save**.

Note: Refer section [New Business](#) for detailed explanation and calculations.

6.8.3.4 Ratings Downgrade

When the assumption sub-category is selected as Ratings Downgrade perform the following steps:

1. From the **Based On** drop-down list, the parameter available for selection is **Downgrade Impact Value** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Ratings Downgrade. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value
3. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
4. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.
Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
5. Choose the **Ratings Downgrade** option. That is, **Rating Based** or **Notches Based**. This parameter identifies the downgrade specified for a legal entity.
6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.

- c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.
- Note:**
- In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
8. In **Time Bucket Definition Selection**, perform the following steps:
- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
 - b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against **Time Bucket** selection.
 - e. For **Time Bucket**, click  icon.
One or multiple time buckets from the given time bucket definition can be selected as part of Time Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.
9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Downgrade Specification** and **Assumption Parameter Specification** table is displayed.

The Downgrade Specification table has the following columns:

- Each selected dimension
- Rating Type
- Rating Source
- Downgrade

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Time Bucket

- Downgrade Impact

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.


Note: Refer section [Ratings Downgrade](#) for detailed explanation and calculations.



6.8.3.5 Run Off

When the assumption sub-category is selected as Run Off, perform the following steps:

1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Available Undrawn Amount
 - EOP Balance
 - EOP amount with significant penalty or withdrawal
 - Fair Value of Collateral Posted
 - Fair Value of Collateral Received
 - General Ledger Balance
 - High Run-off Category 1 Balance
 - High Run-off Category 2 Balance
 - High Run-off Category 3 Balance
 - High run-off category 1 Amount Withdrawal without penalty
 - High run-off category 2 Amount Withdrawal without penalty
 - High run-off category 3 Amount Withdrawal without penalty

- Highly Stable Balance
 - Highly Stable Balance Withdrawal Nonpenalty
 - Insured Amount Withdrawal without penalty
 - Insured Balance
 - Less Stable Balance
 - Market Value of Collateral Posted
 - Market Value of Collateral Received
 - Non Operational Balance
 - Stable Balance
 - Stable Balance Withdrawal Nonpenalty
 - Uninsured Amount Withdrawal without penalty
 - Uninsured Balance
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Run-Off. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value
 3. Select the **Assignment Method – Leg 1** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
 4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
 5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.




Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
 6. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.
 7. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.

- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.


Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

8. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against **Time Bucket** selection.
- e. For **Time Bucket**, click  icon.

One or multiple time buckets from the given time bucket definition can be selected as part of Time Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

9. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Time Bucket
- Run-Off

The unique combinations of selected dimension members and the from buckets are displayed as rows.

10. To save the definition, click **Save**.

Note: Refer section [Run-off](#) for detailed explanation and calculations.






6.8.3.6 Secured Funding/Financing



When the assumption sub-category is selected as Secured Funding/Financing, perform the following steps:


Assumption Parameter Specification									
	LRM - Broker Involved Flag	Primary Bucket	Primary Value-Leg 1	Primary Value-Leg 2	Off-Set Bucket	Off-Set Value-Leg 1	Off-Set Value-Leg 2	Collateral/Underlying	Encumbered Value
	YES	004 - 004 Days			004 - 004 Days				

1. Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Cash Flows
 - EOP Balance
2. In **Assumption Legs** option, **Two** is selected by default. Option One is disabled when you select the sub-category as Secured Funding/Financing. When Two is selected as assumption leg, in assumption specification two columns are displayed to add the primary assumption value.
3. Select the **Assignment Method – Leg 1** and **Assignment Method – Leg 2** from the drop-down list:
 - Selected Time Bucket
 - Increasing
 - Decreasing
 - Equal
 - Proportionate
4. Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.
5. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.
6. Choose the **Transaction Leg** option that is, One or Two.

- If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for From and To assumption value specification.
 - If Two is selected, two columns are displayed for the specification of each assumption leg that is two columns each for From and To assumption value specification. The products for which two transaction legs are applicable are collateral swaps, inter-state swaps and similar products.
7. In case you have selected Assumption Legs as Two, choose the **Specify Collateral/Underlying** option that is, Yes or No.
- If Yes is selected, existing assets can be posted as collateral for each row in the assumption specification table.
 - If No is selected, no collateral is required.
8. In **Dimension Selection**, perform the following steps:
- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.
- Note:**
- In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
9. In **Time Bucket Definition Selection**, perform the following steps:
- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
 - b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
 - c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
 - d. Click **OK**. The selected time bucket definition, is displayed in the time bucket definition selection against both **Primary Bucket** selection, and **Off-set Bucket** selection.

- e. For **Primary Bucket**, click  icon.
One or multiple time buckets from the given time bucket definition can be selected as part of Primary Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.
- f. For **Off-set Bucket**, click  icon.
- g. One or multiple time buckets defined as part of the selected time bucket definition can be selected as part of Off-set Bucket selection. The time buckets selected are displayed as drop-down values in the Off-set Bucket column in each row of the assumption specification table.

10. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

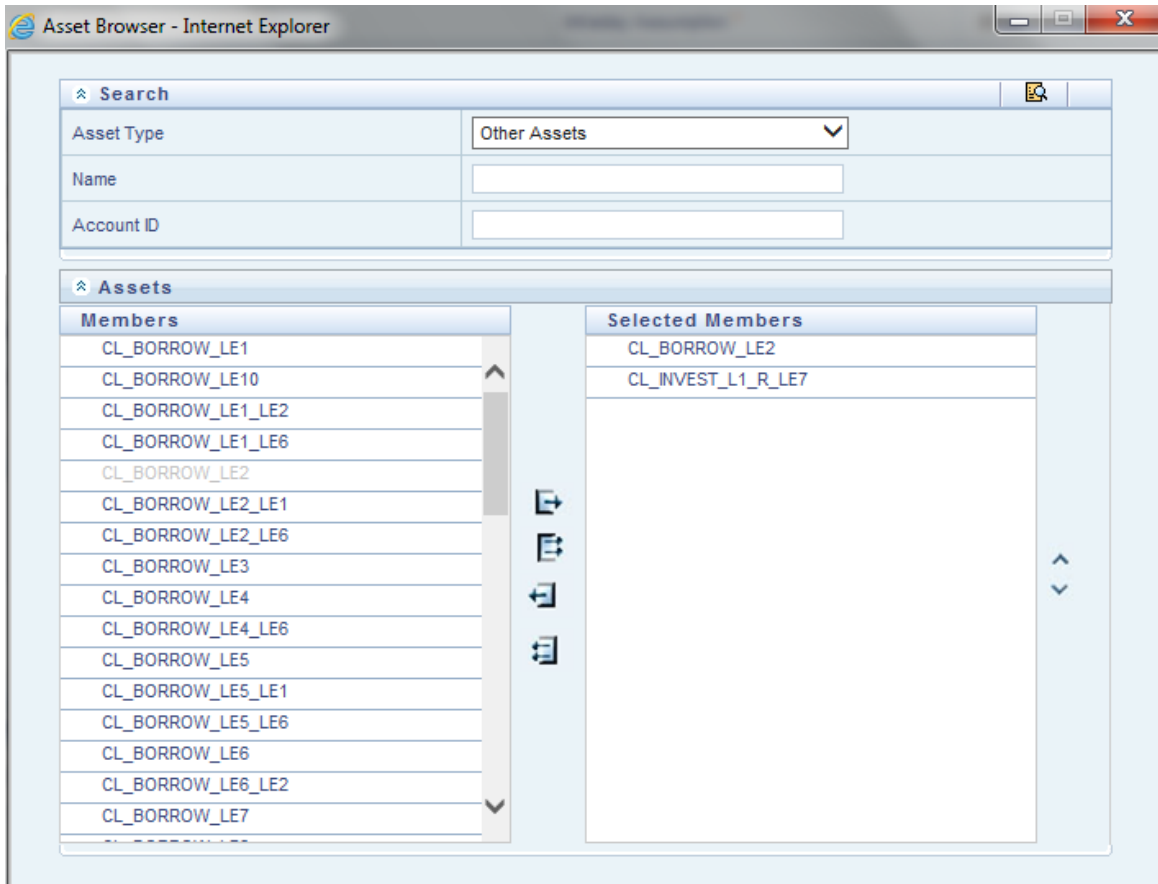
The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Primary Bucket
- Primary Value – Leg 1
- Primary Value – Leg 2 (if Transaction Legs is Two)
- Off-Set Bucket
- Off-Set Value – Leg 1
- Off-Ser Value – Leg 2 (if Transaction Legs is Two)
- Collateral/Underlying
- Encumbered Value

The unique combinations of selected dimension members and the from buckets are displayed as rows.

11. To add values to Collateral/underlying, and Encumbered value columns click the check box on the left of the dimensional combination. Once the dimensional combination is chosen in the grid, click the Add assets icon. The add assets icon allows you to add as many assets as needed for the particular row in the grid.

12. Once the Add assets icon is clicked, the following screen enables you to enter values.



13. The business assumption definition after collateral and encumbered value are specified is displayed below.

Assumption Properties							
Assumption Category	Incremental Cash Flow	Assumption Sub Category	Secured Funding/Financing	Based On	EOP Balance	Assumption Legs	<input type="radio"/> One <input checked="" type="radio"/> Two
Assignment Method - Leg 1	Selected Time Bucket	Assignment Method - Leg 2	Selected Time Bucket	Assumption Unit	Percentage	Assumption Currency	<input type="radio"/> Natural Currency <input type="radio"/> []
Rating Downgrade	<input type="radio"/> Ratings Based <input type="radio"/> Notch Based	Transaction Legs	<input checked="" type="radio"/> One <input type="radio"/> Two	Charge Penalty	<input type="radio"/> Yes <input type="radio"/> No	Specify Collateral/Underlying	<input checked="" type="radio"/> Yes <input type="radio"/> No

Dimension Selection	Time Bucket Definition Selection
LRM - LRM Standard Product Type	Primary Bucket: <input type="button" value="BIS Time Bucket Definition"/> Off-set Bucket: <input type="button" value="BIS Time Bucket Definition"/>

Assumption Parameter Specification						
<input type="checkbox"/> LRM - LRM Standard Product Type	Primary Bucket	Primary Value- Leg 1	Off-Set Bucket	Off-Set Value- Leg 1	Collateral/Underlying	Encumbered Value
<input type="checkbox"/> Loans	7-7 Day(s)	10	15-15 Day(s)	100	CL_BORROW_LE2 CL_INVEST_L1_R_LE7	50 100

14. To save the definition, click **Save**.

Note: Refer section [Secured Funding/Financing](#) for detailed explanation and calculations.

6.8.3.7 Valuation Changes

When the assumption sub-category is selected as Valuation Changes perform the following steps:

Business Assumption Definition			
Liquidity Risk Management > Business Assumption Definition > Add			
Linked To			
Folder	LRMSEG	Access Type	Read/Write Read Only
Assumption Details			
Assumption Name	BIS LCR Assumption	Assumption Description	
Version			
Assumption Properties			
Assumption Category	Incremental Cash Flow	Assumption Sub Category	Valuation Changes
Based On	Market Value of Collateral Posted	Assumption Legs	One Two
Assignment Method - Leg 1	Not Applicable	Assignment Method - Leg 2	Not Applicable
Assumption Unit	Percentage	Assumption Currency	Natural Currency
Rating Downgrade	Ratings Based Notch Based	Transaction Legs	One Two
Charge Penalty	Yes No	Specify Collateral/Underlying	Yes No
Dimension Selection		Time Bucket Definition Selection	
LRM - Domestic Customer LRM - Effective Insurance Scheme		LRM Assumption Time Bucket	
Assumption Parameter Specification			
<input type="checkbox"/>	LRM - Domestic Customer	LRM - Effective Insurance Scheme	Time Bucket
<input type="checkbox"/>	NO	YES	004 - 004 Days
<input type="checkbox"/>	NO	YES	005 - 005 Days
			Downgrade Impact




- Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Fair Value
 - Fair Value of Collateral Posted
 - Fair Value of Collateral Received
 - Fair Value of Excess Collateral
 - Fair Value of Required Collateral
 - Largest 30 Day Cumulative Collateral Amount
 - Market Value
 - Market Value of Collateral Posted
 - Market Value of Collateral Received
 - Market Value of Excess Collateral
 - Market Value of Required Collateral
- In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Valuation Changes. When One is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value
- Select the **Assumption Unit** from the drop-down list. That is, **Amount** or **Percentage**.

4. Choose the **Assumption Currency** option. This option is enabled when you select the assumption unit as amount. You can either select the option as Natural Currency or choose from the drop-down list.

Note: In case you select Natural Currency, ensure that the currency is selected as part of dimension selection.

5. In **Transaction Leg**, option **One** is selected by default. If One is selected, only a column for the specification of each assumption leg is displayed that is one column each for primary and off-set assumption value specification.



6. In **Dimension Selection**, perform the following steps:

- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
- b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.


Note:

- In the dimension panel, you can add only seven dimensions.
- In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.

7. In **Time Bucket Definition Selection**, perform the following steps:

- a. Click  icon to select a **Time Bucket Definition**. The Time Bucket Definition Browser window is displayed.
- b. Select time bucket definitions from a list of definitions displayed in the time bucket definition browser. Only one time bucket definition can be selected. The values which are defined in the time bucket definition window are displayed here.
- c. Double-click or click  icon to move the selected time bucket definition to the selected members section.
- d. Click **OK**. The selected time bucket definition is displayed in the time bucket definition selection against **Time Bucket** selection.
- e. For **Time Bucket**, click [Time Bucket](#) icon.

One or multiple time buckets from the given time bucket definition can be selected as part of Time Bucket selection. The selected time buckets are displayed as row items in the assumption specification table.

15. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Time Bucket
- Downgrade Impact

The unique combinations of selected dimension members and the from buckets are displayed as rows.

16. To save the definition, click **Save**.

Note: Refer section [Valuation Changes](#) for detailed explanation and calculations.

6.8.4 Value Change

In Assumption Parameters, when you select the Assumption Category as **Value Change** from the drop-down list the following sub-categories are available for selection:

- Available Stable Funding Factor
- Haircut
- Required Stable Funding Factor

Note: Depending upon the assumption category and sub-categories selected, assumption parameters are defined.

6.8.4.1 Available Stable Funding Factor

When the assumption sub-category is selected as Available Stable Funding Factor, perform the following steps:

Business Assumption Definition

Liquidity Risk Management > Business Assumption Definition > Add

Linked To

Folder: LRMSEG Access Type: Read/Write Read Only

Assumption Details

Assumption Name: BIS LCR Assumption Assumption Description: Assumption Description
Version: 0

Assumption Properties

Assumption Category: Value Change Assumption Sub-Category: Available Stable Funding Factor
Based On: EOP Balance Assumption Legs: One Two
Assignment Method - Leg 1: Not Applicable Assignment Method - Leg 2: Not Applicable
Assumption Unit: Percentage Assumption Currency: Natural Currency
Rating Downgrade: Ratings Based Notch Based Transaction Legs: One Two
Charge Penalty: Yes No Specify Collateral/Underlying: Yes No




Dimension Selection

LRM - Brokered Deposit Type LRM - Collateral Cover Short Positions LRM - Collateral Segregated Flag


Assumption Parameter Specification

	LRM - Brokered Deposit Type	LRM - Collateral Cover Short Positions	LRM - Collateral Segregated Flag	ASF Factor
<input type="checkbox"/> Reciprocal		YES	NO	
<input type="checkbox"/> Sweep Deposit not originated with covered company or subsidiary		YES	NO	

Save Close

1. From the **Based On** drop-down list, the parameter available for selection is **EOP Balance** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Available Stable Funding Factor. When one is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. In **Assumption Unit** option, Percentage is selected by default.
4. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

 - In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
5. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- ASF Factor

The unique combinations of selected dimension members and the from buckets are displayed as rows.

- To save the definition, click **Save**.




Note:

- The time bucket selection is not required as they are not determined and these factors are applied to balances and market values of assets and liabilities.
- Refer section [Available Stable Funding Factor](#) for detailed explanation and calculations.


6.8.4.2 Haircut

When the assumption sub-category is selected as Haircut, perform the following steps:

- Choose one of the parameters which must be applied on the different assumption values from the **Based On** drop-down list:
 - Fair value
 - Market Value
- In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Haircut. When one is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
- In **Assumption Unit** option, Percentage is selected by default.
- In **Dimension Selection**, perform the following steps:

- a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
- b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
- c. Double-click or click  to move the selected dimensions to the Selected Members section.
- d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
- e. Click the selected dimension member. The Hierarchy Browser window is displayed.
- f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
- g. Click **OK**.

Note:

- In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
7. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- Haircut (%)

The unique combinations of selected dimension members and the from buckets are displayed as rows.




8. To save the definition, click **Save**.

Note:


- The time bucket selection is not required as they are not determined. These haircut values are further used in the Run for the calculation of stock of HQLA.
- Refer section [Haircut](#) for detailed explanation and calculations.

6.8.4.3 Required Stable Funding Factor

When the assumption sub-category is selected as Required Stable Funding Factor, perform the following steps:

1. From the **Based On** drop-down list, the parameter available for selection is **EOP Balance** which is applied on different assumption values.
2. In **Assumption Legs** option, **One** is selected by default. Option Two is disabled when you select the sub-category as Required Stable Funding Factor. When one is selected as assumption leg, in assumption specification only a column is displayed to add the primary assumption value.
3. In **Assumption Unit** option, Percentage is selected by default.
4. In **Dimension Selection**, perform the following steps:
 - a. Click  icon for **Dimension Selection**. The Liquidity Risk Business Dimension browser window is displayed.
 - b. Select one or multiple dimensions from a list of dimensions displayed in the dimension browser.
 - c. Double-click or click  to move the selected dimensions to the Selected Members section.
 - d. Click **OK**. The selected dimensions are displayed in the dimension selection section.
 - e. Click the selected dimension member. The Hierarchy Browser window is displayed.
 - f. Select one or multiple members from a list of dimensions displayed in the Hierarchy browser. Double-click or click  to move to the Selected Members section.
 - g. Click **OK**.

Note:

 - In the dimension panel, you can add only seven dimensions.
 - In dimension panel seven dimensions, one source or actual time bucket and optionally revised time bucket can be added.
5. After the assumption parameters are selected, click  icon on the Business Assumption Definition window. The **Assumption Parameter Specification** table is displayed.

The Assumption Parameter Specification table has the following columns:

- Each selected dimension
- RSF Factor

The unique combinations of selected dimension members and the from buckets are displayed as rows.

6. To save the definition, click **Save**.

Note:

- The time bucket selection is not required as they are not determined and these factors are applied to balances and market values of assets and liabilities.
- Refer section [Required Stable Funding Factor](#) for detailed explanation and calculations.

Note: The stress assumptions are defined in business assumption definition window with different values.

6.9 Business Assumption Approval Process

OFS LRM supports approval workflows based on user roles. Business assumptions which are defined within the application are required to be approved which are defined within the application before they can be used for computations. The user who creates the assumption will send it for approval after finalizing it. Assumptions can be approved only by users with the required access levels. For more information refer section [User Roles and Access](#).



6.9.1 Sending business assumption definition for approval

To send a definition for approval, perform the following steps:

1. Click **Business Assumption** on the LHS menu of the LRM Application to open the **Business Assumption Summary** window.

Note:

Assumptions in the following stages can be sent for approval:

- a. A new definition which in “Draft” status.
 - b. A version of a definition which is rejected and is in “Open” status.
 - c. A definition that is edited and a new version of which is created and is in “In Review” status.
2. Click  to select a definition with the status “Draft”, “Open” or “In Review” from the list of business assumptions and then click  icon

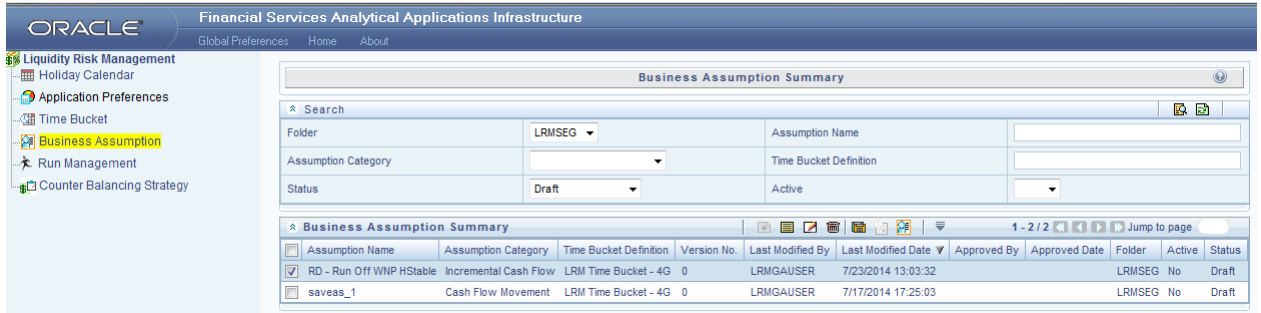


Figure 17 Business Assumption Summary – Draft status

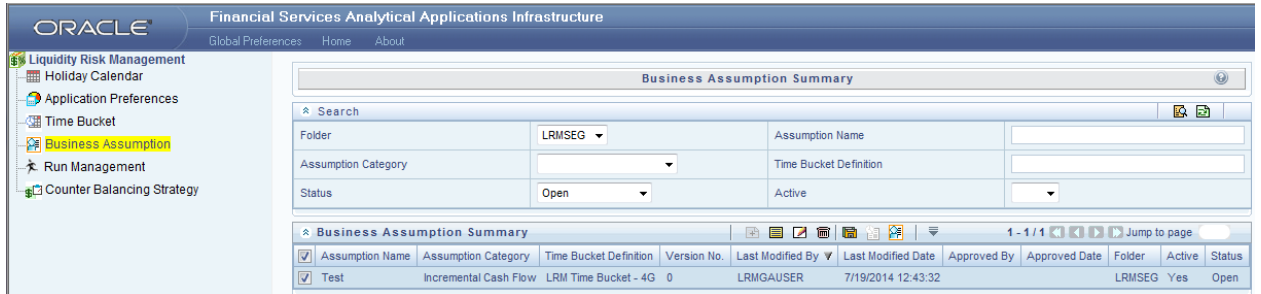


Figure 18 Business Assumption Summary – Open status

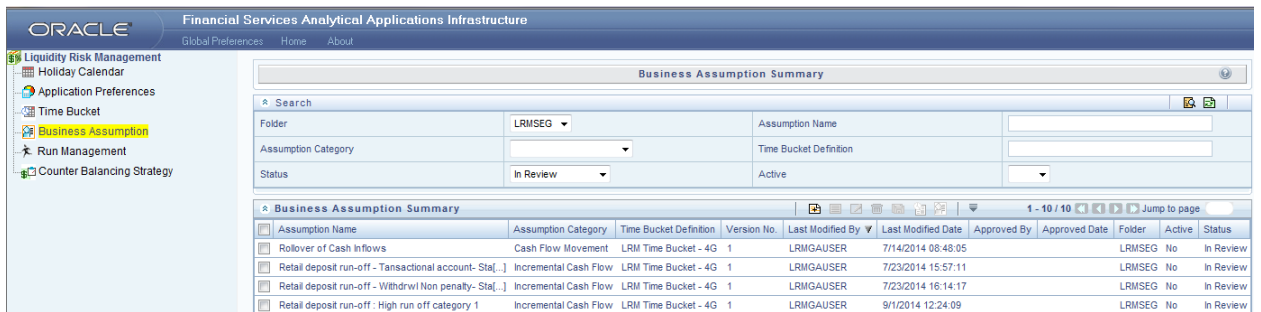


Figure 19 Business Assumption Summary – In Review status

. The Business Assumption Definition window is displayed with all the parameters defined.

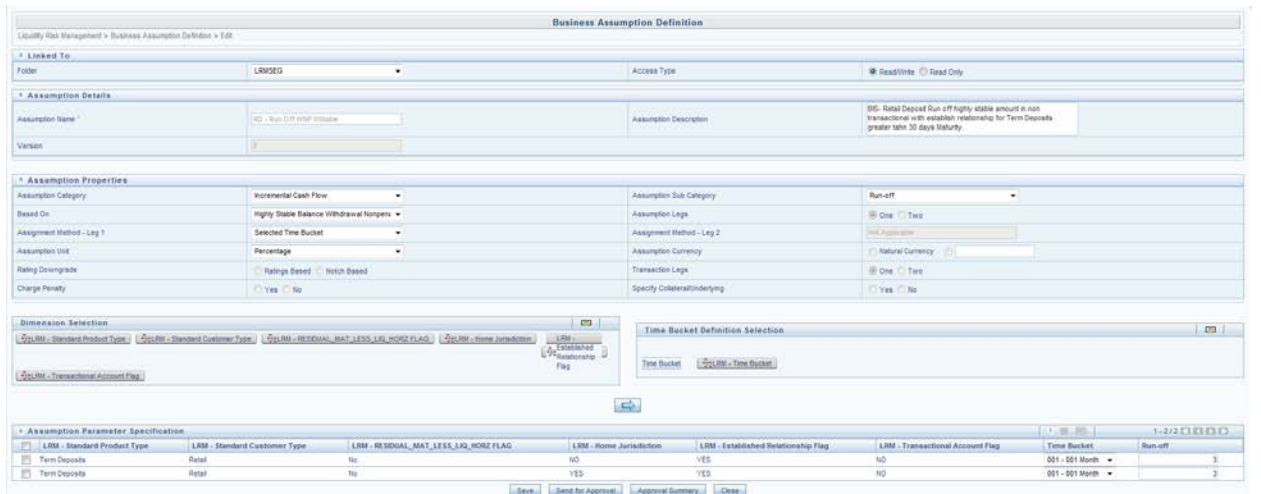




Figure 20 Business Assumption Summary – Send for Approval

- To send a definition for authorization, click **Send for Approval**. This changes the status of the definition to Pending Approval. The definition is successfully sent for approval and the status changes to Pending Approval.

6.9.2 Approving a business assumption definition

To approve a business assumption, perform the following steps:

- Click **Business Assumption** on the LHS menu of the LRM Application to open the **Business Assumption Summary** window. Only assumptions which are in “Pending Approval” status can be approved or rejected by the approver.
- Click  to select a definition with the status “Pending Approval” from the list of business assumptions and then click  icon.

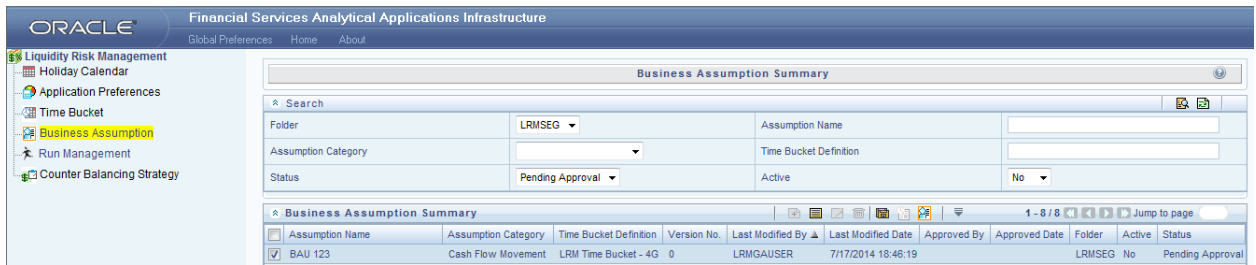


Figure 21 Business Assumption Summary – Pending Approval

The Business Assumption Definition window is displayed with all the parameters defined.

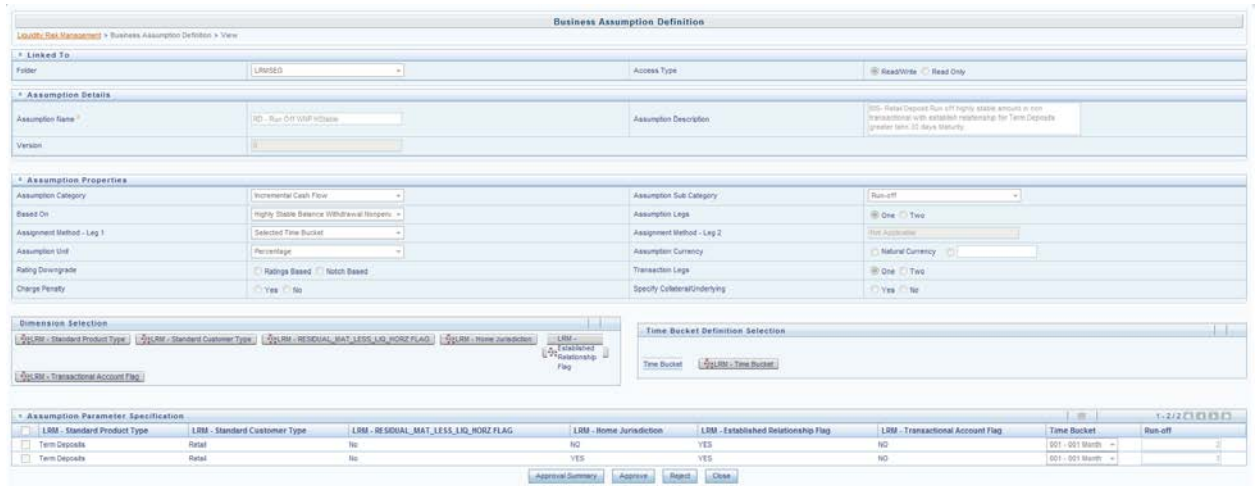


Figure 22 Business Assumption Summary – Approve/Reject

- To approve the definition that is sent for authorization, click **Approve**.
 The Approve dialog box is displayed with the assumption name and description.

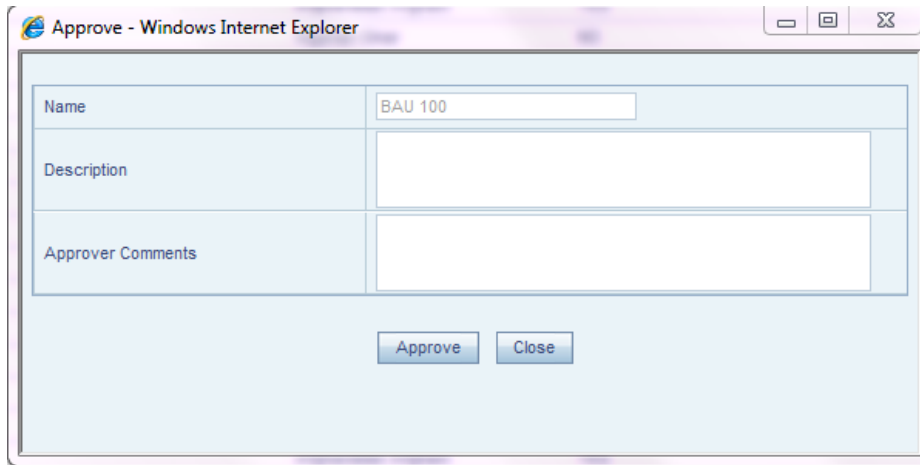


Figure 23 Business Assumptions - Approve

4. Enter Approver comments and then click **Approve**.
5. To reject the definition that is sent for authorization, click **Reject**.

The Reject dialog box is displayed with the assumption name and description.

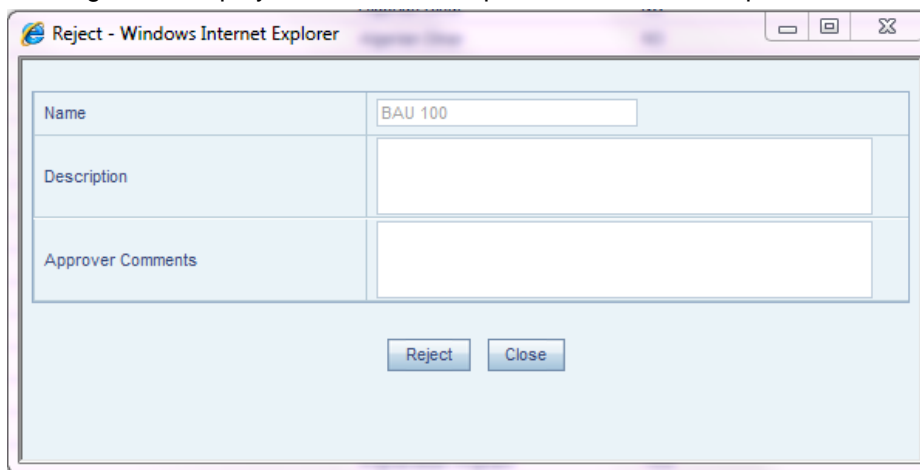


Figure 24 Business Assumptions - Reject


6. Enter Approver comments and then click **Reject**.
7. Click  icon to view the summary of the entire approval workflow. It displays approval history showing the start date, completion date, status owner and comments if any.



Figure 25 Business Assumptions – Approval Summary




Note:

- The Approve or Reject buttons are present only for the users who have the right to approve or reject the definition.

- In case the definition is rejected, it changes back to 'Open' status. When the definition is in open status, click **View** to view the definition. You cannot edit the values in view window.

6.9.3 Retiring a business assumption definition

You can retire a business assumption definition when a definition is no longer valid and not required to be included in the selection of a new run calculation. To retire a definition once it is approved, perform the following steps:

1. To retire a definition, click  to select a definition from the list of business assumptions and then click  or  icon.

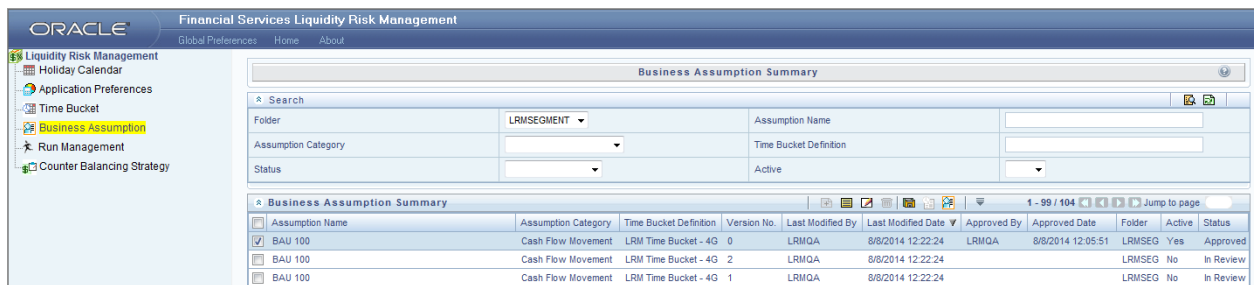
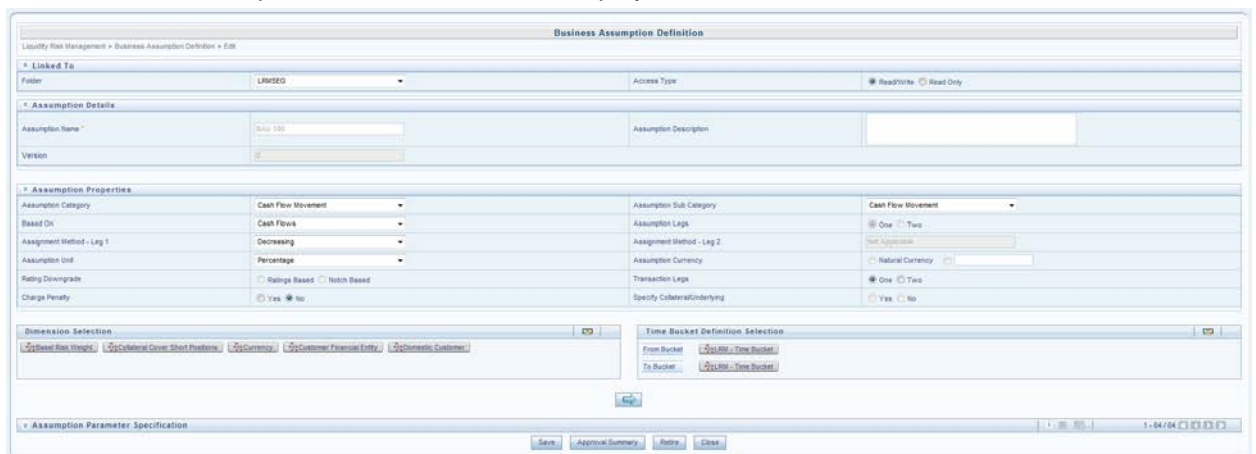


Figure 26 Business Assumptions – Retire

The Business Assumption Definition window is displayed.



2. Click **Retire**. A retired definition will not be available for selection as part of a new Run definition

Note:



- Once approved, when an assumption is edited and is in "In Review" status but this version of the assumption will not be picked up for execution as the definition is still in "In Review" status. Only when the definition goes through the entire approval process and is approved it is marked as latest and it can be used for execution.
- Once the definition is approved the latest version of such approved definitions are executed. While executing the Run executes the latest version of that assumption (that is, the version

marked as latest). Run automatically picks up the definition which is marked as latest. Only the version marked as latest will be executed at a given point of time.

- In case the business conditions change and you require a previously defined version number to make it active, select the assumption from the Business Assumption Summary window and click Make Active icon. Once it is approved, that version is automatically marked as latest but you can always go back and mark a previous version as latest in Business Assumption Summary window (Make Active).
- The status updated in the business assumptions summary window allows you to search the pre-defined business assumption definitions on the basis of approval status. This field displays a list of statuses that you have access to as a drop-down that is, Approved, Draft, In Review, Open, Pending Approval or Retired. Click the drop-down list to select the status. Selection of a status from the drop-down list displays only those business assumptions that have been defined within the selected status in the List of Business Assumption table.
- Business assumption definition can be edited prior to or post approval. If edited prior to approval, it is resaved with the same version number. If edited post approval, it is resaved with a new version number. You cannot edit the definition once sent for approval and is in pending approval status.
- The business assumption definition, once saved and approved, is registered as a Rule in the Rules Framework of Oracle Financial Services Analytical Applications Infrastructure.

6.10 Editing a Business Assumption

The process of editing a business assumption is as follows:

1. To edit a definition, click  to select a definition from the list of business assumptions and then click  icon.

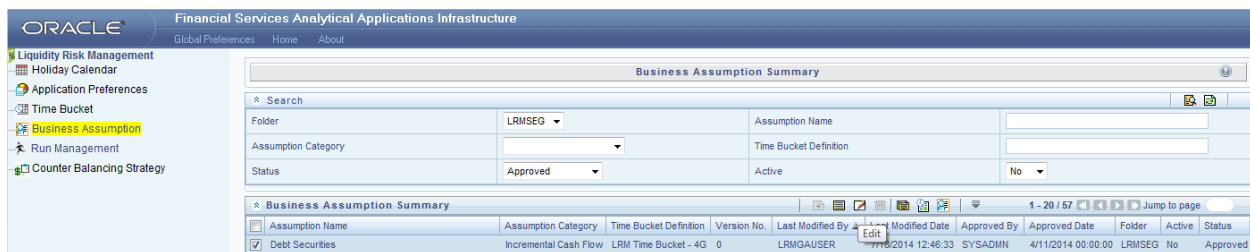


Figure 27 Business Assumptions – Editing a Business Assumption

2. You can edit a definition which is in “Draft”, “Open” and “In Review” status. LRM Analyst has the privileges to edit.
3. When the definition is in “Draft” status all the parameters can be edited in the Business Assumption Definition window.
4. When the definition is in “Open” status and “In Review” status all the parameters except the Assumption Name can be edited in the Business Assumption Definition window.
5. When you edit a definition which is “Draft” status, it remains in version 0.
6. When you edit a definition which is in “Open” status, the version number does not change.

Note: In Draft and Open status, the changes made are overwritten and the version number does not change.

7. When you edit a definition which is in approved status, the version number is changed and a new version is created. This changes the status to "In Review".

7 Run Management

7.1 Overview

Run Management screen of the LRM application allows you to define, approve and execute Runs. All Runs except stress Runs are defined in the Run Management window of LRM application. The Run, once saved and approved, is registered in the **Rules Framework > Run** in Oracle Financial Services Analytical Applications Infrastructure.

7.2 Run Definition Parameters

The Run Definition window has the following sections for defining parameters:

- Linked To
- Run Definition Details
- Run Parameters
- Legal Entity Selection (in case of Contractual Run)
- Business Assumptions (in case of BAU Run)

7.2.1 Linked To

The details must be specified as follows:

- **Folder:** Select the **Folder** which is specific to the Run definition.
- **Access Type:** Choose the access type option, Read/Write or Read Only.

7.2.2 Run Definition Details

The details for each Run definitions are entered here as follows:

- **Run Name:** Specify the Run name.
- **Run Description:** Enter the Run description.

7.2.3 Run Parameters

The parameters for each Run definitions are entered here as follows:

7.2.3.1 Purpose

The purpose is the reason for executing each Run. Each purpose has a set of specific calculations associated with it which require different pre-packaged rules and processes to be executed. On selection of a purpose, the relevant rules to support that computation are selected and executed.

Select the **Purpose** from the drop-down list. The drop-down list displays the following:

- **Basel III Liquidity Ratio Calculation:** Selection of this purpose enables the calculation of the Liquidity Coverage Ratio and Net Stable Funding Ratio in accordance with BIS guidelines.

- **FR 2052 a Report Generation:** Selection of this purpose enables re-classification of accounts into the regulatory reporting lines required to generate the FR 2052 a report of US Federal Reserve
- **FR 2052 b Report Generation:** Selection of this purpose enables re-classification of accounts into the regulatory reporting lines required to generate the FR 2052 b report of US Federal Reserve.
- **Long Term Gap Calculation:** Selection of this purpose enables calculation of liquidity gaps.
- **U.S Fed Liquidity Ratio Calculation:** Selection of this purpose enables the calculation of the Liquidity Coverage Ratio in accordance with the guidelines of US Federal Reserve.

Note:

- The above list of purposes is available to execute the relevant rules and processes required to achieve a specific computation. The business assumptions are applied over and above these rules and can be selected as part of a BAU or stress run for each purpose.
- FR 2052 a Report Generation and FR 2052 b Report Generation purposes are available only in Contractual Run.
- The lendable value is required for the FR2052 reports. In the application a placeholder rule is created for calculation of this value. It is recommended to improvise the rule to include other relevant variables like product /customer type and so on to arrive at the lendable value.

7.2.3.2 Run Type

There are three types of Runs supported by LRM:

1. Contractual Run
2. Business as Usual (BAU) Run
3. Stress Run

1. Contractual Run

This is the first Run defined using the Run Management window of the LRM Application and carries out the data preparation, aggregation and reclassifications required for computation of liquidity risk metrics under multiple scenarios. Contractual Run computes the as-of-date liquidity position of the organization without taking into account any behavioral conditions and forms the base for all subsequent calculations.

A contractual Run allows you to estimate liquidity gaps based on the contractual cash flows received as a download from the bank. It aggregates cash flows based on user-specified aggregation dimensions, identifies HQLA, allocates insurance and identifies deposit stability and so on. All cash inflows and outflows are assumed to be generated under contractual terms. Contractual execution caters to the as of date liquidity status of the organization without the application of any business assumption.

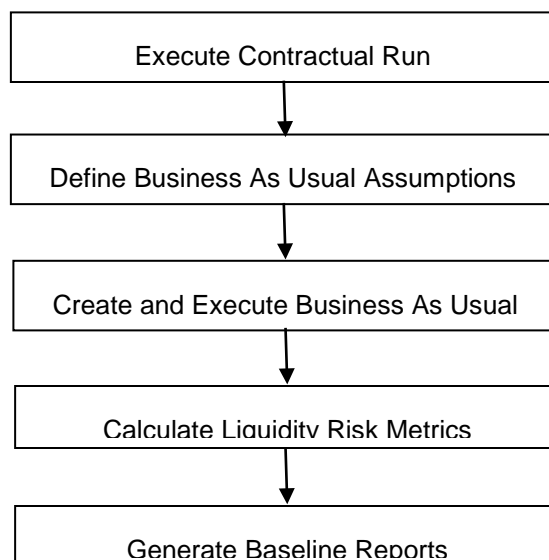
2. Business-as-Usual (BAU)

In BAU execution one or multiple business assumptions under normal conditions are applied to the contractual cash flows and the cash inflows and outflows are modified accordingly. A BAU Execution allows you to estimate and analyze the liquidity gaps under normal business conditions. The liquidity gap report (after BAU Execution) provides the liquidity status of the organization based on the impact of these business assumptions on the contractual cash flows. Additionally, liquidity ratios are estimated based on cash flows adjusted for normal conditions in accordance with the Basel III liquidity ratio guidelines prescribed by BIS (refer section [BIS Basel III Liquidity Ratio Calculation](#)) as well as LCR based on US guidelines (refer section [US Federal Reserve Liquidity Coverage Ratio Calculation](#)).

The features of BAU Run are as follows:

- One or multiple business assumptions are applied to the cash flows and other interim metrics computed as part of the underlying contractual Run. These assumptions are defined as part of the Business Assumption window and selected in a BAU Run for execution.
- All BAU Run parameters are the same as those specified for the underlying contractual Run except for Assumptions Applied To.
- Assumptions are applied on original balance or cash flows or changing balance or cash flows across business assumptions based on user selection.
- Contractual Run is a pre-requisite for defining a BAU Run.

Process flow of a Business As Usual Run



- a. **Executing BAU or Baseline Run:** A Contractual Run is executed before the Business As Usual Run. Once the liquidity gaps are estimated under contractual terms, the changes in cash flows during the normal course of business due to consumer behavior are to be estimated. This involves defining business assumptions based on multiple rules and specifying assumption values. The assumptions include, drawdown, prepayments, rollovers, asset/liability book growth, run-offs, asset value changes, recovery from delinquent accounts, available stable funding factors, required stable funding factors, and so on. Assumption values specified for each dimension member combination, is selected from pre-defined business hierarchies/dimensions. Once these assumptions are defined, they are grouped together and applied to contractual cash flows as part of the BAU Run or Baseline Run execution process. The impact of these business assumptions on liquidity gaps, ratios, and other metrics is estimated.
- b. **Baseline Reports:** LRM generates the Baseline reports that enable a detailed view of the liquidity risk metrics.

3. Stress Run

Stress testing is now an integral part of a bank's risk measurement system and plays an important role in estimating the effects of potential financial crises on a bank's operations. Stress testing, from a liquidity risk management perspective, refers to the process of assessing the liquidity position of a financial institution under adverse conditions. It involves defining stress assumptions and applying them to baseline results in order to obtain stressed results.

The application leverages the stress testing module of Oracle Financial Services Advanced Analytical Applications Infrastructure in order to carry out stress testing in an enterprise-wide consistent manner. Stress testing module is an integrated framework of OFSAAAI which supports the stress testing requirements across the entire suite of OFS analytical applications.

Stress Runs are defined as part of the Stress Testing module of OFSAAAI by selecting the baseline Run that is, the LRM BAU Run in the Stress Definition screen and replacing the BAU assumptions which are part of the baseline Run with stress business assumptions. Stress assumptions are business assumptions with adverse values and are defined as part of the Business Assumption screen of LRM. The replacement of BAU assumptions with the stress assumptions constitutes the stress scenario. Once defined and saved, the Stress Run can be viewed, approved and executed from the Run Management screen of LRM.

The Stress Run defined appears in the list of Runs in the Run Management Summary window. You can approve the definition and then execute it. BAU Run is a pre-requisite for defining stress Runs.

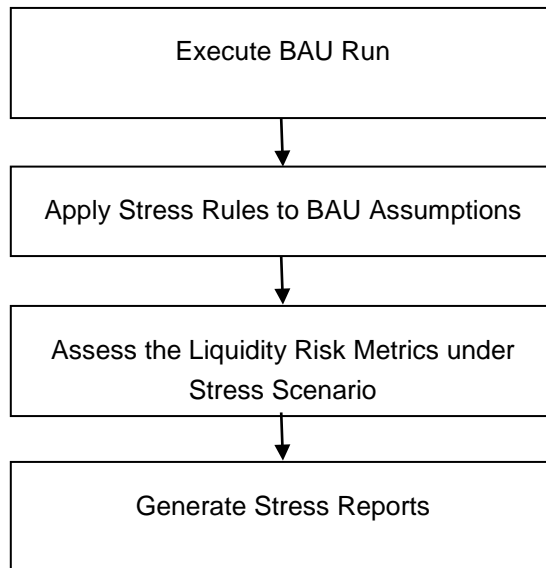
On execution, the stress business assumptions are applied to the contractual cash flows to assess the impact of the adverse scenario on the liquidity position of the institution.

Note:

1. Contractual and BAU Run are defined in the Run Management window and are automatically registered in OFSAAAI.

2. Stress Runs are defined in Stress Testing module of OFSAAI and registered in OFSAAI and appears in Run Management window. The stress Runs appear in Draft status with a Run type as Stress in the Run Management window of LRM. You are allowed to approve and execute these Runs.

Process flow of a Stress Run



- c. **Executing Stress Run:** The Contractual Run is executed first. The BAU Run is executed next. For executing Stress Runs, the Contractual or BAU cash flows are stressed. A combination of stressed assumptions or a stress value of higher magnitude becomes a stress scenario. The values can be applied as absolute values or they can be percentages. The liquidity gaps under the given stress scenario are calculated. The impact of the stress scenario is assessed on Liquidity Coverage Ratio (LCR), Net Stable Funding Ratio (NSFR,) and Funding Concentrations.
- d. **Stress Reports:** LRM generates the Stress reports that enable a detailed view of the liquidity risk metrics like Liquidity gaps across time buckets, Cumulative gaps, Gaps across time, Comparison across scenarios , LCR, NSFR, Funding Concentrations, and so on.

7.2.3.3 Contractual Run

When the Run type is selected as Business-As-Usual, the Contractual Run is required to be selected from the Contractual Run browser. The Contractual Run browser displays a list of contractual Runs. The list is filtered by the purpose selected. For example, if the purpose is selected as Basel III Liquidity Ratio Calculation for a BAU Run, it displays only those Contractual Runs which are specified with that purpose. You are allowed to select a single Contractual Run.

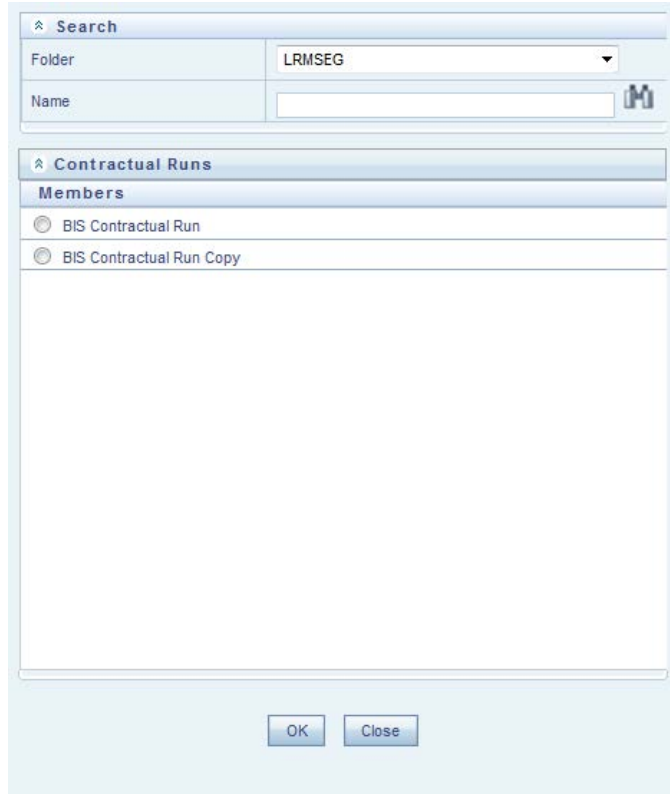


Figure 28 Run Definition – Contractual Run browser

7.2.3.4 Time Bucket Definition

When the Run type is selected as Contractual, the Time Bucket Definition is available for selection from the Time Bucket Definition browser. The Time Bucket Definition browser displays the list of computational time buckets defined as part of the Time Bucket window. You are allowed select a single time bucket definition.

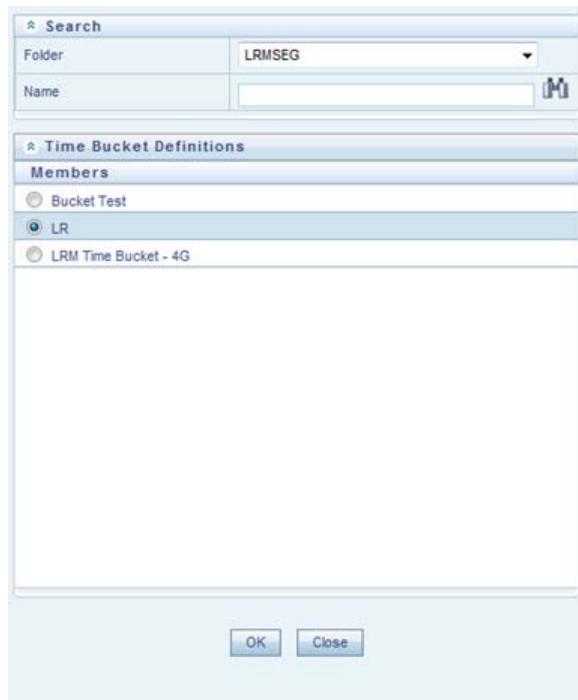


Figure 29 Run Definition - Time Bucket Definition browser

7.2.3.5 Consolidation Type

When the Run type is selected as Contractual, Consolidation Type selection is allowed in the Run Definition window. This parameter determines if the calculations are to be executed on a standalone basis for one or multiple selected legal entities or on a consolidated basis at the level of the selected legal entity. Select either of the following options from the drop-down:

- Solo
- Consolidated

Note:

The liquidity gaps, ratios and other metrics are estimated on a standalone (Solo) basis for each selected legal entity or on a consolidated basis at the level of the selected legal entity based on this selection.

7.2.3.6 Consolidation Level

In case you have selected Consolidation Type as Consolidated, you must select in the Consolidation Level to launch the Legal Entity browser for selecting the consolidation level. Select a single legal entity, at which the consolidated liquidity risk measures are to be calculated, from the list of legal entities available in the Legal Entity browser.

Note:

This selection is applicable only when the Run Type is selected as Contractual Run and Consolidation Type is selected as Consolidated. If you have selected the Consolidation Type as Solo, then Consolidation Level field is disabled and the solo legal entities are to be selected as part of the Legal Entity Selection section.

7.2.3.7 Business Day Convention

When the Run type is selected as Contractual, Business Day Convention selection is allowed in the Run Definition window for the purpose of bucketing cash flows. Select either of the following options from the drop-down:

- Conditional Following
- Conditional Prior
- Following
- No Adjustment
- Prior

7.2.3.8 Include Interest Cash Flows

When the Run type is selected as Contractual, Include Interest Cash Flows selection is allowed in the Run Definition window. Select either of the following options:

- Yes – In case you select Yes, both principal and interest cash flows are considered for calculations.
- No – In case you select No, only principal cash flows are considered and interest cash flows are ignored.

7.2.3.9 Approximate Interest

When the Run type is selected as Contractual and when Include Interest Cash Flows are selected as Yes, Approximate Interest selection is allowed in the Run Definition window. Select either of the following options:

- Yes – When Approximate Interest is selected as Yes, the business assumption is applied only to the principal cash flows and the interest cash flows are approximated based on changes to the principal.
- No – In case you select No, the business assumption values are applied to both principal and interest cash flows. However, this application depends on the manner in which the business assumption is defined as follows:
 - If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Principal, then assumption is applied only to the principal cash flows.
 - If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Interest, then assumption impacts only Interest cash flows.
 - If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Principal and Interest, then assumption is applied to both principal and interest cash flows.

- If you have not selected Cash Flow Type as a dimension in the business assumption, then assumption is applied to both principal and interest cash flows.

7.2.3.10 Forward Rate Interpolation Method

When the Run type is selected as Contractual, Forward Rate Interpolation Method selection is allowed in the Run Definition window. Select either of the following options from the drop-down:

- Linear
- Log Linear

7.2.3.11 Assumptions Applied To

When the Run type is selected as Business-As-Usual, Assumptions Applied To selection is allowed in the Run Definition window. Select either of the following options:

- Changing Balance/Cash Flows – In this case, the change in the cash flows or balances due to the previous assumption will be considered while applying subsequent assumptions.
- Original Balance/Cash Flows – In this case, the assumptions are always applied to the original cash flows or balances without considering the effect of the previous business assumption.

7.2.4 Legal Entity Selection

When Run type is selected as Contractual and the consolidation type is selected as **Solo**, the **Legal Entity Selection** is enabled. You are allowed to select one or multiple legal entities from the Hierarchy browser. The selected legal entities are listed under the Legal Entity Selection section of the browser.

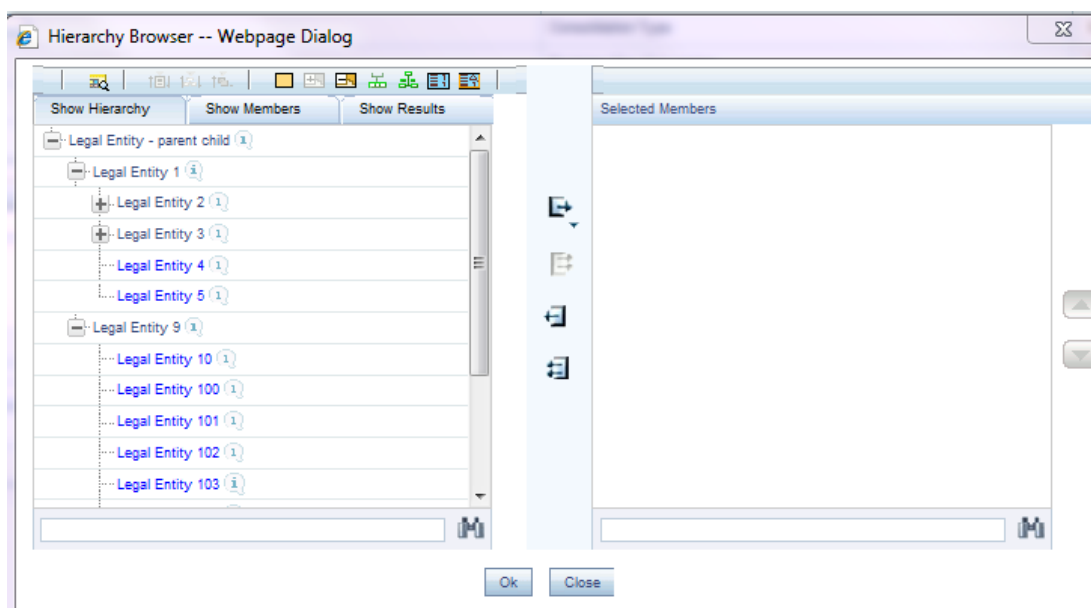


Figure 30 Run Definition – Hierarchy Browser

Note:

1. The parameters Contractual Run and Assumptions Applied to are applicable only when BAU Run is defined. All other parameters of the BAU Run are the same as those of the underlying contractual Run.
2. All parameters of the Stress Runs are the same as those of the underlying BAU Run

7.2.5 Business Assumptions

When the Run type is selected as Business-As-Usual, you are required to select one or multiple business assumptions to be applied to contractual calculations. The Business Assumptions browser displays a list of all approved business assumptions which have a time bucket definition that corresponds to the definition selected as part of the Run Parameters section. Select one or multiple business assumptions that you want to apply.

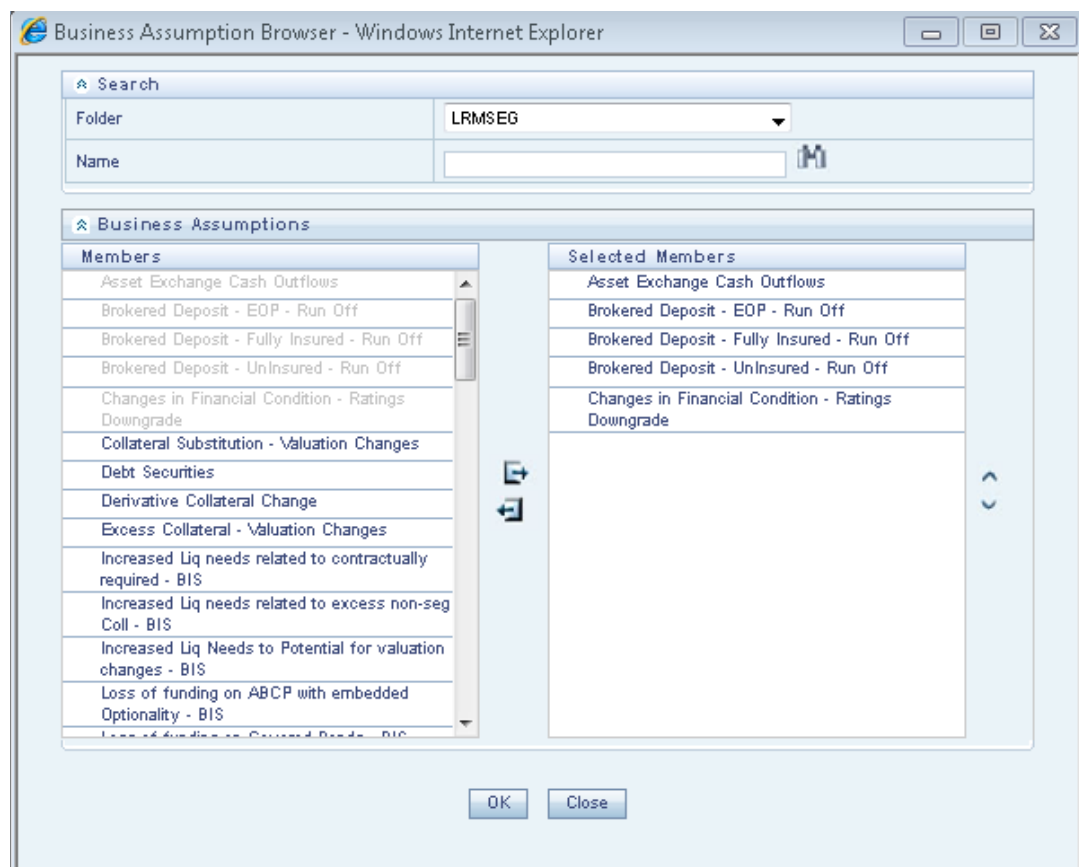


Figure 31 Run Definition – Business Assumption Browser

7.3 Understanding Run Management Summary

To open the **Run Management** window, in **Oracle Financial Services Analytical Applications Infrastructure** window choose, **Risk Applications > Liquidity Risk Management > Run Management** on the Left-Hand Side (LHS) menu.

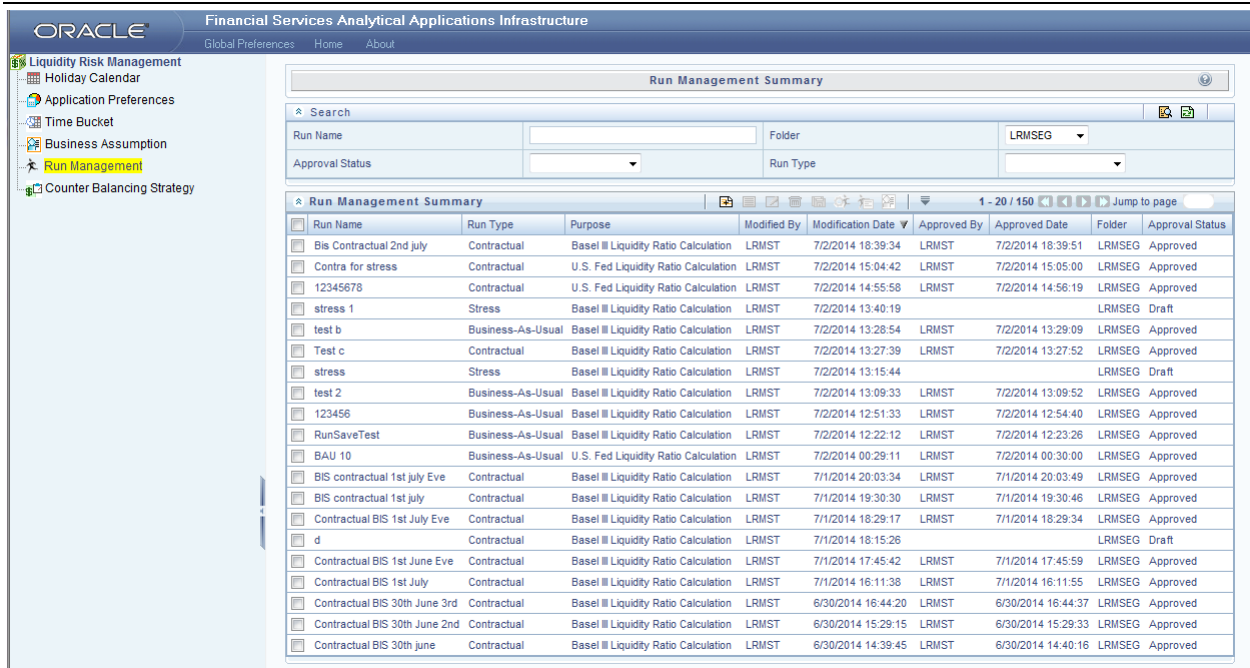




Figure 32 Run Management Summary

The Run management summary window of the LRM application allows you to define, approve and execute Run/s.

This is the search section which contains multiple parameters. You can specify one or multiple search criteria in this section. When you click the search icon, depending up on the search criteria, this filters and displays the relevant search combination parameters under the Run Management Summary as a list.

Search	
Field/Icon	Description
Search 	This icon allows you to search the Run definition on the basis of the search criteria specified. Search criteria include a combination of Run Name, Folder, Approval Status and Run Type. The Run definitions displayed in the Run Management Summary table are filtered based on the search criteria specified on clicking of this icon.
Reset 	This icon allows you to reset the search section to its default state that is, without any selections. Resetting the search section displays all the existing Run definitions in the Run Management Summary table.
Run Name	This field allows you to search the pre-defined Run on the basis of the Run name. Enter the Run name.
Folder	This field allows you to search for the pre-defined Run definitions on the basis of the selected folder. This field displays a list of folders that you have access to as a drop-down. Selection of a folder from the drop down list displays

Search	
Field\Icon	Description
	only those Run definitions that have been defined within the selected folder/segment in the Run Management Summary table.
Run Type	This field allows you to search the pre-defined Run on the basis of Run Type (Contractual, BAU or Stress Run). You need to specify the Run Type here for searching pre-defined Run.
Approval Status	This field allows you to search the pre-defined Run on the basis of approval status. This field displays a list of statuses that you have access to as a drop-down that is, Approved, Draft, In Review, Open, Pending Approval or Retired. Click the drop-down list to select Approved or Rejected status. Selection of a status from the drop-down list displays only those Run definitions that have been defined within the selected status in the Run Management Summary table.

Table 64 Run Management – Search









List of Runs		
Icon Name	Icon	Description
Add		This icon allows you to define a new Run.
View		This icon allows you to view the selected Run definitions.
Edit		This icon allows you to edit the selected Run definition. Once the definition is approved, it cannot be edited in the case of Run definitions.
Delete		This icon allows you to delete the selected Run definition.
Copy		The icon allows a definition to be copied and resaved as a new definition.
Run Execution Parameters		This icon allows you to specify execution parameters and execute the Run from the Run Execution Parameters screen. Select the check-box against a Run definition and click the Run Execution Parameters icon to view the Run Execution Parameter Specification window.
Run Execution Summary		This icon displays the Run Execution Summary window. The Run parameters specified as part of the Run Definition window are displayed in an un-editable form in the Run Parameters window. The entire list of executions and their details are displayed for the selected definition in this screen.
Workflow Summary		The icon displays the approval summary for the definition.

Table 65 Run Management Summary


7.4 Defining a Run

7.4.1 Defining a Contractual Run



The Run Management window allows you to define a new Run or create a new Run definition.

Figure 33 Run Definition - Contractual Run

To define a Contractual Run, perform the following steps:

1. Click  icon on the **Run Management** window.
The **Run Definition** window is displayed where you can define a Run.
2. In **Linked To** section,
 - a. Select the **Folder** from the drop-down list, which is specific to the Run definition. The Run definitions are linked to a segment.
 - b. Select the **Access Type**. It is either Read/Write or Read Only option
3. In **Run Definition Details** section,
 - a. Enter the **Run Name** which is unique across infodoms.
 - b. Enter the **Run Description**.



Note:
Both the **Run Name** and **Run Description** fields allow special characters.
4. In **Run Parameters** section,
 - a. Select the **Purpose** from the drop-down list. The drop-down list displays the following:
 - **Basel III Liquidity Ratio Calculation**
 - **FR 2052 a Report Generation**
 - **FR 2052 b Report Generation**

- **U.S Fed Liquidity Ratio Calculation.**
- b. Select the **Run Type** as Contractual from the drop-down list. The drop-down list displays the following:
 - Contractual
 - Business-as-Usual
 5. When the Run type is selected as **Contractual** and the purpose is selected as **Basel III Liquidity Ratio Calculation** or **Long Term Gap Calculation** or **U.S Fed Liquidity Ratio Calculation** perform the following steps:
 - a. In the **Time Bucket Definition** field, click  to select the time bucket definition. The Time Bucket Definition browser displays the list of computational time buckets defined as part of the Time Bucket screen. Select the required time bucket definition and then click **OK**.
 - b. Select **Consolidation Type** from the drop-down list. It is either **Consolidated** or **Solo**.
 - c. In case you have selected Consolidation Type as Consolidated, in the **Consolidation Level** field, click  to launch the Legal Entity browser for selecting the consolidation level. Select a legal entity, at which the consolidated liquidity risk measures are to be calculated, from the list of legal entities available in the Legal Entity browser.

This selection is applicable only when the Run Type is selected as Contractual Run and Consolidation Type is selected as Consolidated. If you have selected the Consolidation Type as Solo, then **Consolidation Level** field is disabled.
 - d. Select the **Business Day Convention** from the drop-down list. The drop-down list displays the following:
 - Prior
 - Conditional Prior
 - Following
 - Conditional Following
 - No Adjustment

This is applicable only when Run Type is selected as Contractual Run.
 - e. Select the **Include Interest Cash Flows** as either **Yes** or **No**.

Note:

 - The Approximate Interest field is disabled if you select Include Interest Cash Flows as No.
 - Select the **Forward Rate Interpolation Method** from the drop-down list. It is either **Linear** or **Log Linear**. This is applicable only when the Run type is selected as Contractual.
 6. In case you have selected consolidation type as **Solo**, in the **Legal Entity Selection** section, click  to select one or multiple legal entities from the Hierarchy browser and then click **OK**. The selected legal entities are listed under the Legal Entity Selection section. In case you wish to add or edit the legal entities click .

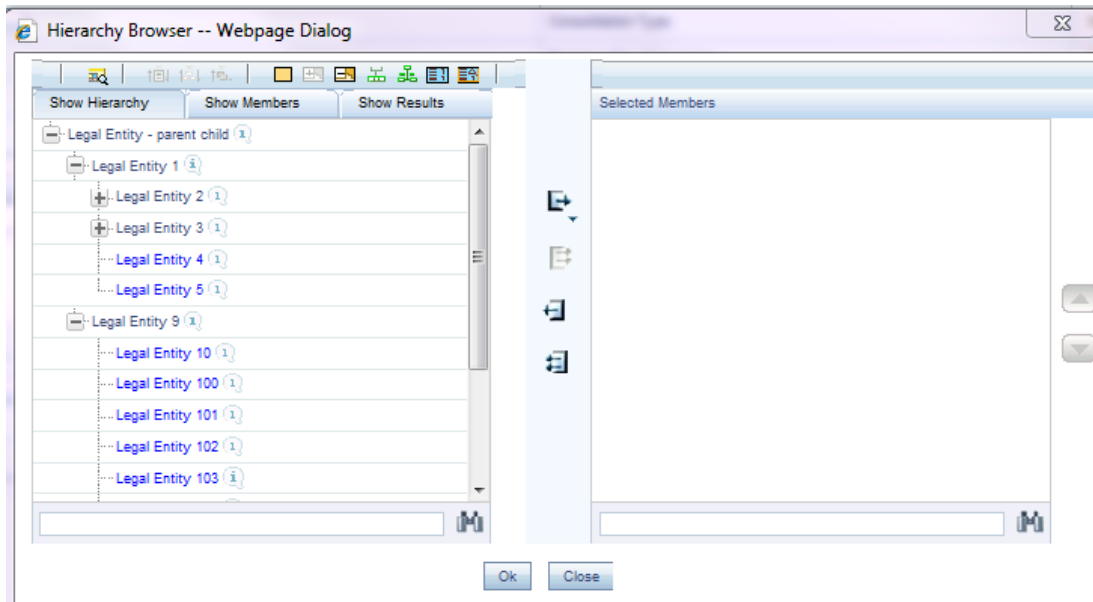





Figure 34 Run Definition – Hierarchy Browser

7. When the Run type is selected as **Contractual** and the purpose is selected as **FR 2052 a Report Generation** or **FR 2052 b Report Generation** perform the following steps:
 - a. Select the **Consolidation Type** from the drop-down list. It is either **Consolidated** or **Solo**.
 - b. In case you have selected Consolidation Type as Consolidated, in the **Consolidation Level** field, click  to launch the Legal Entity browser for selecting the consolidation level. Select a legal entity, at which the consolidated liquidity risk measures are to be calculated, from the list of legal entities available in the Legal Entity browser. This selection is applicable only when the Run Type is selected as Contractual Run and Consolidation Type is selected as Consolidated.

If you have selected the Consolidation Type as Solo, then **Consolidation Level** field is disabled.
 - f. Select the **Include Interest Cash Flows** as either **Yes** or **No**.

Note:

 - The Approximate Interest field is disabled if you select Include Interest Cash Flows as No.
 - Select the **Forward Rate Interpolation Method** from the drop-down list. It is either **Linear** or **Log Linear**. This is applicable only when the Run type is selected as Contractual.
8. In case you have selected consolidation type as **Solo**, in the **Legal Entity Selection** section, click  to select one or multiple legal entities from the Hierarchy browser and then click **OK**. The selected legal entities are listed under the Legal Entity Selection section. In case you wish to add or edit the legal entities click .

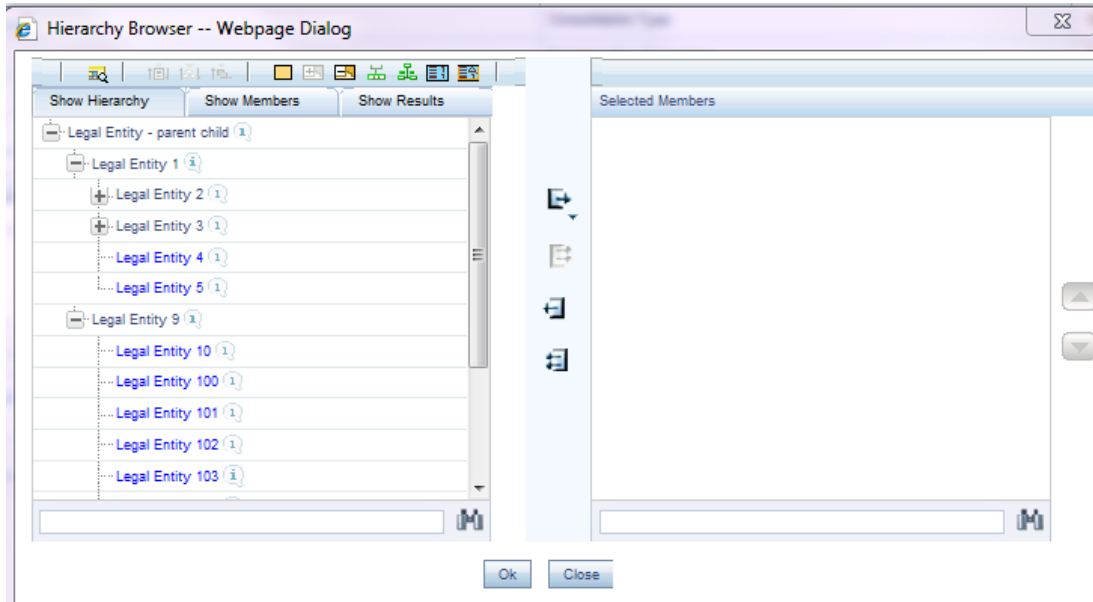


Figure 35 Run Definition – Hierarchy Browser

9. Click **Save**. The Run is saved in the **Run Framework of Oracle Financial Services Analytical Applications Infrastructure**. A Run is available for execution only after it has been approved. Once approved, Run parameters cannot be edited.

7.4.2 Defining a Business-As-Usual (BAU) Run

The Run Definition window in the LRM application allows you to define a new Run.

Run Definition			
Liquidity Risk Management > Run Definition > Add			
Linked To			
Folder	LRMSEG	Access Type	<input checked="" type="radio"/> Read/Write <input type="radio"/> Read Only
Run Definition Details			
Run Name *		Run Description	
Run Parameters			
Purpose *	Basel III Liquidity Ratio Calculation	Run Type *	Business-As-Usual
Contractual Run *			
Time Bucket Definition *		Consolidation Type	Solo
Consolidation Level		Business Day Convention	Prior
Include Interest Cash Flows	<input checked="" type="radio"/> Yes <input type="radio"/> No	Approximate Interest	<input checked="" type="radio"/> Yes <input type="radio"/> No
Forward Rate Interpolation Method	Linear	Assumptions Applied To	<input type="radio"/> Changing Balance/Cash Flows <input checked="" type="radio"/> Original Balance/Cash Flows
Business Assumptions			
Assumption Name	Version Number	Assumption Category	
No Records			
<input type="button" value="Save"/> <input type="button" value="Close"/>			
Audit Trail			
System ID :			
Created By		Creation Date	
Last Modified By		Last Modification Date	

Figure 36 Run Definition - Contractual Business-As-Usual Run

To define a BAU Run, perform the following steps:


1. Click  icon on the **Run Management** window.

The **Run Definition** window is displayed where you can define a BAU Run.

2. In **Linked To** section,
 - a. Select the **Folder** from the drop-down list, which is specific to the Run definition. The Run definitions are linked to a segment.
 - b. Select the **Access Type**. It is either Read/Write or Read Only option
3. In **Run Definition Details** section,
 - a. Enter the **Run Name** which is unique across infodoms.
 - b. Enter the **Run Description**.

Note:


Both the **Run Name** and **Run Description** fields allow special characters.


4. In **Run Parameters** section,
 - a. Select the **Purpose** from the drop-down list. The drop-down list displays the following:
 - **Basel III Liquidity Ratio Calculation**
 - **Long Term Gap Calculation**
 - **U.S Fed Liquidity Ratio Calculation.**
 - b. Select the **Run Type** as Business-As-Usual from the drop-down list. The drop-down list displays the following:
 - Contractual
 - Business-As-Usual
5. When the Run type is selected as **Business-As-Usual** and the purpose is selected as **Basel III Liquidity Ratio Calculation** or **Long Term Gap Calculation** or **U.S Fed Liquidity Ratio Calculation** perform the following steps:
 - a. In the **Contractual Run** field, click  to select from the list of contractual Runs available in the contractual Run browser.


Note:

All other fields in the Run parameters section are consistent with the parameters specified as part of the selected Contractual Run. These fields are in un-editable form based on the Contractual Run selected.

- b. Select the **Assumptions Applied To**. It is either **Changing Balance/Cash Flows** or **Original balance/Cash Flows**. This field is applicable only when the Run type is selected as BAU.

For information on Changing Balance/Cash Flows or Original balance/Cash Flows, refer to section [Assumption Calculation](#).
6. In the **Business Assumptions** section, click  icon. The Business Assumptions browser is displayed. All the approved business assumptions with the latest record indicator Y are listed. These have a time bucket definition which corresponds to the definition selected as part of the Run Parameters section.

7. Select one or multiple business assumptions that you want to apply to the contractual cash flows and click  to move them to Selected Members section.

8. Using  up or down arrows, you can sequencing of assumptions.

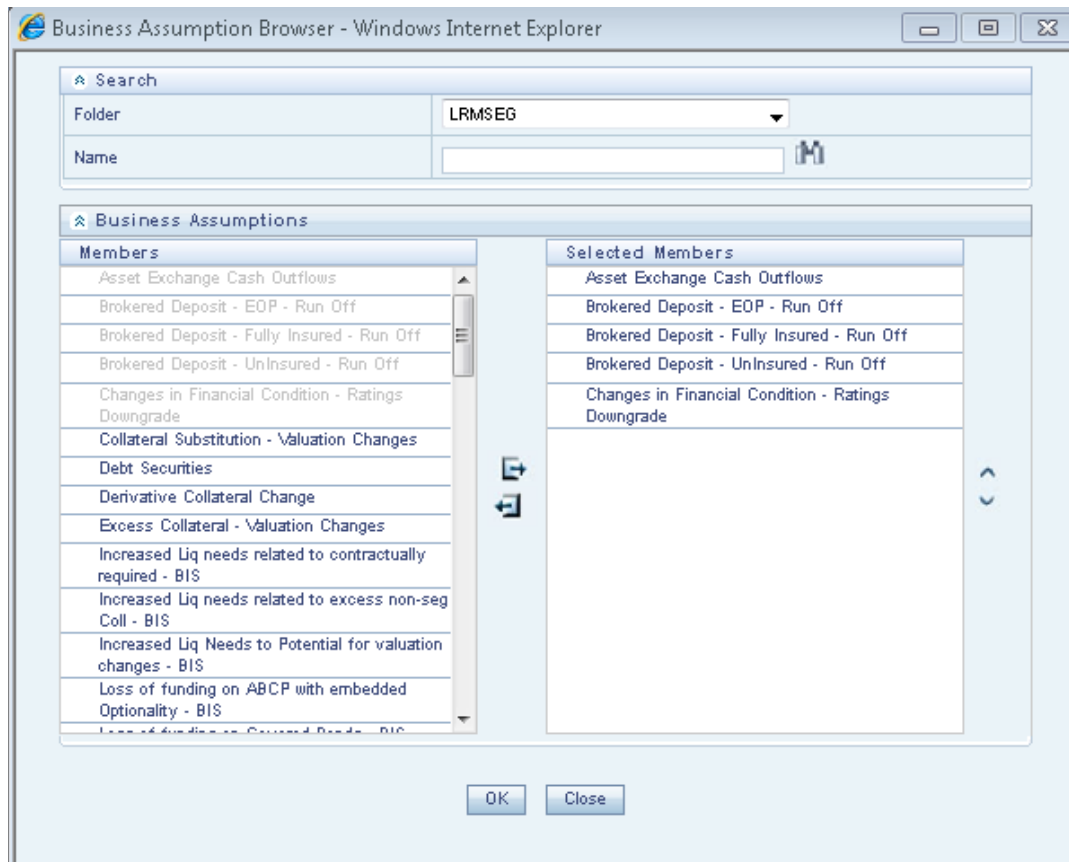



Figure 37 Run Definition – Business Assumption Browser

The application saves the assumptions on BAU Run definition window.

9. In case you wish to add or edit the business assumptions click .
10. If you do not wish to save the assumption, click **Close**.
11. The details are displayed under the Business Assumption section for each selected business assumption as follows:
 - Assumption Name
 - Version Number
 - Assumption Category

Note:

- Only the approved business assumptions appear in the list.
- For information on **Assumption Category**, refer section [Assumption Category](#).
- The assumptions are executed as per the sequence in which they are selected in the Run Definition screen. This sequence is stored for the purpose of reporting.

12. Click **Save**. The Run is saved in the **Run Framework of Oracle Financial Services Analytical Applications Infrastructure**. A Run is available for execution only after it has been approved. Once approved, Run parameters cannot be edited.

7.4.3 Defining a Stress Run

A stress Run is created in the Stress Definition window of the Stress Testing module of **Oracle Financial Services Advanced Analytical Applications Infrastructure (OFSAAI)**. A business-as-usual Run is selected as the baseline Run and one or multiple BAU assumptions which are part of the selected baseline Run are replaced by stress business assumptions to create a stress Run.

Replacement of a set of BAU assumptions with another set of stress assumptions constitutes a scenario for stress testing within LRM. Stress business assumptions are similar to BAU assumptions, but with adverse or stressed values. On execution of the stress Run, the stress assumptions are applied to BAU cash flows to assess the impact of the stress scenario on the liquidity metrics.

Each stress definition created in the Stress Testing module of OFSAAI appears as a line item in the Run Management Summary window. You can view, approve and execute a stress Run from the Run Management screen of the LRM application.

Each stress definition created in the Stress Testing module of OFSAAI appears as a line item in the Run Management Summary window with the Run type as Stress. You can view, approve and execute a stress Run from the Run Management screen of the LRM application.

Note:

For more details on the step-by-step creation of a stress Run refer **Stress Testing** chapter in Advanced Analytical Applications Infrastructure module in OFSAAI user guide.

7.5 Run Definition Approval Process

OFS LRM supports approval workflows based on user roles. Run definitions which are defined within the application are required to be approved which are defined within the application before they can be used for computations. The user who creates the Run definition sends it for approval after finalizing it. Run definitions can be approved only by users with the required access levels. For more information refer section [User Roles and Access](#).

7.5.1 Sending Run definitions for approval



To send a definition for approval, perform the following steps:

1. Click **Run Management** on the LHS menu of the LRM Application to open the **Run Management Summary** window.

Note:

Run definitions in the following stages can be sent for approval:

- a. A new definition which in “Draft” status.
- b. A version of a definition which is rejected and is in “Open” status.

- Click  to select a definition with the status “Draft”, “Open” from the list of business assumptions and then click  icon.

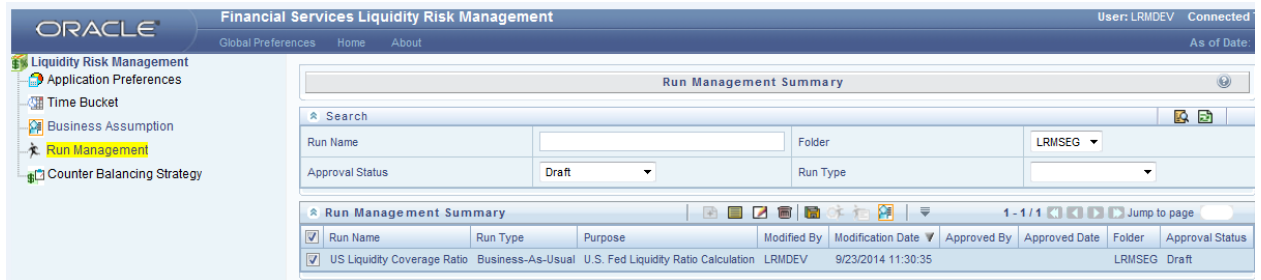


Figure 38 Run Management Summary – Draft status

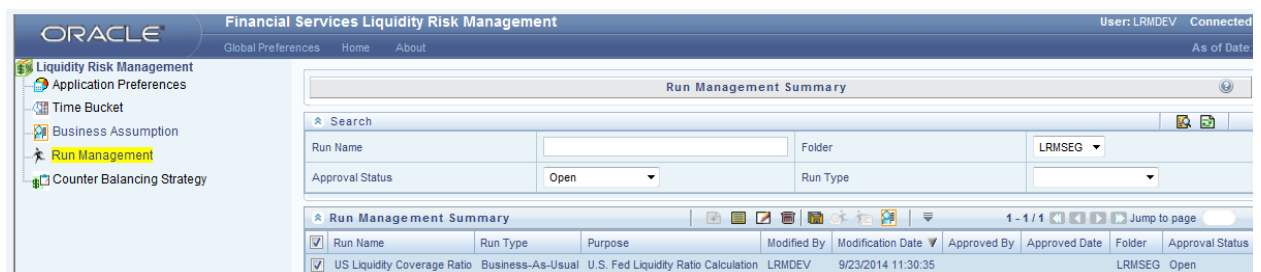


Figure 39 Run Management Summary – Open status

The Run Definition window is displayed with all the parameters defined.



Figure 40 Run Definition – Send for Approval

Note: Stress Runs cannot be edited. The definition is opened in the view mode. To edit the Stress Runs, go to Stress Testing Framework in Advanced Analytics Infrastructure module. In case you have any changes you can edit the parameters and click **Save**.


- To send a definition for authorization, click **Send for Approval**. This changes the status of the definition to Pending Approval. The definition is successfully sent for approval and the status changes to Pending Approval

Note: Stress Runs can be sent for approval only when the Time Bucket Definition under Run Parameters section and the Time Bucket Definition under Business Assumptions section in Run Definition match.

7.5.2 Approving a Run definitions

To approve a Run definition, perform the following steps:

1. Click **Run Management** on the LHS menu of the LRM Application to open the **Run Management Summary** window. Only definitions which are in “Pending Approval” status can be approved or rejected by the approver.

Click to select a definition with the status “Pending Approval” from the list of Run definitions and then click  icon.

2. To view the definition in the approval summary window, click **Approval Summary**. You can view the status changes for the definition created.

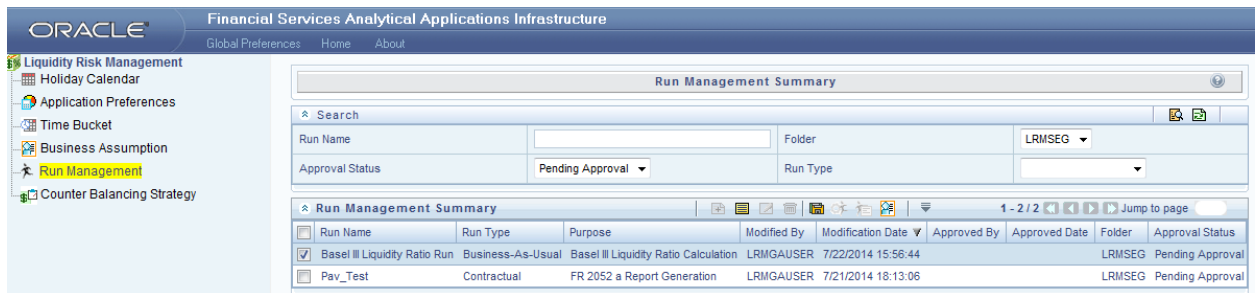


Figure 41 Run Management Summary – Pending Approval

You cannot edit the values in view window.

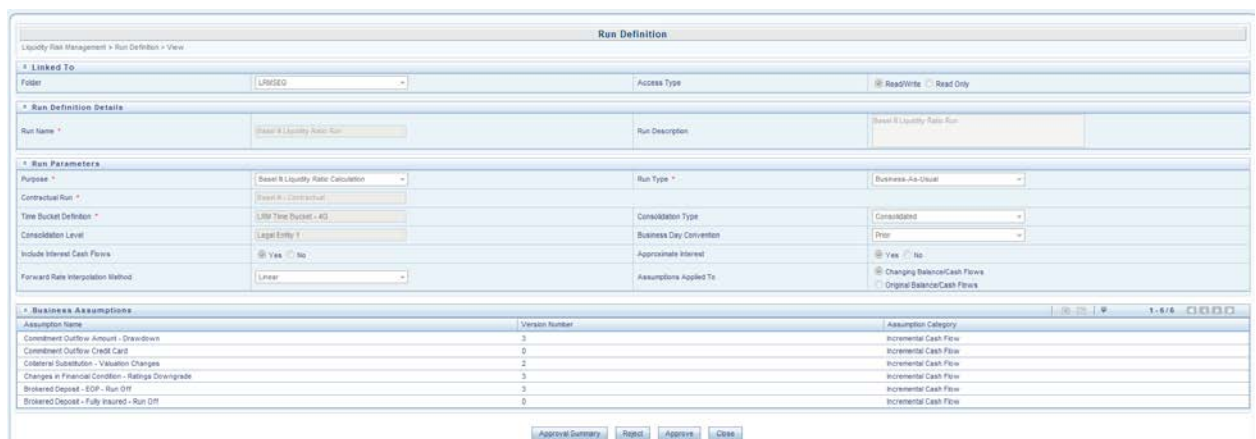


Figure 42 Run Definition – Approve/Reject

3. To approve the definition that is sent for authorization, click **Approve**.

The Approve dialog box is displayed with the assumption name and description.

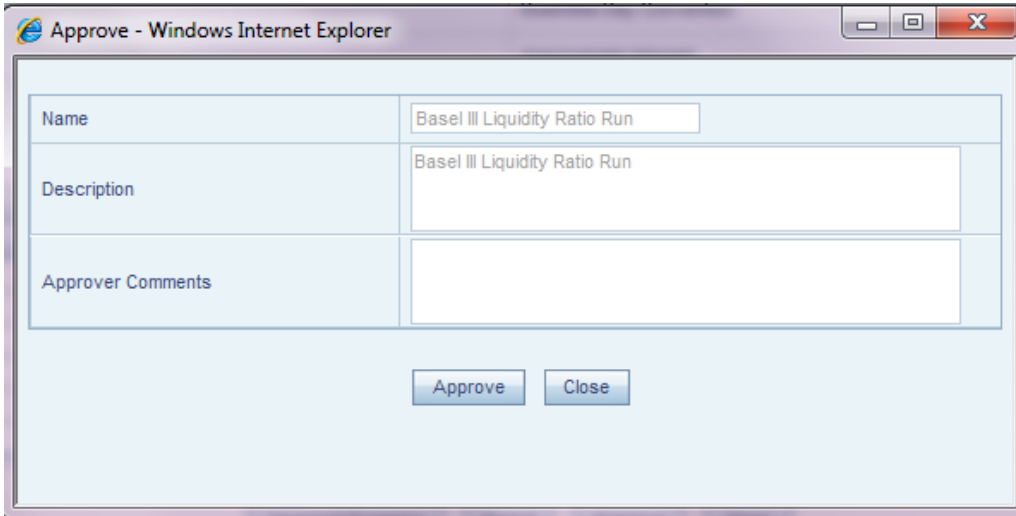


Figure 43 Run Definition - Approve

4. Enter Approver comments and then click Approve.
5. To reject the definition that is sent for authorization, click **Reject**.

The Reject dialog box is displayed with the assumption name and description.

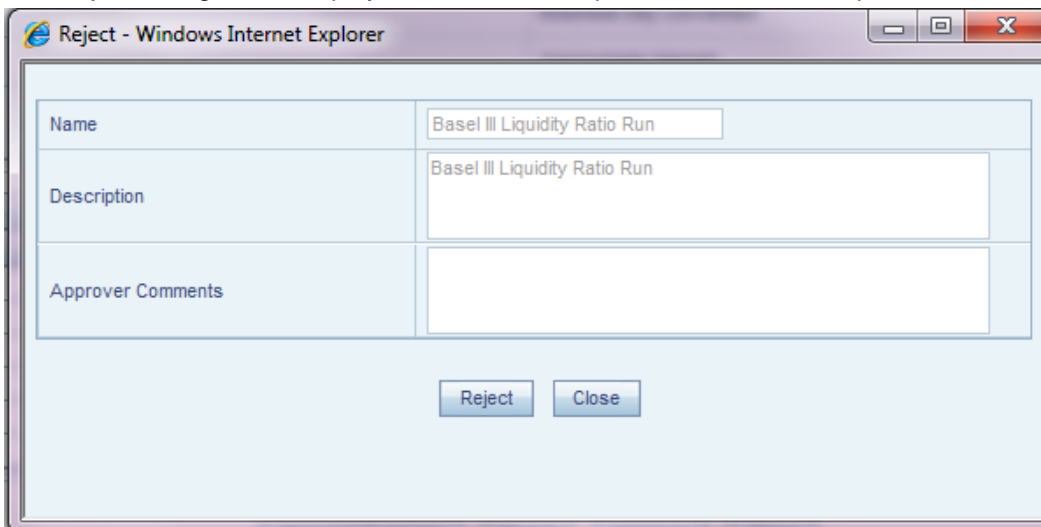


Figure 44 Run Definition - Reject

6. Enter Approver comments and then click **Reject**.
7. Click  icon to view the summary of the entire approval workflow. It displays approval history showing the start date, completion date, status owner and comments if any.

Approval Summary				
Main Details				
Run Name	Run ID	Run Description	Run App	
Approval History				
Start Date	Completion Date	Status	Owner	Comments
2014-05-07 02:01:55.0	2014-05-07 02:02:03.0	OK	LRINGAUZER	
2014-05-07 02:02:03.0	2014-05-07 02:02:18.0	Pending Approval	LRINGAUZER	
2014-05-07 02:02:18.0		Approved	LRINGAUZER	yes



Figure 45 Run Management – Approval Summary

Note:

- The Approve or Reject buttons are present only for the users who have the right to approve or reject the definition.
- In case the definition is rejected, it changes back to 'Open' status. When the definition is in open status, click **View** to view the definition. You cannot edit the values in view window.
- Once the definition is approved, it cannot be edited in the case of Run definitions.

7.5.3 Retiring a Run definition

You can retire a Run definition when a definition is no longer valid and not required to be included in the selection of a new run calculation. To retire a definition once it is approved, perform the following steps:

1. To retire a definition, click  to select a definition from the list of Run definitions and then click  icon.

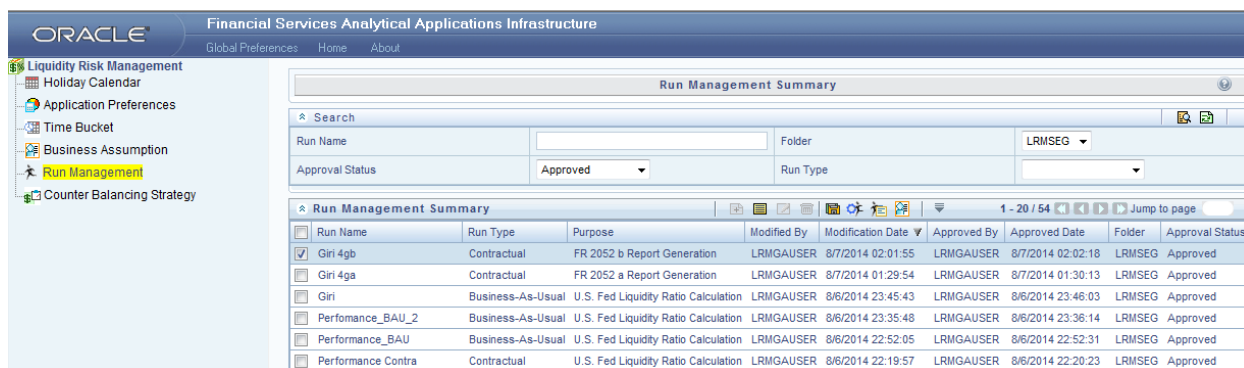


Figure 46 Run Management Summary – Retire

The Run Definition window is displayed



2. Click **Retire**. A retired definition will not be available for selection as part of a new Run definition.

Note:

- The approval status field in the Run Management Summary window allows you to search the pre-defined Run on the basis of approval status. This field displays a list of statuses that you have access to as a drop-down that is, Approved, Draft, In Review, Open, Pending Approval or Retired. Selection of a status from the drop-down list displays only those Run definitions that have been defined within the selected status in the Run Management Summary table.

- Assumption definitions can be approved only by those mapped to the LRM role who has defined the assumption. Multiple levels of approvals are supported.
- The Run definition, once saved and approved, is registered as a Rule in the Rules Framework of Oracle Financial Services Analytical Applications Infrastructure.

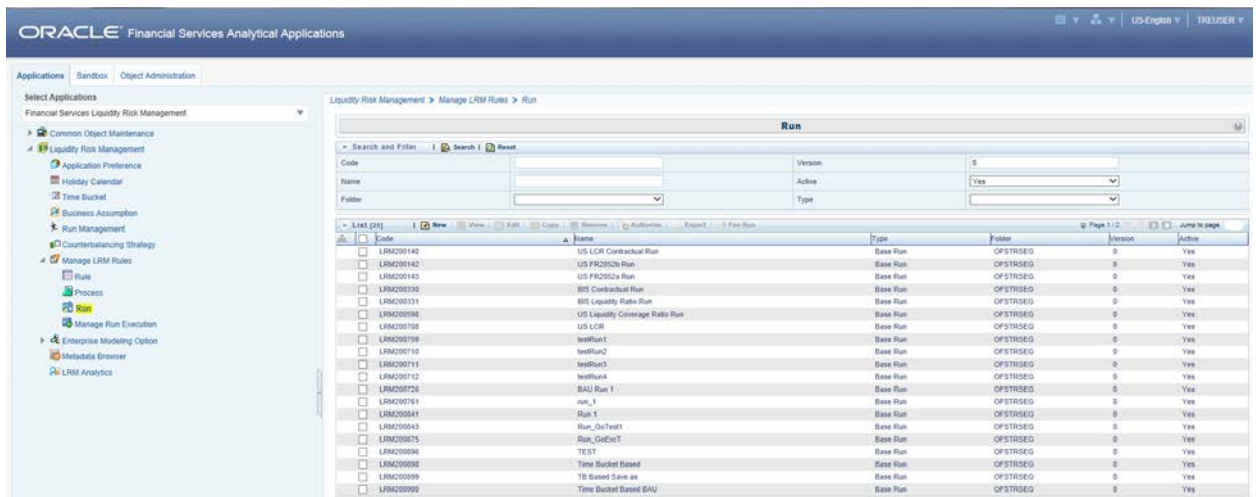
7.6 Adding a Custom Task to a Run

When a Run is defined from LRM Run Management window, it is also registered in the Run window of Rules Framework under the Oracle Financial Services Analytical Applications Infrastructure window.

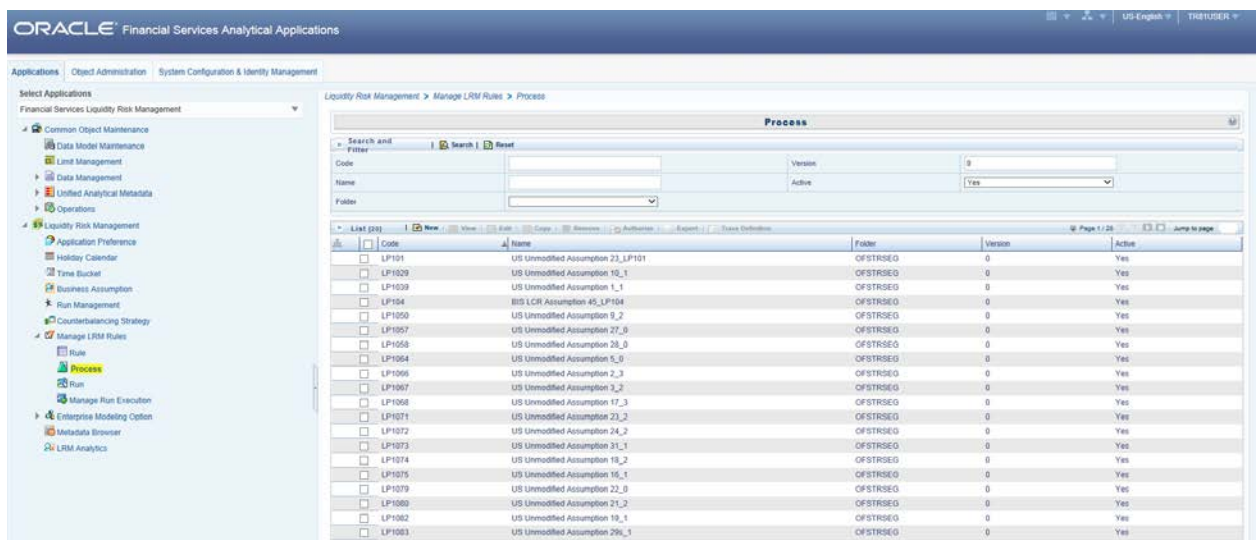
To add a task to a Run, perform the following steps:



1. On the Oracle Financial Services Analytical Applications Infrastructure window, choose **Liquidity Risk Management > Manage LRM Rules > Run** on the LHS menu.

On the RHS menu, you can view all the processes which are used and the tasks in the process. You can decide which process needs an additional custom task.



2. Choose **Manage LRM Rules > Process** on the LHS menu.



3. Select  the process you wish to edit and then click Edit  icon.

The **Process** window is displayed.



4. In the process window, you can add a Custom Task. For more information on how to add a task to the process refer Edit Process Definition section in OFSAAI User Guide.
5. Click Save. Ensure to save it to the existing version.

Note:

- Only Process can be edited and this is a custom change which may get overwritten when subsequent product patches are applied. Run must not be edited from RRF window if it is created through OFS LRM Run Management window.
- You can make the required edits to additionally include custom task. For more information refer *OFSAAI User Guide*.
- To execute this Run, you must go to Run Management window of LRM. The Run must be approved prior to execution.

7.7 Preparing for Execution

This chapter aims to detail the important activities that you must perform before executing Contractual, Business As Usual (BAU) or Stress Runs. It aims to provide details on the data required to be populated in the LRM Application and the steps to be followed to define business assumptions which will help identify liquidity gaps.

7.7.1 Data Requirements

Configuring data into the LRM Application is the basic and most important activity to commence working on the LRM Application. Data to be configured in the LRM Application can be divided into three types:

1. Setup Role Management
2. Setup Data Management
3. Run Data Management

Under Setup Role Management, you are requested to create specific roles to access the respective functionality of the screens and map these roles to user groups.

Setup data is a set of dimension tables which does not change frequently and can be categorized as a onetime setup activity required to be populated in OFS LRM.

Run or Execution data management details the staging data to be populated that change with each execution.

7.7.2 Defining Time Buckets

After configuring setup data and Run or staging data in the LRM Application, the next step is to define the time buckets. Time Buckets can be defined by you in the Time Bucket Definition window of the LRM Application. Refer section [Time Buckets](#) for more information.

7.7.3 Dimension Maintenance


Before executing Runs as part of dimension maintenance, you must execute the <INFODOM>_SCD_COMPONENT and <INFODOM>_DimAccountPop batch. Refer OFS Liquidity Risk Management V8.0.0.0.0 Run Chart.xlsx for more information on the batch.

Further some of the staging data which moves to processing area on MIS date basis have to be executed through ICC batches. Refer OFS Liquidity Risk Management V8.0.0.0.0 Run Chart.xlsx for further details.

7.7.4 Defining Business Assumptions

After configuring setup data and dimension maintenance as well as defining time buckets in the LRM Application, the next step is to define the parameters of the business assumption before executing a Run. Business Assumptions can be defined by you in the Business Assumptions Definition window of the LRM Application. Refer section [Business Assumptions](#) for more information.

7.8 Run Execution Parameters

In the **Run Management Summary** window, select a Run from the list of Runs and click  icon. The **Run Execution Parameters** window appears.

The Run Execution Parameters window has the following sections:

- Linked To
- Run Definition Details
- Run Parameters
- Legal Entity Selection
- Run Execution Parameters

7.8.1 Linked To

This field displays the information about Linked To, which is selected as part of Run definition window. The details are displayed as follows:

- **Folder:** The folder which is specific to the Run definition.
- **Access Type:** Read/Write or Read Only is selected.

7.8.2 Run Definition Details

This section displays the details which have already been specified for the selected Run as part of Run Definition window. These details are not allowed to be edited. The details are displayed as follows:

- **Run Name:** Displays the Run name.
- **Run Description:** Displays the Run description.

7.8.3 Run Parameters

This section displays the parameters which have already been specified for the selected Run as part of Run Definition window. These parameters are not allowed to be edited. The parameters displayed include:

- Purpose
- Run Type
- Contractual Run (only in case of a Business-as-Usual Run)
- Baseline Run (only in case of Stress Run)
- Time Bucket Definition
- Consolidation Type
- Consolidation Level (only when the Run type is selected as Contractual Run and Consolidation type is selected as Consolidated)
- Business Day Convention
- Include Interest Cash Flows
- Approximate Interest
- Forward Rate Interpolation Method
- Assumptions Applied To (only in case of Business-as-Usual and Stress Run)

7.8.4 Legal Entity Selection

This section displays the Legal Entity Selection which is selected as part of Run definition window.

7.8.5 Run Execution Parameters

The Run execution parameters have to be specified for the selected Run.

7.8.5.1 FIC MIS Date

This is a selection of a date from the calendar. The FIC MIS date is with reference to the date of the input data required for computations. This is different from the execution date. The data available in the staging area which has a date corresponding to the FIC MIS date is used for computations.

7.8.5.2 Run Execution Description

This field allows you to provide a brief description of the Run execution. It is optional.

7.8.5.3 Contractual Run Execution ID

When the Run type is selected as Business-As-Usual or Stress Run, execution ID of the underlying contractual Run is required to be selected from the Contractual Run Execution ID browser in the Run Execution Parameters window. Business assumptions, both BAU and stress, are applied to the cash flows aggregated as part of the selected contractual Run execution and further computations are carried out based on these aggregated cash flows and other interim metrics.

7.8.5.4 Reporting Currency

When the Run type is selected as Contractual, Reporting Currency is allowed for selection from the browser in Run Execution Parameters window.

When the Run type is selected as Business-As-Usual, this field displays the reporting currency selected as part of the Contractual Run execution.

When the Run type is selected as Stress Run, this field displays the reporting currency selected as part of the Contractual Run execution.

For the first execution of a run, you must select the reporting currency. For subsequent executions the previously executed reporting currency, is automatically displayed but can be edited for each execution.

All the cash flows and balances in natural currency are converted to the reporting currency selected as part of this section for the purpose of computation and reporting. Additionally, the application also supports conversion to local currency of each legal entity in a single Run execution.

7.8.5.5 Exchange Rate Source

This field allows you to select the source from which the exchange rate is obtained.

When the Run type is selected as Contractual, exchange rate source is allowed for selection from the drop-down in Run Execution Parameters window. The selection is as follows:

- Bloomberg
- Internal
- Reuters

If you have different exchange rates, perform the following steps to add a new exchange rate source:

1. Add a LOOKUP_CD in the table FSI_LRM_LOOKUP_B for the CATEGORY_ID = 19 (Exchange Rate Source).

2. Add a description for LOOKUP_CD added in the above mentioned table(FSI_LRM_LOOKUP_B) in the table FSI_LRM_LOOKUP_TL.

When the Run type is selected as Business-As-Usual or Stress Run, this field displays the reporting currency selected as part of the Contractual Run execution.

7.8.5.6 LCR Horizon

This field allows you to enter the LCR Horizon (in days) for the purpose of liquidity coverage ratio calculation. By default this value is displayed is 30, which is the regulatory horizon for LCR. This can be edited. This parameter determines the number of days to which the LCR scenario applies i.e. net cash outflows will be calculated.

When the Run type is selected as Business-As-Usual or Stress Run, this field displays the LCR Horizon selected as part of the Contractual Run execution.

Note:

- You have the option of defining and executing any number of Runs.
- A Run can be executed multiple times for the same execution date.
- You also have the option of re-executing the same Run for different execution dates.

7.9 Execution a Run

The LRM application contains a Run Management window, which contains the functionality of executing Runs, by selecting different Run level parameters for each execution. Runs can be defined in the Run framework of OFSAAI. Run execution is allowed through the Run Management window.

A Run can be executed as a solo Run or a consolidation Run.

Once a Run has been defined and approved, you can execute a Run by providing the Run execution parameters. You can perform an Ad Hoc execution or batch execution. For an Ad Hoc execution from the Run Execution window you can provide the parameters and click Execute. For a batch execution you can provide the parameters and click Create Batch. This creates a batch and you must schedule the batch scheduler module which is available in OFSAAI.

Note:



If you are not executing the Run for the first time, then the parameters in the Run Parameters Link will be the same as the one selected for the previous Run.

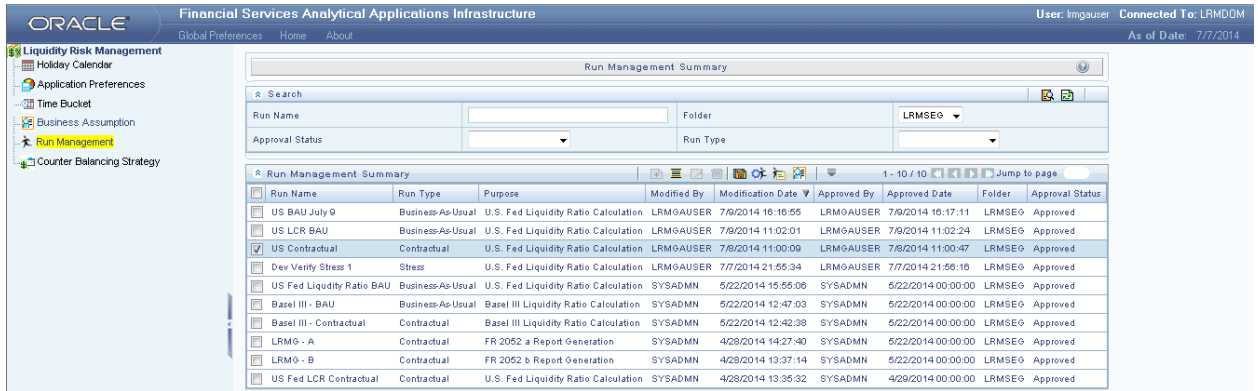
You have the option of defining and executing any number of Runs. For each Run defined, you can select all or few assumptions to be applied to the Run. You also have the option of re-executing the same Run for different Execution dates.

7.9.1.1 Executing a Contractual Run

To execute a Contractual Run, perform the following steps:

1. Click **Run Management** on the LHS menu of the LRM Application to open the **Run Management Summary** window.

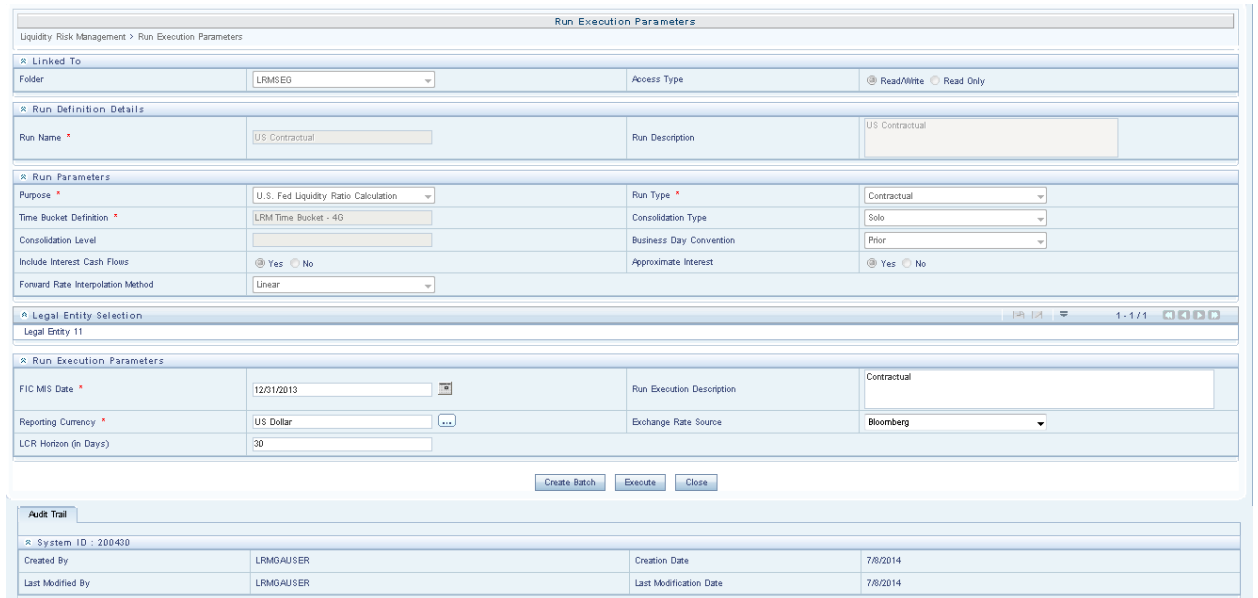
2. Click  to select a contractual Run from the list of Runs and click  icon.



Run Name	Run Type	Purpose	Modified By	Modification Date	Approved By	Approved Date	Folder	Approval Status
US BAU July 9	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/9/2014 16:16:55	LRMGAUSER	7/9/2014 16:17:11	LRMSEG	Approved
US LCR BAU	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/9/2014 11:02:01	LRMGAUSER	7/9/2014 11:02:24	LRMSEG	Approved
US Contractual	Contractual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/8/2014 11:00:09	LRMGAUSER	7/8/2014 11:00:47	LRMSEG	Approved
Dev Verify Stress 1	Stress	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/7/2014 21:55:34	LRMGAUSER	7/7/2014 21:56:16	LRMSEG	Approved
US Fed Liquidity Ratio BAU	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	SYSADMIN	5/22/2014 15:55:06	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
Basel III - BAU	Business-As-Usual	Basel III Liquidity Ratio Calculation	SYSADMIN	5/22/2014 12:47:03	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
Basel III - Contractual	Contractual	Basel III Liquidity Ratio Calculation	SYSADMIN	5/22/2014 12:42:38	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
LRMG - A	Contractual	FR 2052 a Report Generation	SYSADMIN	4/28/2014 14:27:40	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
LRMG - B	Contractual	FR 2052 b Report Generation	SYSADMIN	4/28/2014 13:37:14	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
US Fed LCR Contractual	Contractual	U.S. Fed Liquidity Ratio Calculation	SYSADMIN	4/28/2014 13:35:32	SYSADMIN	4/29/2014 00:00:00	LRMSEG	Approved

Figure 47 Run Management Summary

Note: All fields except for Run execution parameters are non-editable fields for the selected Run..



Run Execution Parameters

Linked To: Folder: LRMSEG, Access Type: Read/Write, Read Only

Run Definition Details

Run Name: US Contractual, Run Description: US Contractual

Run Parameters

Purpose: U.S. Fed Liquidity Ratio Calculation, Run Type: Contractual

Time Bucket Definition: LRM Time Bucket - 4G, Consolidation Type: Solo

Consolidation Level: [Empty], Business Day Convention: Prior

Include Interest Cash Flows: Yes, Approximate Interest: Yes

Forward Rate Interpolation Method: Linear

Legal Entity Selection

Legal Entity 11

Run Execution Parameters

FIC MIS Date: 12/31/2013, Run Execution Description: Contractual

Reporting Currency: US Dollar, Exchange Rate Source: Bloomberg

LCR Horizon (in Days): 30



Buttons: Create Batch, Execute, Close

Audit Trail

System ID: 200430

Created By	LRMGAUSER	Creation Date	7/8/2014
Last Modified By	LRMGAUSER	Last Modification Date	7/8/2014

Figure 48 Run Execution Parameters

3. When the Run type is selected as **Contractual** and the purpose is selected as **Basel III Liquidity Ratio Calculation** or **Long Term Gap Calculation** or **U.S Fed Liquidity Ratio Calculation**, in the Run Execution Parameters section,
 - a. Click  to select the **FIC MIS Date**.
 - b. Enter the **Run Execution Description**.
 - c. Click  to select the **Reporting Currency** from the Hierarchy Browser and then click **OK**. Only a single selection is allowed here.

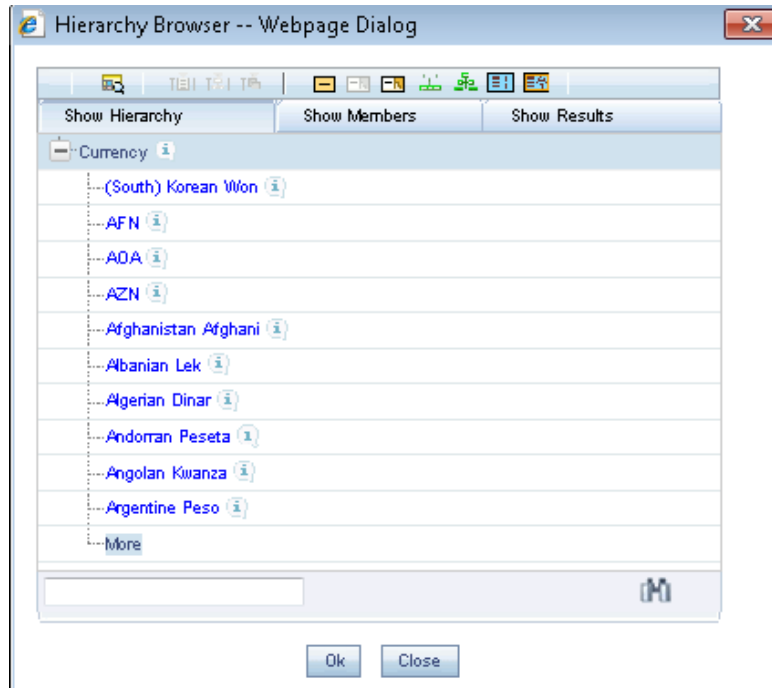


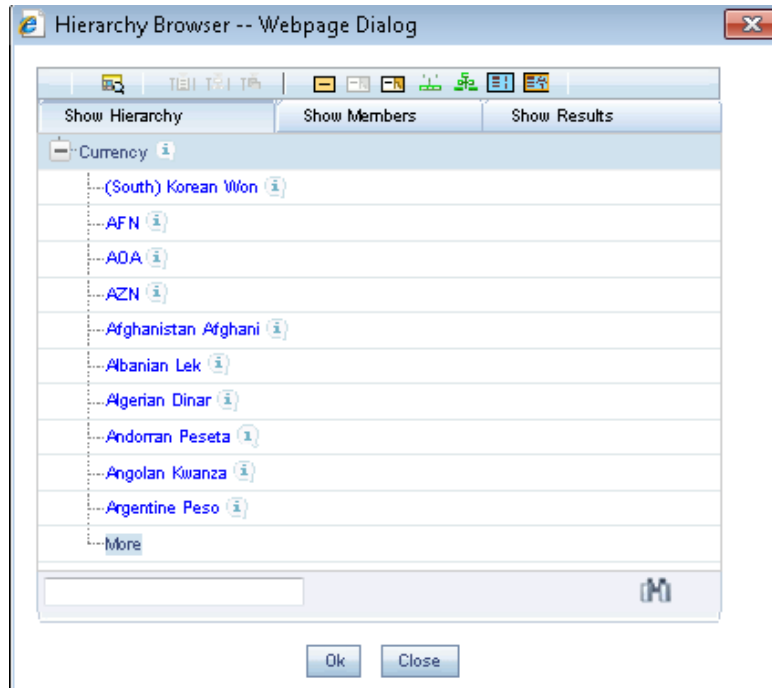


Figure 49 Run Definition – Hierarchy Browser

- d. Select the **Exchange Rate Source** from the drop-down list.
 - e. Enter the **LCR Horizon (in days)**. The default value is 30. This applicable only when the purpose is selected as Basel III Liquidity Ratio Calculation or U.S Fed Liquidity Ratio Calculation.
4. When the Run type is selected as **Contractual** and the purpose is selected as **FR 2052 a Report Generation** or **FR 2052 b Report Generation**, in the Run Execution Parameters section,
 - a. Click  to select the **FIC MIS Date**.
 - b. Enter the **Run Execution Description**.
 - c. Click  to select the **Reporting Currency** from the Hierarchy Browser and then click **OK**.




- d. Select the **Exchange Rate Source** from the drop-down list.
5. Execute the Run as per one of the following methods:
 - Click **Create Batch** to create batches for execution from the batch execution window.
 - Or,
 - Click **Execute** to execute the Run from the Run Execution Parameters window itself
 - Click **Close** to return to the Run Management Summary window.

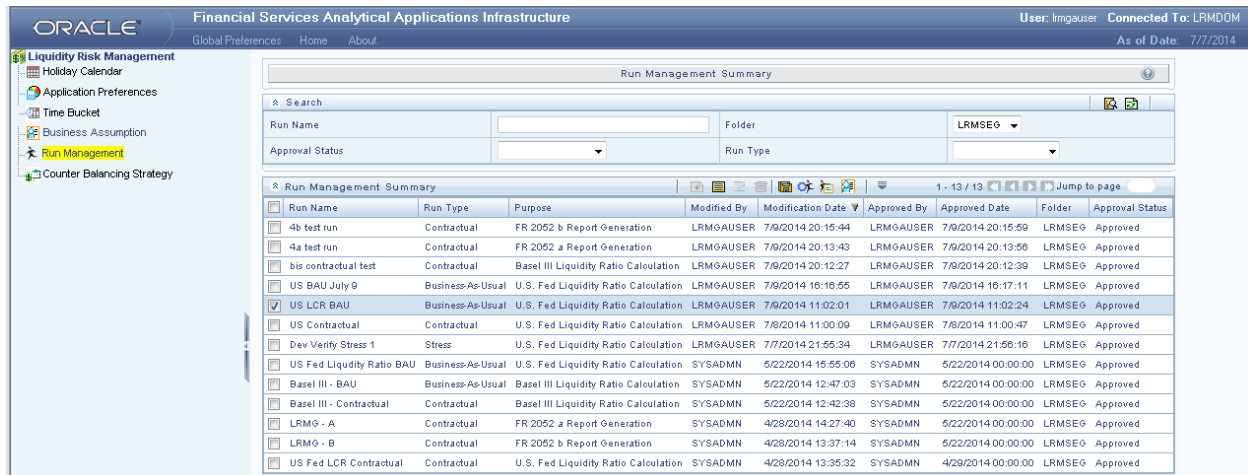
Note:

Run Execution Parameter Definition does not have an approval process.

7.9.1.2 Executing a BAU Run

To execute a BAU Run, perform the following steps:

1. Click **Run Management** on the LHS menu of the LRM Application to open the **Run Management Summary** window.
2. Click to select a BAU Run from the list of Runs and click  icon.



The **Run Execution Parameters** window appears. Here, the parameters of the Run are displayed in an un-editable form and the execution parameters are allowed to be specified for the selected Run.

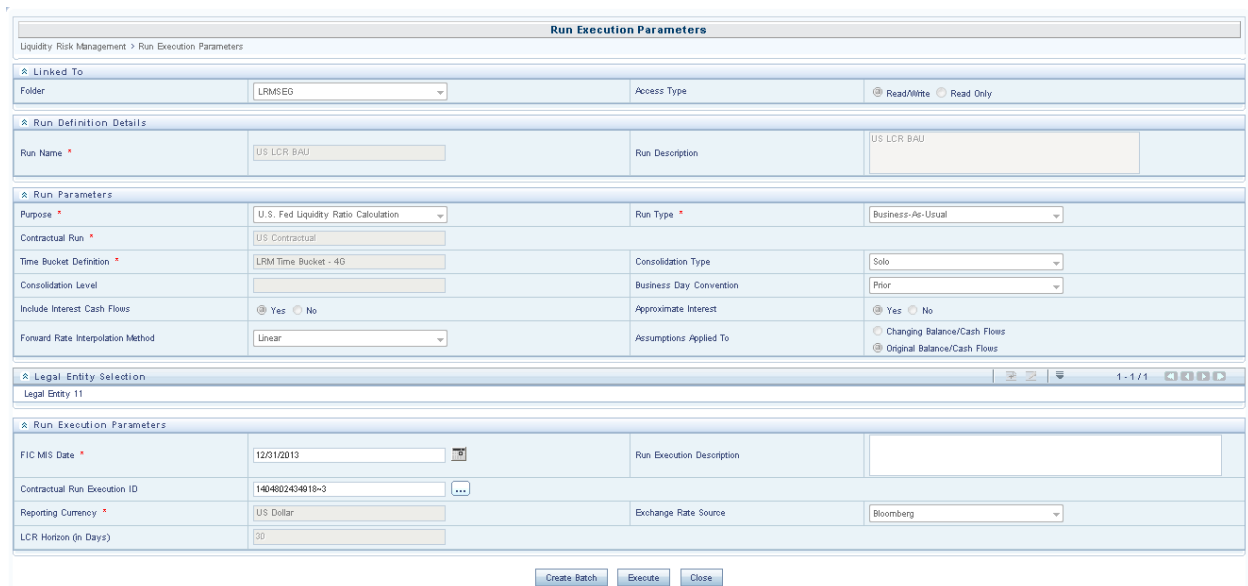




Figure 50 Run Definition – Run Execution Parameters

3. When the Run type is selected as **Business-As-Usual** and the purpose is selected as **Basel III Liquidity Ratio Calculation** or **Long Term Gap Calculation** or **U.S Fed Liquidity Ratio Calculation**, in the **Run Execution Parameters** section,
 - a. Click  to select the **FIC MIS Date**.
 - b. Enter the **Run Execution Description**.
 - c. Click  to select the **Contractual Run Execution ID** from the browser and then click **OK**. This is the execution ID of the underlying Contractual Run.

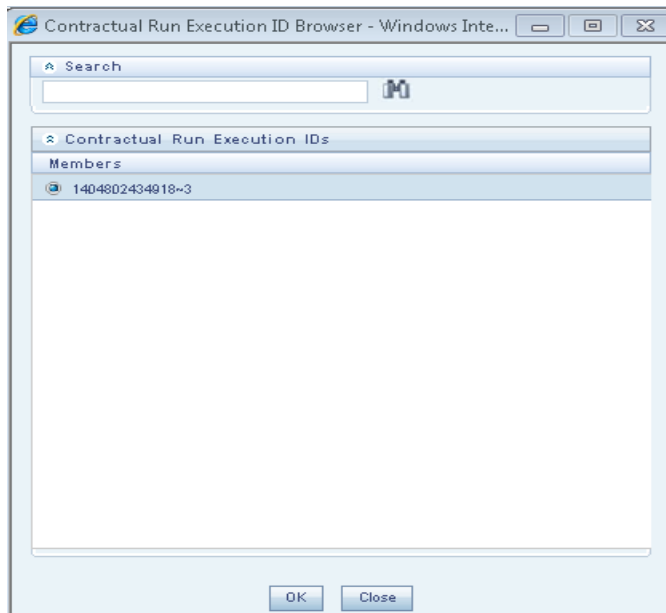


Figure 51 Contractual Run Execution ID Browser



- d. **Reporting Currency**, **Exchange Rate Source** and **LCR Horizon** fields are disabled and display the values which are selected as part of the contractual Run execution.

Note:

- Except for business assumptions which are selected as part of the Run parameters all other Run parameters are displayed.
 - Run Execution Parameter Definition does not have an approval process.
4. Execute the Run as per one of the following methods:
Click **Create Batch** to create batches for execution from the batch execution window.
Or,
Click **Execute** to execute the Run from the Run Execution Parameters window itself
 5. Click **Close** to return to the Run Management Summary window.



7.9.1.3 Executing a Stress Run

To execute a Stress Run, perform the following steps:

1. Click **Run Management** on the LHS menu of the LRM Application to open the **Run Management Summary** window.
2. Click  to select a Stress Run from the list of Runs and click  icon.

- All the fields are same as explained for Contractual and BAU Runs. The only exception is that a stress Run is based on a Business as usual Run. All the parameters specified as part of the Run execution parameter window are displayed in an un-editable form. This is based on the selection of the BAU Run. There is a direct mapping between a BAU and a Stress definition in the stress testing framework.

7.10 Run Execution Summary

To view the summary of all the Run executions of a particular Run, click  to select a Run from the list of Runs in the Run Management Summary window and click  icon.

Run Name	Run Type	Purpose	Modified By	Modification Date	Approved By	Approved Date	Folder	Approval Status
4b test run	Contractual	FR 2052 b Report Generation	LRMGAUSER	7/9/2014 20:15:44	LRMGAUSER	7/9/2014 20:15:59	LRMSEG	Approved
4a test run	Contractual	FR 2052 a Report Generation	LRMGAUSER	7/9/2014 20:13:43	LRMGAUSER	7/9/2014 20:13:56	LRMSEG	Approved
bis contractual test	Contractual	Basel III Liquidity Ratio Calculation	LRMGAUSER	7/9/2014 20:12:27	LRMGAUSER	7/9/2014 20:12:39	LRMSEG	Approved
US BAU July 9	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/9/2014 16:16:55	LRMGAUSER	7/9/2014 16:17:11	LRMSEG	Approved
US LCR BAU	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/9/2014 11:02:01	LRMGAUSER	7/9/2014 11:02:24	LRMSEG	Approved
US Contractual	Contractual	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/8/2014 11:00:09	LRMGAUSER	7/8/2014 11:00:47	LRMSEG	Approved
Dev Verify Stress 1	Stress	U.S. Fed Liquidity Ratio Calculation	LRMGAUSER	7/7/2014 21:55:34	LRMGAUSER	7/7/2014 21:56:16	LRMSEG	Approved
US Fed Liquidity Ratio BAU	Business-As-Usual	U.S. Fed Liquidity Ratio Calculation	SYSADMIN	5/22/2014 15:55:09	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
Basel III - BAU	Business-As-Usual	Basel III Liquidity Ratio Calculation	SYSADMIN	5/22/2014 12:47:03	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
Basel III - Contractual	Contractual	Basel III Liquidity Ratio Calculation	SYSADMIN	5/22/2014 12:42:38	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
LRMO - A	Contractual	FR 2052 a Report Generation	SYSADMIN	4/28/2014 14:27:40	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
LRMO - B	Contractual	FR 2052 b Report Generation	SYSADMIN	4/28/2014 13:37:14	SYSADMIN	5/22/2014 00:00:00	LRMSEG	Approved
US Fed LCR Contractual	Contractual	U.S. Fed Liquidity Ratio Calculation	SYSADMIN	4/28/2014 13:35:32	SYSADMIN	4/29/2014 00:00:00	LRMSEG	Approved

The Run execution summary is displayed as follows:

Figure 52 Run Execution Summary

1. All the parameters entered as part of the Run Definition window are displayed in an un-editable form.
2. Run execution details section displays the Run execution parameters specified for each execution.
3. Business assumptions section displays the details of the business assumptions selected as part of each Run. This is applicable only in case of a Business-as-Usual or Stress Run. The details are displayed in a tabular format in the Business assumption section is as follows:

- a. **Assumption Name:** This column displays the name of the business assumption selected as part of the Run.
- b. **Version Number:** This column displays the version number of the BAU or stress assumption that was used for computations as part of the selected Run execution. Click the version number to launch the Business Assumption Definition window that displays the specific version of the selected business assumption.
- c. **Assumption Category:** This column displays the assumption category selected as part of the Run.

Additionally for Stress Run, the following fields are displayed:

- a. **Stress Assumption Name:** This column displays the name of the stress assumption selected as part of the Run.
- b. **Stress Version Number:** This column displays the version number of the BAU or stress assumption that was used for computations as part of the selected Run execution. Click

the version number to launch the Business Assumption Definition window that displays the specific version of the selected business assumption.

- c. **Stress Assumption Category:** This column displays the stress assumption category selected as part of the Run.
- d. **Time Bucket Definition Validation:** This column checks and displays if the Time Bucket Definition under Run Parameters section and the Time Bucket Definition under Business Assumptions section in Run Definition match.

Refer section [Approving a Run definitions](#) to know how to retire a definition and view the approval summary.

8 Counterbalancing Strategies

8.1 Overview

The Counterbalancing Strategy module of Oracle Financial Services Liquidity Risk Management aids banks in developing contingency funding plans to address the liquidity hotspots observed during stress scenarios of varying magnitudes. A counterbalancing strategy or a contingency funding plan refers to certain measures undertaken by banks to minimize or nullify the gaps identified under the BAU and Stress conditions. The purpose is to identify the large negative and positive liquidity gaps across defined time buckets and apply counterbalancing actions that will reduce the gaps.

A range of counterbalancing strategies, consisting of one or multiple counterbalancing positions covering the fire sale of marketable and fixed assets, creation of new repos, rollover of existing repos and raising fresh deposits or borrowings, can be defined easily in order to bridge the liquidity gaps observed under different business conditions. This module enables banks to dynamically assess and update their contingency funding plans based on the changing market and business conditions thereby ensuring complete preparedness to combat potential liquidity shocks.

The OFS LRM 8.0 application, gives you the option of applying five different types of counterbalancing positions to generate new cash flows and manage huge negative and positive liquidity gaps. These include:

- Sale of Marketable Assets
- Sale of Other Assets
- Rollover of Existing Repo's
- New Repo's
- New Funding

The liquidity gaps and other metrics, calculated post counterbalancing, are displayed in the Liquidity Risk dashboard of ALM Analytics for each counterbalancing strategy definition.

Note:

Counterbalancing strategies are applied to the liquidity gap results of a specific execution of an existing contractual, business-as-usual or stress Run.

8.2 Counterbalancing Strategy Definition

The Counterbalancing Strategy Definition has the following sections for defining parameters:

- Details
- Liquidity Gap Report
- Counterbalancing Positions

8.2.1 Details

The following details must be specified for the counterbalancing strategy:

- **Counterbalancing Strategy Name:** Enter Counterbalancing Strategy Name.


- **Description:** Enter the description of the counterbalancing strategy.

The following details of a particular execution of the underlying Run to which the counterbalancing strategy is to be applied are selected.


- **FIC MIS Date:** Select the as of date of the Run to which the counterbalancing strategy is to be applied.
- **Run Type:** Select the type of Run on which you want to apply the counterbalancing strategy. Options available in the drop-down are Contractual, BAU and Stress.
- **Run Selection:** Select the Run to which the Counterbalancing Strategy needs to be executed.
- **Run Execution ID:** Select the Run execution ID of the selected Run to which counterbalancing strategy needs to be executed.
- **Currency:** Select the reporting currency or local currency as an option. This will be executed on the selected currency type over the selected Run.
- **Legal Entity:** Select the legal entity to which the counterbalancing strategy needs to be executed.
- **Baseline Run:** Select the baseline Run to which the counterbalancing strategy needs to be executed. When you click the selection button, Run Selection Browser appears which will allow you to select the Run.
- **Time Bucket Level Selection:** Select the time bucket level selection to which the counterbalancing strategy needs to be executed.
- **Values to be shown in multiples of:** Click this dropdown to select to display the values in multiples of thousands, millions and billions.

8.2.2 Liquidity Gap Report

This section displays the following, Liquidity gaps calculated as part of the selected execution and Run selected at the time bucket levels which are in terms of multiples selected as part of the Details section.

It will be at selected level and value. It will either be in millions or billions or thousands based on your selection above. The Liquidity Gap report is generated once you click  button.

8.2.3 Counterbalancing Positions

This section allows you to add one or multiple counterbalancing positions, which together constitute a counterbalancing strategy. When you click the add  icon, the Counterbalancing Strategy Definition window is displayed where you can specify the counterbalancing positions to be applied.

Counterbalancing Strategy Definition window supports the following types of counterbalancing positions in the LRM Application:

- Sale of Marketable Assets:
- Sale of Other Assets
- Rollover of Existing Repos

- New Repos
- New Funding

8.2.3.1 Sale of Marketable Assets

This counterbalancing position type allows you to sell a marketable instrument prior to its maturity. Sale of marketable assets generates new cash inflow in the sale bucket and reverses all original cash flows occurring between the sale bucket and maturity. Only unencumbered marketable assets (identified through encumbrance status and marketable asset indicator) are available for selection as a part of this counterbalancing strategy.

As part of this counterbalancing position, you are required to select a marketable instrument and provide the following sale parameters:

- **No. of Units / Percentage to be Sold:** This is the number of units or percentage of the instrument that is to be sold. This value has to be within the sale limit, if any, specified for the asset.
- **Discount (in %):** This is the discount applied to the asset value to determine the inflows on sale.
- **Revised Inflow Bucket:** This is the sale bucket i.e. bucket where the cash inflows are generated due to the sale.

The cash flows on sale of marketable assets are calculated as follows:

1. Original maturity bucket and maturity amount of the asset is identified.
2. Cash inflows to be posted to the sale bucket are calculated as follows:

$$\begin{aligned}
 \text{Cash Inflow}_{\text{Sale Bucket}} &= \text{Market Value Per Unit} \times \text{Number of Units} \times \text{Sale Percentage} \times (1 \\
 &\quad - \text{Discount})
 \end{aligned}$$

3. Original cash flows occurring from the sale bucket to the maturity bucket are reversed as follows:

$$\text{Cash Outflow}_{\text{Time Bucket} > \text{Sale Bucket}} = \text{Original Cash Inflow} \times \text{Sale Percentage}$$

Note:

- The units or amount available for sale depends on the sale limit specified for each instrument. For instance, if the total units of Bond A held by the legal entity are 100 and a sale limit of 50% is specified, then, only 50 units of Bond A are allowed to be sold while counterbalancing.
- If all the available units of an asset are sold then this asset will not appear in the Marketable Assets Browser for selection.
- In case of partial sale, only the balance units or amount are available for further counterbalancing actions, such as creation of new repos. However, it is not available for further sale.

8.2.3.2 Sale of Other Assets

This counterbalancing position type allows you to sell a non-marketable asset such as a fixed asset or an earning asset prior to its maturity. Sale of other assets generates new cash inflow in the sale bucket and

reverses all original cash flows occurring between the sale bucket and maturity. Only unencumbered assets (identified through encumbrance status) are available for selection as a part of this counterbalancing strategy.

As part of this counterbalancing position, you are required to select a non-marketable asset and provide the following sale parameters:

- **Value of Assets to be Sold:** This is the percentage of the asset that is to be sold. This value has to be within the sale limit, if any, specified for the asset.
- **Discount (in %):** This is the discount applied to the asset value to determine the inflows on sale.
- **Revised Inflow Bucket:** This is the sale bucket i.e. bucket where the cash inflows are generated due to the sale.

The cash flows on sale of other assets are calculated as follows:

1. Original maturity bucket and maturity amount of the asset is identified.
2. Cash inflows to be posted to the sale bucket are calculated as follows:

$$\text{Cash Inflow}_{\text{Sale Bucket}} = \text{EOP Balance} \times \text{Sale Percentage} \times (1 - \text{Discount})$$

3. Original cash flows occurring from the sale bucket to the maturity bucket are reversed as follows:

$$\text{Cash Outflow}_{\text{Time Bucket} > \text{Sale Bucket}} = \text{Original Cash Inflow} \times \text{Sale Percentage}$$

Note:

- The sale of other assets includes loans and fixed assets. All assets of the banks excluding marketable assets are available for sale as part of this counterbalancing position.
- The amount available for sale depends on the sale limit that is specified. For example, if the total value of land held by the legal entity is \$10000000 and a sale limit of 30% is specified, then the land worth of a maximum of \$3000000 is allowed to be sold while counterbalancing.
- In case of partial sale, only the balance units or amount are available for further counterbalancing actions, such as creation of new repos. However, it is not available for further sale.

8.2.3.3 Rollover of Existing Repos

This counterbalancing position type allows you to extend the maturity of an existing repo/reverse repo by rolling it over to a later time bucket. This results in rescheduling of cash outflows/inflows to a future date and reversal of cash outflows/inflows at the original maturity. This is applied at an individual instrument position level.

As part of this counterbalancing position, you are required to select an existing repo and provide the following rollover parameters:

- **Units to be Rolled Over:** This is the number of units of the underlying asset that are to be rolled over.
- **Revised Maturity Bucket:** This is the new maturity bucket post rollover. Revised maturity bucket should be less than or equal to the maturity bucket of the underlying instrument.
- **Haircut (in %):** Provide the Haircut in %.

The cash flows on rollover of repos and similar instruments are calculated as follows:

1. Original maturity bucket and maturity amount of the repo is identified.
2. Original cash outflows occurring in the original maturity bucket are reversed:

$$\text{Cash Inflow}_{\text{Original Maturity Bucket}} = \text{MTM Value} \times \text{Rollover Percentage} \times (1 - \text{Haircut})$$

3. Cash outflows to be posted to the revised maturity bucket are calculated as follows:

$$\text{Cash Outflow}_{\text{Revised Maturity Bucket}} = \text{MTM Value} \times \text{Rollover Units}$$

The cash flows on rollover of reverse repos and similar instruments are calculated as follows:

1. Original maturity bucket and maturity amount of the reverse repo is identified.
2. Original cash inflows occurring in the original maturity bucket are reversed:

$$\text{Cash Outflow}_{\text{Original Maturity Bucket}} = \text{MTM Value} \times \text{Rollover Percentage} \times (1 - \text{Haircut})$$

3. Cash inflows to be posted to the revised maturity bucket are calculated as follows:

$$\text{Cash Inflow}_{\text{Revised Maturity Bucket}} = \text{MTM Value} \times \text{Rollover Units}$$

Note:

- Revised maturity bucket cannot exceed maturity bucket of underlying security.
- All repo like instruments are supported as part of this counterbalancing action including repo's, reverse repo's, buy/sell backs and sell/buy backs.

8.2.3.4 New Repos

This counterbalancing position type allows you to create new repo transactions by selecting an existing asset. Creation of a new repo, results in a cash inflow on the repo start date and a corresponding outflow at the repo maturity date specified as part of the counterbalancing position. New repos can be created for the following types of marketable instruments:

- Unencumbered securities (identified through encumbrance status)
- Securities for which the bank has re-hypothecation rights (indicator for re-hypothecation rights)

As part of this counterbalancing position, you are required to select an existing repo and provide the following rollover parameters:

- **No of Units to be Repo'd:** This is the number of units of the asset to be repo'd.
- **Haircut (in %):** This is the haircut applied to calculate the repo value.
- **Revised Inflow Bucket:** This is the bucket where the inflows from the repo are received and the asset is encumbered i.e. repo start bucket.
- **Revised Maturity Bucket:** This is the time bucket in which the repo contract matures i.e. where the asset is received and cash is paid to the counterparty.

The cash flows on repo creation are calculated as follows:

1. Cash inflows occurring in the repo start bucket are calculated as follows:

$$\text{Cash Inflow}_{\text{Repo start Bucket}} = \text{MTM Value} \times \text{Units to be Repo'd} \times (1 - \text{Haircut})$$

2. Cash outflows to be posted to the revised maturity bucket are user specified.
3. The underlying asset is encumbered i.e. encumbrance status is updated.

The cash flows on repo creation are calculated as follows:

1. Cash outflows occurring in the reverse repo start bucket are calculated as follows:

$$\text{Cash Outflow}_{\text{Reverse Repo start Bucket}} = \text{MTM Value} \times \text{Units to be Repo'd} \times (1 - \text{Haircut})$$

2. Cash inflows to be posted to the revised maturity bucket are user specified.

Note:

- Revised maturity bucket cannot exceed maturity bucket of underlying security.
- All repo like instruments are supported as part of this counterbalancing action including repo's, reverse repo's, buy/sell backs and sell/buy backs.
- The units of the asset available to be repo'd depend on the repo limit that is specified. For instance, if the total units of Bond A held by a legal entity are 100 and a repo limit of 40% is specified, then only 40 units of Bond A are allowed to be repo'd while counterbalancing.
- If all available units of an asset are repo'd then it does not appear for selection in the Marketable Assets Browser.
- In case of partial repo, only the balance units or amount appears in the Units Available column for further counterbalancing actions, such as sale of marketable assets. However, it is not available for further creation of new repos.
- Exposure to an existing counterparty while creating new repos is allowed only up to the counterparty limit specified. For instance if the counterparty limit is specified as 1 Million for Counterparty X, the current exposure is 900000, then creation of new repo's is allowed only up to an exposure of 100000 against Counterparty X.

8.2.3.5 New Funding

This counterbalancing position type allows you to raise new funding either as a deposit or borrowing. A new funding creates a cash inflow in the specified time bucket and a corresponding outflow in a later time bucket. The LRM application allows you to specify the product, borrowing date (inflow date), borrowed amount, maturity date and amount.

As part of this counterbalancing position, you are required to select a funding product and provide the following parameters:

- **Legal Entity:** This is the legal entity which is raising the new funding in context of the counterbalancing position.
- **Line of Business:** This is the line of business of the legal entity which is raising the new funding.
- **Natural Currency:** This is the natural currency of the new deposit or borrowing account.

- **Counterparty:** This is the counterparty who is deemed to have provided the new funding.
- **Inflow Bucket:** This is the transaction start bucket that is, the bucket in which the inflows from the new deposit or borrowing is recorded.
- **Inflow Amount:** This is the cash received from the new funding.
- **Maturity Bucket:** This is the maturity bucket of the transaction that is, the bucket in which cash outflows is recorded.
- **Maturity Amount:** This is the outflow amount at the maturity of the new funding.

Note: The cash flows do not have any calculations. It posts the inflows and outflows amount as provided by you.

8.2.4 Liquidity Gap Report Post Counterbalancing

This section displays the Post Counterbalancing Gap Report of the selected Run. Once all counterbalancing positions are defined, clicking the Apply Counterbalancing button triggers the calculation of changes to cash flow position due to the counterbalancing strategy. The effect of counterbalancing positions on the baseline liquidity gaps is displayed in a tabular format. The counterbalancing strategy is allowed to be edited and its effect can be re-calculated within the application.

8.3 Understanding Counterbalancing Strategy Summary


To open the **Run Management** window, in **Oracle Financial Services Analytical Applications Infrastructure** window choose, **Risk Applications > Liquidity Risk Management > Counter Balancing Strategy** on the Left-Hand Side (LHS) menu.



Figure 53 Counterbalancing Strategies Summary

The Counterbalancing Strategies Summary window of the LRM application allows you to define/execute a Counterbalancing Strategy in the LRM Application.

This is the search section which contains multiple parameters. You can specify one or multiple search criteria in this section. When you click the search icon, depending up on the search criteria, this filters and displays the relevant search combination parameters under the list of Counterbalancing Strategies.

Search	
Field/Icon	Description
Search 	This icon allows you to search the counterbalancing strategy on the basis of the search criteria specified. Search criteria include a combination of Name, Run Name, Execution Date or Legal Entity. The





Search	
Field\Icon	Description
	counterbalancing strategies displayed in the Counterbalancing Strategy summary table are filtered based on the search criteria specified on clicking of this icon.
Reset 	This icon allows you to reset the search section to its default state that is, without any selections. Resetting the search section displays all the existing counterbalancing strategies in the Counterbalancing Strategies Summary table.
Counterbalancing Strategy Name	This section allows you to search the pre-defined Counterbalancing Strategy on the basis of the Counterbalancing Strategy name. Specify the Counterbalancing Strategy Name to search for the pre-defined Counterbalancing Strategy.
Run	This section allows you to search the pre-defined Counterbalancing Strategy on the basis of the Run Name. Specify the Run Name here to search for the pre defined Counterbalancing Strategy.
Run Execution Date	This section allows you to search the pre-defined Counterbalancing Strategy on the basis of Execution Date. Specify the Execution Date here to search for the pre-defined Counterbalancing Strategy.
Legal Entity	This section allows you to search the pre-defined Counterbalancing Strategy on the basis of Legal Entity. Specify the Legal entity to search for the pre-defined Counterbalancing Strategy.

Table 66 Counterbalancing Strategy – Search

List of Runs		
Icon Name	Icon	Description
Add		This icon allows you to define a new Counterbalancing Strategy.
View		This icon allows you to view the selected Counterbalancing Strategy.
Edit		This icon allows you to edit the selected Counterbalancing Strategy.

List of Runs		
Delete		This link allows you to delete the selected Counterbalancing Strategy.

Table 67 Counterbalancing Strategy Summary

8.4 Defining Counterbalancing Strategies

The process of defining Counterbalancing Strategies remains unchanged from LRM version 2.0.

After executing Contractual, BAU and Stress Runs, Counterbalancing Strategies are applied to the liquidity gaps which are identified after execution of the Run.

The step-by-step procedure to apply Counterbalancing Strategies on indentified liquidity gaps is as follows:





1. Click  in the counterbalancing strategy summary window. The **Counterbalancing Strategy Definition** window appears to define the counterbalancing strategy.

Figure 54 Counterbalancing Strategy Definition

2. Enter the name of the counterbalancing strategy in the field **Counterbalancing Strategy Name**.
3. Enter the **Description** of the Counterbalancing Strategy.
4. Click  to select the **FIC MIS Date** field.
Note: Depending on the FIC MIS Date selected, the other fields are filtered and then values are displayed.
5. Select the type of Run (Contractual or Business-As-Usual) under field **Run Type**.
6. Click  to select the Run Name in the **Run Selection** field.
7. Select the **Run Execution ID** from the dropdown.
8. Select the **Currency** for which the Counterbalancing Strategy is to be executed.
9. Select the **Legal Entity** for which the Counterbalancing Strategy is to be executed.

10. Select the level at which the **Time Buckets** are to be displayed.
11. Select the **Values to be shown in multiples of** Thousands, Million or Billion, shown in the preceding figure:
12. Click  to display the **Liquidity Gap Report**, shown in the following figure. In case there are any negative gaps, they are highlighted in red.

Liquidity Gap Report															
Liquidity Position	Time Bucket														
	Days	022 - 022 Days	023 - 023 Days	024 - 024 Days	025 - 025 Days	026 - 026 Days	027 - 027 Days	028 - 028 Days	029 - 029 Days	030 - 030 Days	031 - 031 Days	032 - 032 Days	033 - 033 Days	034 - 034 Days	035 - 035 Days
Inflow	016.99	980.88	986.97	991.26	1,046.55	993.31	1,017.07	17.27	38.38	46.45	0.00	955.92	955.84	0.00	0.00
Outflow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	957.36	957.28	957.21	957.13	957.06	956.98	0.00	0.00
Gap	016.99	980.88	986.97	991.26	1,046.55	993.31	1,017.07	-940.09	-918.90	-910.76	-957.13	-1.14	-1.14	0.00	0.00

Amounts in US Dollar

Figure 55 Liquidity Gap Report

13. Click  button in the **Counterbalancing Positions** section to add the counterbalancing strategies. The **Add Counterbalancing Position** window appears.

Add Counterbalancing Positions													
Liquidity Risk Management > Counterbalancing Strategy Definition > Add Counterbalancing Positions (New Mode)													
Liquidity Gap Report													
Liquidity Position	Time Bucket												
	Quarter	011 - 011 Quarter	012 - 012 Quarter	013 - 013 Quarter	014 - 014 Quarter	015 - 015 Quarter	016 - 016 Quarter	005 - 005 Year	006 - 006 Year	007 - 007 Year	008 - 008 Year	009 - 009 Year	010 - 010 Year
Inflow	2.58	0.09	0.41	0.52	0.00	0.00	0.00	1.22	125.50	0.73	0.23	0.87	201.97
Outflow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gap	2.58	0.09	0.41	0.52	0.00	0.00	0.00	1.22	125.50	0.73	0.23	0.87	201.97

Amounts in US Dollar

▼ Sale of Marketable Assets

▼ Sale of Other Assets

▼ Rollover of Existing Repos



▼ New Repos

▼ New Funding

Ok Validate

Figure 56 Add Counterbalancing Positions

In the **Add Counterbalancing Position** window, perform the following steps:

- a. In this window you can define five different types of counterbalancing strategies. Refer section [Adding Counterbalancing Positions](#).
- b. Each counterbalancing strategy has its own edit option () which will allow you to select the instrument from the **Instrument Selection** browser window and subsequently apply the counterbalancing strategy to the identified Liquidity Gap. A detailed explanation in relation to the inputs required for each counterbalancing strategy is provided in the section [Counterbalancing Positions](#).
- c. If an additional instrument is to be added then click  button and repeat the above stated procedure.

Note:

- The errors below may appear while defining Counterbalancing Strategies:

- The Counterbalancing strategy name already exists. Please specify a different name: This error appears if you enter the name of the counterbalancing strategy which is already defined then system.
- The upper bound of the Inflow Bucket cannot be less than MIS Date + No. of Days for Liquidation: This error appears when the time bucket selected is less than execution date.
- Units to be sold cannot be greater than the Units Available: This error message appears if the given units to be sold are more than the units available for the selected instrument.
- Discount % needs to be between 0 and 100%: This error message appears if the values provided in the discount field is not between Zero and Hundred.
- Revised Maturity Bucket should fall within the range of the number of days to maturity of the underlying instrument: If the revised maturity date bucket entered is greater than the maturity date of the underlying, this error pop up message would appear.

- After adding counterbalancing positions, click **OK** or,
- Click **Validate** to validate the entries updated by you.

The **Validate Counterbalancing Positions** window appears which indicates the positions which have breached limits specified as well as exceed available units.

Position	Counterbalancing Method	Exceeds Available Units	Sale Limit Breach	Repo Limit Breach	Counterparty Limit Breach	Sale Limit	Repo Limit	Counterparty Limit	Legal Entity	Counterparty	Currency
INEU41575	CREATION OF NEW REPOS					N/A	N/A	N/A	Bank of United States of America	National Department - MM CUST970	US Dollar
INEU43236	CREATION OF NEW REPOS	X				N/A	N/A	N/A	Bank of United States of America	National Department - MM CUST970	US Dollar

Figure 57 Validate Counterbalancing Positions

- The Validations section displays the following:
 - **Positions:** The selected positions in which breach occurs is displayed.
 - **Counterbalancing Method:** The counterbalancing method of the position is displayed.
 - **Exceeds Available Units** – The positions which exceed available units are marked in red. These are treated as errors and must be changed in order to save the strategy. If any position has this error the strategy cannot be saved.
 - **Sale Limit Breach** – The positions which breach sale limit specified are marked in yellow. These are warning messages which are displayed when you continue to save. You are allowed to save the strategy without changing these positions.
 - **Repo Limit Breach** – The positions which breach repo limit specified are marked in yellow. These are warning messages which are displayed when you continue to save. You are allowed to save the strategy without changing these positions.
 - **Counterparty Limit Breach** – The positions which breach counterparty limit specified are marked in yellow. These are warning messages which are displayed when you continue to save. These are warning messages which are displayed when you continue to save.

- g. You are allowed to change the discounts and continue with the definition.
- h. To revalidate, click **Revalidate** button. The same window appears with all positions which are rectified and no longer exceed units available or breach limits are marked in green.
- i. On the Validate Counterbalancing Positions window, click **OK** to return to the Add Counterbalancing Positions window.
- j. On the Add Counterbalancing Positions window, click **OK** to return to the Counterbalancing Strategy Definition.


Note:

- The positions are grouped according to the counterbalancing method.
- The Add Counterbalancing Positions window is displayed only when all positions marked in red are rectified.

14. Click **Apply** in the **Counterbalancing Strategy Definition** window to execute the Counterbalancing Strategy and view the updated report with the revised liquidity gaps.


You can now view the time bucket wise gap report and see the impact of each counterbalancing strategy selected in the **Liquidity Gap Report Post Counterbalancing** section. You can save these strategies for future use by clicking the **Save** button.

8.4.1 Adding Counterbalancing Positions

This section allows you to add one or multiple counterbalancing positions, which together constitute a counterbalancing strategy. When you click the add  icon, the Counterbalancing Strategy Definition window is displayed where you can specify the counterbalancing positions to be applied.

8.4.1.1 Sale of Marketable Assets

To add Sale of Marketable Assets Counterbalancing Strategy, perform the following steps:


- a. To select individual marketable instruments that are to be sold, click the add  icon in the Sale of Marketable Assets section. The Instrument Selection browser window is displayed.
- b. Select the Instrument to which Sale of Marketable Asset Counterbalancing Strategy is to be applied and click OK.
- c. The list of instruments displayed in the Instrument Selection Browser window is taken from the table FSI LRM Instrument table where Marketability Indicator is set to Y.
- d. You can alternatively search for the instrument by selecting the various filter options in the Advanced Filter field.
- e. The selected information is auto populated from the FSI LRM INSTRUMENT table when you select the instrument in the Instrument Selection Browser window.
- f. The following details of each selected instrument are displayed:
 - Instrument
 - Natural Currency

- Legal Entity
 - Instrument Maturity Date
 - Units Available
 - Market Value Per Unit (NCY)
 - Market Value Per Unit (Converted)
 - No. of Days for Liquidation
 - Sale Limit
 - No. of Units / Percentage to be Sold
 - Discount (in %)
 - Revised Inflow Bucket
- g. You must specify the following sale parameters:
- **No. of Units / Percentage to be Sold:** Enter the number of units or percentage of the instrument to be sold based on the Sale Limit parameter selected.
 - **Discount (in %):** Provide information on the discount on the price of the instrument. Discount should be entered in Percentage.
 - **Revised Inflow Bucket:** Select the inflow bucket where the stated cash inflow will occur.

For detailed explanation on Sale of Marketable Assets, refer [Sale of Marketable Assets](#).

8.4.1.2 Sale of Other Assets

To add Sale of Other Assets Counterbalancing Strategy, perform the following steps:


- a. To select individual assets that are to be sold, click the add  icon in the Sale of Other Assets section. The Non-Marketable Asset Selection browser window is displayed.
- b. Select the Non-Marketable Asset to which Sale of Other Assets Counterbalancing Strategy is to be applied and click OK.
- c. The information is auto populated from the FSI LRM Instrument table when you select the Asset in the Instrument Selection browser window.
- d. The following details of each selected instrument are displayed:
 - Asset
 - Natural Currency
 - Legal Entity
 - Asset Value(NCY)
 - Asset Value (Converted)
 - Number of Days for Liquidation

- Sale Limit
 - Value of Assets to be Sold
 - Discount (in %)
 - Revised Inflow Bucket
- e. You must specify the following sale parameters:
- **Value of Assets to be Sold:** Enter the percentage of the instrument to be sold based on the Sale Limit parameter selected.
 - **Discount (in %):** Provide information on discount provided on the price of the instrument. Discount should be entered in percentage.
 - **Revised Inflow Bucket:** Select the inflow bucket where above stated cash inflow will occur.

For detailed explanation on Sale of Other Assets, refer [Sale of Other Assets](#).

8.4.1.3 Rollover of Existing Repos

To add Rollover of Existing Repos Counterbalancing Strategy, perform the following steps:


- a. To select individual repos, click the add  icon in the Rollover of Existing Repos section. The Repo Selection browser window is displayed.
- b. Select the Repo to which Rollover of Existing Repos Counterbalancing Strategy is to be applied and click OK.
- c. The list of Repos to be rescheduled, displayed in the Instrument Selection browser window is taken from the FSI LRM Instrument table where encumbrance status is set to 'N' and it's a Repo Transaction.
- d. You can alternatively search for the instrument by selecting the various filter options in the Advanced Filter field.
- e. The information is auto populated from the Fact Common Account Summary table when you select the Repos in the Instrument Selection Browser window.
- f. The following details of each selected instrument are displayed:
 - Repo Name
 - Natural Currency
 - Legal Entity
 - Counter Party
 - Repo Maturity Date
 - Repo Maturity Amount (NCY)
 - Repo Maturity Amount (Converted)
 - Underlying Instrument

- Instrument Maturity Date
 - Units Available
 - Market Value Per Unit (NCY)
 - Market Value Per Unit (Converted)
 - Units to be Rolled Over
 - Revised Maturity Bucket
 - Haircut (in %)
- g. You must specify the following parameters:
- **Units to be Rolled Over:** Provide information on the number of units to be rolled over.
 - **Revised Maturity Bucket:** Specify the Revised Time Bucket into which the repo values are to be readjusted. Revised Maturity Bucket should fall within the range of the number of days to maturity of the underlying instrument.
 - **Haircut (in %):** Provide the Haircut in %.

For detailed explanation on Rollover of Existing Repos, refer [Rollover of Existing Repos](#).

8.4.1.4 New Repos

To add New Repos Counterbalancing Strategy, perform the following steps:


- a. To select individual new repos, click the add  icon in the New Repos Counterbalancing Strategy section. The New Repos browser window is displayed.
- b. Select the instrument to which New Repos Counterbalancing Strategy is to be applied.
- c. The list of instruments displayed in the Instrument Selection browser window is taken from the table FSI LRM Instrument table where the underlying is a Repo.
- d. You can alternatively search for the instrument by selecting the various filter options in the Advanced Filter field.
- e. The information is auto populated from the Fact Common Account Summary table when you select the Instrument to be purchased.
- f. The following details of each selected instrument are displayed:
 - Instrument
 - Natural Currency
 - Legal Entity
 - Availability Start Date
 - Availability End Date
 - Units Available
 - Market Value per Unit(NCY)
 - Market Value per Unit (Converted)

- Repo Limit
 - Counter Party
 - Revised Maturity Amount
 - No. and Units to be Repo'd
 - Haircut (in %)
 - Revised Inflow Bucket
 - Revised Maturity Bucket
- g. You must specify the following parameters:
- **No. and Units to be Repo'd:** Enter the number of units to be repo'd.
 - **Haircut (in %):** Provide the Haircut in %.
 - **Revised Inflow Bucket:** Enter the Revised Inflow Bucket, that is, in which bucket you are going to purchase the Instrument.
 - **Revised Maturity Bucket:** Enter the Revised Maturity Bucket

For detailed explanation on New Repos, refer [New Repos](#).

8.4.1.5 New Funding

To add New Funding Counterbalancing Strategy, perform the following steps:

- a. To select new funding, click the add  icon in the New Funding Counterbalancing Strategy section. The Product browser window is displayed.
- b. Select the Product to which the New Funding Counterbalancing Strategy is to be applied.
- c. The list of products to be purchased displayed in the Instrument Selection Browser window is taken from the DIM GL Account table, where GL items with GL Type as Liability is considered.
- d. You can alternatively search for the instrument by selecting the various filter options in the Advanced Filter field.
- e. Select the product, borrowing date (inflow date), borrowed amount, maturity date and amount.
- f. Select a funding product and provide the following parameters:
 - **Legal Entity:** Enter the legal entity which is raising the new funding in context of the counterbalancing position.
 - **Line of Business:** Enter the line of business of the legal entity which is raising the new funding.
 - **Natural Currency:** Enter the natural currency of the new deposit or borrowing account.
 - **Counterparty:** Enter the counterparty who is deemed to have provided the new funding.
 - **Inflow Bucket:** Enter the transaction start bucket that is, the bucket in which the inflows from the new deposit or borrowing is recorded.
 - **Inflow Amount:** Enter the cash received from the new funding.

- **Maturity Bucket:** Enter the maturity bucket of the transaction that is, the bucket in which cash outflows are recorded.
- **Maturity Amount:** Enter the outflow amount at the maturity of the new funding.

For detailed explanation on New Funding, refer [New Funding](#).

9 Viewing LRM objects in Metadata Browser

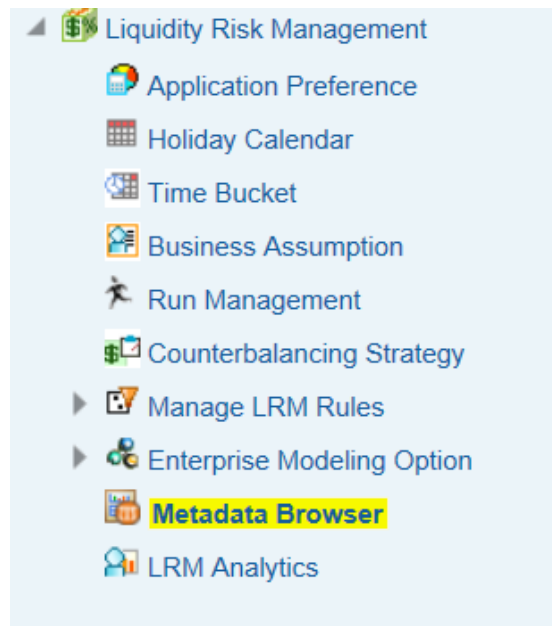
The Liquidity Risk Management under Oracle Financial Services Analytical Applications has the Metadata Browser (MDB). The MDB window displays RRF Runs in application view and LRM objects in object view.

To view LRM applications and objects in MDB, perform the following steps:

1. Execute the following batches in any date:
 - For LRM Objects: ##INFODOM_MDB
 - For LRM Application View: ##INFODOM_MDB_OBJECT_APPLN_MAP

Note: The second batch must be executed after successful completion of the first batch.

2. After successful execution of the batch, in Oracle Financial Services Analytical Applications Infrastructure window choose, Liquidity Risk Management > Metadata Browser on the Left-Hand Side (LHS) menu.



3. Click the Application tab under Metadata Browser window to view the LRM applications.



4. Click the Object tab under Metadata Browser window to view LRM objects:



- Under Process Metadata > Rules > Business Assumptions, all the business assumptions defined under LRM Business Assumptions window are displayed.
- Under Process Metadata > Rules > Holiday Calendar, all the holiday calendars defined under LRM Holiday Calendar window are displayed.
- Under Process Metadata > Rules > Time Buckets, all the time buckets defined under LRM Time Bucket window are displayed.
- Under Process Metadata > LRM Runs, all the available Runs which are created using LRM Run Management window are displayed.

Note:

For information on other AAI Objects, refer Oracle Financial Services Advanced Analytical Applications Infrastructure (OFSAAAI) User Guide on [OTN](#).

10 Cash Flows

10.1 Overview of Cash Flows

Every Product is identified based on its Balance Sheet Category as one of the following:

- Asset
- Liability
- Off Balance Sheet

Cash flows are of two types:

- Account Cash Flow
- Mitigant Cash Flow or Collateral Cash Flow

10.1.1 Account Cash Flow

Account cash flows consist of inflows and outflows that occur from a particular account on a periodic basis under contractual terms. The account can be either an asset or a liability. For example, a bank could disburse a bullet loan where interest payments occur periodically, on say a quarterly basis, while the principal is repaid as a single bullet payment at the maturity of the loan. Also, a bank could disburse a loan on EMI basis where both principal and interest is repaid in equal monthly instalments across the life of the loan.

10.1.2 Mitigant Cash Flow or Collateral Cash Flow

Mitigant or collateral cash flows are cash flows received from the underlying collateral given to the bank by its counterparty, provided, the ownership of the underlying collateral has been transferred to the bank. For example, if a bank has received bonds as collateral against a 5-year loan that it has disbursed, and if the ownership of the collateral is transferred to the bank, then the bank has the right to receive the periodic coupon payments on the underlying bonds till the maturity of the loan. If the ownership of the underlying collateral is not transferred to the bank, then the periodic coupon payments are not payable to the Bank, but will remain with the owner of the collateral.

Similarly, in case of collateral posted by a bank to its counterparty, if the ownership of such an asset is transferred then the cash flows occurring on the collateral will not be considered by the bank during the encumbrance period of the collateral. If the ownership of the collateral is not transferred, then all cash flows from the underlying asset are considered by the bank for its computations.

10.1.3 Inflows and Outflows

Contractual cash flows could either be inflows or outflows. Inflows and outflows can occur for both assets and liabilities. For instance, a forward-starting liability transaction can have one or multiple inflows signifying the start of the transaction and one or multiple outflows including principal and interest payment signifying repayment of the liability.

The above inflows and outflows are categorized based on the Cash Flow Type in the Account Cash Flows Staging table. An inflow is identified by the Cash Flow Type is 'I'. If however, the Cash Flow Type is 'O', then it is classified as an Outflow.

10.1.4 Principal and Interest Cash Flows

Further these inflows and outflows are categorized as either Principal or Interest cash flows based on the Financial Element Code in the Account Cash Flows Staging table. If the Financial Element Code is 'I', then it is identified as an Interest Cash Flow. However, the Financial Element Code is 'P', then it is classified as a Principal Cash Flow.

10.1.4.1 Approximation of Interest Cash Flows

OFS LRM 8.0 takes both principal and interest cashflows into consideration based on user selection. Calculation of the impact of each business assumption on interest cash flows is supported in two ways:

- Business assumption values are applied to both principal and interest cash flows
- Assumption values are applied to principal cash flows only and interest is approximated

If you select the Include Interest Cash flow parameter in the Run Definition window as Yes, both principal and interest cash flows are taken considered for calculations. If you select the Approximate Interest parameter as Yes, then the business assumption is applied only to the principal cash flows and the interest cash flows are approximated based on changes to the principal. If you select Include Interest Cash flow parameter is selected as Yes and Approximate Interest parameter is selected as No, the business assumption values are applied to both principal and interest cash flows. However, this application depends on the manner in which the business assumption is defined as follows:

- i. If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Principal, then assumption is applied only to the principal cash flows.
- ii. If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Interest, then assumption impacts only Interest cash flows.
- iii. If you have selected Cash Flow Type as a dimension in the business assumption and the dimension member as Principal and Interest, then assumption is applied to both principal and interest cash flows.
- iv. If you have not selected Cash Flow Type as a dimension in the business assumption, then assumption is applied to both principal and interest cash flows.

If Include Interest Cash Flow parameter is selected as No, only principal cash flows are considered and interest cash flows are ignored.

The procedure for approximating interest is provided below:

1. Obtain the principal and interest cash flows under contractual terms.
2. Bucket the contractual cash flows based on the user specified time buckets while distinguishing between interest and principal cash flows in each time bucket.
3. Calculate the outstanding balance in each bucket under contractual terms. The outstanding balance in the first time bucket will be the EOP balance. The formula for calculating the outstanding balance for each subsequent bucket is as follows:

$$O/S\ Balance_{Bucket\ n, Contractual} = O/S\ Balance_{Bucket\ n-1, Contractual} - Principal\ CF_{Bucket\ n-1, Contractual}$$

Where,

O/S Balance : Outstanding Balance

CF : Cash Flows

4. Apply the business assumption to estimate principal cash flows. In case of balance based assumptions, this applies to the EOP balance. In case of cash flow based assumptions, this applies to the principal cash flows in a given bucket.
5. Calculate the outstanding balance in each bucket under business-as-usual or stress terms. The outstanding balance in the first time bucket will be the EOP balance. The formula for calculating the outstanding balance for each subsequent bucket is as follows:

$$O/S\ Balance_{Bucket\ n, Assumption} = O/S\ Balance_{Bucket\ n-1, Assumption} - Revised\ Principal\ CF_{Bucket\ n-1, Assumption}$$

6. Calculate the impact on interest cash flows in each bucket under business-as-usual or stress terms as per the following formulas:

$$Interest\ CF_{Bucket\ n, Assumption} = \left(\frac{O/S\ Balance_{Bucket\ n, Assumption} \times Interest\ CF_{Bucket\ n, Contractual}}{O/S\ Balance_{Bucket\ n, Contractual}} \right)$$

$$Change\ in\ Interest\ CF_{Bucket\ n, Assumption} = Interest\ CF_{Bucket\ n, Assumption} - Interest\ CF_{Bucket\ n, Contractual}$$

Illustration 1: Impact on Interest Cash Flows under Run-off Assumption

Run-off	From Bucket	To Bucket	Assignment Method	Assumption Unit	Assumption Value	Based On	Product
	1-3 Months	1-7 Days	Selected	Percentage	10	Cash Flow	Loan

Table 68 Example giving the UI Specification for Run-off Assumption

Note: In the following Illustration both Principal and Interest are downloads.

Measure	Contractual Cash Flows				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Principal	150	250	330	700	610
Outstanding Balance (Refer Point 3)	2000	1850 (2000-150)	1600 (1850-250)	1270 (1600-330)	570 (1270-700)
Interest	20	40	45	80	70
Measure	Business Assumption				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Assumption impacted Principal	Nil	(+) 61	Nil	Nil	(-)61 (610*10%)
Revised Principal CF (post business assumption)	150 (150 + Nil)	311 (250 + 61)	330 (330+Nil)	700 (700 + Nil)	549 {610 + (-)61}
Outstanding Balance (Refer Point 5)	2000	1850 (2000 – 150)	1539 (1850 – 311)	1209 (1539-330)	509 (1209-700)
Interest (Refer Point 6)	20	40	43.28 (45/1600*1539)	76.16 (80/1270*1209)	62.5 (70/570*509)

Table 69 Example showing Impact on Interest Cash Flows under Run-off Assumption

Illustration 2: Impact on Interest Cash Flows under Growth Assumption

Run-off	From Bucket	To Bucket	Assignment Method	Assumption Unit	Assumption Value	Based On	Product
	1-7 Days	Overnight	-	-	0	EOP Balance	Loan
		16-30 Days	Equal	Percentage	20		

Table 70 Example giving the UI Specification for Growth Assumption

Note: In the following Illustration both Principal and Interest are downloads.

Contractual Cash Flows	
EOP Balance	2000

Table 71 Download Data

Measure	Contractual Cash Flows				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Principal	150	250	330	700	610
Outstanding Balance (Refer Point 3)	2000	1850 (2000-150)	1600 (1850-250)	1270 (1600-330)	570 (1270-700)
Interest	20	40	45	80	70
Measure	Business Assumption				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Assumption impacted Principal	Nil	-400	200	200	Nil
Revised Principal CF (post business assumption)	150 (150 + Nil)	-150 {250 + (-) 400}	530 (330+200)	900 (700 + 200)	610 (610 + Nil)

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Outstanding Balance	2000	1850 (2000-150)	2000 {1850- (-150)}	1470 (2000-530)	570 (1470-900)
Total Interest	20	40	56.25 (45/1600*2000)	92.59 (80/1270*1470)	70
Change in Interest	Nil	Nil	11.25 (56.25-45)	12.59 (92.59-80)	Nil

Table 72 Example showing Impact on Interest Cash Flows under Growth Assumption

Illustration 3: Impact on Interest Cash Flows under Growth Assumption (Cash Flow based)

Run-off	From Bucket	To Bucket	Assignment Method	Assumption Unit	Assumption Value	Based On	Product
	1-7 Days	Overnight	-	-	0	Cash Flow	Loan
		16-30 Days	Equal	Percentage	20		

Table 73 Example giving the UI Specification for Growth Assumption (Cash Flow Based)

Note: In the following Illustration both Principal and Interest are downloads.

Measure	Contractual Cash Flows				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Principal	150	250	330	700	610
Outstanding Balance (Refer Point 3)	2000	1850 (2000-150)	1600 (1850-250)	1270 (1600-330)	570 (1270-700)
Interest	20	40	45	80	70
Measure	Business Assumption				
	Overnight	1-7 Days	8-15 Days	16-30 Days	1-3 Months
Assumption impacted Principal	Nil	(-) 50 (250*20%)	25	25	Nil

Revised Principal CF (post business assumption)	150 (150 + Nil)	200 {250 + (-) 50}	355 (330+25)	725 (700 + 25)	610 (610 + Nil)
Outstanding Balance	2000	1850 (2000-150)	1650 (1850-200)	1295 (1650-355)	570 (1295-725)
Total Interest	20	40	46.41 (45/1600*1650)	81.57 (80/1270*1295)	70
Change in Interest	Nil	Nil	1.41 (46.41-45)	1.57 (81.57-80)	Nil

Table 74 Example showing Impact on Interest Cash Flows under Growth Assumption(Cash Flow Based)

The application supports the inclusion or exclusion of interest cash flows based on the Run parameters selected by the user. This is also impacted by the inclusion or exclusion of cash flow type as a dimension in the business assumption. The next section details multiple scenarios with different combination of parameters and their impact on interest cash flows.

Scenario 1: When Interest cash flows are approximated.

1. Do not include Cash Flow Type as a dimension in the business assumption (Principal + Interest will be considered).
2. In Run Definition window,
Select Yes in Include Interest Cash Flow and,
Select Yes in Approximate Interest.

In the above scenario, only Principal cash flows will be impacted. Interest cash flows will be approximated based on change to principal.

Scenario 2: When interest cash flows are calculated without approximating interest.

1. Do not include Cash Flow Type as a dimension in the business assumption (Principal + Interest will be considered).
2. In Run Definition window,
Select Yes in Include Interest Cash Flow and,
Select No in Approximate Interest.

In the above scenario, both Principal and Interest cash flows will be impacted.

Scenario 3: When interest cash flows are not considered for computation.

1. Do not include Cash Flow Type as a dimension in the business assumption (Principal + Interest will be considered).
2. In Run Definition window, select No in Include Interest Cash Flow.

In the above scenario, no impact on Interest cash flows as they are not considered for computation and reporting.

Scenario 4: When interest cash flows are approximated.

1. Include Cash Flow Type as a dimension and select Principal in the business assumption.
2. In Run Definition window,
Select Yes in Include Interest Cash Flow and,
Select Yes in Approximate Interest.

In the above scenario, only Principal will be impacted. Interest cash flows will be approximated based on change to principal.

Scenario 5: When Principal is selected as a dimension.

1. Include Cash Flow Type as a dimension and select Principal in the business assumption.
2. In Run Definition window,
Select Yes in Include Interest Cash Flow and,
Select No in Approximate Interest.

In the above scenario, Principal will be impacted because only Principal is selected as a dimension. There will be no change in the interest cash flow amounts.

10.2 Cash Flow Aggregation

The application buckets the cash flows at the granularity of the level 0 buckets specified as part of the selected time bucket. Once bucketed, the account cash flows are aggregated at the granularity of the combination of user-specified and mandatory dimensions selected as part of the Application Preferences window. Refer section [Mandatory Dimension Configuration](#) for more information. Cash flows are aggregated as part of the contractual Run, on the basis of the dimensional attributes of each account. Further, business assumptions are applied to the aggregated cash flows and not at the individual cash flow level.

10.3 Currency Conversion

Cash flows, account balances and other input data is captured and stored in terms of the natural currency of the account. The application converts cash flows and balances from its natural currency to the local or reporting currency based on the prevailing spot rates or forward rates, as specified by you. Local currency is provided for each legal entity as a download while the reporting currency is selected at the time of Run execution.

The features of currency conversion in the LRM Application are as follows:

- Option to select forward exchange rate or spot rate for currency conversion.
- Forward exchange rate is interpolated to the cash flow date using linear or log linear interpolation method, as specified by you.
- If a direct quote between currencies is not available then an indirect quote is used. For currency pairs that do not have a quotation against each other, either direct or indirect, the cross exchange rate is calculated using the direct quotes available against US Dollar (USD) for each currency, as USD is considered as the base currency in each quote. The base currency can be configured in the **SETUP MASTER** table.

11 Liquidity Gaps and Cumulative Gaps

11.1 Liquidity Gaps

Liquidity gap is the mismatch in a bank's inflows and outflows from various assets and liabilities, due to the difference in the behavior exhibited by the customers. This gap can be positive or negative, depending on whether the bank has more inflows than outflows and vice versa. Liquidity gap can change over the course of each day based on the deposits and withdrawals made and other behavior of the bank as well as its customers.

Liquidity gap is calculated as follows at each user-specified time bucket:

$$\text{Liquidity Gap} = \text{Cash Inflows} - \text{Cash Outflows}$$

Oracle Financial Services Liquidity Risk Management computes the liquidity gap under contractual terms, business-as-usual conditions and stress scenarios. The liquidity gap status under contractual terms is computed based on the cash flows received from an ALM system. Business-as-usual and stress business assumptions are applied to contractual cash flows to obtain gaps under BAU and stress scenarios. The process of creating a business assumption is detailed in [Defining a New Business Assumption](#) section. The process of creating contractual and business-as-usual Runs is detailed in *Defining a Contractual Run* and *Defining a Business-as-Usual Run* sections respectively and stress Runs in *Defining a Stress Run* section.

11.2 Cumulative Gaps

Cumulative Gap gap is the net gap from today up to a given time horizon or time bucket in future. It is calculated as the sum of liquidity gaps from the first time bucket up to each future time bucket. Cumulative gap can be positive or negative, depending on whether cumulative inflows are greater than the cumulative outflows and vice versa.

Cumulative gap is computed as follows:

$$\text{Cumulative Gap}_T = \sum_{T=1}^n \text{Liquidity Gap}_T$$

Where,

T : Each time bucket

N : Total number of time buckets

Cumulative gap is computed under contractual terms, business-as-usual conditions and stress scenarios.

In the below example, Numerical Example (in \$).

Time Bucket	1-14 Days	15-28 Days	29 Days – 3 Months	3-6 Months
Inflows	500	300	1000	2000
Outflows	200	500	1250	1500
Liquidity Gap	300 [=500-200]	-200 [=300-500]	-250 [=1000-1250]	500 [=2000-1500]
Cumulative Gap	300	100 [=300+(-200)]	-150 [=100+(-250)]	350 [=-150+500]

In the preceding example, the cumulative gap at the end of 6 months works out to \$350 whereas the liquidity gap in the 3-6 months time bucket is \$ 500.

Note: This calculation occurs at the reporting layer.

12 BIS Basel III Liquidity Ratio Calculation

12.1 Overview of BIS Basel III Liquidity Ratio Guidelines

Various parameters in Liquidity Risk Management help in analyzing the liquidity status of the bank. Liquidity ratios are one such parameter prescribed in the Basel III Guidelines. There are two types of ratios which are calculated by the LRM Application as follows:

- **Liquidity Coverage Ratio:** Liquidity coverage ratio addresses the short-term liquidity needs of an institution during a stress situation. It estimates whether the stock of high quality liquid assets is sufficient to cover the net cash outflows under stress situations over a specified future period, in general, lasting 30 calendar days (or LCR horizon). Liquidity coverage ratio is calculated at the legal entity level, on a standalone and consolidated basis.
- **Net Stable Funding Ratio:** This addresses the medium and long-term liquidity needs of a bank during a stress situation. It specifies the minimum amount of stable funding required to be maintained in order to promote stable long term funding.

12.2 BIS Basel III Liquidity Coverage Ratio Calculation

12.2.1 Inputs

Inputs required for Liquidity Coverage Ratio calculated by the LRM Application are as follows:

- Liquidity haircut for each asset level should be provided through business assumption with assumption category as valuation change and assumption sub category as haircut.
- Business assumption which defines the outflow percentage should be defined through appropriate business assumptions. For example, retail deposit Run off is defined through business assumption with category as incremental cash flow and sub category as Run-off.
- Business assumption which defines the inflow percentage should be defined through appropriate business assumptions. For example, Roll over reverse repo is defined through business assumption with category as cash flow movement and sub category as roll over.
- Liquidity Horizon is specified as the Run time parameter

12.2.2 Liquidity Ratio Calculation Process Flow

This section aims to explain the procedure of calculating the Liquidity Coverage Ratio (LCR).

- Asset level identification
- Deposit Stability Identification
- Calculation of Stock of High Quality Liquid Asset (SHQLA)
- Calculation of Net Cash Outflows (NCOF)
- Calculation of Liquidity Coverage Ratio

- Consolidation

The application supports an out-of-the-box BIS Basel III LCR which has the regulatory scenario with associated HQLA haircuts, inflow and outflow rates pre-configured in the form of business assumptions.

12.2.2.1 Asset level Identification

A set of Asset Reclassification Rules which assigns an Asset Level to each account is supported by the LRM Application. Level 2 assets are sub categorized to Level2A and Level 2B-RMBS and Level 2B- non RMBS assets. Level1 assets can be included without limit and Level 2 assets can only comprise 40% of the stock of HQLA. Of this, Level 2B assets can only comprise of 15% of stock of HQLA. If any asset is not assigned to Level 1, Level 2, Level 2A or Level 2B asset category, they are marked as Other Assets.

I. Level 1 Assets

The assets are considered as Level 1 assets which qualify to be fully included as part of the stock of high quality liquid assets computing LCR:

1. Cash , that is, coins and banknotes
2. Central bank reserves (including required reserves), to the extent that the central bank policies allow them to be drawn down in times of stress. These include,
 - a. Banks' overnight deposits with the central bank
 - b. Term deposits with the central bank that satisfy the following conditions:
 - They are explicitly and contractually repayable on notice from the depositing bank
 - They constitute a loan against which the bank can borrow on a term basis or on an overnight but automatically renewable basis (only where the bank has an existing deposit with the relevant central bank)

Note: The extent to which the central bank reserves can be included in the stock of HQLA is provided by the local supervisors in agreement with the relevant Central Bank.

3. Marketable securities which satisfy the following conditions:
 - Issuer type or Guarantor Type is one of the following:
 - o Sovereign
 - o Central Bank
 - o Public Sector Entity
 - o Multi-lateral Development Bank
 - o The Bank For International Settlements
 - o The International Monetary Fund
 - o The European Central Bank and European Commission
 - They are assigned a 0% risk-weight under the standardized Approach of Basel II
 - Not an obligation of a financial institution or any of its affiliated entities

Note:

This means that a financial institution or its affiliated entities are not responsible for payment to be made to the holder of a security. Securities, that are guaranteed by the government but which is a liability of a financial institution, do not qualify as HQLA. The exception is if the financial institution is a Public Sector Entity (PSE).

4. Debt securities issued in domestic currencies in the country in which the liquidity risk is being taken or in the bank's home country where the issuer type is sovereign or central bank and the risk weight assigned to the sovereign is greater than 0%.
5. Debt securities issued in foreign currencies are eligible up to the amount of the bank's stressed net cash outflows in that specific foreign currency stemming from the bank's operations in the jurisdiction where the bank's liquidity risk is being taken, where the issuer type is domestic sovereign or central bank and the risk weight assigned to the sovereign is greater than 0%.

II. Level 2A Assets

The assets which are considered as Level 2A assets are as follows:

1. Marketable securities which satisfy the following conditions:
 - Issuer type or Guarantor Type is one of the following:
 - Sovereign
 - Central Bank
 - Public Sector Entity
 - Multi-lateral Development Bank
 - They are assigned a 20% risk-weight under the standardized Approach of Basel II
 - Price has not decreased or haircut has not increased by more than 10% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank
 - Not an obligation of a financial institution or any of its affiliated entities

Note: Marketable securities are very liquid securities that can be converted into cash quickly at a reasonable price.
2. Corporate debt securities (including commercial paper) and covered bonds which satisfy the following conditions:
 - Issuer type is not a financial institution or its affiliated entities
 - Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities (in case of covered bonds)
 - Either has
 - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) equal to or greater than AA- or
 - If long-term rating is not available, then a short-term credit rating by a recognized ECAI which is equal to or greater than AA- or
 - If it does not have assessment by a recognized ECAI, the probability of default as per the internal rating corresponding to a rating which is equal to or greater than AA-

- Price has not decreased or haircut has not increased by more than 10% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank

III. Level 2B Assets

The assets which are considered as Level 2B assets and may be included as part of Level 2 assets for the purpose of computing LCR subject to supervisory approval:

1. Residential mortgage backed securities (RMBS) which satisfy the following conditions:
 - Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities
 - Issuer type of the underlying assets is not the bank itself for which the computations are being carried out or any of its affiliated entities
 - Either has
 - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) equal to or greater than AA or
 - If long-term rating is not available, then a short-term credit rating by a recognized ECAI which is equal to or greater than AA

Note: A residential mortgage-backed security is comprised of a pool of mortgage loans created by banks and other financial institutions. The cash flows from each of the pooled mortgages is packaged by a special purpose entity into classes and tranches, which then issues securities and can be purchased by investors.

- Price has not decreased or haircut has not increased by more than 20% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank
 - The underlying asset pool consists of residential mortgages only and does not contain any structured products
 - The underlying mortgages are “full recourse” loans and have a maximum Loan-To-Value ratio (LTV) of 80% on average at issuance
 - The securitizations are subject to “risk retention” regulations which require issuers to retain an interest in the assets they securitize
2. Corporate debt securities (including commercial paper) which satisfy the following conditions:
 - Issuer type is not a financial institution or its affiliated entities
 - Either has
 - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) between A+ and BBB- or
 - If long-term rating is not available, then a short-term credit rating by a recognized ECAI which is between A+ and BBB- or

- If it does not have assessment by a recognized ECAI, the probability of default as per the internal rating corresponding to a rating which is between A+ and BBB-
 - Price has not decreased or haircut has not increased by more than 20% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank
3. Common equities which satisfy the following conditions:
- Issuer type is not a financial institution or its affiliated entities
 - Are exchange traded and centrally cleared
 - Are a constituent of the major stock index in the legal entity's home jurisdiction or where the liquidity risk is taken, as decided by the supervisor in the jurisdiction where the index is located
 - Are denominated in the domestic currency of the legal entity's home jurisdiction or in the currency of the jurisdiction where the liquidity risk is taken
 - Price has not decreased or haircut has not increased by more than 40% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank

12.2.2.2 Calculation of Stock of High Quality Liquid Asset (SHQLA)

SHQLA is calculated at legal entity and currency granularity. This is performed by the rule **LRM - SHQLA Computation**.

BIS has introduced changes to the calculation of stock of HQLA in its document *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools*. Version 8.0 supports the revised LCR computation requirements of BIS.

High Quality Liquid Assets (HQLA) can be converted into cash with little or no loss of value. The fundamental characteristics of HQLA are low risk, ease and certainty of valuation, low correlation with risky assets and listed in developed or recognized exchange.

Only those assets that are unencumbered on Day 0 of the calculation of stock of HQLA and remain unencumbered throughout the liquidity horizon can be included in the stock of high quality liquid assets. The exception to this rule is the assets received in reverse repo transaction.

Assets received in reverse repo transactions which are technically encumbered over the liquidity horizon under contractual terms, that is, are held by bank and the maturity of the transaction is beyond the liquidity horizon, can be included in the stock of high quality liquid assets.

The formula for calculating SHQLA is as follows:

Stock of HQLA = Post Haircut Stock of Level 1 Assets
+ Post Haircut Stock of Level 2A Assets
+ Post Haircut Stock of Level 2B RMBS Assets
+ Post Haircut Stock of Level 2B non RMBS Assets
– Adjustment due to Cap on Level 2B Assets
– Adjustment due to Cap on Level 2 Assets

- Haircut values for Level 1 Asset = 0%
- Haircut values for Level 2 A Asset = 15%
- Haircut values for Level 2B RMBS Asset = 25%
- Haircut values for Level 2B Non RMBS Asset = 50%

The Market Values are multiplied by (1-Haircut)

Note:

1. The stock of level 1 and level 2 assets is the total value of level 1 and level 2 assets after applying the relevant liquidity haircuts but before applying adjustments specified above. The adjustments only impact the calculation of cap on level 2B assets and level 2 assets.
2. Level 2 assets that are excluded from the stock of HQLA due to the 40% cap specified should not be included as inflows for the purpose of calculating the denominator of the LCR formula. However, securities that do not meet level 1 and 2 asset criteria can be included as inflows.

12.2.2.3 Additional Qualification

1. Only banking book assets qualify as high quality liquid assets. Trading book assets are not considered while calculating stock of HQLA. The cash flows from trading book assets are taken into account in the denominator of the LCR formula. For this purpose, a new dimension Book Code is introduced to differentiate between trading book and banking book.
2. Assets that are used as hedges on trading positions, designated to cover operational costs, provided as collateral or pledged to secure, collateralize or credit-enhance any other transaction should not be included in the stock of HQLA. The exception to this rule is the assets received as collateral as part of securities borrowing transactions maturing within the liquidity horizon, such as reverse repos, collateral swaps and so on. Such assets can be included in the stock of HQLA if they satisfy the conditions set out for level 1 and level 2 assets, provided they are not re-hypothecated or sold within the liquidity horizon.
3. Assets that are used to hedge structural interest rate risk can be included in the stock of HQLA provided they fulfill other level 1 or level 2 asset eligibility criteria.
4. All assets that are available from day 1 to fund gaps between inflows and outflows, including those held in a pool at a major electronic collateral management system, can be considered in the stock of HQLA if they meet all criteria and are unencumbered.

5. If assets are partially encumbered, then the unencumbered portion is taken into the stock of HQLA. For instance, unused portion of collateral pledged at the central bank can be part of the stock of HQLA.
6. If a collateral pool consists of assets of different levels which cannot be separately sold or repo'd, then the eligibility for stock of HQLA is determined by the asset with the lowest level in the pool. For instance if 40% of the pool consists of level 1 assets and 60% of level 2 assets, then the entire pool is considered as level 2 assets for the purpose of calculating stock of HQLA.

I. Calculation of Stock of Level 1 Assets:

Total Level 1 Asset amount is calculated and stored at legal entity and currency granularity. This process is performed by a Table to Table (T2T) transformation in the Liquidity Coverage Ratio Run, namely LRM LCR Data Population.

The stock of Level 1 Assets is calculated as the sum of all assets falling under the category of Level 1 Assets.

II. Calculation of Stock of Level 2 Assets:

Level 2 assets are further classified as Level 2A and Level 2B. Level 2 assets are not allowed to exceed 40% of the total stock of HQLA after applying haircuts. Level 2B assets may be included at the discretion of the local supervisors.

Total Level 2 Asset amount used is calculated and stored at legal entity and currency granularity. This process is done by a T2T Transformation in the Liquidity Coverage Ratio Run, namely LRM LCR Data Population.

The stock of Level 2 Assets is calculated as the sum of all assets falling under the category of Level 2A Assets + sum of all assets falling under the category of Level 2B Assets.

III. Adjustments to Stock of High Quality Liquid Assets

The process of calculating adjustments to stock of HQLA due to cap on Level 2 assets is calculated based on the adjusted amount of level 1 and 2 assets.

1. Calculation of Adjusted Stock of Level 1 Assets

The items which result in adjustments to the stock of Level 1 assets:

- a. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 1 assets which would otherwise qualify as HQLA
- b. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 2A assets which would otherwise qualify as HQLA
- c. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 2B RMBS assets which would otherwise qualify as HQLA

- d. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 2B non-RMBS assets which would otherwise qualify as HQLA
- e. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 1 assets which would otherwise qualify as HQLA
- f. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 2A assets which would otherwise qualify as HQLA
- g. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 2B RMBS assets which would otherwise qualify as HQLA.
- h. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 2B RMBS assets which would otherwise qualify as HQLA, where the counterparties are domestic sovereigns, Multi-Lateral Development Banks (MDBs) or domestic PSEs with a 20% risk weight
- i. Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 2B RMBS assets which would otherwise qualify as HQLA, where the counterparties are not domestic sovereigns, MDBs or domestic PSEs with a 20% risk weight
- j. Market value of Level 1 assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- k. Market value of Level 1 assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- l. Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 1 assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- m. Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 2A assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- n. Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 2B RMBS assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- o. Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 2B non-RMBS assets which qualify as HQLA,

where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions

- p. Market value of Level 1 assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- q. Market value of Level 1 assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- r. Market value of Level 1 assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA

Adjustments to stock of level 1 assets are calculated based on the above mentioned items as follows:

Adjustments to Stock of Level 1 Assets

$$= -A - B - C - D - E - F - G - H - I + J + K + L + M + N + O - P + Q - R$$

Adjusted Amount of Level 1 Assets is calculated as per the following formula:

Adjusted Level 1 Assets

$$= \text{Maximum}[(\text{Post Haircut Stock of Level 1 Assets} + \text{Adjustments to Stock of Level 1 Assets}), 0]$$

2. Calculation of Adjusted Stock of Level 2A Assets

The items which result in adjustments to the stock of Level 2A assets are as follows:

- a. Market value of Level 2A assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- b. Market value of Level 2A assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- c. Market value of Level 2A assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualifies as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- d. Market value of Level 2A assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- e. Market value of Level 2A assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA

Adjustments to stock of level 2A assets is calculated based on the above mentioned items as follows:

$$\text{Adjustments to Stock of Level 2A Assets} = A + B - C + D - E$$

Adjusted Amount of Level 2A Assets is calculated as per the following formula:

$$\begin{aligned} \text{Adjusted Level 2A Assets} \\ = (\text{Pre Haircut Stock of Level 2A Assets} \\ + \text{Adjustments to Stock of Level 2A Assets}) \times \text{Haircut} \end{aligned}$$

Pre Haircut Stock of Level 2A Assets = Stock of Level 2A Assets before applying the haircut.

3. Calculation of Adjusted Stock of Level 2B RMBS Assets

The items which result in adjustments to the stock of Level 2B RMBS Assets are as follows:

- a. Market value of Level 2B RMBS assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- b. Market value of Level 2B RMBS assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- c. Market value of Level 2B RMBS assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualifies as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- d. Market value of Level 2B RMBS assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- e. Market value of Level 2B RMBS assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA
- f. Adjustments to stock of level 2B RMBS assets is calculated based on the above mentioned items as follows:

$$\text{Adjustments to Stock of Level 2B RMBS Assets} = A + B - C + D - E$$

Adjusted amount of level 2B RMBS assets is calculated as per the following formula:

$$\begin{aligned} \text{Adjusted Level 2B RMBS Assets} \\ = (\text{Pre Haircut Stock of Level 2B RMBS Assets} \\ + \text{Adjustments to Stock of Level 2B RMBS Assets}) \times \text{Haircut} \end{aligned}$$

Pre Haircut Stock of Level 2B RMBS Assets = Stock of Level 2B RMBS Assets before applying the haircut.

4. Calculation of Adjusted Stock of Level 2B Non-RMBS Assets

The items which result in adjustments to the stock of Level 2B non-RMBS Assets are as follows:

- a. Market value of Level 2B non-RMBS assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- b. Market value of Level 2B non-RMBS assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA, where the counterparties are domestic sovereigns, MDBs or domestic PSEs with a 20% risk weight
- c. Market value of Level 2B non-RMBS assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA, where the counterparties are not domestic sovereigns, MDBs or domestic PSEs with a 20% risk weight
- d. Market value of Level 2B non-RMBS assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualifies as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- e. Add market value of Level 2B non-RMBS assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- f. Market value of Level 2B non-RMBS assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA
- g. Adjustments to stock of level 2B RMBS assets is calculated based on the above mentioned items as follows:

$$\text{Adjustments to Stock of Level 2B non RMBS Assets} = A + B + C - D + E - F$$

Adjusted amount of level 2B non-RMBS assets is calculated as per the following formula:

$$\begin{aligned} \text{Adjusted Level 2B non RMBS Assets} \\ &= (\text{Pre Haircut Stock of Level 2B non RMBS Assets} \\ &+ \text{Adjustments to Stock of Level 2B non RMBS Assets}) \\ &\times \text{Haircut} \end{aligned}$$

Pre Haircut Stock of Level 2B Non RMBS Assets = Stock of Level 2B Non RMBS Assets before applying the haircut.

5. Calculation of Adjusted Stock of Level 2B Assets

Adjusted amount of level 2B assets is calculated as per the following formula:

$$\begin{aligned} \text{Adjusted Level 2B Assets} \\ &= \text{Adjusted Level 2B RMBS Assets} \\ &+ \text{Adjusted Level 2B non RMBS Assets} \end{aligned}$$

6. Adjustment to Stock of HQLA Due to Cap on Level 2B Assets

Adjustment to Stock of HQLA due to cap on Level 2B assets is calculated as follows:

$$\begin{aligned}
 & \text{Adjustment due to Cap on Level 2B Assets} \\
 & = \text{Maximum} \left[\left\{ \text{Adjusted Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \left(\frac{15}{85} \right) \right. \right. \\
 & \quad \left. \left. \times (\text{Adjusted Level 1 Assets} \right. \right. \\
 & \quad \left. \left. + \text{Adjusted Level 2A Assets}) \right\}, \left\{ \text{Adjusted Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \left(\frac{15}{60} \times \text{Adjusted Level 1 Assets} \right) \right\}, 0 \right]
 \end{aligned}$$

7. Adjustment to Stock of HQLA Due to Cap on Level 2 Assets

Adjustment to Stock of HQLA due to cap on Level 2 assets is calculated as follows:

$$\begin{aligned}
 & \text{Adjustment due to Cap on Level 2 Assets} \\
 & = \text{Maximum} \left[\left\{ \text{Adjusted Level 2A Assets} + \text{Adjusted Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \text{Adjustment due to Cap on Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \left(\frac{2}{3} \times \text{Adjusted Level 1 Assets} \right) \right\}, 0 \right]
 \end{aligned}$$

12.2.2.4 Calculation of Net Cash Outflows (NCOF)

1. **Cash inflow computation:** Cash inflow is the sum of all the cash inflows that occur within the specified liquidity horizon and for all the accounts which are marked as *other assets and inflows from liabilities (arising from Forward Starting Transactions)*. This process is performed by the rule LRM - Cash Inflow Computation. The formula for calculating cash inflow is as follows:

$$\text{Cash inflow} = \sum_{i=1}^n \text{Cash inflow}_i$$

Where n= All the accounts which are marked as Other Assets and inflows from liabilities (arising from Forward Starting Transactions) and their cash flow date is less than the liquidity horizon.

2. **Cash outflow computation:** Cash outflow is the sum of all the cash outflows that occur within the specified liquidity horizon and for all the accounts which are marked as liabilities and outflows from assets (arising from Forward Starting Transactions). This process is performed by the Rule LRM - Cash Outflow Computation. The formula for calculating Cash Outflow is as follows:

$$\text{Cash Outflow} = \sum_{i=1}^n \text{Cash Outflow}_i$$

Where n= All the accounts which are marked as liabilities and outflows from assets (arising from Forward Starting Transactions) and their cash flow date is less than the liquidity horizon.

3. **Net cash outflow computation (NCOF):** Net Cash Outflow is derived from cash inflow and cash outflow. This is performed at the granularity of legal entity and currency. This process is performed by the Rule LRM - NCOF Computation.

Net cash out flow is defined as total expected cash outflow minus total expected inflows in the specified horizon. Total expected cash outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to Run off or be drawn down. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in under the scenario up to an aggregate cap of 75% of total expected cash outflows.

Note:

1. In Contractual Run, Total expected cash flows are the total outstanding balances of various categories or types of liabilities and off-balance sheet commitments. This value is not multiplied by the Run off rates specified by Basel.
2. In Business as usual or stress Run, the total expected cash flows, which are the total outstanding balances of various categories or types of liabilities and off-balance sheet commitment, are multiplied by the Run off rates specified by Basel.
3. If an asset is included as part of the *stock of HQLA* (that is, the numerator), the associated cash inflows cannot also be counted as cash inflows (that is, part of the denominator)

The formula for calculating net cash outflow is as follows:

$$NCOF = Cash\ Outflow - Minimum((Cash\ Inflow), (75\% \ of\ Cash\ Outflow))$$

12.2.2.5 Calculation of Liquidity Coverage Ratio

Liquidity coverage ratio is calculated at legal entity and Currency Granularity and stored in the database. This is performed by the Rule **LRM - Liquidity Coverage Ratio Computation**.

The formula for calculating liquidity coverage ratio is as follows:

$$Liquidity\ Coverage\ Ratio = \frac{Stock\ of\ High\ Quality\ Liquid\ Asset\ (SHQLA)}{Net\ Cash\ Outflow\ (NCOF)}$$

The formula to calculate LCR at legal entity level only is as follows:

Liquidity Coverage Ratio

$$= \frac{\sum_{i=1}^n \text{Stock of High Quality Liquid Asset (SHQLA)}_i}{\sum_{i=1}^n \text{Net Cash Outflow (NCOF)}_i}$$

where n = Total Number of distinct Currencies available in the Legal Entity

12.2.2.6 Alternative Liquidity Approaches

Some jurisdictions may have insufficient supply of Level 1 assets or Level 1 and Level 2 assets. In such a case, banks may not be able to purchase adequate HQLA in order to cover their net cash outflows. In case of such shortfall in HQLA, alternative liquidity approaches may be applied for the given jurisdiction in order to meet the minimum level of LCR. These alternative treatments include:

- Option 1 – Contractual committed liquidity facilities from the relevant central bank, with a fee
- Option 2 – Foreign currency HQLA to cover domestic currency liquidity needs
- Option 3 – Additional use of Level 2 assets with a higher haircut

An assessment is conducted by each jurisdiction to determine if each of the alternative liquidity approaches may be adopted by banks within that jurisdiction. Additionally, the maximum usage of the options is specified by regulators for each jurisdiction. This can be specified individually, at the level of each alternative approach, or collectively for all approaches.

In the current liquidity risk application this is captured at “Legal Entity” level.

Legal Entity	Level 1 Asset (Required HQLA)	Alternative approaches
LE 1	25%	75%
LE 2	40%	60%

Table 75 Level 1 HQLA Limit

The Level 1(HQLA) limit is specified for each legal entity and they have to adhere to it. Alternative liquidity approaches can only be used when they meet the Level 1 (HQLA) requirement.

1. Option 1 – Contractual committed liquidity facilities from the relevant central bank, with a fee

Option 1 increases the Stock of HQLA. For currencies in which sufficient HQLA is not available, the bank can add the amount to Stock of HQLA from Product Type Contractual Committed Liquidity Facilities from the Central Bank. This computation happens in LRM LCR Option1 Computation Process.

Data is first inserted in the table with Option Type as Option 1 and then a set of Rules are executed which updates the Option 1 Amount, the Stock of HQLA, and then recalculates the Liquidity Coverage Ratio post Options 1.

Banks should adhere to the following criteria in order to able to adopt option 1. They should have drawdown facility that is, should be receiving lines of credit by central bank on committed liquidity facilities. This should fulfill the following conditions:

- a) Should not be regular central bank standing arrangements that is, these are contractual arrangements between the central bank and commercial bank.
- b) These contractual arrangements mature outside the 30 day LCR Horizon.
- c) These arrangements are irrevocable prior to maturity and involve no ex-post credit decision by the central bank.
- d) These facilities are charged for a fee irrespective of the amount, if any, drawn down and the fee is set so that banks which claim the facility line to meet the LCR, and banks which do not, have similar financial incentives to reduce their exposure to liquidity risk.

Note: The type of collateral that is acceptable for securing these facilities is indicated by the respective central bank.

2. Option 2– Foreign currency HQLA to cover domestic currency liquidity needs

Option 2 increases the Stock of HQLA. For currencies in which sufficient HQLA is not available, the bank can add the amount to Stock of HQLA from foreign currency. Stock of HQLA from foreign currencies can only be added if there is extra Stock of HQLA available in foreign currency. This computation happens in LRM LCR Option2 Computation Process.

Data is first inserted in the table with Option Type as Option 2 and then a set of Rules are executed which brings in the extra Stock of HQLA from foreign Currency and adds it to the Stock of HQLA of the currency where the funds are insufficient. Once the Option amount and New Stock of HQLA is updated then Liquidity Coverage Ratio is recalculated.

This option allows HQLA in foreign currencies to be used to cover the net cash outflows in domestic currency. These currencies are classified as Major currencies and Other Currencies.

In order to account for the foreign exchange risk, banks are expected to apply a minimum haircut of 8% on the major currencies and higher on other currencies.

Note: Other Currencies haircut is considered at a minimum of 10%.

Haircuts are specified against each currency pair. Example: Haircut for USD and GBP 8%, Haircut for GBP and AUD 10% and so on. These haircuts are applicable only to that portion of the foreign currency HQLA that is in excess of a threshold specified by each regulator.

For every Legal Entity there would be a threshold for applying haircuts which is calculated by the following formula:

$$\frac{\text{Max Amt of Total Net Cash Outflows in Domestic Ccy to be covered by Foreign Ccy HQLA}}{\text{Amt of Total Net Cash Outflows in the Domestic Ccy}}$$

Where,

Domestic Ccy = Currency in which the HQLA is insufficient to cover net cash outflows

This threshold cannot exceed 25% for a given Legal Entity. The sequence of the currencies is specified by the concerned bank.

Note: While applying this threshold the first foreign currency is considered and then the threshold is applied.

3. Option 3– Additional use of Level 2 assets with a higher haircut

Option 3 increases the Stock of HQLA for currencies in which sufficient HQLA is not available, banks can take the additional amount from Asset 2 if available. This computation happens in **LRM LCR Option3**

Computation process.

Data is first inserted in the table with Option Type as Option 3 and then a set of Rules are executed which updates the Option 3 Amount, Stock of HQLA and then recalculates the Liquidity Coverage Ratio post Options 3.

This option applies when Level 1 assets are insufficient to cover the liquidity needs of a bank in domestic currency, but there are sufficient level 2A assets. The level 2A assets used as part of this option must have a quality similar to that of Level 1 assets. In order to achieve this there are additional criteria imposed like:

- Such Assets must have a minimum credit rating of AA or AA+ and
- Additional level 2A assets used will be subject to a minimum of 20% haircut which is 5% more than that applied to the level 2A assets falling within the 40% cap.

Note:

- a. Level 2B assets are not considered for this purpose
- b. 15% Cap on level 2B assets remains unchanged regardless of additional level 2A assets used as part of this option
- c. The Haircut can be different across jurisdictions and also across banks within a single jurisdiction depending on the level of usage.

An Example to calculate option 3 amount: Say suppose the below mentioned information is available.

Legal Entity	Account	Level 2A Flag	Level2A Assets Used	Level2A Assets Unused	Credit Rating	Qualified Option 3 Asset	Haircut
LE1	ACCT1	Y	200000	500000	AA+	Y	25%
LE1	ACCT1	Y	0	250000	B	N	

Table 76 Example to calculate Option 3 HQLA Amount

Only ACCT1 fulfills additional criteria that is,

- a) Credit rating of AA+ so we have to consider the amount which is unused and apply a higher haircut in this case its 25% .

So the option 3 amount will be calculated as Level 2A assets Unused *(1-haircut) that is, $500000 * (1 - .25) = 375000$.

Note: Different processes have been created in the Run for all three Options. You are allowed to specify the sequence in which these options are to be executed. The sequence of execution is available as part of the Run.

12.2.2.7 Deposit Stability Identification

I. Deposit Insurance Allocation

All deposit accounts are classified as having one of the following insurance coverage statuses:

- Fully Insured
- Partially Insured
- Uninsured

Insurance limit is captured as an absolute amount for all accounts classified as fully insured or partially insured. "Fully insured" means that 100% of the deposit amount, up to the deposit insurance limit, is covered by an effective deposit insurance scheme. For partially insured, a limit coverage % is specified. Uninsured does not have any coverage.

The insured and uninsured balance in each account is determined based on the following steps:

- a. You should determine the deposits covered under the Insurance Scheme.
Example: Certificate of Deposits, Savings account, money market deposit account (MMDA), Checking account.
- b. An account will be covered by only one Insurance Scheme.
- c. You should determine the number of customers or beneficiaries holding accounts with the covered products.
- d. You should assign the Insurance Coverage Sequence for Products. This indicates the sequence in which the products will be given preference in the calculations.
- e. You should determine the ownership category and allocation process for the deposits.
- f. You should identify the Coverage limit and limit (%) at the Insurance Scheme and Product level.
- g. You should determine the Insurance Currency eligible to be covered under the Insurance scheme. Example: USD, INR, AUD
- h. You should finally assign the End Of Period (EOP) balance to the first account holder or divide the EOP balance of each account equally based on the number of account holders and assign the amount to each customer as per the co-owner account insurance coverage method selected.

II. Ownership Categories

For the purpose of insurance coverage, the ownership category is identified. The ownership categories covered by BIS are like single accounts, joint accounts, and partnership accounts, and so on based on the jurisdiction of the insurer and are provided by the concerned bank.

III. Established Relationship Identification

a. Transactional Accounts

Current accounts are considered transactional accounts if they are used for regular transactions such as salaries being deposited in these accounts.

b. Established Relationship Accounts

If two or more non-transactional accounts have the same customer ID then they are marked as accounts with relationships. Examples for non-transactional accounts are loans, deposits and so on.

IV. Deposit Stability Calculation

a. Stable Deposits

Basel III deposit stability is applicable only for retail deposits and unsecured wholesale funding. Stable deposits, which usually receive a Run-off factor of 5%, are the amount of the deposits that are fully insured by an effective deposit insurance scheme or by a public guarantee that provides equivalent protection and where:

- The depositors have other established relationships with the bank that make deposit withdrawal highly unlikely;
- Or,
- The deposits are in transactional accounts (for example, accounts where salaries are automatically deposited).

b. Stable Deposits Meeting Additional Insurance Criteria

A new deposit stability classification “stable deposits meeting additional insurance criteria” is supported. All “stable” deposits identified as per the criteria specified in point 1 above are classified as meeting additional insurance criteria if the insurance scheme under which they are covered satisfies the following conditions. A Run-off factor of 3% is applicable to such deposits.

- Is based on a system of prefunding via the periodic collection of levies on banks with insured deposits
- Has adequate means of ensuring ready access to additional funding in the event of a large call on its reserves, for example, an explicit and legally binding guarantee from the government, or a standing authority to borrow from the government
- Access to insured deposits is available to depositors in a short period of time once the deposit insurance scheme is triggered

Stability	System of Prefunding	Ready Access to Additional Funding	Access to Insured Deposits	Highly Stable
Y	Y	Y	Y	Y
Y	Y	N	Y	N
Y	N	Y	Y	N
Y	Y	Y	N	N

Table 77 Stable Deposits Meeting Additional Insurance Criteria

Note: All the three mentioned conditions will be download from the bank

c. Less Stable Deposits

All insured and uninsured deposit or funding balances that do not meet the stable deposits criteria specified earlier are classified as less stable deposits: This includes:

- Insured balance of deposits meeting stable deposits criteria but denominated in foreign currencies
- Uninsured balance of deposits meeting stable deposits criteria
- Insured and uninsured balance of deposits whose insurance coverage status is Partially Insured
- Deposit balance where the insurance coverage status is Uninsured

d. High Run-off Deposits

Three additional stability criteria are supported for uninsured deposit balances This is optional for a Bank.

- High Run-off Deposits Category 1
- High Run-off Deposits Category 2
- High Run-off Deposits Category 3

This classification is dependent on the aggregated funding received from each customer. The steps involved are as follows:

- Identify all accounts of a given customer which are liabilities of the bank
- Calculate the aggregated funding from a customer as follows:

$$\text{Aggregated Funding}_{\text{Customer}} = \sum_{i=1}^n \text{Uninsured Balance}_{\text{Account.Customer}}$$

Where, I = Accounts of a given customer which are liabilities of the bank

I. Assign the uninsured balance to one of the high Run-off categories as follows:

- If aggregated funding from a customer \leq EUR 500,000, the uninsured amount from each relevant account is assigned to High Run-off Deposits Category 1
- If aggregated funding from a customer $>$ EUR 500,000 $<$ EUR 1,000,000, the uninsured amount from each relevant account is classified as High Run-off Deposits Category 2
- If aggregated funding from a customer \geq EUR 1,000,000, the uninsured amount from each relevant account is classified as High Run-off Deposits Category 3

Customer	Account	Insured Balance (Account)	Uninsured Balance (Account)
Customer 1	Account 1	450000	550000
Customer 2	Account 2	1000000	200000
Customer 2	Account 3	800000	300000

Deposits	Uninsured Amount
High Run-off Deposits Category 1	500,000 (200000 + 300000)
High Run-off Deposits Category 2	550,000

Note: The High Run-off category is defined at Customer level. The Uninsured balance of each account falling under a customer will be directly moved to High-Run off category 1, 2, 3.

12.2.2.8 Other Calculations

1. Operational Expenses

Expected expenses which are operational in nature, such as rents, salaries and so on, are not included as part of the net cash outflows. Also, the means held to pay these expected operational expenses are not included as part of the stock of HQLA.

2. Operational Relationship Identification

An account is classified as either operational account or non-operational account. An account is classified as an operational account if the Operational Balance is available and this is taken as a download.

12.2.2.9 Consolidation

All inter-company transactions are eliminated that is, not considered while calculating the liquidity gap, ratios and other metrics at a consolidated level. Inter-company transactions include transactions upstream, downstream and lateral. In consolidation, the consolidation entity selected as part of the Run is considered the parent. The elimination is restricted to the transactions within the organization structure of the consolidated entity. When a Run is defined with consolidation type as consolidated, the

legal entity selected as part of this Run eliminates all the internal counterparties. Internal counterparties are customers which belong to the same organization structure. All the external counterparties are considered as part of the Run.

For instance a bank's organization structure is as follows:

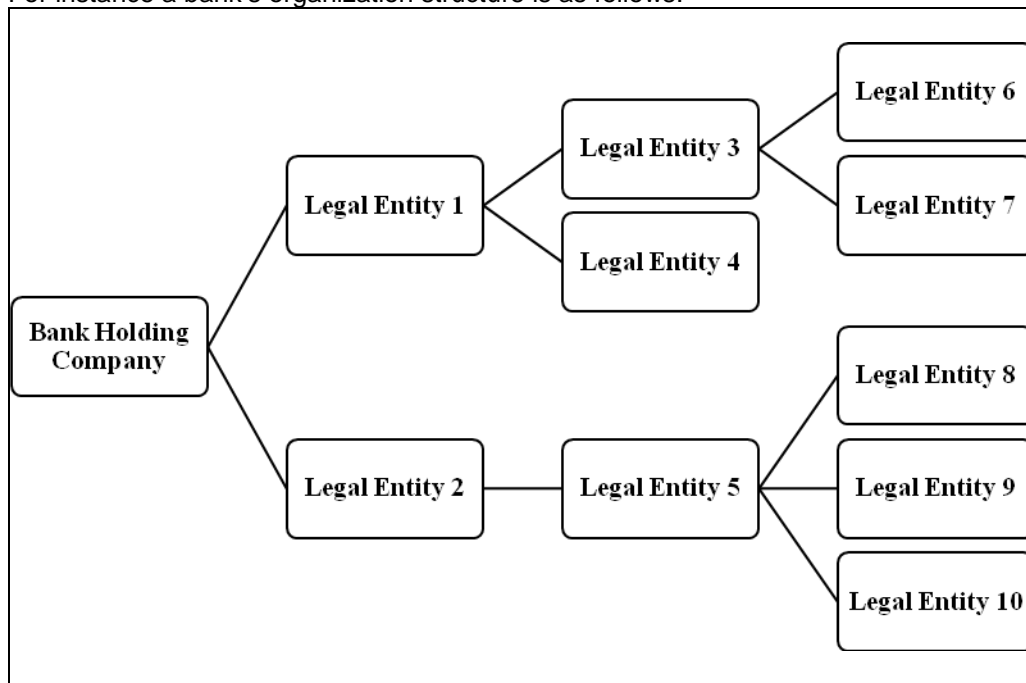


Figure 58 Organization Structure

If the consolidation is done at the level of Legal Entity 3, any transactions where the legal entity in question and its counterparty or customer belong to its organization structure are eliminated. In this example, any transactions where both the legal entity and its counterparty or customer are legal entities 3, 6 and 7 are excluded as they are carried out with internal counterparties. Transactions with all other entities in the bank holding company structure are included as they are considered external counterparties for the purpose of this consolidation.

Sometimes excess liquidity available in a particular legal entity cannot be transferred to the parent entity due to regulatory, tax or other reasons. Such restrictions imply that the restricted assets will be available only to the extent required to cover the liquidity needs of that legal entity. Any restricted liquidity in excess of this will not be available for the parent company's use. The application expects the restriction to be provided for HQLA assets at an account level and considers this information for the purpose of consolidation.

The application consolidates the HQLA and cash flows of each entity in a step-by-step basis till the consolidation entity level. The process of computing the consolidated LCR in accordance with the BIS approach is detailed below:

- i. Calculate the net cash outflow based on the BIS LCR approach that is, based on the cumulative cash flows on the LCR horizon end date, that is, 30th day, eliminating inter-company

transactions at the level of the consolidated subsidiary.

- ii. Consolidate post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow that is, to the extent required to satisfy the BIS LCR requirements of that subsidiary as part of the covered parent company's HQLA.
- iii. Consolidate the entire amount of post-haircut unrestricted HQLA held at the consolidated subsidiary as part of the covered parent company's HQLA.
- iv. Consolidate all cash inflows and outflows which are part of the net cash flow calculation.

12.2.3 Foreign Currency Liquidity Coverage Ratio Calculation

Liquidity coverage ratio is also calculated at the level of each significant currency in order to identify potential currency mismatches, which is known as Foreign Currency Liquidity Coverage Ratio.

12.2.4 Computation of Funding Concentrations

Wholesale funding from significant sources is calculated in order to monitor the liquidity risk arising from the withdrawal of such funds. Funding concentration is calculated on the basis of following dimensions:

- Concentration by Significant Counterparties
- Concentration by Significant Products
- Concentration by Significant Currencies

Ratio of each of the cash flow in the aggregate table is first calculated with respect to the concentration at legal entity level. Any counterparty or product is termed as significant if the sum of its concentration is greater than 1%. A currency is termed as a significant currency if the sum of its concentration is greater than 5% of the currency.

All the Concentration specified below are calculated at the following time horizons

- Period is < 1 Month
- Period is between 1 to 3 Months
- Period is between 3 to 6 Months
- Period is between 6 to 12 Months
- Period is > 12 Months

12.2.4.1 Funding Concentration by Significant Counterparties

Funding Concentration by significant Counterparties is to be calculated at Legal Entity or Entities and Counterparty Level.

For Solo Execution for each of the Legal Entities selected and for each of the above stated time horizons, Significant Counterparties are calculated; whereas for Consolidated Execution, Significant Counterparties are calculated at the Parent Level Legal Entity and for each of the above stated time horizons.

A Counterparty is stated as Significant if Sum of the Cash flows of that counterparty for a given Legal Entity is greater than or equal to 1% of the Sum of the Cash flows of the given Legal Entity.

Cash flows of all accounts are not considered, for this purpose Cash flows of Accounts which are having Product Type as Liabilities are the only accounts which are considered.

Funding concentration for significant counterparties is calculated as follows:

$$\text{Concentration}_{\text{Significant Counterparty}} = \frac{\text{Funding Liabilities}_{\text{Significant Counterparty}}}{\text{Total Liabilities of Legal Entity}}$$

12.2.4.2 Funding Concentration by Significant Products

Funding Concentration by significant Products is calculated at Legal Entity or Entities and Product Level.

For Solo Execution for each of the Legal Entities selected and for each of the above stated time horizons, Significant Products are calculated; whereas for Consolidated Execution, Significant Products are calculated at the Parent Level Legal Entity and for each of the above stated time horizons.

A Product is stated as Significant if Sum of the Cash flows of that Product for a given Legal Entity is greater than or equal to 1% of the Sum of the Cash flows of the given Legal Entity.

Cash flows of all accounts are not considered, Accounts which are having Product Type as Liabilities are the only accounts which are considered.

Funding concentration is calculated for significant product as follows:

$$\text{Concentration}_{\text{Significant Product}} = \frac{\text{Funding Liabilities}_{\text{Significant Product}}}{\text{Total Liabilities of Legal Entity}}$$

12.2.4.3 Funding Concentration by Significant Currencies

Funding Concentration by significant Currencies is calculated at Legal Entity or Entities and Currency Level.

For Solo Execution for each of the Legal Entities selected and for each of the above stated time horizons, Significant Currencies are calculated; whereas for Consolidated Execution, Significant Currencies are calculated at the Parent Level Legal Entity and for each of the above stated time horizons.

A Currency is stated as Significant if Sum of the Cash flows of that Currency for a given Legal Entity is greater than or equal to 5% of the Sum of the Cash flows of the given Legal Entity.

Cash flows of all accounts are not considered, Accounts which are having Product Type as Liabilities are the only accounts which are considered.

Funding concentration is calculated for significant product as follows:

$$\text{Concentration}_{\text{Significant Currency}} = \frac{\text{Funding Liabilities}_{\text{Significant Currency}}}{\text{Total Liabilities of Legal Entity}}$$

12.2.5 BIS Basel III Business Assumptions for LCR

12.2.5.1 Cash outflows

1. Retail Deposit Run off
 - a. Stable Deposits Run off
 - Retail stable deposits which do not satisfy additional insurance criteria receive 5% Run off
 - Retail Stable Deposits which satisfy the additional insurance criteria receive 3% Run off.
 - b. Less stable Deposit Run off
 - Less stable deposits receive 10% Run off.
2. Unsecured wholesale Run off
 - a. Unsecured wholesale funding provided by small business customers:
 - Of these, stable deposits which satisfy additional insurance criteria receive 3% Run off
 - Of these, stable deposits which do not satisfy additional insurance criteria receive 5% Run off
 - Of these, less stable deposits receive 10% Run off
 - b. Operational deposits generated by clearing, custody and cash management activities:
 - Of these, stable deposits which satisfy additional insurance criteria receive 3% Run off
 - Of these, stable deposits which do not satisfy additional insurance criteria receive 5% Run off
 - Of these, less stable deposits would receive 25% Run off
 - c. Treatment of deposits in institutional networks of cooperative banks:
 - Of these, non-correspondent Bank activities receive 25% Run off
 - Of these, correspondent Bank activities receive 100% Run off
 - d. Unsecured wholesale funding provided by non-financial corporate and sovereign central banks, multilateral development banks, and Public Sector Entities (PSE):
 - Of these, which are covered by deposit insurance scheme receive 20% Run off
 - Of these, which are not covered by deposit insurance scheme receive 40% Run off
 - e. Unsecured wholesale funding provided by other legal entity customers receives 100% Run off.

3. Secured funding Run off
 - a. Backed by Level 1 assets or with central banks receive 0% Run off
 - b. Backed by Level 2A assets receive 15% Run off
 - c. Secured funding transactions with domestic sovereign, PSEs or multilateral development banks that are not backed by Level 1 or 2A assets. PSEs that receive this treatment are limited to those that have a risk weight of 20% or lower receive 25% Run off
 - d. Backed by RMBS eligible for inclusion in Level 2B receive 25% Run off
 - e. All others receive 100% Run off
4. Additional Requirements:
 - a. Derivative Cash Outflows: 100% of the net cash outflows are considered for calculation.
 - b. Increased Liquidity Needs
 - Increased Liquidity Needs due to Downgrade Triggers embedded in financing transactions, derivatives and other contracts: 100% of this additional collateral or cash outflow is posted for any downgrade up to and including a 3-notch downgrade of the bank's long-term credit rating.
 - Increased liquidity needs related to the potential for valuation changes on posted collateral securing derivative and other transactions.
 - Increased liquidity needs related to excess non-segregated collateral held by the bank that could contractually be called at any time by the counterparty: 100% of the excess collateral.
 - Increased liquidity needs related to contractually required collateral on transactions for which the counterparty has not yet demanded the collateral be posted
 - Increased liquidity needs related to contracts that allow collateral substitution to non-HQLA assets
 - Increased liquidity needs related to market valuation changes on derivative or other transactions
 - c. Loss of funding
 - Loss of funding on asset-backed securities, covered bonds and other structured financing instruments
 - Loss of funding on asset-backed commercial paper, conduits, securities investment vehicles and other such financing facilities.
 - d. Drawdown of Committed Credit and Liquidity Facilities
 - Committed credit and liquidity facilities to retail and small business customers: 5% drawdown of the undrawn portion of these facilities.
 - Committed credit facilities to non-financial corporate, sovereign and central banks, PSEs and multilateral development banks: 10% drawdown of the undrawn portion of these facilities.
 - Committed liquidity facilities to non-financial corporate, sovereign and central banks, PSEs and multilateral development banks: 30% drawdown of the undrawn portion of these facilities.

- Committed credit and liquidity facilities extended to banks subject to prudential supervision: 40% drawdown of the undrawn portion of these facilities.
 - Committed credit facilities to other financial institutions including securities firms, insurance companies, fiduciaries and beneficiaries - 40% drawdown of the undrawn portion of these credit facilities.
 - Committed liquidity facilities to other financial institutions including securities firms, insurance companies, fiduciaries, and beneficiaries: 100% drawdown of the undrawn portion of these liquidity facilities.
 - Committed credit and liquidity facilities to other legal entities (including SPEs), conduits and special purpose vehicles, and other entities not included in the prior categories): 100% drawdown of the undrawn portion of these facilities.
- e. Contractual Obligations to Extend Funds in 30-day period: Other contractual obligations to extend funds to financial institutions retail, small business customers, non-financials and other clients
- f. Other contingent funding obligations which include
- Draw down on Unconditionally revocable "uncommitted" credit and liquidity facilities
 - Guarantees and letters of credit unrelated to trade finance obligations
 - Non contractual obligations where customer short positions are covered by other customers' collateral

12.2.5.2 Cash Inflows

1. Roll over reverse repo and other secured lending or securities borrowing transactions maturing ≤ 30 days
 - a. backed by Level 1 assets, of which collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions: 100% roll over
 - b. backed by Level 2A assets, of which collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions: 85% roll over
 - c. backed by Level 2B RMBS assets, of which collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions: 75% roll over
 - d. backed by Level 2B non-RMBS assets, of which collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions: 50% roll over
 - e. backed by other assets, of which collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions: 100% roll over
2. Committed facilities: 0% inflow from committed credit and liquidity facilities that the bank holds with other institutions.
3. Growth or new business from the inflows from other counterparties
 - a. Contractual inflows due in 30 days from fully performing loans extended to retail customers: extend loans at the rate of 50% of contractual inflows.
 - b. Contractual inflows due in 30 days from fully performing loans extended to small business customers: extend loans at the rate of 50% of contractual inflows.
 - c. Contractual inflows due in 30 days from fully performing loans extended to non-financial

corporates: extend loans at the rate of 50% of contractual inflows.

4. Other inflows
 - a. No inflows from operational deposits at other financial institutions.
 - b. Derivatives cash inflows: the sum of all net cash inflows receive a 100% inflow factor.

12.3 BIS Basel III Net Stable Funding Ratio Calculation

12.3.1 Inputs

The inputs for Net Stable Funding Ratio are Available amount of Stable Funding and Required amount of Stable Funding.

12.3.2 Net Stable Funding Ratio Calculation Process Flow

The procedure to calculate Net Stable Funding Ratio is as follows:

1. Available amount of stable funding computation
2. Required amount of stable funding computation
3. Net Stable funding ratio computation

12.3.2.1 Available amount of stable funding computation

This is calculated and stored at legal entity and currency granularity. This process is performed by a Table to Table (T2T) transformation in the Liquidity Coverage Ratio Run, LRM LCR Data Population. The formula for calculating Available Amount of Stable Funding is as follows:

$$\text{Available Amount of Stable Funding} = \sum_{i=1}^n \text{Liability}_i * \text{Factor}_i$$

where n = All Liability Products and Factors is the percentage allocated in

Available Stable Funding Factors Business Assumption

12.3.2.2 Required amount of stable funding computation

This is calculated and stored at legal entity and currency granularity. This process is done by T2T transformation in LCR Run, namely LRM LCR Data Population. The formula which is used for calculating the Required Amount of Stable Funding is as follows:

Required Amount of Stable Funding

$$= \left(\sum_{i=1}^n \text{Asset}_i * \text{Factor}_i \right) + \left(\sum_{i=1}^m \text{Off Balance Sheet}_i * \text{Factor}_i \right)$$

where n = All Asset Product

where m = All Off Balance Sheet Products and

factor is the percentage allocated in

Required Stable Funding Factors Business Assumption

12.3.2.3 Net Stable Funding Ratio (NSFR) computation

This is calculated at legal entity and currency granularity. This is done by the Rule LRM - Net Stable Funding Ratio Computation. The formula which is used for calculating Net Stable Funding Ratio is as follows:

$$\text{Net Stable Funding Ratio} = \frac{\text{Available Amount of Stable Funding}}{\text{Required Amount of Stable Funding}}$$

13 US Federal Reserve Liquidity Coverage Ratio Calculation

13.1 Overview of US Federal Reserve Liquidity Coverage Ratio Guidelines

US Federal Reserve issued a notice of proposed rule (NPR), Liquidity Coverage Ratio: Liquidity Risk Measurement, Standards, and Monitoring, in November 2013 covering the requirements for the computation of Liquidity Coverage Ratio for US covered companies. These guidelines are along the lines of those issued by BIS, with some deviations based on the conditions under which US banks operate. US Federal Reserve has prescribed 2 approaches for computing the Liquidity Coverage Ratio, each of which is applicable to banks of different sizes.

1. Liquidity Coverage Ratio

The Liquidity Coverage Ratio is applicable to larger banks and requires the stock of HQLA to be sufficient to cover peak net cash outflows over a liquidity horizon of 30 days. The regulator provides specific guidelines on the inclusion of assets into the stock of HQLA and provides the relevant haircuts. The computation of the denominator is based on a peak net cash flow approach based on inflow and outflow rates specified by the regulator.

2. Modified Liquidity Coverage Ratio

A new approach, the modified LCR calculation, is prescribed by US Federal Reserve for smaller banks, which requires the stock of HQLA to be sufficient to cover net cash outflows over a liquidity horizon of 21 days. These banks are required to compute a less stringent LCR, because of their relatively small size and lower complexity. The inflow and outflow rates for such banks are 70% of those prescribed under the minimum LCR approach.

OFS LRM 8.0 supports both these approaches for computing Liquidity Coverage Ratio as prescribed by the US Federal Reserve in its NPR, Liquidity Coverage Ratio: Liquidity Risk Measurement, Standards, and Monitoring.

13.2 US Federal Reserve Liquidity Coverage Ratio Calculation

13.2.1 Inputs

Inputs required for Liquidity Coverage Ratio calculated by the LRM Application are as follows:

- Liquidity haircut, inflow percentage and outflow percentage of the respective business assumption are preconfigured. However, you can change them, if required.
- Liquidity Horizon is specified as the Run time parameter

13.2.2 Liquidity Coverage Ratio Calculation Process Flow

This section aims to explain the procedure of calculating the Liquidity Coverage Ratio (LCR).

The procedure for calculating Liquidity Coverage Ratio is as follows:

- Asset Level Identification
- Deposit Stability Identification

- Calculation of Stock of High Quality Liquid Asset (SHQLA)
- Determination of the Maturity of Cash Flows
- Calculation of Net Cash Outflows (NCOF)
- Calculation of Liquidity Coverage Ratio
- Consolidation as Per Minimum LCR Approach
- Other Calculations

The application supports an out-of-the-box US Federal Reserve LCR which has the regulatory scenario with associated HQLA haircuts, inflow and outflow rates pre-configured in the form of business assumptions.

13.2.2.1 Asset Level Identification

Assets classified as “available-for-sale” or “held-to-maturity” are included in the stock of HQLA provided they fulfill the following HQLA criteria:

- Are unencumbered
- Meet the operational HQLA requirements
- Are not client pool securities that are held in segregated accounts or cash received from a repurchase agreement on client pool securities held in a segregated account
- If consolidated, then the portion of assets required to cover the consolidated subsidiary's net cash outflow and an excess amount of assets having unrestricted transferability
- An asset received under a re-hypothecation right where the owner has a right to withdraw the asset anytime during the liquidity horizon without remuneration
- Assets held not to cover operational costs

Note:

- ‘Available-for-Sale Security’ is a security that is purchased with the intent of selling it before its maturity or selling it within a short time period if the security does not have a known maturity.
- ‘Held-to-Maturity Securities’ are securities that a bank intends to hold until maturity.

All assets, whether owned by the bank or received from counterparties as collateral, are classified as follows:

- Level 1 Assets
- Level 2A Assets
- Level 2B Assets
- Other Assets

Level 1, 2A and 2B assets are considered high quality liquid assets and can be included as part of the stock of HQLA provided they meet the HQLA eligibility criteria set out by the US Federal Reserve detailed above. Assets are classified as HQLA based on the qualifying criteria set by the US Federal Reserve as follows:

1. Level 1 Assets

The qualifying criteria for assets to be classified as level 1 assets is detailed below. Level 1 assets can be fully included as part of the stock of high quality liquid assets provided they meet the HQLA eligibility criteria.

a. Cash and Cash Equivalents

b. **Federal Reserve Bank Balances:** Balances held by the Federal Reserve banks include reserve balance requirements, excess balances and term deposits. Only excess balances and certain term deposits are included in the stock of level 1 assets. To be included in the stock, term deposits should be held pursuant to the terms and conditions that:

- explicitly and contractually permit such term deposits to be withdrawn upon demand prior to the expiration of the term

Or that,

- permit such term deposits to be pledged as collateral for term or automatically-renewing overnight advances from a Federal Reserve Bank

Reserve balance requirements are excluded from the stock as they have to be maintained with the Federal Reserve Bank at all times.

c. **Foreign Withdrawable Reserves:** Reserves held in foreign central banks which have no transferability restrictions are included.

d. **United States Government Securities:** Securities issued by or unconditionally guaranteed as to the timely payment of principal and interest by, the U.S Department of the Treasury, are included. Additionally, securities issued by any other US government agency and explicitly guaranteed by the US Government are included.

e. **Certain Sovereign and Multilateral Organization Securities:** Securities issued or guaranteed by a sovereign entity, a central bank, the Bank for International Settlements, the International Monetary Fund, the European Central Bank and European Community, or a multilateral development bank are included if the securities fulfill the following conditions:

- Are assigned a 0% risk weight
- Should be liquid and readily marketable
- Issued by an entity whose obligations have a proven record as a reliable source of liquidity in the repurchase or sales markets during stressed market conditions
- Not an obligation of a financial entity or its consolidated subsidiary

f. **Certain Foreign Sovereign Debt Securities:** Debt securities issued by a foreign sovereign entity with a non 0% risk weight if they fulfill the following conditions:

- Are liquid and readily marketable
- Are issued in the local currency of the foreign sovereign

The legal entity holds the securities to cover its cash outflows in that jurisdiction.

2. Level 2A Assets

The assets which are considered as Level 2A assets are as follows:

- a. Securities issued by or guaranteed by a US government sponsored entity (GSE) as they have been assigned a 20% risk weight.
- b. Securities issued by or guaranteed by a sovereign or multi-lateral development bank that is:
 - Not included in level 1 assets
 - Assigned a risk weight between 0% and 20%
 - Price has not decreased or haircut increased by > 10% during a 30-calendar day period of significant stress
 - Not an obligation of a financial entity or its consolidated subsidiary

Note:

The rule excludes covered bonds and securities issued by other PSE's to be included in the stock even though they are assigned a 20% risk weight.

3. Level 2B Assets

The assets which are considered as Level 2B assets are as follows:

- a. Publicly traded corporate debt securities that meet the following criteria:
 - Are considered investment grade in accordance with the definition provided in 12 CFR part 1
 - Price has not decreased or haircut increased by > 20% during a 30-calendar day period of significant stress
 - Not an obligation of a financial entity or its consolidated subsidiary
- b. Publicly traded common equities that meet the following criteria:
 - Included in the S&P 500 Index or an equivalent index in a foreign jurisdiction
 - Issued in US dollars or in foreign currency in order to cover its cash outflows in that jurisdiction
 - Price has not decreased or haircut increased by > 40% during a 30-calendar day period of significant stress
 - Not an obligation of a financial entity or its consolidated subsidiary
 - If held by a depository institution, such equity was not obtained under a debt previously contracted (DPC)
 - If held by a consolidated subsidiary, then to the extent of the outflows of the subsidiary.

13.2.2.2 Calculation of Stock of High Quality Liquid Asset (SHQLA)

All unencumbered assets classified as Level 1, 2B or 2B which meet the HQLA eligibility criteria are included in the stock of HQLA. The formula for calculating SHQLA is as follows:

$$\text{Stock of HQLA} = \{ \text{Post - Haircut Stock of (Level 1 Assets + Level 2A Assets + Level 2B Assets)} \} \\ - \text{Maximum} \{ \text{Unadjusted Excess HQLA; Adjusted Excess HQLA} \}$$

Note: All calculations are based on the fair value of assets.

1. **Calculation of Unadjusted Excess HQLA:** US Federal Reserve on Liquidity Coverage Ratio requires banks to calculate the excess HQLA, due to cap on level 2 assets, both before and after the unwinding of certain transactions. The unadjusted excess HQLA is the cap calculated before unwinding transactions, that is, prior to applying adjustments. It is calculated based on the following formula:

$$\text{Unadjusted Excess HQLA} = \text{Level 2 Cap Excess Amount} + \text{Level 2B Cap Excess Amount}$$

- a. **Calculation of Level 2 Cap Excess Amount:** The formula for calculating level 2 cap excess amount is as follows:

$$\text{Unadjusted Excess HQLA} = \text{Level 2 Cap Excess Amount} + \text{Level 2B Cap Excess Amount}$$

- b. **Calculation of Level 2B Cap Excess Amount:** The formula for calculating level 2 cap excess amount is as follows:

Level 2B Cap Excess Amount

$$\begin{aligned} &= \text{Maximum}[\text{Post} - \text{Haircut Stock of Level 2B Assets} \\ &\quad - \text{Level 2 Cap Excess Amount} \\ &\quad - \{0.1765 \times \text{Post} - \text{Haircut Stock of (Level 1 + Level 2A Assets)}\}; 0] \end{aligned}$$

2. **Calculation of Adjusted Excess HQLA:** The adjusted excess HQLA is the cap calculated after unwinding transactions that is, after applying the adjustments. It is calculated based on the following formula:

$$\text{Unadjusted Excess HQLA} = \text{Adjusted Level 2 Cap Excess Amount} + \text{Adjusted Level 2B Cap Excess Amount}$$

- a. **Calculation of Adjustments to Stock of HQLA**

All transactions secured by eligible HQLA or HQLA are eligible if it was not used to secure that particular transaction are unwound and the associated values are either added to or deducted from the stock based on the asset level to compute the adjusted stock. The procedure is detailed below:

- I. **Calculation of Adjusted Stock of Level 1 Assets:** The items which result in adjustments to the stock of Level 1 assets are as follows:
 - Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 1 assets which would otherwise qualify as HQLA
 - Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 2A assets which would otherwise qualify as HQLA

- Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, conducted with the bank's domestic central bank, backed by Level 2B assets which would otherwise qualify as HQLA
- Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 1 assets which would otherwise qualify as HQLA
- Amount received (prior to applying Run-offs) from secured funding or repo transactions that mature within LCR horizon, not conducted with the bank's domestic central bank, backed by Level 2A assets which would otherwise qualify as HQLA
- Market value of Level 1 assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 1 assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 1 assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 2A assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- Amount given (prior to applying Run-offs) in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, backed by Level 2B assets which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- Market value of Level 1 assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualify as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions

- Market value of Level 1 assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 1 assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA

Adjustments to stock of level 1 assets are calculated based on the above mentioned items as follows:

$$\begin{aligned} &\text{Adjustments to Stock of Level 1 Assets} \\ &= -A - B - C - D - E + F + G + H + I + J + K - L + M \end{aligned}$$

Adjusted Amount of Level 1 Assets is calculated as per the following formula:

$$\begin{aligned} &\text{Adjusted Level 1 Assets} \\ &= \text{Maximum}[(\text{Post Haircut Stock of Level 1 Assets} \\ &+ \text{Adjustments to Stock of Level 1 Assets}), 0] \end{aligned}$$

II. Calculation of Adjusted Stock of Level 2A Assets: The items which result in adjustments to the stock of Level 2A assets are as follows:

- Market value of Level 2A assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 2A assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 2A assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualifies as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- Market value of Level 2A assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 2A assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA
- Adjustments to stock of level 2A assets is calculated based on the above mentioned items as follows:

$$\text{Adjustments to Stock of Level 2A Assets} = A + B - C + D - E$$

Adjusted Amount of Level 2A Assets is calculated as per the following formula:

$$\begin{aligned}
 &\text{Adjusted Level 2A Assets} \\
 &= (\text{Pre Haircut Stock of Level 2A Assets} \\
 &+ \text{Adjustments to Stock of Level 2A Assets}) \times \text{Haircut}
 \end{aligned}$$

Pre Haircut Stock of Level 2A Assets = Stock of Level 2A Assets before applying the haircut.

III. Calculation of Adjusted Stock of Level 2B Assets: The items which result in adjustments to the stock of Level 2B Assets are as follows:

- Market value of Level 2B assets provided as collateral for secured funding or repo transactions conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 2B assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA, where the counterparties are domestic sovereigns, MDBs or domestic PSEs with a 20% risk weight
- Market value of Level 2B assets provided as collateral for secured funding or repo transactions not conducted with the bank's domestic central bank that mature within LCR horizon, which would otherwise qualify as HQLA, where the counterparties are not domestic sovereigns, MDBs or domestic PSEs with a 20% risk weight
- Market value of Level 2B assets received as collateral in a reverse repo or security borrowing transactions with residual maturity \leq LCR horizon, which qualifies as HQLA, where the collateral is not re-used (that is, is not re-hypothecated) to cover the reporting institution's outright short positions
- Add market value of Level 2B assets lent (given) in a collateral swap transaction with residual maturity \leq LCR horizon, which would otherwise qualify as HQLA
- Market value of Level 2B assets borrowed (received) in a collateral swap transaction with residual maturity \leq LCR horizon, which qualifies as HQLA
- Adjustments to stock of level 2B assets is calculated based on the above mentioned items as follows:

$$\text{Adjustments to Stock of Level 2B Assets} = A + B + C - D + E - F$$

Adjusted amount of level 2B assets is calculated as per the following formula:

$$\begin{aligned}
 &\text{Adjusted Level 2B Assets} \\
 &= (\text{Pre Haircut Stock of Level 2B Assets} \\
 &+ \text{Adjustments to Stock of Level 2B Assets}) \times \text{Haircut}
 \end{aligned}$$

Pre Haircut Stock of Level 2B Assets = Stock of Level 2B Assets before applying the haircut.

- IV. Adjustment to Stock of HQLA Due to Cap on Level 2B Assets: Adjustment to Stock of HQLA due to cap on Level 2B assets is calculated as follows:

$$\begin{aligned}
 & \text{Adjustment due to Cap on Level 2B Assets} \\
 &= \text{Maximum} \left[\left\{ \text{Adjusted Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \left(\frac{15}{85} \right) \right. \right. \\
 & \quad \times (\text{Adjusted Level 1 Assets} \\
 & \quad \left. + \text{Adjusted Level 2A Assets} \right) \left. \right\}, \left\{ \text{Adjusted Level 2B Assets} \right. \\
 & \quad \left. - \left(\frac{15}{60} \times \text{Adjusted Level 1 Assets} \right) \right\}, 0 \right]
 \end{aligned}$$

- V. Adjustment to Stock of HQLA Due to Cap on Level 2 Assets: Adjustment to Stock of HQLA due to cap on Level 2 assets is calculated as follows:

$$\begin{aligned}
 & \text{Adjustment due to Cap on Level 2 Assets} \\
 &= \text{Maximum} \left[\left\{ \text{Adjusted Level 2A Assets} \right. \right. \\
 & \quad \left. \left. + \text{Adjusted Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \text{Adjustment due to Cap on Level 2B Assets} \right. \right. \\
 & \quad \left. \left. - \left(\frac{2}{3} \times \text{Adjusted Level 1 Assets} \right) \right\}, 0 \right]
 \end{aligned}$$

b. Calculation of Adjusted Level 2 Cap Excess Amount

The formula for calculating adjusted level 2 cap excess amount is as follows:

$$\begin{aligned}
 & \text{Adjusted Level 2 Cap Excess Amount} \\
 &= \text{Maximum} [\text{Post} \\
 & \quad - \text{Haircut Stock of} (\text{Adjusted Level 2A Assets} \\
 & \quad + \text{Adjusted Level 2B Assets} - (0.6667 \\
 & \quad \times \text{Adjusted Level 1 Assets}); 0]
 \end{aligned}$$

c. Calculation of Adjusted Level 2B Cap Excess Amount

The formula for calculating adjusted level 2B cap excess amount is as follows:

Level 2B Cap Excess Amount

$$= \text{Maximum}[\text{Post} \\ - \text{Haircut Stock of Adjusted Level 2B Assets} \\ - \text{Adjusted Level 2 Cap Excess Amount} \\ - \{0.1765 \times \text{Post} - \text{Haircut Stock of (Adjusted Level 1} \\ + \text{Adjusted Level 2A Assets)}\}; 0]$$

3. **Numerical Example:** The fair values of HQLA and adjustments are provided below:

Asset Level	Fair value of HQLA	Fair Value of Adjustments
Level 1	100	20
Level 2A	40	30
Level 2B	80	40

Table 78 Example showing Liquid Asset Amount and Adjustments

Note that the given liquid asset amounts and adjusted liquid asset amounts does not reflect the level 2A and 2B haircuts. Asset haircuts of 15 % and 50 % are applied to the level 2A and 2B liquid assets, respectively.

1. Computation of Post Haircut Adjusted Liquid Asset Amount:
 - Level 1: 120 [= (100+20) * (1 - 0%)]
 - Level 2A: 59.5 [= (40+30) * (1 - 15%)]
 - Level 2B: 60 [= (80+40) * (1 - 50%)]
2. Computation of Post Haircut Unadjusted Liquid Asset Amount:
 - Level 1: 100 [= 100 * (1 - 0%)]
 - Level 2A: 34 [= 40 * (1 - 15%)]
 - Level 2B: 40 [= 80 * (1 - 50%)]
3. Computation of Unadjusted Excess HQLA Amount:
 - Unadjusted Level 2 cap Excess amount: 7.333 = Maximum [{34+40} - (0.6667 * 100), 0]
 - Unadjusted Level 2B cap Excess amount: 9.019 = Maximum [{40 - 7.333} - (0.1765 * (100+34)), 0]
 - Unadjusted Excess HQLA Amount: 16.349 = 7.333 + 9.019
4. Computation of adjusted Excess HQLA Amount
 - Adjusted Level 2 cap Excess amount: 39.496
 - Adjusted Level 2B cap Excess amount: 0
 - Adjusted Excess HQLA Amount: 39.496

$$\begin{aligned}
 & \textit{Adjusted Level 2 Cap Excess Amount} \\
 & = \textit{Maximum [Post Haircut Stock of \{Adjusted Level 2A Assets} \\
 & \quad + \textit{Adjusted Level 2B Assets} - (0.6667 \times \textit{Adjusted Level 1 Assets})]; 0]}
 \end{aligned}$$

$$= \text{Maximum [59.5+60- 0.6667*120, 0]}$$

$$= 39.496$$

$$\begin{aligned}
 & \textit{Adjusted Level 2B Cap Excess Amount} \\
 & = \textit{Maximum[Post - Haircut Stock of Adjusted Level 2B Assets} \\
 & \quad - \textit{Adjusted Level 2 Cap Excess Amount} \\
 & \quad - \{0.1765 \times \textit{Post - Haircut Stock of (Adjusted Level 1} \\
 & \quad + \textit{Adjusted Level 2A Assets})\}; 0]
 \end{aligned}$$

$$= \text{Maximum [60-39.496-0.1765(120+59.5), 0]}$$

$$= 0$$

$$\begin{aligned}
 & \textit{Adjusted Excess HQLA Amount} = \\
 & (\textit{Adjusted Level 2 Cap Excess Amount} + \textit{Adjusted Level 2B Cap Excess Amount})
 \end{aligned}$$

$$= 39.496 + 0$$

$$= 39.496$$

5. Computation of HQLA Amount:

$$\begin{aligned}
 & \textit{Stock of HQLA} \\
 & = \{ \textit{Post Haircut Stock of (Level 1 Assets + Level 2A Assets} \\
 & \quad + \textit{Level 2B Assets}) \} \\
 & \quad - \textit{Maximum \{Unadjusted Excess HQLA; Adjusted Excess HQLA\}}
 \end{aligned}$$

$$= \{100+34+40-\text{Max} (39.496, 16.349)\}$$

$$= 134.504$$

13.2.2.3 Determination of the Maturity of Cash Flows

The maturity of each cash flow depends on the cash flow type and embedded optionality, if any. US Federal Reserve provides detailed guidelines on the determination of maturity of cash inflows as well as outflows.

1. **Determining the Maturity of Outflows:** If any account, instrument or transaction results in an outflow at the time of its maturity, the maturity date of such a contract is taken as the earliest maturity date based on the following conditions:
 - a. If the contract has embedded optionality that reduces the maturity date, then the earliest option exercise date is considered as the maturity date.

- b. If the contract has embedded optionality that extends the maturity date, then the extended maturity date is ignored and the original maturity date of the contract, without exercising the option, is taken as the maturity date.
2. **Determining the Maturity of Inflows:** If any account, instrument or transaction results in an inflow at the time of its maturity, the maturity date of such a contract is taken as the latest maturity date based on the following conditions:
 - a. If the contract has embedded optionality that reduces the maturity date, then the earliest option exercise date is ignored and the maturity date in such as case equals the contractual maturity date.
 - b. If the contract has embedded optionality that extends the maturity date, then the option is assumed to be exercised and the maturity date is extended to the latest possible date. In such a case, the original maturity date of the contract is ignored.

13.2.2.4 Deposit Stability Identification

A stable deposit is a deposit whose entire outstanding balance is fully covered by deposit insurance provided by Federal Deposit Insurance Corporation (FDIC) of USA and which satisfies one of the following conditions:

1. It is held in a transactional account by the depositor
Or
2. The depositor has an established relationship with the reporting legal entity.

The FDIC covers all deposit accounts, including checking and savings accounts, money market deposit accounts and certificates of deposit. The standard insurance amount is \$250,000 per depositor, per insured bank, for an ownership category. The application expects the limit to be provided at a customer-ownership category combination. This limit is allocated to the insurance eligible accounts based on a waterfall approach such that it maximizes insurance coverage from the perspective of deposit stability identification. Once the insurance limit is allocated, deposit stability is identified based on insurance coverage and other conditions. Only the fully covered accounts meeting the other stability criteria are considered stable deposits.

Note:

- i. Insurance eligible account means an account which is covered by the deposit insurance scheme.
- ii. Fully covered, in the context of US Federal Reserve on LCR, means that, the entire outstanding balance of the deposit account must be covered by insurance.

1. Ownership Categories

LRM 8.0 assumes the insurance limit for each customer per ownership category level as download.

The ownership categories covered by Federal Deposit Insurance Corporation (FDIC) are the following 8 in number :

- a. Single Accounts
- b. Joint Accounts
- c. Certain Retirement Accounts

- d. Revocable Trust Accounts
- e. Irrevocable Trust Accounts
- f. Employee Benefit Plan Accounts
- g. Corporation / Partnership / Unincorporated Association Accounts
- h. Government Accounts

2. Products Covered by Federal Deposit Insurance Corporation (FDIC)

FDIC covers all deposit accounts including deposits in a checking account, negotiable order of withdrawal (NOW) account, savings account, money market deposit account (MMDA), time deposit such as a certificate of deposit (CD), or an official item issued by a bank (such as a cashier's check or money order).

3. Allocation of Maximum Insured Amount

The insurance limit captured at each customer-ownership category combination is allocated to multiple accounts in the decreasing order of the outstanding amount (including interest) of the accounts, provided it fully covers the outstanding amount of the account. The insurance coverage status is updated for each deposit account as follows:

Fully Insured: Insured Amount = Outstanding Amount

Partially Insured: Insured Amount > 0 and < Outstanding amount

Uninsured: Insured Amount = 0

The insurance limit is allocated to each eligible account belonging to a particular customer within a given ownership category as per the procedure given as follows:

1. Arrange all accounts in the descending order of their outstanding balances.
2. Allocate the insurance limit available to account 1 to n – 1 as per the formula given below:

$\begin{aligned} \text{Insured Amount} &= \text{If } [(\text{Insurance Limit Available} \\ &\quad - \text{Outstanding Balance}) \\ &\quad \geq 0]; \text{ Outstanding Balance else 0] \end{aligned}$
--

Where,

Insurance Limit Available : Limit available post allocation to previous accounts

$$= \text{Insurance Limit Available}_{x-1} - \text{Insured Amount}_{x-1}$$

x : Number of accounts up to the current account to which insured amount is to be allocated

n : Total number of accounts of a customer which are eligible for insurance coverage under a given ownership category

3. Allocate the remaining available insurance to the last account i.e. account n.
4. If a part of the insurance limit remains unallocated after step 3, it is allocated to the first account which was skipped as part of step 2.

An illustration of this procedure is detailed as follows for all accounts belonging to customer A which are eligible for insurance coverage under the Single ownership category.

Account Number	Outstanding Balance (a)	Insurance Limit Available (b)	Remaining Insurance Limit (b - a)	Insured Amount	Uninsured Amount
9	143934	250000	106066	143934	0
3	131071	106066	-25005	0	131071
5	124006	106066	-17940	0	124006
10	117015	106066	-10949	0	117015
4	91870	106066	14196	91870	0
7	78324	14196	-64128	0	78324
2	58462	14196	-44266	0	58462
1	51370	14196	-37174	0	51370
6	35700	14196	-21504	0	35700
8	29405	14196	-15209	14196	15209

Table 79 Insurance Limit Allocation

13.2.2.5 Calculation of Net Cash Outflows (NCOF)

Note:

- i. This section details the cash inflows and outflows that are included as part of the regulatory LCR computation as per US Federal Reserve requirements "Name of the NPR Guidelines". The associated regulatory inflow and outflow rates to determine the cash flows to be included in the denominator.
- ii. The inflow and outflow rates are specified as part of business assumption definition UI. You can define and maintain multiple business assumptions with different rates and can apply them to compute the LCR and other liquidity metrics under various scenarios.

Net cash outflow is derived from cash inflow and cash outflow.

1. Cash Inflow computation:

A. Cash Inflow Exclusions

The US Federal Reserve explicitly excludes the following inflows from the denominator of LCR/modified LCR:

- i. The deposits held by the bank, at other banks, for its own operational purposes, that is, the bank's operational deposits

- ii. Amounts that the bank would receive from derivative transactions due to forward sale of mortgage loans or any derivatives that are mortgage commitments or pipeline
- iii. Undrawn amount of funding credit and liquidity lines received by the bank
- iv. The fair value of any asset included in the bank's stock of HQLA as well as any inflows received from or with respect to such assets. For instance, inflows received from HQLA assets maturing within 30 days.
- v. Any cash flows from a non performing asset or any asset that is expected to be non-performing within the LCR horizon
- vi. Cash flows from any account that does not have a contractual maturity or from an account whose maturity date is beyond the liquidity horizon
- vii. Any inflows from intragroup transactions are excluded. These include transactions between the following:
 - The legal entity at the level of which consolidation is being carried out that is, consolidation level and its subsidiaries
 - Any two subsidiaries in the immediate organization structure of the consolidation level entity

B. Derivative Cash Inflow

Net derivative cash flows refer to the cash inflows and outflows obtained from derivative contracts and their underlying collateral. These cash inflows include all payments that the bank is expected to receive from its counterparty as well as any collateral that is due to be received from the counterparty within the LCR horizon. If an ISDA master netting agreement is in place, then the payments and collateral due to the counterparty during the LCR horizon are off-set against the cash inflows. If the net exposure value is positive, it is considered a derivatives cash outflow and included in the outflow part of the denominator.

Such inflows and outflows can be offset against each other at a netting agreement level provided the payment netting indicator is Yes.

The process of computing the derivative cash inflows and outflows is provided as follows:

- i. Check if payment netting indicator is Yes for a given netting agreement. If Yes, sum all cash outflows (negative cash flows) and inflows (positive cash flows) denominated in a particular currency, occurring on each date from the instruments which are part of a particular netting agreement and the underlying collateral.
 - a. If the sum of cash flows is negative, then it is considered net derivative cash outflows.
 - b. If the sum of cash flows is positive, then it is considered net derivative cash inflows.
- ii. Check if payment netting indicator is No for a given netting agreement. If No, then
 - a. Sum all cash outflows denominated in a particular currency, occurring on each date from the instruments which are part of a particular netting agreement and the underlying collateral. This is considered net derivative cash outflow.
 - b. Sum all cash inflows denominated in a particular currency, occurring on each date from the instruments which are part of a particular netting agreement and the underlying collateral. This is considered net derivative cash inflow.

- iii. The net derivative cash outflow at a legal entity level equals the sum of all derivative cash outflows computed in step 1(i) and 2(i).
- iv. The net derivative cash outflow at a legal entity level equals the sum of all derivative cash outflows computed in step 1(ii) and 2(ii).

C. Retail Cash Inflow Amount

The cash inflows from retail customers or counterparties include contractually payable amounts multiplied by the regulator-specified inflow rate.

D. Unsecured Wholesale Cash Inflow Amount

Unsecured wholesale cash inflows include amounts contractually due from wholesale customers or counterparties, regulated and non-regulated financial companies, investment companies, non-regulated funds, pension funds, investment advisers, or identified companies, or from a consolidated subsidiary of any of the foregoing, or central banks.

E. Securities Cash Inflow Amount

The contractual payments due to the bank from non-HQLA securities that it owns are included as part of cash inflows.

F. Secured Funding and Asset Exchange Cash Flows

Inflows from secured lending transactions maturing within the LCR horizon are based on the collateral securing such transactions. The inflow rates increase in inverse proportion to the quality of the collateral and are related to the liquidity haircuts specified for such assets.

Inflows from asset exchanges are determined based on the difference between the quality of the assets received and posted. If the assets to be posted by the bank to the counterparty at the maturity of the transaction are of lower quality than the assets that will be received from the counterparty, such asset exchanges result in cash inflows to the bank.

The inflow and outflow rates are specified as part of the business assumptions UI.

2. Calculation of Cash Outflow:

Note: Only the changes vis-à-vis the BIS approach is documented below.

a. Unsecured Retail Funding Outflow

The unsecured retail funding outflow amount includes outflows with respect to deposits and other unsecured funding from retail customers, regardless of the maturity of the transaction. These exclude brokered deposits. Retail funding is further classified as stable and less stable based on the regulatory guidelines and receive run-off rates based on this classification. Please refer section [Deposit Stability Identification](#).

b. Structured Transaction Outflow

The outflow amount from structured transaction either issued or sponsored by the bank is calculated as the maximum of one of the following values:

- i. 100% of the structured transactions, issued by the bank, that mature during the LCR horizon and all commitments made by the bank to purchase assets during the LCR horizon.

Or

- ii. Maximum contractual amount that the bank may be required to provide to its sponsored entity that issues the structured instrument, through a liquidity facility, a return or repurchase of assets from that entity or other funding agreement.

c. Derivative Cash Outflow

Net derivative cash outflows include all payments that the bank has to make to its counterparty as well as any collateral that is due to be paid by the bank within the LCR horizon. If an ISDA master netting agreement is in place, then the payments and collateral to be received from the counterparty during the LCR horizon are off-set against the cash outflows. If the net exposure value is negative, it is considered a derivatives cash inflow and included in the inflow part of the denominator.

Note:

Any cash flows from forward sales of mortgages and mortgage commitments are excluded from derivative cash flows as they are assigned a different outflow rate.

d. Mortgage Commitments or Pipelines

A mortgage commitment is a written agreement that the bank is willing to provide a mortgage loan to the buyer in order to complete the purchase formalities. This is not an actual loan but only a commitment to provide the loan. Once the buyer has purchased a property in accordance with the terms of commitment and availed the loan, it gets converted to a mortgage.

As per US Federal Reserve an outflow is captured for retail mortgage commitments.

e. Commitment Outflow Amount

The commitment outflow amount includes the undrawn portion of committed credit and liquidity facilities provided by various counterparties. The application deducts the value of any level 1 or 2A asset which is securing the facility from the portion of the undrawn amount of that facility that can be drawn down within the LCR horizon, provided the underlying asset is not included in the stock of HQLA. The outflow amount is determined by multiplying the adjusted undrawn amount with the outflow rates specified by the user. These rates vary based on the facility type and the customer type.

f. Collateral Outflow

- i. Changes in financial condition: Derivatives and other transactions may include certain clauses that result in collateral outflows due to change in financial condition of an institution due to a downgrade. The application supports the ability to capture downgrade triggers for derivatives and other transactions. It also supports the ability to activate these triggers through the [Ratings Downgrade](#) assumption. The collateral outflow due to change in financial condition is supported through calculation and outflow of downgrade impact amount.

A. Downgrade Impact Amount for Derivatives

The downgrade impact amount for derivatives is calculated at the netting agreement level as follows:

- a. The application checks if a downgrade trigger exists for a particular derivative transaction. If there is no downgrade trigger, the downgrade impact amount is 0.
- b. If a downgrade trigger exists, the application checks for the signage of the net exposure. If the net exposure is positive, that is > 0, the downgrade impact amount is 0.
- c. If a downgrade trigger exists and the net exposure is negative, the downgrade impact amount is calculated as follows:

$$\text{Downgrade Impact Amount} = \text{Max}[0, \{ \text{Abs}(\text{Net Exposure}) - \text{Contractually Required Collateral} \}]$$

Note:

The ratings downgrade business assumption is defined at the netting agreement level for all accounts that have a netting agreement ID associated with them. The outflow of downgrade impact amount depends on the downgrade specified. For instance, if a 3-notch downgrade is specified, then the downgrade impact amount outflows only for those accounts that have a trigger of 1-notch, 2-notches and 3-notches. If a 2-notch downgrade is specified, then the downgrade impact amount outflows only for those accounts that have a trigger of 1-notch and 2-notches. Refer Ratings Downgrade under [Business Assumptions Supported](#) section for details on the ratings downgrade business assumption.

B. Downgrade Impact Amount for Securitizations

The downgrade impact amount for securitizations is calculated as follows:

- a. The application checks the commingling indicator value. If the commingling indicator is 'No', the downgrade impact amount is 0.
- b. If commingling indicator is 'Yes', the application checks if downgrade trigger exists for such a securitization. If there is no downgrade trigger, the downgrade impact amount is 0.
- c. If a downgrade trigger exists the application compares the start date of the collections from the underlying assets with the as of date. If collection start date > as of date, the downgrade impact amount is 0.
- d. If the collection start date <= as of date ,the downgrade impact amount is calculated as follows:

$$\text{Downgrade Impact Amount} = \sum_c^f \text{Collections from underlying assets}$$

Where,

c : Collection start date <= as of date

f : As of date

Note:

The ratings downgrade business assumption is defined for securitizations for the outflow of downgrade impact amount.

C. Downgrade Impact Amount for Other Liabilities

In case of other liabilities, including annuities, that have a downgrade trigger associated with them, the downgrade impact amount is calculated as follows:

- a. The application checks if a downgrade trigger exists for liabilities other than derivatives and securitizations. If there is no downgrade trigger, the downgrade impact amount is 0. Else,
- b. If a downgrade trigger exists, the application checks if the product is derivative or securitization. If it is not a derivative or securitization, the downgrade impact amount is calculated as follows:

$$\text{Downgrade Impact Amount} = \text{Max}[0, (\text{EOP Balance} - \text{Collateral Posted})]$$

Note:

The ratings downgrade business assumption is defined for other liabilities for the outflow of downgrade impact amount.

- ii. Potential valuation changes: Collateral outflows may result due to the fall in the fair value of non-level 1 assets securing a transaction. The application provides the ability to specify outflow rates on the fair value of collateral posted.
- iii. Excess collateral: Any unsegregated collateral in excess of the amount contractually required to be provided provided by the counterparty to the bank is assumed to be withdrawn during stress conditions. The application calculates the value of excess collateral and provides the ability to specify outflows on such excess collateral.

The procedure of calculating excess collateral posted by counterparty is as follows:

- a. The application checks for signage of net exposure. If net exposure is negative, that is < 0 , then the excess collateral is 0. Else,
- b. If net exposure is positive, the excess collateral is calculated as follows:

$$\text{Excess Collateral} = \text{Max}[0, (\text{Threshold} - \text{Net Exposure})]$$

Note:

- Excess collateral is computed only for derivatives and not for any other assets.
 - The business assumption of outflow of excess collateral is defined at the netting agreement level for all accounts that have a netting agreement ID associated with them.
- iv. Contractually required collateral: Any collateral that is contractually due from the bank to the counterparty, but has not yet been posted, is assumed to be demanded by the counterparty during times of stress. The application calculates the value of contractually due collateral and provides the ability to specify outflows on such collateral.

The procedure of calculating the collateral that a bank is required to post contractually is as follows:

- a. The application checks for CSA type of the transaction. If CSA Type = One way then the contractually due collateral is 0. Else,

- b. If CSA Type = Two way, it checks for signage of net exposure. If net exposure is positive i.e. > 0, then the contractually due collateral is 0. Else,
- c. If net exposure is negative, the contractually due collateral is calculated as follows:

$$\text{Contractually Due Collateral} = \text{Max}[0, \{\text{Abs}(\text{Net Exposure}) - \text{Threshold}\}]$$

Where,

Threshold : Minimum exposure amount required to call for additional collateral.

Note:

- Contractually due collateral is computed only for derivatives and not for any other liabilities.
 - The business assumption of outflow of required collateral is defined at the netting agreement level for all accounts that have a netting agreement ID associated with them.
- v. Outflow related to collateral substitution: In a stress scenario, any collateral that can be substituted by another collateral, is assumed to be substituted by the lowest quality of collateral allowed under the substitution clause of the contract. The application provides the ability to capture the substitution details, identifies the asset level of each substitutable collateral based on the attributes of the substitutable collateral and determines the lowest quality of substitutable collateral permissible under the terms of the contract. The outflow rates due to collateral substitution are captured through the business assumptions UI.
 - vi. Derivative collateral change: The absolute value of the largest LCR horizon cumulative net mark-to-market collateral outflow or inflow resulting from derivative transactions realized during the preceding 24 months.
- g. Brokered Deposit Outflow

As per US Federal Reserve, brokered deposits are assigned higher Run-offs. A brokered deposit is a deposit that a bank obtains whether directly or indirectly from or through the mediation or assistance of a deposit broker or brokerage house. For instance, a bank may offer a large denomination deposit to a brokerage house which it then sells in smaller chunks to its ultimate customers.

Brokered deposits are further sub-divided into the following categories:

- Reciprocal Brokered Deposits
- Brokered Sweep Deposit
- Other Brokered Deposits

Each of the above specified brokered deposit categories are assigned a different Run-off rate.

- h. Unsecured wholesale funding outflow amount

Any unsecured funding from wholesale customers, including operational deposits, that matures within the LCR horizon, is identified by the application. The application identified the operational deposits as those arising from clearing, custody and cash management

relationship based on the regulatory guidelines. Separate outflow rates are assigned to such funding based on regulatory or user specified parameters.

i. Secured funding and asset exchange outflow amount

Outflows from secured funding transactions maturing within the LCR horizon are based on the collateral securing such transactions. The outflow rates increase in inverse proportion to the quality of the collateral and are related to the liquidity haircuts specified for such assets.

Outflows from asset exchanges are determined based on the difference between the quality of the assets received and posted. If the assets to be posted by the bank to the counterparty at the maturity of the transaction are of higher quality than the assets that will be received from the counterparty, such asset exchanges result in cash outflows to the bank.

The inflow and outflow rates are specified as part of the business assumptions UI.

j. Central Bank Borrowings

If a bank has borrowed from a foreign central bank, then such borrowings will get an outflow rate equal to the rate specified by that jurisdiction under its minimum liquidity standard. In the absence of a specific outflow rate from the foreign jurisdiction, the outflow rate is equal to the rates specified for secured funding transactions under of the US Federal Reserve's regulation, *Liquidity Coverage Ratio: Liquidity Risk Measurement, Standards, and Monitoring*.

The application provides banks the ability to specify multiple outflow rates for borrowings from each foreign central bank.

13.2.2.6 Calculation of Liquidity Coverage Ratio (LCR)

Under the US Liquidity Coverage Ratio requirements, a peak cumulative net cash outflow day is identified and the net cash outflow calculated on a cumulative basis on that day is taken as the denominator value. The liquidity horizon prescribed by the US Federal Reserve is 30 calendar days.

The formula for calculating cumulative net cash outflows on each day is as follows:

$$\begin{aligned}
 & \text{Cumulative Net Cash Outflow}_T \\
 &= \left(\text{Cash Outflow}_{\text{Non Maturity}} + \sum_{T=1}^t \text{Cash Outflow}_T \right) \\
 & - \left[\text{Minimum} \left(\sum_{T=1}^t \text{Cash Inflow}_T \right); \left\{ 75\% \times \left(\text{Cash Outflow}_{\text{Non Maturity}} + \sum_{T=1}^t \text{Cash Outflow}_T \right) \right\} \right]
 \end{aligned}$$

Where,

T = Calendar days ranging from 1 to 30

This calculation is done on a daily basis for 30 calendar days after the current date and the highest cumulative net cash outflow is identified. This value is taken as the net cash outflow.

1. Numerical example for Net Cash Outflow Calculation – LCR

As per the US Federal Reserve, the peak cumulative net cash outflow approach is used for calculation of the denominator of the Liquidity Coverage Ratio. This is applicable to all large banks that are required to calculate the LCR on an unmodified basis. The liquidity horizon prescribed by the US Federal Reserve for the calculation of the LCR is 30 calendar days.

The table below illustrates this approach to Liquidity Coverage Ratio calculation. For computational convenience we have taken the liquidity horizon as 10 days instead of 30 days.

Calculation Day	Non-Maturity Cash Outflows	Cash Outflows with Maturity equal to Calculation Day	Cumulative Cash Outflows with Maturity equal to Calculation Day	Total Cumulative Cash Outflows (a)	Cash Inflows with Maturity equal to Calculation Day	Cumulative Cash Inflows with Maturity equal to Calculation Day (b)	Total Cumulative Inflows post 75% Cap [c = min {b, (a * 75%)}]	Net Cumulative Cash Outflow (a – c)
Day 1	200	100	100	300	90	90	90	210
Day 2	200	20	120	320	5	95	95	225
Day 3	200	10	130	330	5	100	100	230
Day 4	200	15	145	345	20	120	120	225
Day 5	200	20	165	365	15	135	135	230
Day 6	200	0	165	365	0	135	135	230
Day 7	200	0	165	365	0	135	135	230
Day 8	200	10	175	375	8	143	143	232
Day 9	200	15	190	390	17	160	160	230
Day 10	200	25	215	415	40	200	200	215

Table 80 Peak Cumulative Net Cash Outflow Calculation - LCR

As per this illustration, the peak cumulative net cash outflow occurs on Day 8. Therefore, the net cash outflow on Day 8, that is, 232, is taken as the denominator value in the LCR calculation.

13.2.2.7 Consolidation as Per Minimum LCR Approach

The process of consolidating HQLA as per US Federal Reserve differs slightly based on the type of subsidiary. Broadly 3 methods of consolidating HQLA are followed, based on the type of subsidiary, which is detailed below:

1. In case of US Consolidated Subsidiaries Subject to Minimum LCR Requirements: In case of a US based legal entity that is a consolidated subsidiary of a covered company, consolidation is done as follows:
 - I. The application identifies whether the subsidiary is a US consolidated subsidiary.
 - II. If condition (i) is fulfilled, it identifies whether the US consolidated subsidiary is subject to minimum LCR requirement that is, whether the subsidiary in question is a regulated entity.
 - III. If condition (ii) is fulfilled, then it calculates the net cash outflow based on the US Federal Reserve LCR approach that is, based on the peak cumulative cash flow calculation, eliminating inter-company transactions at the level of the consolidated subsidiary.
 - IV. The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow that is, to the extent required to satisfy minimum LCR requirements of that subsidiary as part of the covered company's HQLA.
 - V. It consolidates the entire amount of post-haircut unrestricted HQLA held at the consolidated subsidiary as part of the covered company's HQLA.
 - VI. It consolidates all cash inflows and outflows which are part of the net cash flow calculation.
2. In case of US Consolidated Subsidiaries Not Subject to Minimum LCR Requirements
 - I. The application identifies whether the subsidiary is a US consolidated subsidiary.
 - II. If condition (i) is fulfilled, it identifies whether the US consolidated subsidiary is subject to minimum LCR requirement that is, whether the subsidiary in question is a regulated entity.
 - III. If condition (ii) is not fulfilled, it eliminates all inter-company transactions till the level of the immediate parent of the consolidated subsidiary and then calculates the net cash outflow based on the BIS LCR approach that is, based on net cash flows on the 30th day.
 - IV. The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow and the entire amount of post-haircut unrestricted HQLA as part of the covered company's HQLA.
 - V. It consolidates all cash inflows and outflows which are part of the net cash flow calculation.

3. In case of Non-US Consolidated Subsidiaries
 - I. The application identifies whether the subsidiary is a US consolidated subsidiary.
 - II. If condition (i) is not fulfilled, it eliminates all inter-company transactions till the level of the immediate parent of the foreign subsidiary and then calculates the net cash outflow based on the BIS LCR approach that is, based on net cash flows on the 30th day.
 - III. The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow and the entire amount of post-haircut unrestricted HQLA as part of the covered company's HQLA.
 - IV. It consolidates all cash inflows and outflows which are part of the net cash flow calculation.

Consolidation is done on a step by step basis based on each level of the organization structure starting from the most granular level. This means that intercompany transactions are eliminated at each sub-consolidation level till the final level of the consolidation (generally BHC) is reached. The Consolidated HQLA calculated at the level of the immediate subsidiary of the BHC is added to the HQLA held by the BHC. All intercompany cash flows are eliminated and the LCR is calculated in accordance with the minimum LCR approach.

For instance a bank's organization structure is as follows:

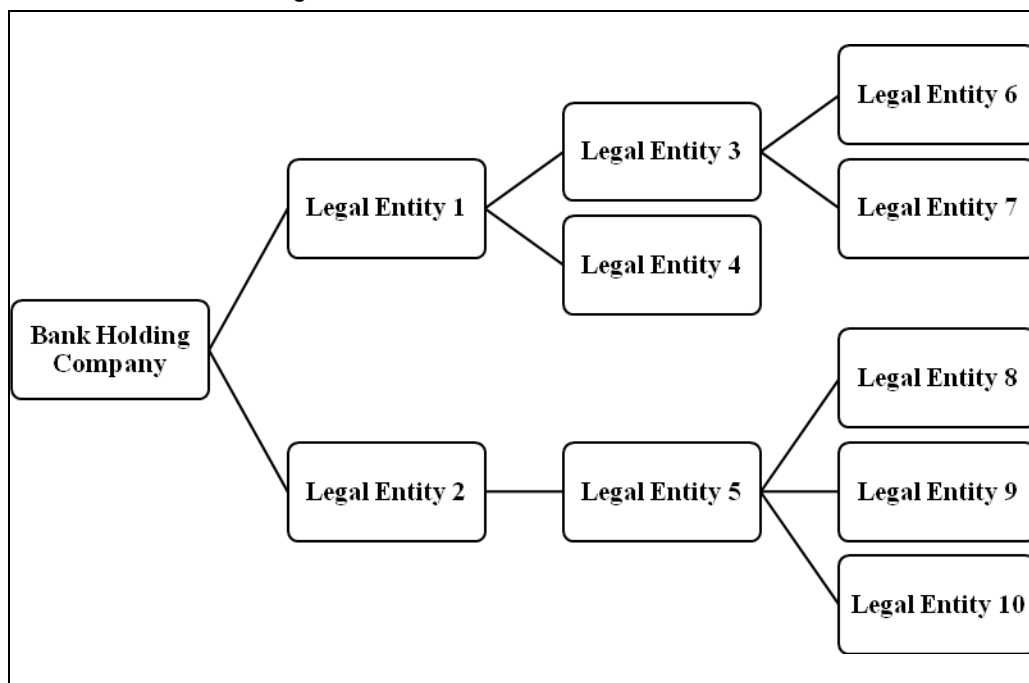


Figure 59 A Bank's Organization Structure

In this case, at the first level of consolidation, calculation of net cash outflows and HQLA is done on a solo basis for legal entities 6, 7, 8, 9 and 10 as they do not have any subsidiaries. In case of regulated entities, intercompany transactions are not eliminated; whereas in case of non-regulated or foreign subsidiaries, intercompany transactions are eliminated to the next level of

consolidation that is, legal entities 3 and 5. The restricted HQLA from entities 6 and 7 are consolidated to the extent of their net cash outflows, based on the respective approaches, while the unrestricted HQLA is transferred fully to legal entity 3. The cash inflows and outflows are consolidated to the full extent.

At the second level of consolidation that is, legal entity 3, intercompany transactions are eliminated till legal entity 1, if LE 3 is a non-regulated or foreign subsidiary. The HQLA is calculated as a sum of the consolidated restricted and unrestricted HQLA of entities 6 and 7 and the HQLA of legal entity 3. The net cash outflow is calculated based on the cash flows of entities 3, 6 and 7, post elimination of intercompany transactions if applicable. The consolidated HQLA is calculated based on the procedure detailed in the following section.

This process continues in a step-by-step manner till the bank holding company level.

Note:

1. Stock of HQLA is calculated based on the US Federal Reserve LCR calculation approach for all subsidiaries. Only the approach to net cash outflow calculation changes based on the type of subsidiary as detailed earlier.
2. The amount of HQLA that can be consolidated is determined after applying the relevant haircuts that is; the post haircut value of HQLA is compared with the net cash outflow in order to estimate the consolidated HQLA.
3. The restricted HQLA is consolidated based on the sequence of the quality of the asset that is, level 1 HQLA is consolidated first, followed by level 2A and 2B.
4. In case of modified holding companies, the net cash outflow is calculated in accordance with the modified LCR approach that is, the 21-day scenario. All other calculations remain unchanged.

13.2.3 Modified Liquidity Coverage Ratio Calculation Process Flow

13.2.3.1 Changes vis-à-vis Minimum Liquidity Coverage Ratio Calculation

The changes in the modified LCR calculations vis-a-vis US Fed LCR calculations are as follows:

1. 21-day LCR horizon, which means HQLA adjustments, cash inflows and outflows are based on transactions that mature in 21 days.
2. 70% of the LCR outflow and inflow rates are used in the modified LCR calculations. HQLA haircut values remain unchanged.
3. Denominator is calculated in accordance with the BIS approach and not based on the peak cumulative net cash outflow.

All other conditions remain unchanged between LCR and modified LCR calculations.

13.2.3.2 Calculation of Net Cash Outflows (NCOF)

As per the US Federal Reserve, the net cash outflow calculated on a cumulative basis on the last day of the liquidity horizon is taken as the denominator value in case of the modified LCR calculations. The

liquidity horizon prescribed by the US Federal Reserve for the calculation of modified LCR is 21 calendar days.

1. Numerical example for Net Cash Outflow Calculation – Modified LCR: The table below illustrates the modified LCR approach. For computational convenience we have taken the liquidity horizon as 10 days instead of 21 days.

Calculation Day	Non-Maturity Cash Outflows	Cash Outflows with Maturity equal to Calculation Day	Cash Inflows with Maturity equal to Calculation Day
Day 1	200	100	90
Day 2	200	20	5
Day 3	200	10	5
Day 4	200	15	20
Day 5	200	20	15
Day 6	200	0	0
Day 7	200	0	0
Day 8	200	10	8
Day 9	200	15	17
Day 10	200	25	40
Total	200	215	200

Table 81 Net Cash Outflow Calculation – Modified LCR

Cumulative Cash Outflows = 200+215 = 415

Net Cash Outflows = 415 – Min (0.75* 415, 200) = 215

13.2.3.3 Consolidation as per Modified LCR Approach

Consolidation for a modified BHC is done as per the procedure detailed in the following sections.

1. In case of US Consolidated Subsidiaries Subject to Modified LCR Requirements

In case of a US based legal entity that is a consolidated subsidiary of a modified LCR parent company, consolidation is done as follows:

- a. The application identifies whether the subsidiary is a US consolidated subsidiary.
- b. If condition (i) is fulfilled, it identifies whether the US consolidated subsidiary is subject to modified LCR requirement that is, whether the subsidiary in question is a regulated entity.
- c. If condition (ii) is fulfilled, then it calculates the net cash outflow based on the US Federal Reserve modified LCR approach that is, based on the cumulative cash flows on the 21st day, eliminating inter-company transactions at the level of the consolidated subsidiary.
- d. Consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow that is, to the extent required to satisfy modified LCR requirements of that subsidiary as part of the modified parent company's HQLA.
- e. Consolidates the entire amount of post-haircut unrestricted HQLA held at the consolidated subsidiary as part of the modified parent company's HQLA.
- f. Consolidates all cash inflows and outflows which are part of the net cash flow calculation.

2. In Case of US Consolidated Subsidiaries Not Subject to Modified LCR Requirements

- a. The application identifies whether the subsidiary is a US consolidated subsidiary.
- b. If condition (i) is fulfilled, it identifies whether the US consolidated subsidiary is subject to modified LCR requirement that is, whether the subsidiary in question is a regulated entity.
- c. If condition (ii) is not fulfilled, it eliminates all inter-company transactions till the level of the immediate parent of the consolidated subsidiary and then calculates the net cash outflow based on the US Federal Reserve modified LCR approach that is, based on the cumulative cash flows on the 21st day.
- d. Consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow and the entire amount of post-haircut unrestricted HQLA as part of the modified parent company's HQLA.
- e. Consolidates all cash inflows and outflows which are part of the net cash flow calculation.

3. In case of Non-US Consolidated Subsidiaries

- a. The application identifies whether the subsidiary is a US consolidated subsidiary.
- b. If condition (i) is not fulfilled, it eliminates all inter-company transactions till the level of the immediate parent of the consolidated subsidiary and then calculates the net cash outflow based on the US Federal Reserve modified LCR approach that is, based on the cumulative cash flows on the 21st day.
- c. The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow and the entire amount of post-haircut unrestricted HQLA as part of the modified parent company's HQLA.
- d. The application consolidates all cash inflows and outflows which are part of the net cash flow calculation.

These steps are repeated for each level in the organization structure, till the final consolidation level as selected in the Run is reached. The Consolidated HQLA calculated at the level of the immediate subsidiary of the BHC is added to the HQLA held by the BHC. All intercompany cash flows are eliminated and the LCR is calculated in accordance with the modified LCR approach.

13.2.3.4 Other Calculations

1. Calculation of Effective Drawdown Date

The funding start date, end date and draw notice period are used to determine the effective drawdown date for outflow of cash flows in case of loans or commitments provided by the bank to its customers. The application calculates the effective drawdown date for assets that have a drawdown associated with them as follows:

- i. If funding start date > as of date, effective drawdown date = funding start date.
- ii. If funding start date < as of date, funding end date < as of date, draw notice period > 0 and funding end date + draw notice period > as of date, effective drawdown date = funding end date + draw notice period.
- iii. If funding start date < as of date, funding end date < as of date, draw notice period > 0 and funding end date + draw notice period <= as of date, effective drawdown date = as of date.
- iv. If funding start date < as of date, funding end date < as of date and draw notice period = 0, effective drawdown date = funding end date.

Note:

The outflow rates are applied to cash outflows based on the effective drawdown date computed as above. If the effective drawdown date is < LCR horizon, the appropriate drawdown rates are applied based on other regulatory criteria.

2. Treatment of Commingled Securitization Cash Flows

If the commingling indicator is 'Yes' for a particular securitization then all cash flows of such a securitization are commingled with the cash flows of its parent entity. Such commingled cash flows are treated as available for use by the parent entity under normal conditions that is, when there is no downgrade.

In case of a ratings downgrade that results in the activation of the downgrade trigger for the securitization, all access to commingled cash flows by the parent company becomes restricted and these are segregated from the parent company's cash flows. In this case, all cash inflows and outflows related to the securitization are completely removed from the calculation of the net cash outflow, except the downgrade impact amount which is posted as an outflow.

In a consolidated Run, the application treats commingled securitization cash flows as follows:

- i. The application checks if the commingling indicator value for securitizations from SPV/SIV which is part of the consolidated entity's organization structure. If the commingling indicator is 'No', the application treats the SPV/SIV as a standalone entity and does not commingle the cash flows. The regular consolidation process is followed, refer section [US Federal Reserve Liquidity Coverage Ratio Calculation](#) for more information.

- ii. If commingling indicator is 'Yes' and Run type is Contractual Run, the cash inflows and outflows of the the securitization are commingled with the parent company's cash flows. Separate identification of the legal entity of such cash flows that is, SPV/SIV information is maintained.
- iii. If commingling indicator is Yes and Run type is BAU or stress Run, the application checks if ratings downgrade is specified as part of the business assumption included in the Run. If downgrade is not specified, the cash flows continue to remain commingled.
- iv. If ratings downgrade is specified, the application checks if a downgrade trigger exists for the securitization. If there is no downgrade trigger, the cash flows continue to remain commingled.
- v. If a downgrade trigger exists, the application checks if the trigger is activated based on the ratings downgrade specified as part of the business assumption included in the Run. If the downgrade trigger is not activated, the cash flows continue to remain commingled.
- vi. If downgrade trigger is activated based on the downgrade specified, the application segregates and excludes all the securitization cash inflows and outflows from computation of net cash outflows and posts the downgrade impact amount calculated as per the procedure detailed as part of the above section *Downgrade Impact Amount for Securitizations* as an outflow.

Note:

In a Solo Run, the application does not include any cash flows from commingled securitizations in the parent company's calculations. These are included only when calculations are done on a consolidated basis..

3. Treatment of Central Bank Reserves and Deposits

Central bank reserves are deposits with the central bank with the Product Type as Central Bank Reserves. These are obtained in the Correspondent Accounts table. In addition to the product type, such reserves have an additional attribute, Minimum Reserve Requirement, captured. Excess reserve at each Central Bank is calculated as follows:

Excess Central Bank Reserve

= Central Bank Reserve Balance – Minimum Reserve Requirement

Central bank reserves and excess central bank reserves do not have a maturity associated with them and are bucketed in the first time bucket that is, Day 1 bucket in case of FR2052b reporting.

Note: Banks may place deposits with their Central Bank which has a maturity associated with them. Such deposits are bucketed based on their respective maturities for FR 2052a and b reporting.

4. Substitutable Collateral

The attributes required for reclassification of substitutable collateral to HQLA level is taken at a less granular level. Currently, the application expects specific details of the asset substitutable as collateral such as the instrument code, issuer code, guarantor code and so on. Since such a substitution has not yet occurred, a generic set of attributes is defined within the contract for the assets substitutable in the future. For instance, the contract states the issuer type, guarantor type and

product of the asset which can be substituted. In the event of substitution, the specific assets which is substituted has these broad attributes along with asset specific details. The broad characteristics are sufficient for HQLA classification.

5. Operating Expenses

Operational expenses are expenses such as salaries, rents and so on incurred at frequent intervals for the purpose of the day-to-day running of the business. These are essentially income statement line items and the forecasted values of such expenses are reported as part of FR 2052b template. Download for these items is across multiple tenors specified as days, each of which is bucketed appropriately based on a 30/360 convention.

The items in FR 2052b that are treated in a manner similar to operational expenses include:

- i. 14.3 Operating Cash Inflows
- ii. 16.1 Common Dividends
- iii. 16.2 Operating Expenses

For instance, operating expenses are provided 100 in 1 day, 200 in 5 days, 300 in 10 days and 400 in 60 days. They are bucketed in FR 2052b as follows:

Time Bucket	Time Bucket Size (in Days)	Time Bucket Start Day	Time Bucket End Day	Operating Expenses
Day 1	1	1	1	100
> 1 Day <= 1 month	29 [=(30*1) – 1]	2	30 [=30*1]	500 [=200+300]
> 1 month <= 3 months	60 [=(30*3) – 30]	31	90 [=30*3]	400

Note: Day count convention of 30/360 is used where 1 Month = 30 days and 1 Year = 360 Days.

6. CDS Spread

CDS spread is reported in FR 2052b template is the spread associated with the legal entity itself. This is not the instrument level spread of the counterparty. Currently the spread is taken at an instrument level. This is taken at a legal entity and tenor (in days) combination. In consolidated reporting, the spread associated with the consolidation entity is reported. If the 5 year CDS spread is unavailable, the spread for the tenor closest to 5 years must be reported.

7. Funding Pricing Curves

The funding price and funding amount is captured for ABCP multi-seller funding curve, ABCP single seller funding curve, unsecured bank funding curve and unsecured holding company funding curve at a legal entity and tenor granularity. These values are directly reported as part of line items 20 and 21 in FR 2052b reporting template.

If multiple funding prices are available that are bucketed in a single time bucket, a weighted average of the funding price is calculated based on the funding amount. For instance unsecured bank funding curve information is provided as follows:

Tenor (in Days)	Funding Price (in %)	Funding Amount
40	4	100
60	5	150
90	6	250

In this case, all 3 tenors occur in the > 1 month <= 3 months bucket for FR 2052b reporting. In such a case, the weighted average of these prices must be reported.

Total funding amount = 100 + 150 + 250 = 500

Weights are calculated as follows:

Funding Price	4	5	6
Weight	0.2 [=100/500]	0.3 [=150/500]	0.5 [=250/500]
Weighted Price	0.8 [=4*0.2]	1.5 [=5*0.3]	3 [=6*0.5]

Weighted average price = 0.8 + 1.5 + 3 = 5.3

8. Lendable Value

The lendable haircut is available at a product level and not at an account level as currently expected by the application. This is updated in the business processor that computes the lendable value.

9. Placed Collateral

Secured funding transactions require covered company to place collateral for the borrowings which are received from the counterparty. Secured funding can be borrowings from repurchase transactions, Federal Home Loan Bank advances, secured deposits from municipalities or other public sector entities (which typically require collateralization in the United States), loans of collateral to effect customer short positions, and other secured wholesale funding arrangements with Federal Reserve Banks, regulated financial companies, non-regulated funds, or other counterparties. Secured funding could give rise to cash outflows or increased collateral requirements in the form of additional collateral or higher quality collateral to support a given level of secured debt. Collaterals are also placed for some derivatives transactions such as collateral swap, futures, forwards, securitization and so on.

The information required at the placed collateral level is as follows:

- i. Placed collateral can be securities or other assets such as credit cards, loans and so on.
- ii. All the attributes required for the HQLA classification and collateral amount is provided as download for each placed collateral.

- iii. The mapping of placed collateral and corresponding secured funding transactions are provided as download.
- iv. The underlying asset level, underlying asset amount, contractually required collateral amount, downgrade impact amount are computed for each secured funding transactions.
 - a. Collateral posted or the underlying amount is the sum of the value of all collaterals placed for the secured funding.

$$\text{Underlying collateral Amount} = \sum_{i=1}^n \text{collateral amount of the placed collateral}$$

- b. Underlying asset level: the asset level of the placed collateral for the secured funding. In cases where the multiple collaterals were placed for a secured funding transaction with varying asset levels, the asset level corresponding to lowest liquidity value is assigned as underlying asset level for the secured funding transaction. For example, if Level 1 and Level 2A assets are placed as collateral for FHLB borrowing, the underlying asset level for the FHLB borrowings is Level 2A.

$$\text{Contractually due collateral} = \text{Max}[0, (\text{EOP Balance} - \text{Collateral Posted})]$$

Note: The contractually due collateral calculation for derivative transactions is specified in 'Net Exposure' section.

- c. The downgrade impact amount computations are explained in 'Calculation of Downgrade Impact Amount' section.

14 User Roles and Access

The three basic roles defined in the LRM 8.0 application are as follows:

1. **LRM Analyst:** This user is responsible for defining and maintaining the user interface input parameters and definitions required by the application. This user is also allowed to execute the Runs defined within the application.

LRM Analyst can define time buckets, business assumptions and Runs with the following access privileges: Add, View, Edit, Copy, Delete, Send for Approval, Make Active, Retire, Approval Summary, as well as execute the Runs created in the application. This user is not allowed to approve definitions. A business assumption or a Run is sent for approval by this user to the LRM approver.

2. **LRM Approver:** This user is responsible for verifying and approving the tasks assigned to and completed by the LRM Analyst. Additionally, this user can execute the Runs created in the application. For instance, this user can approve, and execute a definition.

LRM Approver can approve business assumptions and Runs defined by the LRM analyst with the following access privileges: View, Approve, Reject, Retire, Approval Summary, and execute the Runs created in the application.

3. **LRM System Administrator:** This user is responsible for ensuring that all inputs required for the liquidity risk calculations have been specified in a functionally appropriate manner, in line with the bank's liquidity risk objectives. LRM Administrator is responsible for preparing the metadata required for LRM, including access to Application Preferences window. This user is allowed to approve all tasks across functional areas of the Liquidity Risk Management application.

LRM Administrator can perform the following functions: View, Delete, Send For Approval, Approve, Reject, and Approval Summary. This user is not allowed to perform the following functions: Add, Edit, Copy, Make Active, Retire, and execute the Runs created in the application.

Note:

- Refer section [Approval Work Flow](#) for more information.
- You are allowed to create a user and assign all the above three roles. This user is a Super User.
- For information on how to map a user to a user group refer section 'Mapping the User to User Group' in *OFSAA Treasury Risk 8.0 Installation Guide*.

15 Approval Work Flow

15.1 Overview

OFS LRM supports approval workflows based on user roles. A one-step maker-checker approval is supported for business assumption definition and Run definition to ensure that computations are carried out using the right input data.

A definition goes through multiple stages, each with a different status, before it can be used for computation. For instance, when a new business assumption is defined and saved, it will be in 'Draft' status. When the definition is edited and sent for authorization, the status of the definition changes to 'Pending Approval' and so on. Each stage requires action from the relevant user based on the role assigned to her. Similarly, a Run definition goes through the same stages of approval.

15.2 Understanding Approval Work Flow

Each definition goes through multiple stages and has a status associated with it in each stage and the following table explains the status at each stage.

Status	Description
Draft	When a new definition is created and saved for the first time it is in 'Draft' status. While in draft status, the user is allowed to make any necessary edits without a change in the version number.
Pending Approval	When a definition is sent for approval but is not yet approved by the approver the status changes to 'Pending Approval'. This does not result in a change in the version number.
Open	When a definition is rejected by the approver, it changes to 'Open' status and is required to be updated or rectified. This does not result in a change in the version number. After the necessary updates have been made, it goes through the approval process again. You are allowed to delete a version in 'Open' status.
Approved	When a definition has been approved by the LRM approver its status changes to 'Approved'. An approved version of the definition, whose 'Active' status is Y, is picked up for execution. This does not result in a change in the version number.
In Review	When a definition is edited post approval, but is not yet sent for the next round of approval, the status displayed is 'In Review'. This edit will result in the creation of a new version of that definition with a new version number. This version of the definition is not picked up for execution till it is approved.

Status	Description
Retired	<p>When a definition is retired, i.e. no longer required for further computations, its status changes to 'Retired'. This action does not result in a change in the version number of the definition.</p> <p>A retired definition no longer appears for selection in the Run Management window while defining new Runs. However, it can still be executed as part of an existing Run definition. A retired definition is not deleted as it was used previously and will be retained for audit purposes.</p>

The steps which explain the approval work flow process and the tasks that a user can perform during each stage are as follows:

1. To create a new definition, click **Add** icon in the Business Assumptions Summary window. On creation of a new definition it is in 'Draft' status. The icons which are enabled while a definition is in Draft status are as follows: **View**, **Edit**, **Copy**, **Delete**, **Send for Approval**, and **Approval Summary**.

The actions which are permissible when a definition is in 'Draft' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.
- You can edit the definition by clicking the **Edit** icon in the summary window and make the required changes. This does not result in a new version.
- You can copy the definition and save it with a new name by clicking the **Copy** icon in the summary window. The new definition will have the same attributes as the existing definition and will be created as version 0. This definition will be in 'Draft' status and the necessary edits can be made.
- You are allowed to delete any definition which is in 'Draft' status, by selecting the definition from the summary window and clicking the **Delete** icon.
- Once the definition is finalized, you can initiate the approval process by opening the definition in edit mode and clicking the **Send for Approval** icon in the definition window. This changes the status of the definition to 'Pending Approval'.
- You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status.

2. Once the definition is finalized, it is sent for approval and its status changes to 'Pending Approval'. The icons which are enabled in the 'Pending Approval' status are as follows: **View**, **Copy**, **Approve**, **Reject**, and **Approval Summary**.

The actions which are permissible when a definition is in 'Pending Approval' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.

- You can copy the definition and save it with a new name by clicking the **Copy** icon in the summary window. The new definition will have the same attributes as the existing definition and will be created as version 0. This definition will be in 'Draft' status and the necessary edits can be made.
- You can approve the definition, if you have the appropriate access rights, by clicking the **Approve** icon. You are allowed to add comments. The status changes to 'Approved' when you have completed the approval process.
- You can reject the definition, if you have the appropriate access rights, by clicking the **Reject** icon. You are allowed to add comments. Rejecting a definition changes the status to 'In Review'.
- You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status. This window provides details of each change in the approval status.

Note:

- The Approve or Reject buttons are present only for users who are mapped to the LRM Approver role.
3. If a definition is rejected by the LRM approver, its status changes to 'Open'. The icons which are enabled in the Open status are as follows: **View**, **Edit**, **Copy**, **Send for Approval**, and **Approval Summary**.

The actions which are permissible when a definition is in 'Open' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.
 - You can edit the definition by clicking the **Edit** icon in the summary window and make the required changes. Once the edits are saved, the status still remains in 'Open' status.
 - You can copy the definition and save it with a new name by clicking the **Copy** icon in the summary window. The new definition will have the same attributes as the existing definition and will be created as version 0. This definition will be in 'Draft' status and the necessary edits can be made.
 - After modifying the definition, you can send it again for approval, by clicking **Send for Approval**. This changes the status of the definition to 'Pending Approval'.
 - You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status.
4. Once the definition is reviewed and approved its status changes to 'Approved'. The icons which are enabled in the Approved status are as follows: **View**, **Edit**, **Copy**, **Make Active**, **Retire**, and **Approval Summary**.

The actions which are permissible when a definition is in 'Approved' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.

- You can edit the definition by clicking the **Edit** icon in the summary window and make the required changes. The definition is still in 'In Review' status.
 - You can copy the definition and save it with a new name by clicking the **Copy** icon in the summary window. The new definition will have the same attributes as the existing definition and will be created as version 0. This definition will be in 'Draft' status and the necessary edits can be made.
 - If the definition is an older version that is not currently used for computations, you can make it active to be picked by for executions by clicking the **Make Active** icon in the summary window.
 - You can retire a definition when it is no longer applicable or required for calculations, by clicking **Retire** in the summary window.
 - You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status.
5. When an approved definition is edited, a new version of the definition is created with the status 'In Review'. The icons which are enabled in the In Review status are as follows: **View**, **Edit**, **Copy**, **Send for Approval**, and **Approval Summary**.

The actions which are permissible when a definition is in 'In Review' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.
 - You can edit the definition by clicking the **Edit** icon in the summary window and make the required changes. The definition is still in 'In Review' status.
 - You can copy the definition and save it with a new name by clicking the **Copy** icon in the summary window. The new definition will have the same attributes as the existing definition and will be created as version 0. This definition will be in 'Draft' status and the necessary edits can be made.
 - You can send a definition for approval by clicking the **Send for Approval** icon in the definition window. This changes the status of the definition to 'Pending Approval'.
 - You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status.
- Note:**
- Only a business assumption definition, once approved, can be edited. A new version of such the definition is created.
 - A Run, once approved, is not allowed to be edited. Hence, no versioning of Runs is supported.
6. You can retire an approved definition, if it is no longer valid, by clicking the **Retire** icon. The icons which are enabled in the 'Retire' status are as follows: **View**, **Delete Copy** and **Approval Summary**.

The actions which are permissible when a definition is 'Retired' status are as follows:

- You can view the definition by clicking the **View** icon in the summary window. You cannot edit the values in View mode.
- You are allowed to delete the retired definition by clicking the **Delete** icon. A retired business assumption is allowed to be deleted only if it is not used in any Run.
- You can view the approval workflow for the definition in the Approval Summary window, by clicking the **Approval Summary** icon. This window provides details of each change in the approval status.

The table below provides a snapshot of the UI functions that are enabled for each status:

UI Functions	Status					
	Draft	Pending Approval	Approved	Open	In Review	Retired
Add	✓	✗	✗	✗	✗	✗
View	✓	✓	✓	✓	✓	✓
Edit	✓	✗	✓	✓	✓	✗
Copy	✓	✓	✓	✓	✓	✓
Delete	✓	✗	✗	✗	✓	✓*
Send For Approval	✓	✗	✗	✓	✓	✗
Approve	✗	✓	✗	✗	✗	✗
Reject	✗	✓	✗	✗	✗	✗
Make Active	✗	✗	✓	✗	✗	✗
Retire	✗	✗	✓	✗	✗	✗
Approval Summary	✓	✓	✓	✓	✓	✓
Run Execution Parameters	✗	✗	✓	✗	✗	✗
Run Execution Summary	✗	✗	✓	✗	✗	✓

* Deletion is allowed only if the business assumption definition is not used in any Run

The approval work flow and the logical change in each status is depicted as part of the process flow below:

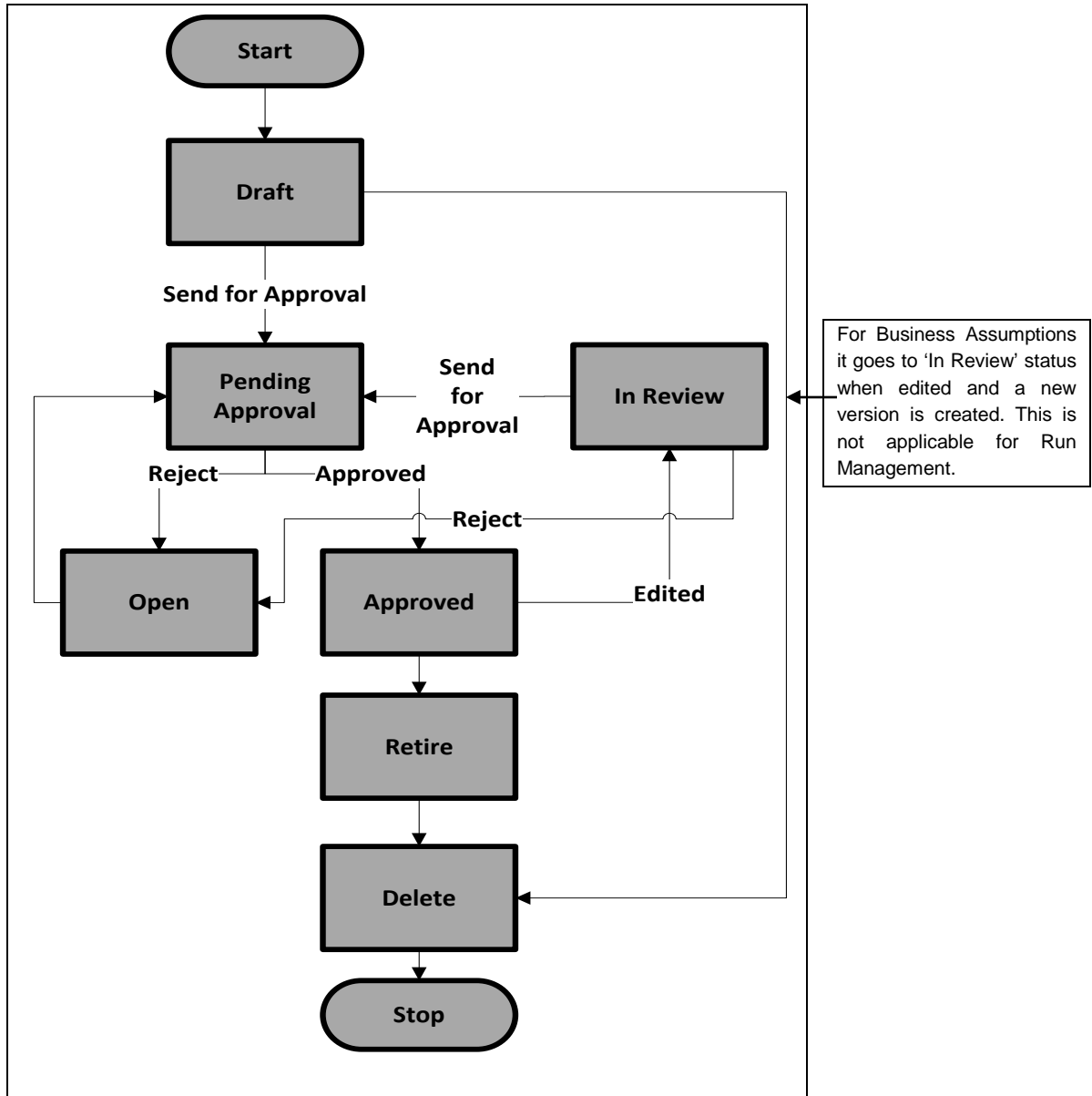


Figure 60 Approval WorkFlow

16 Liquidity Risk Reports

Regulatory requirements, whether regional or global such as BCBS 239, require banks to have stringent risk reporting practices throughout the organization. Banks across jurisdictions are gearing up to comply with the new stringent reporting requirements in order to comply with frequent regulatory submissions and management reporting. Oracle Financial Services Liquidity Risk Management helps drive this with an extensive set of pre-configured regulatory templates, graphical reports and dashboards to address complex reporting requirements on-demand.

The liquidity risk reports, which were earlier being packaged along with OFS Asset Liability Management Analytics, are now available as part of OFS Liquidity Risk Management. The reports continue to be available as part of OFS ALM Analytics up to version 6.2 to support reporting for OFS LRM v3.0. This change is applicable from version 8.0 onwards.

This section provides details around the dashboard reports and regulatory templates supported by the application. The reports are divided and displayed into two dashboards: Management Reports and Graphical Reports for which detailed drill-throughs are available in Liquidity Risk dashboard. Whereas, the regulatory templates and associated reports are available in the Regulatory Reporting dashboard.

For a complete list of reports refer [Annexure G: List of LRM Reports](#).

16.1 Liquidity Risk Dashboard

The reports which form part of the Liquidity Risk dashboard are grouped into the following subject areas based on their functionality:

- Liquidity Gap
- Detailed Gap Analysis
- Counterbalancing
- Liquidity Ratios
- Interim Results
- Funding Concentration
- Data Analysis

16.1.1 Liquidity Gap Subject Area

Liquidity Gap tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Liquidity Gap
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The</p>

	<p>drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p>
Page Level Display Parameters	Consolidation Type

The following reports are displayed as part of the Liquidity Gap subject area:

- Liquidity Gap Analysis – Base Currency
- Liquidity Gap Analysis – <Currency Type>
- Dynamic Balance Sheet – Base Currency
- Dynamic Balance Sheet – <Currency Type>

16.1.1.1 Liquidity Gap Summary – Base Currency

Report Name	Liquidity Gap Summary - Base Currency
Report Level Filters	<p>Currency: Select the Currency from the drop-down list.</p> <p>Time Bucket: Select the Time Bucket from the drop-down list which consists of one of the following options: Bucket Name and Bucket Start and End Date. All reports displaying the time buckets either displays the bucket name or the start and end date of each bucket based on this selection.</p>
Report Description	This report displays the liquidity gap results in each selected natural currency for the time bucket selected. Both the graphical and tabular report display the liquidity gap.
Report Type	<p>Graphical Report: Combination of Line and Column Chart</p> <p>Least granular time buckets are displayed on the x-axis. Liquidity gaps are displayed on the y-axis as column values. Cumulative gap is displayed on the y-axis as a line.</p> <p>Tabular Report: The following are displayed as row items:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap • Gap as % of Total Outflows • Gap Limit • Deviation from Gap Limit

	<ul style="list-style-type: none"> Total Cumulative Gap <p>The least granular time buckets are displayed as column items.</p>
Dimensions	<ul style="list-style-type: none"> Line of Business Product Type Product Customer Type Customer Account Time Bucket Definition
Base Measures	<ul style="list-style-type: none"> Cash Flows Gap Limit
Computed Measures	<ul style="list-style-type: none"> Total Inflows Total Outflows Liquidity Gap Gap as % of Total Outflows Deviation from Gap Limit Cumulative Gap
Drill-through On	<p>Graphical Report: Clicking each column in the column chart.</p> <p>Tabular Report: For tabular reports which are viewed across time buckets, drill-through is enabled both on the row items as well as the columns.</p> <p>The time buckets displayed in the main report will be the least granular time buckets. Drill-through is enabled on clicking each column which displays the report across the immediate next level of time bucket granularity till level 0 is displayed</p>
Drill-through's	<p>The drill-through sequence remains unchanged for both the tabular and graphical reports as follows:</p> <p>Level 1: Line of Business Level 2: Product Type Level 3: Product Level 4: Customer Type Level 5: Customer Level 6: Account</p> <p>Graphical Report: On clicking each column the drill-through report will display cumulative gap across the relevant dimension. All drill-through reports are combination of line and stacked column charts as displayed in the main report.</p>

	<p>Tabular Report:</p> <p>Drill-through is enabled on the following row items as per the drill-through sequence specified above:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap
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16.1.1.2 Liquidity Gap Summary – <Currency Type>

Report Name	Liquidity Gap Summary - <Currency Type>
Report Level Filters	Not Applicable
Report Description	<p>The name of this report changes based on the Currency Type selected as part of the Page Level Filters. For instance if the currency type is selected as Reporting Currency, the name of this report is displayed as Liquidity Gap Analysis – Reporting Currency.</p> <p>This report displays the liquidity gap results in the selected currency type for the time bucket selected. Both the graphical and tabular report display the liquidity gap. The time buckets are displayed based on the bucket level selected as part of the page level filter.</p>
Report Type	<p>Graphical Report:</p> <p>Combination of Line and Column Chart</p> <p>Least granular time buckets are displayed on the x-axis. Liquidity gaps are displayed on the y-axis as column values. Cumulative gap is displayed on the y-axis as a line.</p> <p>Tabular Report:</p> <p>The following are displayed as row items:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap • Gap as % of Total Outflows • Gap Limit • Deviation from Gap Limit • Cumulative Gap <p>The least granular time buckets are displayed as column items.</p>
Dimensions	<ul style="list-style-type: none"> • Line of Business • Product Type • Product • Customer Type • Customer • Account

	<ul style="list-style-type: none"> Time Bucket Definition
Base Measures	<ul style="list-style-type: none"> Cash Flows Gap Limit
Computed Measures	<ul style="list-style-type: none"> Total Inflows Total Outflows Liquidity Gap Gap as % of Total Outflows Deviation from Gap Limit Cumulative Gap
Drill-through On	<p>Graphical Report: Clicking each column in the column chart.</p> <p>Tabular Report: For tabular reports which are viewed across time buckets, drill-through is enabled both on the row items as well as the columns.</p> <p>The time buckets displayed in the main report will be the least granular time buckets. Drill-through is enabled on clicking each column which displays the report across the immediate next level of time bucket granularity till level 0 is displayed.</p>
Drill-through's	<p>The drill-through sequence remains unchanged for both the tabular and graphical reports is as follows:</p> <p>Level 1: Line of Business Level 2: Product Type Level 3: Product Level 4: Customer Type Level 5: Customer Level 6: Account</p> <p>Graphical Report: On clicking each column the drill-through report will display cumulative gap across the relevant dimension. All drill-through reports are combination of line and stacked column charts as displayed in the main report.</p> <p>Tabular Report: Drill-through is enabled on the following row items as per the existing drill-through sequence specified above:</p> <ul style="list-style-type: none"> Total Inflows Total Outflows Liquidity Gap

16.1.1.3 Dynamic Balance Sheet - Base Currency

Report Name	Dynamic Balance Sheet - Base Currency
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Report Level Filters	Not Applicable
Report Description	This is a tabular report that displays the opening balances of assets and liabilities and the corresponding gaps as of the start of each time bucket. This report drill's down to the level of each individual asset and liability.
Report Type	Tabular Report
Dimensions	<ul style="list-style-type: none"> • Balance Sheet Items
Base Measures	<ul style="list-style-type: none"> • Current EOP Balance
Computed Measures	<ul style="list-style-type: none"> • Opening Balance for each time bucket
Drill-through On	Drill-through is enabled on clicking assets and liabilities row items in the tabular report.
Drill-through's	On clicking the assets row in the main report, a list of assets with the corresponding balance is displayed. Similarly, on clicking the liabilities row in the main report, a list of liabilities with the corresponding balance is displayed

16.1.1.4 Dynamic Balance Sheet - <Currency Type>

Report Name	Dynamic Balance Sheet - <Selected Currency>
Report Level Filters	Not Applicable
Report Description	<p>The name of this report changes based on the Currency Type selected as part of the Page Level Filters. For instance if the currency type is selected as Local Currency, the name of this report is displayed as Dynamic Balance Sheet – Local Currency.</p> <p>This is a tabular report that displays the opening balances of assets and liabilities and the corresponding gaps as of the start of each time bucket. This report drill's down to the level of each individual asset and liability.</p>
Report Type	Tabular Report
Dimensions	<ul style="list-style-type: none"> • Balance Sheet Items
Base Measures	<ul style="list-style-type: none"> • Current EOP Balance
Computed Measures	<ul style="list-style-type: none"> • Opening Balance for each time bucket
Drill-through On	Drill-through is enabled on clicking assets and liabilities row items in the tabular report.
Drill-through's	On clicking the assets row in the main report, a list of assets with the corresponding balance is displayed. Similarly, on clicking the liabilities row in the main report, a list of liabilities with the corresponding balance is displayed

16.1.1.5 Detailed Gap Analysis Subject Area

Detailed Gap Analysis tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Detailed Gap Analysis
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p>
Page Level Display Parameters	<ul style="list-style-type: none"> Consolidation Type

The following reports are displayed as part of the Detailed Gap Analysis subject area:

- Detailed Bucket-Wise Gap Report - Base Currency
- Liquidity Gap across Stress Scenarios - Reporting Currency
- Gap Analysis - Top N Large Customers

16.1.1.6 Detailed Bucket-Wise Gap Report - Base Currency

Report Name	Detailed Bucket-Wise Gap Report - Base Currency
Report Level Filters	<p>Bucket Name: Select the bucket name from the drop-down list.</p> <p>Time Bucket: Select the Time Bucket from the drop-down list which consists of one of the following options: Bucket Name and Bucket Start and End Date. All reports displaying the time buckets either displays the bucket name or the start and end date of each bucket based on this selection.</p>
Report Description	This report is a tabular and graphical report which is displayed as part of a single report. This report displays the liquidity metrics across time buckets for each selected dimension.
Report Type	<p>Graphical Report:</p> <p>Combination of Line and Column Chart</p> <p>The graphical chart displays the time buckets for the selected bucket level on the x-axis. The liquidity gap for the selected</p>

	<p>dimension member is displayed on the y-axis as a column chart. The cumulative gap is displayed on the y-axis as a line graph.</p> <p>Tabular Report:</p> <p>The following are displayed as row items across all members of the selected dimension:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap • Net Gap as % of Total Outflows • Cumulative Gap <p>The time buckets corresponding to the bucket level selected as part of the page level filter are displayed as column items.</p> <p>Note:</p> <p>Dimension member selection only affects the graphical report. The tabular report remains unaffected. It displays the rows based on all members of the selected dimension.</p>
<p>Dimensions</p>	<ul style="list-style-type: none"> • Product Type • Product • Customer Type • Account
<p>Base Measures</p>	<ul style="list-style-type: none"> • Cash Flows
<p>Computed Measures</p>	<ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap • Net Gap as % of Total Outflows • Cumulative Gap
<p>Drill-through On</p>	<p>Graphical Report:</p> <p>Clicking each column in the column chart.</p> <p>Tabular Report:</p> <p>Row level drill-through on the total components of Inflows, Outflows and Liquidity Gap.</p>
<p>Drill-through's</p>	<p>The drill-through sequence for both the tabular and graphical reports is as follows:</p> <p>Level 1: Product Type</p> <p>Level 2: Product</p> <p>Level 3: Customer Type</p> <p>Level 4: Customer</p> <p>Graphical Report:</p> <p>On clicking each column the drill-through report displays the break-up of liquidity gap and cumulative gap across relevant dimension.</p>

	<p>All drill-through reports are combination of line and stacked column charts as displayed in the main report.</p> <p>Tabular Report:</p> <p>Drill-through is enabled on each dimension member against the following row items as per the drill-through sequence specified above:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap
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16.1.1.7 Liquidity Gap across Stress Scenarios - Reporting Currency

Report Name	Liquidity Gap across Stress Scenarios - Reporting Currency
Report Level Filters	Time Bucket
Report Description	<p>This report displays the liquidity gaps in each time bucket across multiple stress scenarios in the form of a column chart. This report allows comparison of liquidity gaps across multiple stress scenarios mapped to a business-as-usual Run and enables identification of the worst case scenarios.</p> <p>The drop-down values in the time bucket selection displays based on the bucket level selected as part of the page level filters. In addition to the liquidity gap, the cumulative gap up to the selected time bucket is displayed.</p>
Report Type	<p>Column Chart</p> <p>The scenarios, baseline and stress, mapped to a given contractual Run are displayed on the x-axis while the gap for the selected time bucket is displayed on the y-axis.</p>
Dimensions	<ul style="list-style-type: none"> • Stress Scenario • Line of Business • Product Type • Product • Customer Type • Customer
Base Measures	<ul style="list-style-type: none"> • Liquidity Gap
Computed Measures	Not Applicable
Drill-through On	Scenario
Drill-through's	<p>On drill-through, both the liquidity gap and cumulative gap under each scenario will be displayed across the following dimensions:</p> <p>Level 1: Line of Business</p> <p>Level 2: Product Type</p> <p>Level 3: Product</p>

	Level 4: Customer Type Level 5: Customer
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16.1.1.8 Gap Analysis - Top N Large Customers

Report Name	Gap Analysis - Top N Large Customers
Report Level Filters	<ul style="list-style-type: none"> • Top N – Specify a numeric value • Large Customer Name – Select the top N customers from the drop-down list.
Report Description	This report displays the Top N details entered where N corresponding to the number of large customers for which the report is to be displayed.
Report Type	<p>Graphical Report: Combination of Line and Column Chart</p> <p>The graphical chart displays the time buckets for the selected bucket level on the x-axis. The liquidity gap for the top N large customers is displayed on the y-axis as a column chart. The cumulative gap is displayed on the y-axis as a line graph.</p> <p>Tabular Report: The following are displayed as row items for each top N customer:</p> <ul style="list-style-type: none"> • Total Inflows • Total Outflows • Liquidity Gap <p>The time buckets corresponding to the bucket level selected as part of the page level filter are displayed as column items.</p> <p>Note: The tabular report remains unchanged and only the graphical report undergoes changes. It displays the rows based on all top N customers.</p>
Dimensions	<ul style="list-style-type: none"> • Inflows • Outflows
Base Measures	<ul style="list-style-type: none"> • Liquidity Gap • Cumulative Gap
Computed Measures	Not Applicable
Drill-through On	<p>Graphical Report: Clicking each column in the column chart.</p> <p>Tabular Report: Row level drill-through on the Inflows, Outflows and Liquidity Gap. Column drill-through on each time bucket column.</p>

Drill-through's	<p>The drill-through sequence for both the tabular and graphical reports is as follows:</p> <p>Level 1: Product Type</p> <p>Level 2: Product</p> <p>Graphical Report:</p> <p>On clicking each column the drill-through report displays the break-up of liquidity gap and cumulative gap across the relevant dimension. All drill-through reports are combination of line and column charts as displayed in the main report.</p> <p>Tabular Report:</p> <p>Drill-through is enabled on each dimension member against the following row items as per the existing drill-through sequence specified above:</p> <ul style="list-style-type: none"> • Inflows • Outflows • Liquidity Gap
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16.1.1.9 Liquidity Gap across Time

Report Name	Liquidity Gap across Time
Report Level Filters	<ul style="list-style-type: none"> • Period Start • Period End • Time Bucket – Displayed based on bucket level selected
Report Description	This report displays the period start and end date for which the trend is displayed. Additionally, you are allowed to select multiple time buckets for the purpose of viewing the trend. It only displays the historical trends.
Report Type	Line Graph Time period is displayed on the x-axis and the liquidity gap is displayed on the y-axis for each selected time bucket.
Dimensions	<ul style="list-style-type: none"> • Time Period
Base Measures	<ul style="list-style-type: none"> • Cash Flows
Computed Measures	<ul style="list-style-type: none"> • Liquidity Gap
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.2 Counterbalancing Subject Area

Counterbalancing tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Counterbalancing
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p> <p>Counterbalancing Strategy: Select the counterbalancing strategy from the drop-down list. The drop-down list is displayed based on the Run and scenario selected.</p>
Page Level Display Parameters	Consolidation Type

The following reports are displayed as part of the Counterbalancing subject area.

Counterbalancing tab consists the following option:

- Liquidity Gap Analysis Post Counterbalancing

16.1.2.1 Liquidity Gap Analysis Post Counterbalancing

Report Name	Liquidity Gap Analysis Post Counterbalancing
Report Level Filters	Not Applicable
Report Description	This report is available under a single report title. A new counterbalancing method, rollover of reverse repos, is included in the tabular report.
Report Type	<p>Graphical Report: Combination of Line and Column Chart</p> <p>The time buckets of the bucket level selected as part of the counterbalancing strategy are displayed on the x-axis. Liquidity gap is displayed on the y-axis as column values. Cumulative gap is displayed on the y-axis as a line.</p> <p>Tabular Report: The following are displayed as row items:</p> <ul style="list-style-type: none"> • Pre-Counterbalancing Metrics <ul style="list-style-type: none"> ○ Total Inflows

	<ul style="list-style-type: none"> ○ Total Outflows ○ Liquidity Gap ● Post Counterbalancing Metrics <ul style="list-style-type: none"> ○ Total Counterbalancing Inflows ○ Counterbalancing Inflows under each Counterbalancing Method ○ Total Counterbalancing Outflows ○ Counterbalancing Outflows under each Counterbalancing Method ○ Net Gap post Counterbalancing ○ Net Gap as % of Total Outflows ○ Cumulative Net Gap <p>The time buckets of the bucket level selected as part of the counterbalancing strategy are displayed as column items.</p>
Dimensions	<ul style="list-style-type: none"> ● Line of Business ● Product Type ● Product ● Customer Type ● Customer ● Account
Base Measures	<ul style="list-style-type: none"> ● Total Inflows ● Total Outflows
Computed Measures	<ul style="list-style-type: none"> ● Liquidity Gap ● Net Gap post Counterbalancing ● Net Gap as % of Total Outflows ● Cumulative Net Gap
Drill-through On	<p>Graphical Report: Clicking each column in the column chart.</p> <p>Tabular Report: Row level drill-through on the following post counterbalancing metrics:</p> <ul style="list-style-type: none"> ● Counterbalancing Inflows under each Counterbalancing Method ● Counterbalancing Outflows under each Counterbalancing Method ● Net Gap Post Counterbalancing
Drill-through's	<p>Graphical Report: On clicking each column the drill-through report displays the break-up of all liquidity gap and cumulative gap across the following</p>

	<p>dimensions:</p> <p>Level 1: Line of Business</p> <p>Level 2: Product Type</p> <p>Level 3: Product</p> <p>Level 4: Customer Type</p> <p>Level 5: Customer</p> <p>All drill- through reports are combination of line and stacked column charts as displayed in the main report.</p> <p>Tabular Report:</p> <p>Drill- through is enabled on the counterbalancing inflows and outflows under each counterbalancing method to the level of each individual counterbalancing position, as currently existing.</p> <p>Drill- through is enabled on the net gap post counterbalancing as follows:</p> <p>Level 1: Line of Business</p> <p>Level 2: Product Type</p> <p>Level 3: Product</p> <p>Level 4: Customer Type</p> <p>Level 5: Customer</p> <p>Drill- through is not available here for pre-counterbalancing liquidity metrics.</p>
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16.1.3 Liquidity Ratios Subject Area

Liquidity Ratios tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Liquidity Ratios
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p> <p>Period Start: Select the Period Start date from the calendar.</p>

	<p>Period End: Select the Period End date from the calendar</p> <p>Value Type: Select the Value Type from the drop-down list.</p>
Page Level Display Parameters	<ul style="list-style-type: none"> • Run Type • Consolidation Type • Forward Date • Liquidity Horizon

The following reports are displayed as part of the Liquidity Ratios subject area:

- Liquidity Ratios
- Liquidity Coverage Ratio Components
- Net Stable Funding Ratio Components
- High Quality Liquid Assets
- Break-up of Stock of High Quality Liquid Assets
- Liquidity Coverage Ratio by Significant Currencies
- Break-up of Stock of HQLA Denominated in Significant Currencies
- Liquidity Transferability Restrictions
- Liquidity Ratio Historical Variance Analysis
- Liquidity Ratio Trend Analysis

16.1.3.1 Liquidity Ratios

Report Name	Liquidity Ratios
Report Level Filters	Not Applicable
Report Description	This report displays the pre and post option values. The high quality liquid assets drill- through report displays additional asset levels.
Report Type	<p>Tabular Report</p> <p>The following are displayed as row items in the first table:</p> <ul style="list-style-type: none"> • Liquidity Coverage Ratio • Net Stable Funding Ratio <p>Each significant currency is listed as a separate row item in the second table.</p> <p>The pre-option and post option values for each ratio are displayed as column values.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Significant Currency • Asset Level • Cash Flow Type

	<ul style="list-style-type: none"> • Product Type • Product
Base Measures	<ul style="list-style-type: none"> • Liquidity Coverage Ratio • Net Stable Funding Ratio • High Quality Liquid Assets • Cash Flows
Computed Measures	Not Applicable
Drill-through On	Pre and post option column values of LCR and significant currency LCR.
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • As of Date • Process/Run • Run Execution ID • Run Type • Consolidation Type • Legal Entity • Forward Date • Liquidity Horizon • Significant Currency (if drill-through is from Significant Currency LCR) <p>Page Level Filters: Currency Type is a page level filter.</p> <p>Report 1:</p> <p>Report Name: High Quality Liquid Assets by Product Type</p> <p>Report Level Filters: Asset Level (other assets are not displayed)</p> <p>Report Type: Column Chart</p> <p>The product types are displayed on the x-axis and the values for the selected high quality asset level are displayed as columns on the y-axis.</p> <p>Level 2 Drill- through On: Column</p> <p>Report 2:</p> <p>Report Name: Cash Flows by Product Type (No change in this report)</p> <p>Report Level Filters: Cash Flow Type</p> <p>Report Type: Column Chart</p> <p>The product types are displayed on the x-axis and the values for the selected cash flow type are displayed as columns on the y-axis.</p> <p>Level 2 Drill- through On: Column</p>

	<p>Report 1 Level 2:</p> <p>Page Level Display Parameters: The following parameters are displayed in addition to the parameters displayed in the High Quality Liquid Assets by Product Type:</p> <ul style="list-style-type: none"> • Asset Level • Product Type <p>Report Name: High Quality Liquid Assets by Product</p> <p>Report Type: Column Chart</p> <p>The products are displayed on the x-axis and the values for the selected high quality asset level and product type combination are displayed as columns on the y-axis.</p> <p>Level 2 Drill- through On: Not Applicable</p>
	<p>Report 2 Level 2:</p> <p>Page Level Display Parameters: The following parameters are displayed in addition to the parameters displayed in the Cash Flows by Product Type:</p> <ul style="list-style-type: none"> • Cash Flow Type • Product Type <p>Report Name: Cash Flows by Product (No change in this report)</p> <p>Report Level Filters: Cash Flow Type</p> <p>Report Type: Column Chart</p> <p>The products are displayed on the x-axis and the values for the selected cash flow type and product type combination are displayed as columns on the y-axis.</p> <p>Level 2 Drill- through On: Not Applicable</p>

16.1.3.2 Liquidity Coverage Ratio Components

Report Name	Liquidity Coverage Ratio Components
Report Level Filters	Not Applicable
Report Description	The drill-through report named Components of Liquidity Coverage Ratio that was available as part of the Liquidity Ratio report are available as part of this report.
Report Type	<p>Combination of Column and Line Graph</p> <p>The following are displayed on the x-axis:</p> <ul style="list-style-type: none"> • Pre-option • Each applicable option <p>The Liquidity Coverage Ratio is displayed as a line graph on the primary y-axis. Only the line markers are displayed, the line itself is not displayed.</p> <p>The following components of LCR are displayed as columns on the secondary y-axis:</p>

	<ul style="list-style-type: none"> • Stock of High Quality Liquid Assets • Net Cash Outflows
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset Level • Cash Flow Type
Base Measures	<ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets • Stock of High Quality Liquid Assets • Total Cash Inflows • Total Cash Outflows • 75% of Total Cash Outflows • Net Cash Outflows • Liquidity Coverage Ratio
Computed Measures	Not Applicable
Drill-through On	Chart
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • As of Date • Process/Run • Run Execution ID • Run Type • Consolidation Type • Legal Entity • Forward Date • Liquidity Horizon <p>Page Level Filters: Currency Type</p> <p>Report Name: Break-up of Liquidity Coverage Ratio Components The pre and post option LCR is displayed.</p> <p>Chart 1:</p> <p>Chart Name: Stock of HQLA Components</p> <p>Report Type: Column Chart</p> <p>The stock of HQLA and its components are displayed on the x-axis</p>

	<p>and the values prior to option and post each option are displayed as columns on the y-axis.</p> <p>Level 2 Drill-through On: Not Applicable</p> <p>Chart 2:</p> <p>Chart Name: Net Cash Outflow Components</p> <p>Report Type: Column Chart</p> <p>Net cash outflow and its components are displayed on the x-axis and the values prior to option and post each option are displayed as columns on the y-axis.</p> <p>Level 2 Drill-through On: Not Applicable</p>
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16.1.3.3 Net Stable Funding Ratio Components

Report Name	Net Stable Funding Ratio Components
Report Level Filters	Not Applicable
Report Description	This report breaks down the Net Stable Funding Ratio into its components in the form of a bar chart. The available stable funding and required stable funding, which are the components of the NSFR formula, are displayed.
Report Type	<p>Combination of Column and Line Graph</p> <p>The following are displayed on the x-axis:</p> <ul style="list-style-type: none"> • Available Stable Funding • Required Stable Option <p>Their values are displayed on the y-axis.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset Level • Cash Flow Type
Base Measures	<ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets • Stock of High Quality Liquid Assets • Total Cash Inflows • Total Cash Outflows • 75% of Total Cash Outflows • Net Cash Outflows • Liquidity Coverage Ratio

Computed Measures	Not Applicable
Drill-through On	Chart
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • As of Date • Process/Run • Run Execution ID • Run Type • Consolidation Type • Legal Entity • Forward Date • Liquidity Horizon <p>Page Level Filters: Currency Type</p> <p>Report Name: Break-up of Net Stable Funding Ratio Components</p> <p>The pre and post option Net Stable Funding Ratio is displayed.</p> <p>Chart 1:</p> <p>Chart Name: Stock of HQLA Components</p> <p>Report Type: Column Chart</p> <p>The available stable funding and required stable funding components are displayed on the x-axis and the values prior to option and post each option are displayed as columns on the y-axis.</p> <p>Level 2 Drill-through On: Not Applicable</p> <p>Chart 2:</p> <p>Chart Name: Net Cash Outflow Components</p> <p>Report Type: Column Chart</p> <p>Net cash outflow and its components are displayed on the x-axis and the values prior to option and post each option are displayed as columns on the y-axis.</p> <p>Level 2 Drill-through On: Not Applicable</p>

16.1.3.4 High Quality Liquid Assets

Report Name	High Quality Liquid Assets
Report Level Filters	Encumbrance Status
Report Description	This report displays the break-up of encumbered and unencumbered high quality liquid assets across each asset level in the form of a pie chart.
Report Type	Pie Chart The pie chart displays the break-up of HQLA across the following

	<p>asset levels:</p> <ul style="list-style-type: none"> • Level 1 Assets • Level 2A Assets • Level 2B RMBS Assets • Level 2B Non-RMBS Assets
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset Level • Account
Base Measures	<ul style="list-style-type: none"> • Asset Value
Computed Measures	<ul style="list-style-type: none"> • Not Applicable
Drill-through On	Each segment of the pie chart
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • As of Date • Process/Run • Scenario • Run Execution ID • Run Type • Consolidation Type • Legal Entity • Currency Type • Forward Date • Liquidity Horizon <p>Report Level Filters: The following filters are displayed for selection:</p> <ul style="list-style-type: none"> • Product Type • Product • Natural Currency • Location • Maturity Date <p>An icon is available to filter the tabular report row items based on the filter selection. A reset icon is available to reset all filter selection and to restore the original number of rows. This filter selection is not mandatory.</p> <p>Report Name: <Selected Encumbrance Status> <Selected Asset Level> Details</p> <p>The name changes based on the report-level parameter selection. For instance, if encumbrance status is selected as Unencumbered and the Level 2A Assets segment is selected in the pie chart, the</p>

	<p>report name is displayed as Unencumbered Level 2A Asset Details</p> <p>Report Type: Tabular Report</p> <p>The following details are displayed for each asset whose attributes correspond to the selected encumbrance status and asset level:</p> <ul style="list-style-type: none"> • Asset • Product Type • Natural Currency • Location • Maturity Date • Units Available • Maturity Value • Haircut (%) • Market Value • Expected Value <p>Level 2 Drill-through On: Not Applicable</p>
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16.1.3.5 Break-up of Stock of High Quality Liquid Assets

Report Name	Break-up of Stock of High Quality Liquid Assets
Report Level Filters	Not Applicable
Report Description	This report displays the break-up of the stock of HQLA across its components in the form of a line-column chart as well as a tabular report
Report Type	<p>Report 1: Graphical Report</p> <p>Combination of Line and Column Chart</p> <p>The following components of the stock of HQLA are displayed on the x-axis:</p> <ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets <p>The values for each component are displayed as columns on the y-axis and the cumulative values are displayed as a line graph on the y-axis.</p> <p>The total stock of HQLA is also displayed.</p> <p>Report 2: Tabular Report</p> <p>The components displayed as part of the graphical report are also displayed in a tabular format as well. Additionally, the following are displayed:</p>

	<ul style="list-style-type: none"> • Adjustments to Stock of Level 1 Assets • Adjusted Level 1 Assets • Adjustments to Stock of Level 2A Assets • Adjusted Level 2A Assets • Adjustments to Stock of Level 2B RMBS Assets • Adjusted Level 2B RMBS Assets • Adjustments to Stock of Level 2B non-RMBS Assets • Adjusted Level 2B non-RMBS Assets • Stock of High Quality Liquid Assets
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset Level
Base Measures	<ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets • Adjustments to Stock of Level 1 Assets • Adjusted Level 1 Assets • Adjustments to Stock of Level 2A Assets • Adjusted Level 2A Assets • Adjustments to Stock of Level 2B RMBS Assets • Adjusted Level 2B RMBS Assets • Adjustments to Stock of Level 2B non-RMBS Assets • Adjusted Level 2B non-RMBS Assets • Stock of High Quality Liquid Assets
Computed Measures	Not Applicable
Drill-through On	<p>Report 2: Tabular Report</p> <ul style="list-style-type: none"> • Post Haircut Stock of Level <1 / 2A / 2B RMBS / 2B non-RMBS> Assets • Adjustments to Stock of Level <1 / 2A / 2B RMBS / 2B non-RMBS> Assets
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • As of Date • Process/Run

	<ul style="list-style-type: none"> • Scenario • Run Execution ID • Run Type • Consolidation Type • Legal Entity • Forward Date • Liquidity Horizon <p>Page Level Filter: Currency Type</p> <p>Report Names: The following reports are launched on clicking each corresponding link in the tabular report:</p> <ul style="list-style-type: none"> • Components of Stock of Level 1 Assets • Adjustments to Stock of Level 1 Assets • Components of Stock of Level 2A Assets • Adjustments to Stock of Level 2A Assets • Components of Stock of Level 2B RMBS Assets • Adjustments to Stock of Level 2B RMBS Assets • Components of Stock of Level 2B non-RMBS Assets • Adjustments to Stock of Level 2B non-RMBS Assets <p>Report Type: Tabular Report</p> <p>The components and corresponding values of the stock of each asset level and the adjustments for estimating the cap value are displayed.</p> <p>Level 2 Drill-through On: Not Applicable</p>
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16.1.3.6 Liquidity Coverage Ratio by Significant Currencies

Report Name	Liquidity Coverage Ratio by Significant Currencies
Report Level Filters	<ul style="list-style-type: none"> • Significant Currency
Report Description	<p>This report displays the Liquidity Coverage Ratio for each significant current in the form of a column chart. LCR for each significant currency displayed the following conditions:</p> <ul style="list-style-type: none"> • Pre-Option • Post Option 1: Drawdown on Liquidity Facilities from Central Bank • Post Option 2: Foreign Currency Liquid Assets • Post Option 3: Additional Use of Level 2 Assets
Report Type	<p>Combination of Line and Column Chart</p> <p>The following significant currency are displayed on the x-axis:</p> <ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets

	<ul style="list-style-type: none"> • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets <p>The liquidity coverage ratio is reported on the y-axis. The options are displayed in the order of execution i.e. in the order that they are applied.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Significant Currency • Asset Level
Base Measures	<ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.3.7 Break-up of Stock of HQLA Denominated in Significant Currencies

Report Name	Break-up of Stock of HQLA Denominated in Significant Currencies
Report Level Filters	<ul style="list-style-type: none"> • Significant Currency
Report Description	This report displays the break-up of the stock of HQLA denominated in each significant currency across its components in the form of a line-column chart.
Report Type	<p>Combination of Line and Column Chart</p> <p>The following components of the stock of HQLA denominated in the selected significant currency are displayed on the x-axis:</p> <ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets <p>The values for each component are displayed as columns on the y-axis and the cumulative values are displayed as a line graph on the y-</p>

	axis. The total stock of HQLA is also displayed.
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Significant Currency • Asset Level
Base Measures	<ul style="list-style-type: none"> • Stock of Level 1 Assets • Stock of Level 2A Assets • Stock of Level 2B RMBS Assets • Stock of Level 2B non-RMBS Assets • Adjustment due to Cap on Level 2B Assets • Adjustment due to Cap on Level 2 Assets
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.3.8 Liquidity Transferability Restrictions

Report Name	Liquidity Transferability Restrictions
Report Level Filters	Not Applicable
Report Description	This report identifies portion of HQLA from each legal entity that is not consolidated due to the liquidity transferability restrictions. Additionally, the consolidated HQLA and net cash outflows are displayed at the consolidation level selected as part of the Run.
Report Type	<p>Combination of Stacked Bar Chart and Line Graph</p> <p>The subsidiary legal entities are displayed on the x-axis. The following are displayed on the y-axis in the form of stacked bars:</p> <ul style="list-style-type: none"> • Restricted HQLA – Consolidated (orange color) • Unrestricted HQLA – Consolidated (green color) • Restricted HQLA – Not Consolidated (red color) <p>Net cash outflow is displayed on the y-axis in the form of a line graph.</p> <p>Additionally, the consolidated HQLA and net cash outflows at the level of the consolidated legal entity are displayed.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Time Period • HQLA Transferability Restriction
Base Measures	<ul style="list-style-type: none"> • Consolidated and Unconsolidated Portions of Restricted HQLA

	<ul style="list-style-type: none"> • Unrestricted HQLA • Consolidated Stock of HQLA • Standalone Net Cash Outflows • Consolidated Net Cash Outflows
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.3.9 Liquidity Ratio Historical Variance Analysis

Report Name	Liquidity Ratio Historical Variance Analysis
Report Level Filters	<p>As of Date 1: Select the date from the calendar and which represents the original value against which variance is calculated.</p> <p>Run Execution ID 1: Select the Run execution ID 1 from the drop-down list which lists all the Execution IDs of the selected Run executed on As of Date 1.</p> <p>As of Date 2: Select the date from the calendar and must be greater than or equal to As of Date 1.</p> <p>Run Execution ID 2: Select the Run execution ID 1 from the drop-down list which lists all the Execution IDs of the selected Run executed on As of Date 2.</p>
Report Description	This report displays the variance between the liquidity ratios and their components across 2 historical dates in the form of a tabular report. The computed values across the 2 dates and the variance between them, both in absolute as well as percentage terms are displayed.
Report Type	<p>Tabular Report</p> <p>Liquidity coverage ratio, net stable funding ratio and their components are displayed as row items. The computed values for each of these are displayed for the selected dates. Variance between the values across the selected dates is displayed in terms of absolute value as well as percentage.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Time Period • Liquidity Ratio Components • Net Stable Funding Ratio Components
Base Measures	<ul style="list-style-type: none"> • Liquidity Coverage Ratio • Net Stable Funding Ratio • Amount
Computed Measures	<ul style="list-style-type: none"> • Variance • Variance %

Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.3.10 Liquidity Ratio Trend Analysis

Report Name	Liquidity Ratio Trend Analysis
Report Level Filters	<p>Liquidity Ratio: Select the Liquidity Ration from the drop-down list which contains the options Liquidity Coverage Ratio and Net Stable Funding Ratio.</p> <p>Period Start: Select the start date.</p> <p>Period End: Select the end date.</p> <p>Value Type: Select the Value Type from the drop-down containing the options Daily Value and 90-Day Average.</p>
Report Description	This report displays the period start and end date for which the trend is displayed is selected by the user. The report displays the values of the selected ratio as well as its components in terms of either a daily value or a 90-day average value based on the selection.
Report Type	<p>Combination of Column and Line Graph</p> <p>The time period is displayed on the x-axis. The daily value or the 90-day average value of the liquidity ratio metrics and the minimum requirement are displayed on the primary y-axis in the form of line graphs. The components of the selected ratio are displayed on the secondary y-axis in the form of a column chart for the selected time period.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Time Period
Base Measures	<ul style="list-style-type: none"> • Liquidity Coverage Ratio • Stock of HQLA • Net Cash Outflows • Net Stable Funding Ratio • Available Stable Funding • Required Stable Funding
Computed Measures	<ul style="list-style-type: none"> • 90-Day Average Value
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.4 Interim Results Subject Area

Interim Results tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Interim Results
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p> <p>Time Bucket Display: Select the Time Bucket Display from the drop-down list which consists of one of the following options: Bucket Name and Bucket Start and End Date. All reports displaying the time buckets either displays the bucket name or the start and end date of each bucket based on this selection.</p>
Page Level Display Parameters	Consolidation Type

The following reports are displayed as part of the Interim Results subject area:

- Interim Results across Buckets
- Interim Liquidity Gaps across Business Assumptions

16.1.4.1 Interim Results across Buckets

Report Name	Interim Results across Buckets
Report Level Filters	<p>Business Assumption: A drop down list containing the following options:</p> <ul style="list-style-type: none"> • Contractual • Business Assumptions (displayed in the order of execution) • Business-as-Usual/Stress
Report Description	This report displays the changes in cash flows in each time bucket due to the application of the selected business assumptions in the form of a column chart. It enables the assessment of the impact of each business assumption on the contractual cash flows occurring in each time bucket.
Report Type	<p>Combination of Line and Stacked Column Chart</p> <p>Time buckets are displayed on the x-axis while the impact of assumptions on cash flows is displayed on the y-axis.</p>

Dimensions	<ul style="list-style-type: none"> • Legal Entity • Time Bucket Definition • Business Assumption • Cash Flows
Base Measures	<ul style="list-style-type: none"> • Cash Flows
Computed Measures	<ul style="list-style-type: none"> • Cumulative Cash Flows
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.4.2 Interim Liquidity Gaps across Business Assumptions

Report Name	Interim Liquidity Gaps across Business Assumptions
Report Level Filters	Time Bucket: The list of time buckets is displayed based on the bucket level selected.
Report Description	This report displays the impact of each business assumption on the baseline cash flows, on a standalone as well as cumulative basis, for each selected time bucket in the form of a line-column combination chart. It displays the changes in cash flows of a given time bucket due to each business assumption.
Report Type	<p>Combination of Line and Stacked Column Chart</p> <p>Baseline cash flows in case of a business-as-usual (BAU) Run refer to the contractual cash flows; in case of a Stress Run they refer to the BAU cash flows.</p> <p>For each selected time bucket, baseline condition and business assumptions applied as part of the selected Run are displayed on the x-axis. The standalone impact of each assumption on the cash flows is reported on the primary y-axis in the form of columns while the cumulative impact is displayed on the secondary y-axis in the form of a line.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Time Bucket Definition • Business Assumptions • Cash Flows
Base Measures	<ul style="list-style-type: none"> • Cash Flows
Computed Measures	<ul style="list-style-type: none"> • Cumulative Cash Flows
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.5 Funding Concentration Subject Area

Funding Concentration tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Funding Concentration
Page Level Filters	<p>Calendar Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario Name: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p> <p>Dimension: Select the dimension from the drop-down list.</p> <p>Significant Currency: Select the significant currency from the drop-down list.</p>
Page Level Display Parameters	Consolidation Type

The following reports are displayed as part of the Funding Concentration subject area:

- Concentration of Funding Liabilities across Dimensions
- Funding Concentration Trend Analysis
- List of Assets by Significant Currencies
- List of Liabilities by Significant Currencies

16.1.5.1 Concentration of Funding Liabilities across Dimensions

Report Name	Concentration of Funding Liabilities across Dimensions
Report Level Filters	<p>Dimension: Select a dimension from the following drop-down options:</p> <ul style="list-style-type: none"> • Counterparty • Currency • Product/Instrument Type • Product/Instrument <p>Measure: This is a drop down filter of the following options:</p> <ul style="list-style-type: none"> • Funding Amount

	<ul style="list-style-type: none"> Percentage of Total Funding
Report Description	This report displays Concentration of Funding Liabilities across Dimensions. The total funding concentration by each significant dimension member and for each time bucket is displayed.
Report Type	<p>Graphical Report:</p> <p>Pie Chart</p> <p>The tabular report displays the funding liabilities by significant members of each selected dimension. This value of funding from each significant dimensions member is displayed across the time buckets as a percentage of the total funding liabilities. Significance for each dimension is determined based on regulatory guidelines.</p> <p>Tabular Report:</p> <p>This report displays the total funding provided by significant dimension members over a trailing 30-day period in the form of a line graph. The report displays the funding liabilities across time buckets as a percentage of the total funding liabilities of the institution.</p> <p>Time period is displayed on the x-axis while the value of funding liabilities from significant sources is reported on the y-axis.</p>
Dimensions	<ul style="list-style-type: none"> Counterparty Currency Product/Instrument Type Product/Instrument
Base Measures	<ul style="list-style-type: none"> Funding Amount
Computed Measures	<ul style="list-style-type: none"> Percentage of Total Funding
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.5.2 Funding Concentration Trend Analysis

Report Name	Funding Concentration Trend Analysis
Report Level Filters	<ul style="list-style-type: none"> Dimension Period Start Period End
Report Description	This report displays the total funding provided by significant dimension members over a trailing 30-day period in the form of a line graph. The report displays the funding liabilities across time buckets as a percentage of the total funding liabilities of the institution.
Report Type	<p>Combination of Line and Column Chart</p> <p>Time period is displayed on the x-axis while the value of funding liabilities from significant sources is reported on the y-axis.</p> <p>Additionally, the selected dimension is displayed for informational</p>

	purpose.
Dimensions	<ul style="list-style-type: none"> • Counterparty • Currency • Product/Instrument Type • Product/Instrument
Base Measures	<ul style="list-style-type: none"> • Funding Amount
Computed Measures	<ul style="list-style-type: none"> • Total Funding from Significant Dimension Members • Funding Concentration
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.5.3 List of Assets by Significant Currencies

Report Name	List of Assets by Significant Currencies
Report Level Filters	<ul style="list-style-type: none"> • Significant Currency
Report Description	This report displays the list of assets denominated in each selected significant currency in the form of a tabular report. The asset balances are displayed across time buckets based on their maturity. Significant currencies are available for selection as a drop-down list.
Report Type	<p>Tabular Report</p> <p>The assets denominated in the selected significant currency are displayed as row items. The asset value is displayed for each time bucket in columns.</p>
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset/Liability • Significant Currency
Base Measures	<ul style="list-style-type: none"> • Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.5.4 List of Liabilities by Significant Currencies

Report Name	List of Liabilities by Significant Currencies
Report Level Filters	<ul style="list-style-type: none"> • Significant Currency

Report Description	This report displays the list of liabilities denominated in each selected significant currency in the form of a tabular report. The liability balances are displayed across time buckets based on their maturity. Significant currencies are available for selection as a drop-down list.
Report Type	Tabular Report The liabilities denominated in the selected significant currency are displayed as row items. The liability value is displayed for each time bucket in columns.
Dimensions	<ul style="list-style-type: none"> • Legal Entity • Asset/Liability • Significant Currency
Base Measures	<ul style="list-style-type: none"> • Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.6 Data Analysis Subject Area

Data Analysis tab consists of the following page level filters which are applicable to all the reports in this subject area.

Dashboard Name	Liquidity Risk
Subject Area	Data Analysis
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the Process/Run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario: Select the Scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID: Select the Run Execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Legal Entity: Select the Legal Entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the Currency Type from the drop-down list. The drop-down list displays the following options: Local Currency and Reporting Currency.</p> <p>Time Bucket Display: Select the Time Bucket Display from the drop-down list which consists of one of the following options: Bucket Name and Bucket Start and End Date. All reports displaying the time buckets either displays the bucket name or the start and end date of each bucket based on this selection.</p>

Page Level Display Parameters	Not Applicable
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The following reports are displayed as part of the Data Analysis subject area:

- Deposit Balances
- Loan Balances
- Marketable Assets
- Repos
- Delinquency Report
- Delinquency Customer

16.1.6.1 Deposit Balances

Report Name	Deposit Balances
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	This report displays a list of all the deposits which is part of the given Legal Entity which is selected in the Contractual Page of the Dashboard. The currency type is selected as one of the following: Natural Currency, Local Currency, and Reporting Currency.
Report Type	<p>Tabular Report</p> <p>The Average Monthly Balance and EOP Balance will be displayed in the denomination of the currency type selected. For instance if the natural currency of the account is Indian Rupees, the currency type is selected as reporting currency and the reporting currency mapped to the selected legal entity is US Dollars, then the balances will be converted to US Dollar based on the exchange rate prevalent on the Run Execution Date and displayed in dollars.</p>
Dimensions	<ul style="list-style-type: none"> • Product • Customer Type • Customer • Account
Base Measures	<ul style="list-style-type: none"> • Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.6.2 Loan Balances

Report Name	Loan Balances
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	This report displays a list of all the loan accounts which are part of the given Legal Entity which is selected in the Contractual Page of the Dashboard. The currency type is selected as one of the following: Natural Currency, Local Currency, and Reporting Currency.
Report Type	<p>Tabular Report</p> <p>The Credit Limit, Limit Utilization and EOP Balance will be displayed in the denomination of the currency type selected. For instance if the natural currency of the account is Indian Rupees, the currency type is selected as reporting currency and the reporting currency mapped to the selected legal entity is US Dollars, then the limits and balances will be converted to US Dollar based on the exchange rate prevalent on the Run Execution Date and displayed in dollars.</p>
Dimensions	<ul style="list-style-type: none"> • Product • Customer Type • Customer • Account
Base Measures	<ul style="list-style-type: none"> • Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.6.3 Marketable Assets

Report Name	Marketable Assets
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	This report displays a list of all the marketable assets which are part of the given Legal Entity which is selected in the Contractual Page of the Dashboard. The currency type is selected as one of the following: Natural Currency, Local Currency and Reporting Currency.
Report Type	Tabular Report

	The Face Value and Market Value will be displayed in the denomination of the currency type selected. For instance if the natural currency of the account is Indian Rupees, the currency type is selected as reporting currency and the reporting currency mapped to the selected legal entity is US Dollars, then the values will be converted to US Dollar based on the exchange rate prevalent on the Run Execution Date and displayed in dollars.
Asset Type	<ul style="list-style-type: none"> • Interest Rate Instruments • Equity Instruments • Commodity Instruments • Currency Instruments • Securitized Products • Property
Base Measures	<ul style="list-style-type: none"> • Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.6.4 Repos

Report Name	Repos
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	This report displays a list of all the repo transactions of the given Legal Entity which is selected in the Contractual Page of the Dashboard. The currency type is selected as one of the following: Natural Currency, Local Currency and Reporting Currency.
Report Type	<p>Tabular Report</p> <p>The Collateral Value, Asset Quality Limit, Market Value and Maturity Amount will be displayed in the denomination of the currency type selected. For instance if the natural currency of the account is Indian Rupees, the currency type is selected as reporting currency and the reporting currency mapped to the selected legal entity is US Dollars, then the values will be converted to US Dollar based on the exchange rate prevalent on the Run Execution Date and displayed in dollars..</p>
Asset Type	<ul style="list-style-type: none"> • Interest Rate Instruments • Equity Instruments • Commodity Instruments • Currency Instruments

	<ul style="list-style-type: none"> Securitized Products Property
Base Measures	<ul style="list-style-type: none"> Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.1.6.5 Delinquency Report

Report Name	Delinquency Report
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	This is a tabular report displaying the delinquent amount in each time bucket across product types. Additionally, 2 report level parameters, Reporting Bucket Definition and Bucket Level have been introduced for this report.
Report Type	<p>Tabular Report</p> <p>Product types are displayed as row items while time buckets based on the bucket level selected are displayed as column headers. The delinquent amounts in each time bucket are displayed as column values.</p>
Dimensions	<ul style="list-style-type: none"> Product Type Product Customer Type Customer
Base Measures	<ul style="list-style-type: none"> Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	As currently available on each product type
Drill-through's	<p>The drill-through sequence for this report are as follows:</p> <p>Level 1: Product Type</p> <p>Level 2: Product</p> <p>Level 3: Customer type</p> <p>Level 4: Customer</p>

16.1.6.6 Delinquent Customer

Report Name	Delinquency Customer
Report Level Filters	<p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down displays based on the Time Bucket Definition selected in the given Run.</p> <p>Bucket Level: Select the bucket level from the drop-down list. The drop-down list is filtered based on the Reporting Time Bucket selected.</p>
Report Description	<p>This is a tabular report that displays the following details of each delinquent customer:</p> <ul style="list-style-type: none"> • Account Number • Product Type • Product • Customer Type • Customer • Tenor • Delinquent Days • Delinquent Amount.
Report Type	<p>Tabular Report</p> <p>Product types are displayed as row items while time buckets based on the bucket level selected are displayed as column headers. The delinquent amounts in each time bucket are displayed as column values.</p>
Dimensions	<ul style="list-style-type: none"> • Product • Customer Type • Customer • Account
Base Measures	<ul style="list-style-type: none"> • Delinquent Amount
Computed Measures	Not Applicable
Drill-through On	Not Applicable
Drill-through's	Not Applicable

16.2 Regulatory Reporting Templates Dashboard

The reports which form part of the Regulatory Reporting Templates dashboard are grouped into the following two subject areas. Depending on their functionality, these reports are grouped together:

- BIS
- US Federal Reserve

16.2.1 BIS

16.2.1.1 BIS Basel III Liquidity Ratio Reports

I. Liquidity Coverage Ratio Common Disclosure Template

This report displays the components of the Basel III liquidity coverage ratio in the form of a common disclosure template prescribed by BIS.

Dashboard Name	Regulatory Reporting Templates
Subject Area	BIS
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario Name: This is Contractual by default.</p> <p>Run Execution ID: Select the run execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Entity Name: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting Currency.</p>
Page Level Display Parameters	Not Applicable
Report Name	BIS Liquidity Coverage Ratio Common Disclosure Template

II. Liquidity Coverage Ratio QIS Template

This report displays the detailed components of the Basel III liquidity coverage ratio in the form of a pre-specified regulatory template.

Dashboard Name	Regulatory Reporting Templates
Subject Area	BIS
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario Name: This is Contractual by default.</p> <p>Run Execution ID: Select the run execution ID from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Entity Name: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting</p>

	Currency.
Page Level Display Parameters	Not Applicable
Report Name	BIS Basel III Liquidity Coverage Ratio QIS Template

III. LCR QIS Reporting Line Variance Analysis

This report displays the un-weighted amount for each line item of the LCR QIS template across 2 selected time periods and the variance between these amounts in absolute and percentage terms. Additionally, it provides a break-up of the un-weighted amounts of each line item across products.

Dashboard Name	Regulatory Reporting Templates
Subject Area	BIS
Page Level Filters	<p>As of Date 1: Select date 1 from the calendar which represents the original value against which variance is calculated.</p> <p>As of Date 2: Select date 2 from the calendar and must be greater than or equal to As of Date 1.</p> <p>Process/Run: Select the process/run from the drop-down list. The drop-down list is filtered based on the date selected.</p> <p>Scenario: Select the scenario from the drop-down list. The drop-down list is filtered based on the Run selected.</p> <p>Run Execution ID 1: Select the run execution ID 1 from the drop-down list which lists all the Execution IDs of the selected Run executed on As of Date 1.</p> <p>Run Execution ID 2: T Select the run execution ID 1 from the drop-down list which lists all the Execution IDs of the selected Run executed on As of Date 2.</p> <p>Entity Name: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down list from one of the following options: Local Currency and Reporting Currency</p>
Page Level Display Parameters	Not Applicable
Report Name	LCR QIS Template Reporting Line Variance Analysis
Report Level Filters	Not Applicable
Report Description	This is a new report that displays the un-weighted amount for each line item of the LCR QIS template across 2 selected time periods and the variance between these amounts in absolute and percentage terms. Additionally, it provides a break-up of the un-weighted amounts of each line item across products.
Report Type	Tabular Report

	The row items of the tabular report are based on the LCR QIS template issued by BIS. The un-weighted amounts are displayed as columns for each time period selected. Variance between the 2 periods is displayed in absolute and percentage terms.
Dimensions	<ul style="list-style-type: none"> • LCR Reporting Line • Product
Base Measures	<ul style="list-style-type: none"> • Market Value • EOP Balance • Amount
Computed Measures	<ul style="list-style-type: none"> • Variance • Variance %
Drill-through On	Each row of the LCR QIS template that has values associated with it.
Drill-through's	<p>Level 1:</p> <p>Page Level Display Parameters: The following parameters are displayed:</p> <ul style="list-style-type: none"> • Process/Run • Scenario • Run Type • Consolidation Type • Legal Entity • Currency Type • Drill-through on LCR QIS Line Number • QIS Line Descriptions <p>Report Name: LCR QIS Template Reporting Line Variance Analysis by Product</p> <p>Report Type: Tabular Report</p> <p>The break-up of the un-weighted amount of the selected LCR QIS line item and the variance between 2 time periods is displayed across products.</p> <p>Level 2 Drill-through On: Not Applicable</p>

16.2.2 US Federal Reserve

16.2.2.1 Liquidity Monitoring Reports

I. FR 2052a - Complex Institution Liquidity Monitoring Report

This report displays the liquidity position of a large and complex bank holding company and its subsidiaries under contractual terms.

Dashboard Name	Regulatory Reporting Templates
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Subject Area	US Federal Reserve
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario: This is Contractual by default.</p> <p>Legal Entity: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting Currency.</p> <p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down list displays based on the Time Bucket Definition selected in the given Run.</p>
Page Level Display Parameters	Not Applicable
Report Name	FR 2052a - Complex Institution Liquidity Monitoring Report

Only the format of the pre-specified regulatory template is provided here. The details to be reported are available as part of the US Federal Reserve document named DRAFT Instructions for completing and submitting the FR 2052a.

II. FR 2052b - Liquidity Monitoring Report

a. FR 2052b - Liquidity Monitoring Report - Consolidated

This is a report displays the consolidated liquidity position of a smaller bank holding company under contractual terms.

Dashboard Name	Regulatory Reporting Templates
Subject Area	US Federal Reserve
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario: This is Contractual by default.</p> <p>Legal Entity: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting Currency.</p> <p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down list displays based on the Time Bucket Definition selected in the given Run.</p>
Page Level Display	Not Applicable

Parameters	
Report Name	FR 2052b - Liquidity Monitoring Report - Consolidated

b. FR 2052b - Liquidity Monitoring Report - Parent

This is a new report which displays the liquidity position of a smaller bank holding company on a standalone basis under contractual terms.

Dashboard Name	Regulatory Reporting Templates
Subject Area	US Federal Reserve
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario: This is Contractual by default.</p> <p>Legal Entity: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting Currency.</p> <p>Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down list displays based on the Time Bucket Definition selected in the given Run.</p>
Page Level Display Parameters	Not Applicable
Report Name	FR 2052b - Liquidity Monitoring Report - Parent

c. FR 2052b - Liquidity Monitoring Report - Pricing

This report displays the pricing metrics used.

Dashboard Name	Regulatory Reporting Templates
Subject Area	US Federal Reserve
Page Level Filters	<p>As of Date: Select the date from the calendar.</p> <p>Process/Run: Select the process/run from the drop-down selection. The drop-down list is filtered based on the dates selected.</p> <p>Scenario: This is Contractual by default.</p> <p>Legal Entity: Select the legal entity from the drop-down list. The drop-down list is filtered based on As of Date, Run and Scenario selected.</p> <p>Currency Type: Select the currency type from the drop-down selection of one of the following options: Local Currency and Reporting Currency.</p>

	Reporting Bucket Definition: Select the reporting bucket definition from the drop-down list. The drop-down list displays based on the Time Bucket Definition selected in the given Run.
Page Level Display Parameters	Not Applicable
Report Name	FR 2052b - Liquidity Monitoring Report - Pricing

17 Annexure A: LRM Data Flow and Dimensions

This section provides details on the movement of data from staging area or tables to the processing area or tables. The application supports multiple pre-configured table-to-table (T2T) definitions and data transformations (DT) for moving data from the staging tables to the processing tables.

This section details all the table names where cash flow data is moved and stored in the reporting tables.

1. When OFS ALM is installed,
Data on cash flows is expected as an input in the Stage Account Cash Flow table which also contains cash flow dates for all the accounts. On execution of Process Cash Flow Population Control T2T, data moves from Stage Account Cash Flow table to Fact Process Cash Flow table.
2. In Fact Process Cash Flow table, all the corresponding keys of stage account cash flows code columns are populated by joining them to the corresponding code columns in dimension tables (keys are fetched from these dimension tables).
3. Data moves from Fact Process Cash Flow table to Fact Account Cash Flow table. The cash flows in Fact Process Cash Flow table are time bucketed and aggregated account and time bucket wise as they are moved to Fact Account Cash Flow table. This is done by these two T2T's (LRM Time Bucket Account Cash flow Population and LRM Open Maturity Time Bucket Account Cash flow Population).

Note:

Cash flows are stored at the granularity of account and time bucket in the Fact Account Cash Flow table whereas they are stored at the granularity of account and cash flow date in the Fact Process Cash Flow table.

4. When OFS ALM is not installed,
The cash flows in stage account cash flows are moved to fact account cash flows. The cash flows are time bucketed and aggregated as they move from stage account cash flows to fact account cash flows. This is done in these two T2T's (LRM Fact Account Cash flows Time Bucket Population and LRM Fact Account Cash flows Open Maturity Time Bucket Population).
5. Cash flows from Fact Account Cash Flow table move into Fact Aggregate Cash Flow table based on user selected aggregation dimensions and the mandatory dimensions. The aggregation dimensions supported by the application are as follows:

Serial No.	Dimension Name	Dimension Description
1	4G Reporting Line Surrogate Key	This dimension stores the underlying asset category key corresponding to 4G.
2	Account Country Liquidity Risk Flag	This dimension identifies whether the legal entity has liquidity risk in account's country. If account's country is equal to one of the legal entity's country in legal entity organization structure then, this is considered as liquidity risk is taken in account's

Serial No.	Dimension Name	Dimension Description
		country. This flag is "Y" else it is "N".
3	Account Forward Start Flag	This dimension stores the flag indicating if account starts in the future date or no. For example, this flag is "Y" for forward starting repos, forward starting options, and so on.
4	Account Fully Covered Under Insurance Scheme	This dimension stores the flag which states if account is fully covered under insurance scheme.
5	Account Risk Weight Surrogate Key	This dimension stores the Account Risk Weight Identifier.
6	Account Status Surrogate Key	This dimension stores the unique surrogate key for each account status like 'Delinquent', 'Closed' and so on.
7	Acquisition Channel Surrogate Key	This dimension stores the unique surrogate key for each acquisition channel like 'Internet', Direct Mailing, Customer Referral and so on.
8	Age on Book Band Key	This dimension stores the integer code to represent the lower and upper bound of age on book.
9	As of Date Surrogate Key	This dimension stores as of date surrogate key.
10	Asset Level Surrogate Key	This dimension stores asset level surrogate key.
11	Asset with Hedge Flag	This dimension indicates if asset has a hedge associated with it.
12	Available Intraday Liquidity Surrogate Source Key	This dimension stores available intraday liquidity surrogate key. For example reserve balances at the central bank, balance with the correspondent bank providing services as mentioned in BCBS 248.
13	Broker Deposit Type Surrogate Key	This dimension stores the unique surrogate key for broker deposit type. A broker is an individual or party (brokerage firm) that arranges transactions between a buyer and a seller for a commission when the deal is executed. There are several kinds of brokers, each of whom deals in specific types of transactions. Each broker provides different levels or type of service. List of Values for this table is "Reciprocal", "Sweep" and "Other".
14	Broker Involved Flag	This dimension indicates if there is a broker intervention in issuance of instrument to counterparty.
15	Callable Period Band Surrogate	This dimension stores the band surrogate Key for callable

Serial No.	Dimension Name	Dimension Description
	Key	period of the account.
16	Callable Period Greater then Liquidity Horizon	This dimension stores the flag that indicates if callable period is greater the liquidity horizon (selected by user at run time).
17	Collateral Covers Short Position	This dimension stores the flag that indicates if collateral of the account is used for covering the short position.
18	Collateral Re-hypothecation Flag	This dimension indicates if the collateral is currently rehypothecated or not.
19	Collateral Segregated Flag	This dimension indicates if the collateral received is from a pool of assets or posted individually for a specific purpose.
20	Collateral Substituted Asset Level Surrogate Key	This dimension stores HQLA level of collateral which can be substituted for the collateral given for an account. If received, collateral for this account is HQLA (High Quality Liquid Asset) and it can be substituted for other HQLA assets without the banks consent. For example, surrogate key corresponding to "Level 1","Level 2A","Level 2B","Other Asset" appears in this column.
21	Commitment Contract Code	This dimension stores the unique identifier of the commitment contract code.
22	Covering Banks Short Position	This dimension stores the indicator stating if asset is utilized for covering short positions of bank. For example, a firm sells \$100 of Category-B security short. If a firm has such security in its trading inventory which is used to cover it's short position, then this flag will be "Y".
23	Covering Customer Short Position	This dimension stores the indicator stating if asset is utilized for covering short positions of customer. For example, a customer in the US broker/dealers prime brokerage unit sells \$100 of Category-B security short. If a firm has such security in its trading inventory which is used to cover customer's short position, then this flag will be "Y".
24	Credit Facility Status	This dimension indicates if facility is credit facility or liquid facility. "Y" states it is credit facility.
25	Credit Line Purpose Category Surrogate Key	This dimension stores the unique surrogate key for purpose category of credit line which is available for liquidity, credit, both or other.
26	Credit Line Purpose Surrogate	This dimension stores the unique identifier for the credit facility

Serial No.	Dimension Name	Dimension Description
	Key	purpose key.
27	Credit Line Surrogate Key	This dimension stores the surrogate key for credit facility for which data is stored.
28	Credit Rating Surrogate Key	This dimension stores the unique numeric code for credit rating. It is published credit ratings of borrower/issuer.
29	Currency Code	This dimension stores the currency code of the currency in which deposit insurance amount is specified for the given insurance scheme.
30	Customer Child Flag	This dimension indicates if customer is a legal entity which is a descendent to the legal entity of account in the bank's organization structure.
31	Customer Established Relationship Flag	This dimension indicates whether the customer is holding more than one non-transactional account with the bank.
32	Customer Financial Entity Identifier	This dimension stores the flag that indicates if customer type is a financial entity or not.
33	Customer Parent Flag	This dimension indicates if customer is a legal entity which is a sucessor to the legal entity of account in the banks organization structure.
34	Customer Type Surrogate Key	This dimension stores the unique surrogate key for each customer type.
35	Deferred Start Date Time Bucket	This dimension stores the deferred start date, time bucket, and surrogate key in case of forward starting repo transactions.
36	Delinquency Day Greater then Liquidity Horizon	This dimension stores the flag that indicates if delinquency day of the instrument is greater than liquidity horizon.
37	Domestic Currency Flag	This dimension stores the flag which identifies if the mitigant belongs to the domestic currency or foreign currency. Mitigant belongs to the domestic currency if currency of mitigant and currency of the legal entity is same else its a foreign currency account. This is one of the criterias which is used to qualify mitigant as high quality liquid asset.
38	Domestic Customer Flag	This dimension indicates if customer is a domestic customer.
39	Domestic Issuer Flag	This dimension indicates if issuer is domestic issuer. This is derived column. When country ID of legal entity and issuer are same then this flag is "Y".

Serial No.	Dimension Name	Dimension Description
40	Downgrade Trigger Associated to Account Flag	This dimension stores whether an account has downgrade trigger associated to it. If 'Y' then yes or else it is no.
41	Effective Insurance Scheme Flag	This dimension stores if insurance qualifies as effective insurance as per supervisory criteria. An effective deposit insurance scheme refers to a scheme (1) that guarantees that it has the ability to make prompt payouts, (2) for which the coverage is clearly defined and (3) of which public awareness is high.
42	Effective Maturity Band Surrogate Key	This dimension stores the effective maturity band surrogate key.
43	Effective Maturity Time Bucket Surrogate Key	This dimension stores the effective maturity time bucket surrogate key.
44	Effective Residual Maturity Band Surrogate Key	This dimension stores the effective residual maturity band surrogate key
45	Effective Residual Maturity Time Bucket Surrogate Key	This dimension stores the effective residual maturity time bucket surrogate key.
46	Embedded Options Flag	This dimension indicates if the account has any embedded options. An embedded option is a special condition attached to a security, and in particular, a bond that gives the holder or the issuer the right to perform a specified action at some point in the future.
47	Encumbrance Period	This dimension stores encumbrance period.
48	Encumbrance Status Flag	This dimension is the indicator of whether a given account is encumbered or no. This is applicable when security is pledged or financial institutions have raised fund through repo; N=Not.
49	Encumbrance Status Surrogate Key	This dimension stores encumbrance status surrogate key.
50	Encumbrance Time Bucket Surrogate Key	This dimension stores encumbrance time bucket surrogate key.
51	End of Period Balance Band Surrogate Key	This dimension stores the integer code to represent the lower and upper bound of end of period balance band.
52	Entity Surrogate Key	This dimension stores entity surrogate key.

Serial No.	Dimension Name	Dimension Description
53	Escrow Account Flag	This dimension stores the flag which states if account is escrow account or not. An escrow account can be used in the sale of a house, for example. If there are conditions to the sale, such as the passing of an inspection, the buyer and seller may agree to use escrow. In this case, the buyer of the property deposits the payment amount for the house in an escrow account held by a third party. This assures the seller - in the process of allowing the house to be inspected - that the buyer is capable of making payment. Once all of the conditions to the sale are satisfied, the escrow transfers the payment to the seller, and title is transferred to the buyer.
54	Exactly off-Setting Reverse Repo Flag	This dimension indicates if unencumbered securities held by the institution has an exactly offsetting reverse repurchase transaction. Securities are considered as exactly offsetting when the security on each transaction has the same unique identifier (for example, ISIN number or CUSIP) as securities received in a reverse repo transaction.
55	Excess Mitigant Value Reporting Currency	This dimension stores the excess mitigant value allocated to account.
56	Facility Commitment Identifier	This dimension stores the flag that indicates if facility is committed or no.
57	Flag for Ex-Post Credit Decision by Central Bank	This dimension stores indicator if there is any ex-post credit decision by Central Bank at account level. This is required as one of the criterias for Option 1 calculation of LCR as specified in BCBS238.
58	Full Recourse Flag	This dimension stores the full recourse flag. The underlying mortgages of RMBS are considered as full recourse loans if in the case of foreclosure the mortgage owner remains liable for any shortfall in sales proceeds from the property. That is, the lender can go after the borrowers personal assets to collect if the loan is defaulted. Default value is 'No'. Specific to RMBS.
59	Fully Performing Asset Flag	This dimension states if the account is fully performing. The loan has not defaulted in the past and thereby the bank has no reason to expect a default within the 30-day time horizon.
60	Guarantor Risk Weight Surrogate Key	This dimension stores the guarantor risk weight key.

Serial No.	Dimension Name	Dimension Description
61	Guarantor US Flag	This dimension stores the flag to identify if guarantor of the account is "US" or no. This is specifically required for NPR classification.
62	High Quality Liquid Asset Collateral Substitution	This dimension stores if received collateral for this account is HQLA (High Quality Liquid Asset) and it can be substituted for non-HQLA assets without the banks consent.
63	High Stability Flag	This dimension stores the high stability indicator of an account.
64	Highly Stable Amount	This dimension stores the highly stable amount in reporting currency. To identify an account as highly stable it has to fulfil three additional criterias specified by BIS.
65	Holding Type Identifier	This dimension is a financial term to classify financial assets. It has 4 values - AFS, HFT, HTM, Loans and Receivables.
66	Home Jurisdiction Flag	This dimension states if liquidity risk is taken in home jurisdiction.
67	In or Out or At The Money Indicator	This dimension stores the identifier to know if option is in the money (I), out the money (O) or at the money (A). These are terms associated with derivative options.
68	Institutional Network Flag	This dimension indicates if the banks are members of institutional networks of cooperative banks. Institutional networks of cooperative banks are legally autonomous banks with specific functions. This is required for application of run-off as specified in BCBS238.
69	Insurance Fund Type	This dimension stores the fund type of insurance scheme. If the insurance scheme's insurance fund is pre-funded (ex-ante) or post-funded (ex-post). LOV are ex-ante and ex-post.
70	Inter Bank Identifier	This dimension stores the inter bank identifier, indicator is "Y" if customer of an account is not part of organisation structure of legal entity and customer type is "Bank".
71	Interest type	This dimension has the following types of interest - Fixed, Floating and Adjustable.
72	Intra Bank Identifier	This dimension stores the intra bank identifier. Indicator is "Y" if customer of an account is within the organisation structure of legal entity.
73	Issuer Financial Entity Flag	This dimension stores the flag that indicates if issuer of mitigant is a financial entity or no. This is one of the criterias

Serial No.	Dimension Name	Dimension Description
		which is used to qualify mitigant as high quality liquid asset.
74	Issuer Parent Financial Entity Flag	This dimension stores the flag indicating if issuer parent is financial entity or no.
75	Issuer Risk Retention Flag	This dimension stores risk retention flag. Securitizations are subject to risk retention regulations which require issuers to retain an interest in the assets they securitize.
76	Issuer Surrogate Key	This dimension stores the issuer surrogate key.
77	Issuer Type Surrogate Key	This dimension stores the surrogate key for the issuer type.
78	Issuer US Flag	This dimension stores the flag to identify if issuer of the account is "US" or no. This is specifically required for NPR classification.
79	Line of Credit Extended	This dimension stores the indicator stating if line of credit is extended or received. Value is "Y" if line of credit is extended and "N" if received. While populating rows from stage borrowing commitments, this flag is "N" and from stage commitment contract this flag is "Y".
80	Liquidity Status Flag	This dimension has 'Y' or 'N'. 'Y' means the instrument is liquid and 'N' means it is not liquid.
81	Loan to Value Band Surrogate Key	This dimension stores the band surrogate key for loan to value.
82	Lob Surrogate Key	This dimension stores a unique key representing a particular line of business. It is joined with DIM_LOB.
83	Major Component Index Flag	This dimension stores if securities received as mitigant are component of major index or not. This is one of the criterias which is used to qualify mitigant as high quality liquid asset.
84	Master Agreement Code	This dimension stores the type of the master agreement - ISDA and so on.
85	Maturity Band Surrogate Key	This dimension stores the maturity band surrogate key.
86	Maturity Bucket Surrogate Key	This dimension stores maturity bucket surrogate for account.
87	Maturity Extendibility Flag	This dimension indicates if a contract can be extended beyond its maturity period.
88	Maturity Less Than Liquidity Horizon	This dimension indicates whether maturity period is less than liquidity horizon.

Serial No.	Dimension Name	Dimension Description
89	Maximum Market value Percentage change band Surrogate Key	This dimension stores maximum price percentage change over 30-day period.
90	Maximum Price Change Band Surrogate Key	This dimension stores market value percentage change band surrogate key.
91	Maximum Volatility Haircut Band Surrogate Key	This dimension stores maximum volatility haircut band surrogate key.
92	Netting Agreement Flag	This dimension stores indicator to identify if there is netting agreement associated with the record.
93	Netting Agreement Surrogate Key	This dimension stores a unique key to represent a particular netting agreement.
94	Next Call Date Time Bucket Surrogate Key for Embedded Option	This dimension stores the time bucket surrogate key corresponding to the next call date of the option.
95	Non Contractual Obligation Identifier	This dimension stores the unique code for non contractual obligation identifier. Non contractual contingent funding obligations are related to potential liquidity draws from joint ventures or minority investments in entities.
96	Non Contractual Obligation Type Surrogate Key	This dimension stores the unique surrogate key for non contractual obligation type.
97	Operational Account Flag	This dimension indicates if the nature of the account is operational. An account where a clearing, custody or cash management relationship exists between the bank and its customer is classified as an operational account.
98	Operational Relationship	This dimension stores the flag that indicates if there is an operational relationship between financial institution and customer for the specified account.
99	Over the Counter Flag	This dimension indicates whether a derivative exposure is traded on an exchange or over the counter. Y means it is traded over the counter and N means it is traded as an exchange.
100	Ownership Category Surrogate Key	This dimension stores the unique surrogate key for ownership category.

Serial No.	Dimension Name	Dimension Description
101	Ready Access to Additional Funding	This dimension stores if insurance scheme has adequate means of ensuring ready access to additional funding in the event of a large call on its reserves. This dimension is required for identifying the highly stability criteria of accounts as per regulator(BCBS 238). If the indicator is 'Yes' it qualifies as one of the criterias for stability.
102	Ready Access to Insured Deposit	This dimension stores if insured deposits are available to depositors in a short period of time once the deposit insurance scheme is triggered. This dimension is required for identifying the highly stability criteria for accounts as per regulator(BCBS 238). If the indicator is 'Yes' it qualifies as one of the criterias for stability.
103	Received Underlying Re-hypothecation Flag	This dimension indicates the re-hypothecation status of underlying asset received in collateral swap transaction.
104	Recognised Exchange Listed	This dimension stores the flag that indicates if underlying instrument is listed on the recognised exchange.
105	Regular Central Bank Standing Arrangements Flag	This dimension stores indicator for account having regular central bank standing arrangements. As per Basel, regular standing arrangements and contractual arrangements are two different facilities. To qualify for option 1, a bank must have contractual arrangements with the central bank and not regular standing arrangements. (Basel does not specify what is included in regular standing arrangement and which contracts are included as part of contractual arrangements).
106	Residual Maturity Band Surrogate Key	This dimension stores the residual maturity band surrogate key.
107	Residual Maturity Less than Liquidity Horizon	This dimension indicates whether residual maturity period is less than liquidity horizon.
108	Residual Maturity Time Bucket Surrogate Key	This dimension stores the residual maturity time bucket surrogate key.
109	Revocable Status Surrogate Key	This dimension stores the revocable status surrogate key. The values can be, "Conditionally Revocable" or "Unconditionally Revocable".
110	Risk Weight Surrogate Key	This dimension stores the risk weight surrogate key.
111	Run Surrogate Key	This dimension stores Run surrogate key.

Serial No.	Dimension Name	Dimension Description
112	Secured Or Unsecured Flag	This dimension identifies the secured or unsecured borrowings Y=secured, N=unsecured.
113	Self Investment Flag	This dimension stores the flag that indicates if the account is the self investment account or not.
114	Sell Flag	This dimension is a sell/buy indicator for products like euro, dollar and fed funds.
115	Short Term Flag	This dimension stores short term indicator.
116	Significant Withdrawal Penalty	This dimension stores the flag that indicates if the withdrawal penalty for deposit accounts is significant.
117	Sold Exclusively In Retail Market	This dimension stores the flag that indicates if the account is sold exclusively in retail market.
118	Standard Accounting Head Surrogate Key	This dimension stores surrogate key corresponding to a unique standard accounting head.
119	Standard Counterparty Type Surrogate Key	This dimension stores the standard counterparty surrogate key of the account head. For example, for reserve standard accounting head, surrogate key of the bank with which reserve are held will come as standard counterparty surrogate key.
120	Standard Customer Type Surrogate Key	This dimension stores the standard customer type surrogate key.
121	Standard Guarantor Type Surrogate Key	This dimension stores the standard guarantor type surrogate key.
122	Standard Issuer Type Surrogate Key	This dimension stores the standard issuer type surrogate key.
123	Standard Product Type Surrogate Key	This dimension stores the standard product type surrogate key.
124	Structured Debt Product Flag	This dimension indicates if the issued product is structured. Structured debt securities are complex debt instruments created to meet needs that cannot be met from traditional financial instruments available in the markets. Common examples include collateralized debt obligations (CDO) and asset backed securities(ABS). Structured debt securities have the potential to decrease risk, create liquidity, and increase yield.

Serial No.	Dimension Name	Dimension Description
125	Trade Related Obligations	This dimension indicates if trade related obligations are associated with the account. Trade finance instruments consist of trade-related obligations directly underpinned by the movement of goods or the provision of services, such as: (1) documentary trade letters of credit, documentary and clean collection, import bills, and export bills; and (2) guarantees directly related to trade finance obligations, such as shipping guarantees. Value is "Y" if instrument is having trade related obligations and "N" if such trade obligations are not associated with the instrument.
126	Transactional Account Flag	A transactional account is a deposit account held at a bank or other financial institution, for the purpose of securely and quickly providing frequent access to funds on demand, through a variety of different channels. Transactional accounts are meant neither for the purpose of earning interest nor for the purpose of savings, but for convenience of the business or personal client.
127	Underlying Asset Level Surrogate Key	This dimension stores the underlying asset's asset level surrogate key.
128	Underlying Basel Risk Weight	This dimension stores the underlying account risk weight identifier.
129	Underlying Collateral Covering Short Position	This dimension stores the flag indicating if account underlying is used for covering the short position of different transaction.
130	Underlying Received Asset Surrogate Key	This dimension stores the underlying asset category key corresponding to QIS for securities received in swap transaction.
131	Underlying Re-hypothecation Flag	This dimension indicates the re-hypothecation status of underlying asset.
132	Underlying Standard Issuer Type	This dimension stores the underlying standard issuer type surrogate key.
133	Underlying Standard Product Type	This dimension stores the underlying standard product type surrogate key.
134	Withdrawal Notice Period Greater then Liquidity Horizon	This dimension stores the flag that indicates if withdrawal notice priod is greater than liquidity horizon (selected by user at run time).

Table 82 List of Dimensions

6. As part of the contractual Run execution, data flows from Fact Aggregate Cash Flow table to the reporting tables and the liquidity gap report based on the contractual cash flows is generated from reporting tables. Contractual Run execution assesses the current liquidity status of the organization purely under contractual terms, without the application of any business assumption. In a BAU or stress Run execution, the data which was loaded into Fact Aggregate Cash Flow table as part of the underlying contractual Run is re-inserted in the same table against a new execution skey and currency conversion module is re-executed as reporting currency of the contractual Run and the BAU or stress Runs may be different. User-defined BAU or stress business assumptions are executed on the aggregated cash flows in Fact Aggregate Cash Flow table. Once the assumptions are applied, the cash flow in the reporting currency rules for assumptions are adjusted. Currency conversion is re-executed to convert the adjusted cash flows from reporting currency to local and natural currency.
7. Once cash flows are adjusted in the Fact Aggregate Cash Flow table based on the business assumptions applied, data is moved into the reporting tables and Gap reports of Adjusted Cash flow can be generated from these reporting tables.

Based on the purpose selected in the Run Definition window for the BAU Run,

- When Liquidity Ratio Calculation is selected, LCR is calculated.
- When FR2052 a and b is selected, the reporting line reclassification occurs and the reporting measures are aggregated across the reporting lines and moved to the reporting table (Fact Liquidity Reporting table).

A. Understanding LRM Flow

Liquidity Risk is managed by the LRM application through the following functionalities as represented in the given diagram:

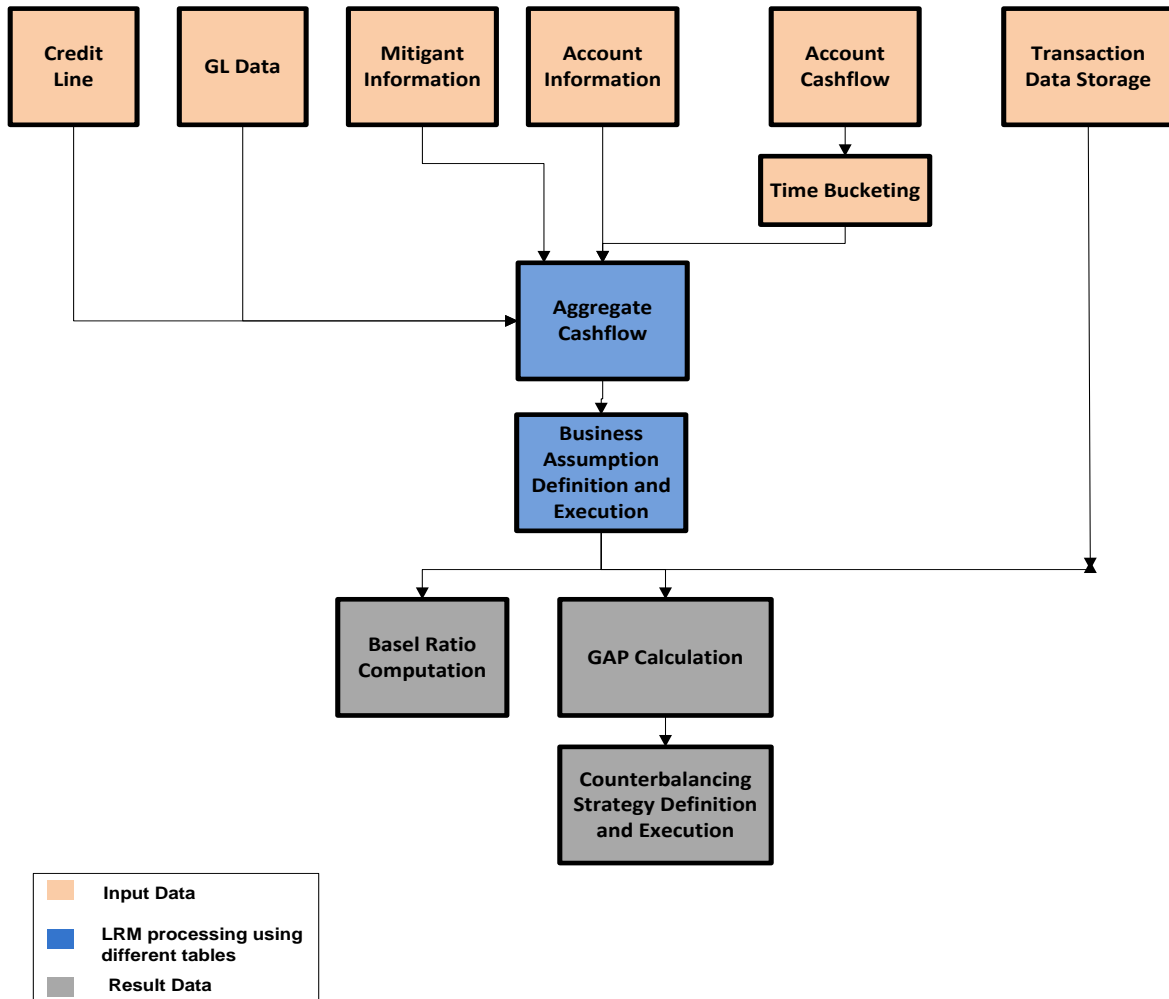


Figure 61 LRM Flow

The process flow chart depicts the LRM flow as explained in the following steps:

1. The data is received from the following tables: GL Data, Mitigant Information, Account Information. The cash flows are received from the Account Cash flow table.
2. After the account cash flows data are received, they are bucketed as per the defined time period. For instance, if the Time Bucket is for 1 - 15 days or 1 - 30 days, in the case of 1-15 days all the cash flows which are received within 15 days are accumulated and placed in the first Time Bucket. Similarly, the cash flows received from 1 - 30 days are accumulated, calculated, and placed in the 1 - 30 days Time Bucket.
3. After Time Bucketing is completed, aggregation of cash flows is done. Aggregation of Cash flows is done based on the different dimensions. Some examples of the dimensions are Legal Entity, Currency, Product, Product Type, and so on. These dimensions based on which aggregation happen are selected as part of the application preferences window. The aggregation of cash flows is done in respect of the data received from the GL Data, Mitigant Information and Account Information tables as well as the time bucketed account cash flows.
4. After the cash flows are bucketed, they are aggregated into the Fact Aggregation cash flow table with different dimensions.
5. After the cash flow aggregation is completed (that is after a contractual Run), a Business Assumption is applied to the contractual Run. These business assumptions are defined in the Business Assumption Definition User Interface. Once these definitions are defined, the BAU Run is executed. While executing a BAU Run, select at least one of the assumption definitions and then execute a Run.
6. While executing the Run, the following are calculated: Basel Ratio Computation (which computes LCR) and GAP Calculation (which computes Inflow - Outflow). There are different types of reports based on the purpose selected. Based on the purpose selected as part of the Run, the reports are generated. For a particular date and legal entity/entities selected the run is executed.
7. A range of counterbalancing strategies can then be defined easily based on a combination of counterbalancing positions in order to bridge the liquidity gaps observed under different business conditions. Users select the business-as-usual or a stress execution to which a counterbalancing strategy is to be applied and view the base results where the negative gaps are highlighted.

Once, the counterbalancing positions are specified, the strategy is applied to the existing liquidity gaps in order to assess its impact.

18 Annexure B: OFS ALM – OFS LRM Cash Flow Integration

This section is applicable only if a bank has both OFS Asset Liability Management and OFS Liquidity Risk Management installed and if the cash flows generated by OFS ALM are to be considered for calculation within OFS LRM. The following steps are required to be performed to consider the cash flows generated by OFS ALM for LRM computations:

1. Open the **Application Preferences** window, in **Oracle Financial Services Analytical Applications Infrastructure** window. Choose, **Risk Applications > Liquidity Risk Management > Application Preferences** on the Left-Hand Side (LHS) menu.
2. Select one or multiple cash flow generation processes from the Contractual Cash Flow Process Selection section. This selection enables OFS LRM to use the contractual cash flows generated by OFS ALM for further computations. Refer section [Contractual Cash Flow Process Selection](#) for more information.
3. Refer ALM LRM Integration page in the OFS Liquidity Risk Management V8.0.0.0.0 Run Chart.xlsx for details on the batches to be executed to populate the cash flows from ALM output tables.
4. Once these batches are executed, verify whether the data for the selected process IDs is appearing in the Fact Process Cash Flow table.
5. LRM provides out-of-the-box time bucket definitions which are seeded in DIM_RESULT_BUCKET table. Before defining any ALM time bucket, ensure to increase the sequence SEQ_DIM_RESULT_BUCKET.nextval value to the max+1 value of N_RESULT_BUCKET_SKEY of DIM_RESULT_BUCKET.

19 Annexure C: Create/Execute LRM Batch from Command Line

To generate the execution IDs the following steps can be followed by passing all requisite parameters at command line. Perform the following steps, to create or execute LRM batch from command line:

1. Navigate to \$FIC_APP_HOME/icc/bin path and open lrmExecParams.properties.
2. Provide all the required parameters. All Parameters are mandatory, except for the Contractual Run Execution ID which is required in case of BAU / Stress Run.

a. **RUNID:**

- In case of Contractual Run and BAU Run, the N_RUN_OBJECT_ID (FSI_LRM_RUN_PARAM.N_RUN_OBJECT_ID) of the run definition you are trying to execute.

Example: If the name of the Run definition created is 'TEST2131', execute the below query to get the n_run_object_id

```
SELECT T.N_RUN_OBJECT_ID FROM FSI_LRM_RUN_PARAM T WHERE  
T.V_RUN_NAME LIKE 'TEST2131';
```

- In case of Stress Run, the ID of the Stress Run created (ST_STRESS_MASTER.V_STRESS_ID)

b. **RUNTYPE:** The type code of the Run to be executed is as follows:

10:- Contractual Run; 11:- BAU Run; 12:- Stress Run

c. **INFODOM:** Enter the name of the INFODOM which is in use.

d. **FICMISDATE:** Enter FIC MIS date to be used for execution.

e. **RUNEXECDISC:** Enter the description for the execution.

f. **CONTRAEXECID:** In case of BAU/Stress Run, enter the ID of the Contractual Run execution to be used. The following query can be used to find the various Contractual Run Execution IDs:

Note: Choose any value of ITEM_ID column as an input for "CONTRAEXECID" from the result of the query.


```

SELECT DISTINCT R.N_RUN_SKEY,
                R.V_RUN_EXECUTION_ID ITEM_ID,
                R.V_RUN_EXECUTION_ID || '~' || R.N_VERSION_NUMBER ITEM_NAME,
                TO_CHAR(P.FIC_MIS_DATE, 'MM/DD/YYYY') FIC_MIS_DATE,
                BVW.V_BATCH_STATUS STATUS,
                COALESCE(TO_CHAR(P.N_CONTRACTUAL_RUN_EXE_ID), '')
CONTRACTUAL_RUN_EXE_ID,
                P.V_REPORTING_CURRENCY_CODE,
                DECODE(P.V_REPORTING_CURRENCY_CODE,
                    C.V_ISO_CURRENCY_CD,
                    C.V_CURRENCY_NAME,
                    C.V_ISO_CURRENCY_CD) REPORTING_CURRENCY,
                V_EXCHANGE_RATE_SOURCE,
                COALESCE(TO_CHAR(P.N_CONFIDENCE_INTERVAL), '') N_CONFIDENCE_INTERVAL,
                COALESCE(TO_CHAR(P.N_LIQUIDITY_HORIZON), '') N_LIQUIDITY_HORIZON,
                R.D_RECORD_START_DATE EXEC_DATE
FROM FCT_LRM_RUN_PARAM P, DIM_CURRENCY C, DIM_RUN R, BATCH_RUN_VIEW BVW
WHERE P.N_RUN_OBJECT_ID = (SELECT P.N_CONTRACTUAL_RUN_CODE
                            FROM FSI_LRM_RUN_PARAM
                            WHERE P.N_RUN_OBJECT_ID = <<BAU RUN OBJECT ID>>)
AND P.N_RUN_SKEY = R.N_RUN_SKEY
AND P.V_REPORTING_CURRENCY_CODE = C.V_ISO_CURRENCY_CD
and UPPER(BVW.V_BATCH_ID) LIKE UPPER('%' || R.V_RUN_EXECUTION_ID || '%')
AND UPPER(BVW.V_BATCH_STATUS) = UPPER('C')
AND TO_CHAR(R.FIC_MIS_DATE, 'MM/DD/YYYY') =
    TO_CHAR(TO_DATE(<<FIC_MIS_DATE in mm/dd/yyyy format>>, 'MM/DD/YYYY'), 'MM/DD/YYYY')
ORDER BY EXEC_DATE
    
```

- g. **REPCURRENCY:** Enter the code of the reporting currency to be used. The currency code can be found using the following query:

```

SELECT V_ISO_CURRENCY_CD, V_CURRENCY_NAME FROM DIM_CURRENCY
ORDER BY UPPER(V_CURRENCY_NAME)
    
```

- h. **EXCHGRATESRC:** Enter the code of the exchange rate source to be used. The code can be found using the following query:

```

SELECT LOOKUP_CD, LOOKUP_DESCRIPTION FROM FSI_LRM_LOOKUP_TL T
WHERE T.CATEGORY_ID = 19
    
```

- i. **LCRHORIZON:** Enter the LCR Horizon (in days) to be used. The default provided is 30.
 j. **USER:** Enter the OFSAA application user name.
 k. **EXECUTE:** Enter Y/N. Here, Y= Execute Run and N=Create Batch Only.

3. Run the lrmBatch.sh file to create or execute a batch. Provide the input parameter as EXECUTE=Y to execute the batch.

Ensure that the wsdl URL is replaced with correct values in LRMWSservices.properties file under \$FIC_APP_HOME/icc/lib

```

LRM_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST:$WEBSERVERPORT/$CONTEXT$/
lrmService?wsdl.
    
```


20 Annexure D: Updating Port Changes in OFS LRM

In case you refer the OFS AAI document on how to configure infrastructure ports and execute it, the changes reflect only in the OFS AAI configuration files but not OFS LRM files.

Hence, it is recommended to change the `LRM_WSDL_LOCATION` port number manually in the following location: `$FIC_APP_HOME/icc/lib/LRMWSSservices.properties` file with the new servlet port. Note that, this change is required only when the servlet port is changed else it is not required to update the file.

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21 Annexure E: Setup Master Table Configuration

The setup master table must be configured for calculating LCR Option 2.

The setup master table configuration is as follows:

Column Name	Component Description	Example Component Value	Comment
LCR_OPT2_MAX_THRESHOLD_EXEMPT_HAIRCUT_PCT	Maximum threshold percent which is exempt from haircut for LCR option 2	25	Enter the maximum threshold haircut percentage which needs to be exempted and this should be a whole value and not a percentage.
LRM4G_HOL_CODE	US 4G Holiday Code	1	Enter the Holiday Code which needs to be used for "US FR2052a Run" and "US FR2052a Run" Runs.
LRM_STD_CCY_CD	Standard Currency used in currency conversion	USD	In case reporting currency is not selected then default value provided here is used.
OPTION3_HAIRCUT	Additional Haircut required for option 3 LCR	0.1	Enter the haircut value which is the component value for option 3.

22 Annexure F: Business Assumption Data Maintenance

A. Adding Existing Dimension to the Assumption

The steps to add an existing dimension (which is already part of LRM Data Model) in the assumption are as follows:

I. Cash Flow Attribute

If it is a Cash Flow Attribute then, perform the following steps:

- a. The cash flow attribute must be present in Fact Account Cash flow table and Fact Aggregate Cash flow table with same column name.
- b. The cash flow attribute must be part of primary key in Fact Aggregate Cash flow table.
- c. Add an entry to the FSI LRM tabular column metadata table. The mandatory columns have to be filled in FSI LRM tabular column metadata table as displayed below:

Column Name	Example Value
V_TABLE_NAME	Should be "FCT_AGG_CASH_FLOWS"
V_COLUMN_NAME	Column_Name
V_DATA_TYPE	Data type of the column
F_CONSTRAINT_TYPE_FLAG	Should be "P".

II. Account Attribute

You must add an entry in FSI LRM Business Dimensions table and enter the values which are specified in the description given below:

Column Name	Column Description	Example Value
n_business_dimension_number	This attribute stores the Running sequence for list of business dimensions used in LRM application. Business dimensions are set of hierarchies to which liquidity business assumption can be specified.	56
v_dimm_agg_cashflow_col_name	This attribute stores the physical name of the column in Fact aggregate cash flow table which represents corresponding business dimensions.	F_COLLATERAL_COVER_SHORT_POS
v_dimm_acct_summary_col_name	This attribute stores the physical name of column in FSI LRM Instrument summary table which represents corresponding	F_COLLATERAL_COVER_SHORT_POS

Column Name	Column Description	Example Value
	business dimension.	
v_dimension_table_pk_name	This attribute stores the physical name of Primary key column for dimension table of business dimension used in LRM application.	V_FLAG_CODE
v_dimension_table_name	This attribute stores the physical name of dimension table for business dimensions used in LRM application.	DIM_BOOLEAN_FLAGS
v_dimension_hierarchy_code	This attribute stores the hierarchy code of business dimensions used in LRM application.	HLRM230
v_dimension_alias_table_name	This attribute stores the metadata alias name of dimensions table for business dimensions used in LRM application. Aliases names are created for dimensions like "underlying asset level" on dimensions asset level or for all "flag dimensions" on dimension Boolean flag. If business hierarchy is not created on alias table then this attribute should be empty.	DIM_COLLATERAL_COVER_SHORT_POS
v_business_dimension_name	This attribute stores the name of business dimensions used in LRM application.	Collateral Covering Short Position Flag
v_business_dimension_desc	This attribute stores the description for business dimensions used in LRM application.	Collateral Covering Short Position Flag
v_business_dimension_code	This attribute stores the unique code for business dimensions used in LRM application.	B037
f_selection_flag	This attribute indicates if corresponding business dimension is selected by user for performing analysis in Liquidity Risk Management Application.	Y
f_pk_numeric_flag	This attribute indicates if primary key column of the physical table of the dimension table is numeric or not.	N

B. Adding a New Dimension

The steps to add a new dimension (which is not present in LRM Data Model) in the assumptions are as follows:

- New dimensions can be added by including the new dimensions table or creating an alias over the existing dimension table.
- Create a hierarchy on the dimension table or alias.

I. Cash Flow Attribute

If it is a cash flow attribute then, perform the following steps:

- a. Add a column to the following tables:
 - Stage Account Cash flow
 - Fact Process Cash flow
 - Fact Account Cash flow
 - Fact Aggregate Cash flows
- b. Ensure that the cash flow attribute in Fact Account Cash flow table and Fact Aggregate Cash flows table has the same name.
- c. Ensure to include it part of primary key in Fact Aggregate Cash flow table.
- d. Add an entry to the FSI LRM tabular column metadata. The mandatory columns to be filled in FSI LRM tabular column metadata is as displayed below:

Column Name	Example Value
V_TABLE_NAME	Should be "FCT_AGG_CASH_FLOWS"
V_COLUMN_NAME	Column_Name
V_DATA_TYPE	Data type of the column
F_CONSTRAINT_TYPE_FLAG	Should be "P".

II. Account Attribute

If it is an account attribute then a column needs to be added to the following tables:

- FSI LRM Instrument
- Fact Aggregate Cash Flow
- FSI LRM Composite Key DIMS
- Fact Business Assumption Audit Trail

This changes the appropriate T2Ts which displays the data from one table to another table.

You must add an entry in FSI LRM Business Dimension and enter the values which are specified in the description given below.

Column Name	Column Description	Example Value
n_business_dimension_number	This attribute stores the Running sequence for list of business dimensions used in LRM application. Business dimensions are set of hierarchies to which liquidity business assumption can be specified.	56
v_dimm_agg_cashflow_col_name	This attribute stores the physical name of the column in Fact aggregate cash flow table which represents corresponding business dimensions.	F_COLLATERAL_COVER_SHORT_POS
v_dimm_acct_summary_col_name	This attribute stores the physical name of column in FSI LRM Instrument summary table which represents corresponding business dimension.	F_COLLATERAL_COVER_SHORT_POS
v_dimension_table_pk_name	This attribute stores the physical name of Primary key column for dimension table of business dimension used in LRM application.	V_FLAG_CODE
v_dimension_table_name	This attribute stores the physical name of dimension table for business dimensions used in LRM application.	DIM_BOOLEAN_FLAGS
v_dimension_hierarchy_code	This attribute stores the hierarchy code of business dimensions used in LRM application.	HLRM230
v_dimension_alias_table_name	This attribute stores the metadata alias name of dimensions table for business dimensions used in LRM application. Aliases names are created for dimensions like "underlying asset level" on dimensions asset level or for all "flag dimensions" on dimension Boolean flag. If business hierarchy is not created on alias table then this attribute should be empty.	DIM_COLLATERAL_COVER_SHORT_POS

Column Name	Column Description	Example Value
v_business_dimension_name	This attribute stores the name of business dimensions used in LRM application.	Collateral Covering Short Position Flag
v_business_dimension_desc	This attribute stores the description for business dimensions used in LRM application.	Collateral Covering Short Position Flag
v_business_dimension_code	This attribute stores the unique code for business dimensions used in LRM application.	B037
f_selection_flag	This attribute indicates if corresponding business dimension is selected by user for performing analysis in Liquidity Risk Management Application.	Y
f_pk_numeric_flag	This attribute indicates if primary key column of the physical table of the dimension table is numeric or not.	N

C. Adding tasks to the Assumptions

The steps to add a task to the assumptions registered through LRM Business Assumption window are as follows:

You must add an entry in FSI LRM Assumption tasks table and enter the values which are specified in the description given below.

Column Name	Column Description	Example Value
v_task_placement	This attribute stores identifier if task is to be stitched pre-offsetting (offsetting refers to Allocation Engine) or post offsetting (offsetting refers to Allocation Engine) List of values are PRE-OFFSETTING,POST-OFFSETTING.	POST-ASSUMPTION
v_task_identifier	This column stores the unique identifier for the task to be included for assumption.	LRMRULE0477
v_assumption_sub_category_name	This attribute stores liquidity business assumption sub-category name. Liquidity business assumption category and sub-category are types of assumptions which are supported and provided	72

Column Name	Column Description	Example Value
	out of box in liquidity risk management application.	
v_assumption_category_name	This attribute stores liquidity business assumption category name. Liquidity business assumption category and sub-category are types of assumptions which are supported and provided out of box in liquidity risk management application.	84
n_task_sequence	This attribute stores the sequence in which task is suppose to appear in the Assumption process.	2
v_task_type	This column stores the type of the task to be included for assumption. Possible values can be DT, Rule.	TYPE3
v_task_name	This column stores the name of the task to be included for assumption.	LRM - Assumption Application Change Balance Update

23 Annexure G: Run Management Data Maintenance

A. Adding a process for pre/post assumption processing

In LRM Run management, select the purpose for defining a Run from the Run Definition window. Select the required purpose from the drop-down list. It can be either of the following:

- Basel III Liquidity Ratio Calculation
- FR 2052 a Report Generation
- FR 2052 b Report Generation
- Long Term Gap Calculation
- U.S Fed Liquidity Ratio Calculation

Once the purpose is selected and the required parameters are selected a Run is created.

If it is Contractual Run, the Run stitches the processes. The processes are taken from the FSI LRM Process Purpose Map table. This process map table contains all the processes which are required for a Run definition in LRM. When the Run type is Contractual, all the processes with Run type as contractual and process placement as PRE-ASSUMPTION in FSI LRM Process Purpose Map are stitched as part of Contractual Run.

If it is BAU Run, in addition to the processes which come from the process map table, the processes related to the business assumptions selected are automatically stitched into BAU Run.

In case of Contractual Run all the processes in FSI LRM Process Purpose Map must have process placement as PRE-ASSUMPTION only. Whereas in BAU, they are both PRE/POST-ASSUMPTION processes.

If you have to add an entry in FSI LRM Process Purpose Map table, and enter the values which are specified in the description given below.

Column Name	Column Description of the Entry to be made	Example Value
v_Run_type	This attribute holds the code for the Run type. The list of values for this column is from FSI_LRM_LOOKUP_TL.LOOKUP_CD with category_id as 1. (filter FSI_LRM_LOOKUP_TL.category_id = 1)	10
v_Run_purpose	This attribute stores the purpose of the Run. The list of values for this column is from FSI_LRM_LOOKUP_TL.LOOKUP_CD with category_id as 10.(filter FSI_LRM_LOOKUP_TL.category_id = 10).	2
v_process_placement	This attribute stores identifier if process is to be stitched pre assumption or post assumption List	PRE-ASSUMPTION

Column Name	Column Description of the Entry to be made	Example Value
	of values are "PRE-ASSUMPTION","POST-ASSUMPTION"	
n_process_sequence	This attribute stores the sequence in which process is suppose to appear in the Run.	1
v_Run_type_desc	This attribute holds the description for values Contractual, BAU, Stress	Contractual
v_Run_purpose_desc	This attribute stores the description of purpose of the Run. It holds the values are "Long Term Gap Calculation", "Basel III Liquidity Ratio Calculation", "U.S. Fed Liquidity Ratio Calculation", "FR 2052 a Report Generation", "FR 2052 b Report Generation"	Long Term Gap Calculation
v_rrf_process_object_id	This attribute stores the unique ID of RRF process which will be part of Run for corresponding purpose and Run type. Execution will include this process in the Run.	LRM_PROCESS_001
v_rrf_process_description	This attribute stores the description of RRF process which will be part of Run for corresponding purpose and Run type. Execution will include this process in the Run.	LRM - Party and Product Type Reclassification
v_folder_name	This column stores the folder name for which process is defined	LRMSEG

24 Annexure H: List of LRM Reports

Sl. No.	Report No.	Report Name	Report Category	Subject Area	Dashboard
1	1	Liquidity Gap Analysis - Base Currency	Main Report	Liquidity Gap	Liquidity Risk
2	1.1	Liquidity Gap Analysis by Line of Business - Base Currency	Drill-through (from Graph)		
3	1.1.1	Liquidity Gap Analysis by Product Type - Base Currency			
4	1.1.1.1	Liquidity Gap Analysis by Product - Base Currency			
5	1.1.1.1.1	Liquidity Gap Analysis by Customer Type - Base Currency			
6	1.1.1.1.1.1	Liquidity Gap Analysis by Customer - Base Currency			
7	1.1.1.1.1.1.1	Liquidity Gap Analysis by Account - Base Currency			
8	1.2	Liquidity Gap Report by Line of Business - Base Currency			
9	1.2.1	Liquidity Gap Report by Product Type - Base Currency			
10	1.2.1.1	Liquidity Gap Report by Product - Base Currency			
11	1.2.1.1.1	Liquidity Gap Report by Customer Type - Base Currency			
12	1.2.1.1.1.1	Liquidity Gap Report by Customer - Base Currency			
13	1.2.1.1.1.1.1	Liquidity Gap Report by Account - Base Currency			
14	2	Liquidity Gap Analysis - <Currency Type>	Main Report		
15	2.1	Liquidity Gap Analysis by Line of Business - <Currency Type>	Drill-through (from Graph)		
16	2.1.1	Liquidity Gap Analysis by Product Type - <Currency Type>			
17	2.1.1.1	Liquidity Gap Analysis by Product - <Currency Type>			
18	2.1.1.1.1	Liquidity Gap Analysis by Customer Type - <Currency Type>			
19	2.1.1.1.1.1	Liquidity Gap Analysis by Customer - <Currency Type>			
20	2.1.1.1.1.1.1	Liquidity Gap Analysis by Account - <Currency Type>			
21	2.2	Liquidity Gap Report by Line of Business - <Currency Type>			
22	2.2.1	Liquidity Gap Report by Product Type - <Currency Type>			
23	2.2.1.1	Liquidity Gap Report by Product - <Currency Type>			
24	2.2.1.1.1	Liquidity Gap Report by Customer Type - <Currency Type>			
25	2.2.1.1.1.1	Liquidity Gap Report by Customer - <Currency Type>			
26	2.2.1.1.1.1.1	Liquidity Gap Report by Account - <Currency Type>			
27	3	Dynamic Balance Sheet - Base Currency	Main Report		

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Sl. No.	Report No.	Report Name	Report Category	Subject Area	Dashboard
28	3.1	Dynamic Balance Sheet Asset Details - Base Currency	Drill-through (from Assets)		
29	3.2	Dynamic Balance Sheet Liability Details - Base Currency	Drill-through (from Liabilities)		
30	4	Dynamic Balance Sheet - <Currency Type>	Main Report		
31	4.1	Dynamic Balance Sheet Asset Details - <Currency Type>	Drill-through (from Assets)		
32	4.2	Dynamic Balance Sheet Liability Details - <Currency Type>	Drill-through (from Liabilities)		
33	5	Detailed Bucket-wise Gap Analysis	Main Report		
34	5.1	Bucket-wise Liquidity Gap by Product Type	Drill-through (from Graph)	Detailed Gap Analysis	
35	5.1.1	Bucket-wise Liquidity Gap by Product			
36	5.1.1.1	Bucket-wise Liquidity Gap by Customer Type			
37	5.1.1.1.1	Bucket-wise Liquidity Gap by Customer	Drill-through (from Table)		
38	5.2	Bucket-wise Gap Analysis by Product Type			
39	5.2.1	Bucket-wise Gap Analysis by Product			
40	5.2.1.1	Bucket-wise Gap Analysis by Customer Type	Main Report		
41	5.2.1.1.1	Bucket-wise Gap Analysis by Customer			
42	6	Liquidity Gap across Scenarios			
43	6.1	Liquidity Gap by Line of Business	Drill-through		
44	6.1.1	Liquidity Gap by Product Type			
45	6.1.1.1	Liquidity Gap by Product			
46	6.1.1.1.1	Liquidity Gap by Customer Type			
47	6.1.1.1.1.1	Liquidity Gap by Customer			
48	7	Gap Analysis - Top N Large Customers	Main Report		
49	7.1	Top N Large Customer Bucket-wise Gap by Product Type	Drill-through (from Graph)		
50	7.1.1	Top N Large Customer Bucket-wise Gap by Product			
51	7.2	Top N Large Customer Gap Analysis by Product Type	Drill-through (from Table)		
52	7.2.1	Top N Large Customer Gap Analysis by Product			
53	8	Liquidity Gap Across Time	Main Report		
54	9	Liquidity Gap Analysis Post Counterbalancing	Main Report	Counterbalancing	
55	9.1	Bucket-wise Liquidity Gap Post Counterbalancing by Line of Business	Drill-through (from Graph)		
56	9.1.1	Bucket-wise Liquidity Gap Post Counterbalancing by Product Type			
57	9.1.1.1	Bucket-wise Liquidity Gap Post Counterbalancing by Product			
58	9.1.1.1.1	Bucket-wise Liquidity Gap Post Counterbalancing by Customer Type			
59	9.1.1.1.1.1	Bucket-wise Liquidity Gap Post			

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SI. No.	Report No.	Report Name	Report Category	Subject Area	Dashboard
		Counterbalancing by Customer			
60	9.2	Counterbalancing Inflows by Position	Drill-through (from Counterbalancing Inflows section of the Table)		
61	9.3	Counterbalancing Outflows by Position	Drill-through (from Counterbalancing Outflows section of the Table)		
62	11	Liquidity Ratios	Main Report	Liquidity Ratios	
63	11.1	High Quality Liquid Assets by Product Type	Drill-through		
64	11.1.1	High Quality Liquid Assets by Product	Drill-through		
65	11.2	Cash Flows by Product Type	Drill-through		
66	11.2.1	Cash Flows by Product	Drill-through		
67	12	Liquidity Coverage Ratio Components	Main Report		
68	12.1	Break-up of Liquidity Coverage Ratio Components	Drill-through		
69	13	Net Stable Funding Ratio Components	Main Report		
70	14	High Quality Liquid Assets	Main Report		
71	14.1	<Selected Encumbrance Status> <Selected Asset Level> Details	Drill-through		
72	15	Break-up of Stock of High Quality Liquid Assets	Main Report		
73	15.1	Components of Stock of Level 1 Assets	Drill-through (from Table)		
74	15.2	Adjustments to Stock of Level 1 Assets	Drill-through (from Table)		
75	15.3	Components of Stock of Level 2A Assets	Drill-through (from Table)		
76	15.4	Adjustments to Stock of Level 2A Assets	Drill-through (from Table)		
77	15.5	Components of Stock of Level 2B RMBS Assets	Drill-through (from Table)		
78	15.6	Adjustments to Stock of Level 2B RMBS Assets	Drill-through (from Table)		
79	15.7	Components of Stock of Level 2B Non-RMBS Assets	Drill-through (from Table)		
80	15.8	Adjustments to Stock of Level 2B Non-RMBS Assets	Drill-through (from Table)		
81	16	Liquidity Coverage Ratio by Significant Currencies	Main Report		
82	17	Break-up of Stock of HQLA Denominated in Significant Currencies	Main Report		
83	18	Liquidity Transferability Restrictions	Main Report		
84	19	Liquidity Ratio Historical Variance Analysis	Main Report		
85	20	Liquidity Ratio Trend Analysis	Main Report		
86	21	Interim Results across Buckets	Main Report	Interim Results	
87	22	Interim Liquidity Gaps across Business Assumptions	Main Report		
88	23	Concentration of Funding Liabilities across Dimensions	Main Report	Funding Concentra	

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SI. No.	Report No.	Report Name	Report Category	Subject Area	Dashboard
89	24	Funding Concentration Trend Analysis	Main Report	tion	
90	25	List of Assets by Significant Currencies	Main Report		
91	26	List of Liabilities by Significant Currencies	Main Report		
92	27	Deposit Balances	Main Report	Data Analysis	
93	28	Loan Balances	Main Report		
94	29	Marketable Assets	Main Report		
95	30	Repos	Main Report		
96	31	Delinquency Report	Main Report		
97	31.1	Delinquency Report by Product Type	Drill-through		
98	31.1.1	Delinquency Report by Product	Drill-through		
99	31.1.1.1	Delinquency Report by Customer Type	Drill-through		
100	31.1.1.1.1	Delinquency Report by Customer	Drill-through		
101	32	Delinquent Customer	Main Report	BIS	
102	33	BIS Liquidity Coverage Ratio Common Disclosure Template	Main Report		
103	34	BIS Liquidity Coverage Ratio QIS Template	Main Report		
104	35	Variance Analysis - Liquidity Coverage Ratio QIS Template	Main Report		
105	35.1	Variance Analysis - Liquidity Coverage Ratio QIS Template by Product	Drill-through		
106	36	FR 2052a - Complex Institution Liquidity Monitoring Report	Main Report		US Federal Reserve
107	37	FR 2052b - Liquidity Monitoring Report	Main Report		

Table 83 List of LRM Reports

25 Annexure I: Migrating LRM Objects

This section explains LRM specific configurations. The migration process from one set up to another is as follows:

Note: For Object Migration, refer *OFSAAI 7.3.5.0.0 User Manual* which explains the generic configuration.

1. **Holiday Calendar:**

- a. Excel import/export functionality is available. You must use this functionality for migration.
- b. Refer section [Excel Import / Export](#) for information on holiday calendar excel export/import.

2. **Time Bucket:**

- a. Time bucket migration definitions used either in Business Assumption or in Run definition are migrated automatically.

3. **Business Assumption:**

- a. Assumptions can be migrated using OFSAAI “Command Line Utility to Migrate Objects”. To understand the migration process, refer section “Command Line Utility to Migrate Objects” of *OFSAAI 7.3.5.0.0 User Manual*.
- b. To export/import LRM Assumption objects, the following object codes and object types must be provided:

OBJECT Code= “Assumption Name” ~ “Version of the assumption”

Type="902"

For example, to export an assumption:

<OBJECTS>

<OBJECT Code="US Unmodified Assumption~1 " Type="902" />

</OBJECTS>

Note:

- Once an assumption object is imported, dependent objects like Time bucket definition (if any) are automatically migrated.
- In case only assumption name is provided without version number, then the latest version of the given assumption will be migrated.

4. **Run Definition:**

- a. Run Definitions can be migrated using OFSAAI “Command Line Utility to Migrate Objects”. To understand the migration process, refer section “Command Line Utility to Migrate Objects” of *OFSAAI 7.3.5.0.0 User Manual*.
- b. To export/import LRM Run objects, the following object codes and object types must be provided.

OBJECT Code= “Run Name”

Type="901"

For example, to export an assumption:

<OBJECTS>

<OBJECT Code="US Final Run" Type="901" />

</OBJECTS>

Note: Once a Run definition is imported, dependent objects like Time bucket definition, assumptions definitions (in case of BAU or Stress Run) are automatically migrated.

26 Annexure J: Generating Download Specifications

Download specifications can be extracted from this model. Refer the Download Specifications present in [OTN](#) for more details.

A. Additional Information

- GAAP code is a primary key in staging to support multi-GAAP implementations. In LRM v8.0 out of box, the staging product processors to fsi_lrm_instrument T2T's filter for 'USGAAP'.
- Load Run ID is part of the primary key in staging with default set to zero.

Glossary

AASF	Available Amount of Stable Funding
BAU	Business as Usual
BCBS	Basel Committee for Banking Supervision
BCBS 188	Basel III: International framework for liquidity risk measurement, standards and monitoring
HQLA	High Quality Liquid Asset
ILAS	Individual Liquidity Adequacy Standards
LCR	Liquidity Coverage Ratio
Level 1 Assets	<p>Level 1 Assets as per Basel III Guidelines are as follows:</p> <ul style="list-style-type: none"> • Cash • Central bank reserves to the extent that can be drawn down during times of stress. • Marketable securities which satisfy the following conditions: <ul style="list-style-type: none"> ▪ Issuer type or Guarantor Type is one of the following: <ul style="list-style-type: none"> ○ Sovereign ○ Central Bank ○ Non-Central Government Public Sector Entity ○ Multi-lateral Development Bank ○ The Bank For International Settlements ○ The International Monetary Fund ○ The European Commission ▪ They are assigned a 0% risk-weight under the standardized Approach of Basel II ▪ Issuer type is not a bank or other financial services entity • Debt securities issued in the local currency of the legal entity in which the liquidity risk is being undertaken or the bank's country of domicile where the issuer type is sovereign or central bank and the risk weight assigned to the sovereign is greater than 0% • Debt securities issued in foreign currencies, to the extent that matches currency needs of bank's operations in that

	jurisdiction, where the issuer type is domestic sovereign or central bank and the risk weight assigned to the sovereign is greater than 0%
Level 2 Assets	<p>Level 2 Assets as per Basel III Guidelines are as follows:</p> <ul style="list-style-type: none"> • Marketable securities which satisfy the following conditions: <ul style="list-style-type: none"> ▪ Issuer type or Guarantor Type is one of the following: <ul style="list-style-type: none"> ○ Sovereign ○ Central Bank ○ Non-Central Government Public Sector Entity ○ Multi-lateral Development Banks ▪ They are assigned a 20% risk-weight under the standardized Approach of Basel II ▪ Price has not decreased or haircut has not increased by more than 10% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank • Corporate Bonds and Covered Bonds which satisfy the following conditions <ul style="list-style-type: none"> ▪ Issuer type is a non-financial institution ▪ Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities (in case of covered bonds) ▪ Credit rating by a recognized external credit assessment institution is equal to or greater than AA- or if it does not have an external rating, the probability of default as per the internal rating corresponds to a rating which is equal to or greater than AA- ▪ Price has not decreased or haircut has not increased by more than 10% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank
NSFR	Net Stable Funding Ratio
OFSAAI	Oracle Financial Services Analytical Applications Infrastructure
RASF	Required Amount of Stable Funding
Revised Time Buckets	Revised time bucket is the bucket into which the cash flows are to be moved from the original time bucket.
Unencumbered Assets	Unencumbered Assets are assets which can easily sold or mortgaged as these assets are free from debt with no legal defects in its title.



Oracle Financial Services Liquidity Risk
Management
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