

Oracle Financial Services

Cash Flow Engine Cloud User Guide



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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

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Contents

1 About This Content

2 Revision History

3 Getting Started

| | | |
|---------|---|------|
| 3.1 | Getting Started with Oracle Cloud | 3-1 |
| 3.1.1 | Welcome to Oracle Cloud | 3-1 |
| 3.1.1.1 | About Oracle Cloud | 3-1 |
| 3.1.1.2 | Supported Web Browsers | 3-2 |
| 3.1.1.3 | Order Oracle Cloud Applications | 3-2 |
| 3.1.2 | Get Started with Cloud Service | 3-2 |
| 3.1.2.1 | Create and Activate New Cloud Account | 3-3 |
| 3.1.2.2 | Accessing the Cloud Account | 3-5 |
| 3.1.2.3 | Create an Environment | 3-5 |
| 3.1.2.4 | Access the Identity and Access Management | 3-6 |
| 3.1.2.5 | Activate Application User Account | 3-7 |
| 3.1.3 | Users and Roles | 3-7 |
| 3.1.3.1 | User Summary- Application Users | 3-7 |
| 3.1.3.2 | Create Application Users | 3-8 |
| 3.1.3.3 | Create a User Group | 3-10 |
| 3.1.3.4 | Add User to Group | 3-11 |
| 3.1.3.5 | Import Application Users | 3-11 |
| 3.1.4 | User Groups | 3-12 |
| 3.1.4.1 | Map Application with the User Groups | 3-12 |
| 3.1.4.2 | Map Application with the Groups | 3-12 |
| 3.1.4.3 | Map Users to Groups | 3-13 |
| 3.1.4.4 | Unmap User from Groups | 3-14 |
| 3.1.4.5 | Create a User Group | 3-14 |
| 3.1.5 | User Management | 3-15 |
| 3.1.5.1 | Application Users | 3-15 |
| 3.1.5.2 | User Roles and Privileges | 3-15 |

| | | |
|---------|---|------|
| 3.1.6 | Configuring Session Timeout | 3-19 |
| 3.1.6.1 | How to configure Session Lifetime Timeout? | 3-20 |
| 3.2 | Introduction to Oracle Cash Flow Engine Cloud Service | 3-21 |
| 3.2.1 | Key Features | 3-21 |
| 3.2.2 | User Groups | 3-22 |
| 3.2.3 | Guidelines for Working with a Cash Flow Engine | 3-22 |
| 3.2.4 | Launching Cash Flow Engine | 3-23 |
| 3.2.4.1 | Cash Flow Engine Home Page | 3-23 |
| 3.2.4.2 | Common Icons | 3-28 |
| 3.2.4.3 | Common Feature Controls | 3-32 |
| 3.2.5 | Quick Tour | 3-33 |
| 3.2.6 | Key Terms | 3-36 |
| 3.3 | Admin Console | 3-38 |
| 3.3.1 | Introduction to Admin Console | 3-38 |
| 3.3.1.1 | Administrator Tasks | 3-39 |
| 3.3.1.2 | Authorizer Tasks | 3-39 |
| 3.3.2 | System Configuration | 3-39 |
| 3.3.2.1 | Metering | 3-39 |
| 3.3.2.2 | Component Details | 3-40 |
| 3.3.2.3 | Audit Trail Report | 3-42 |
| 3.3.2.4 | Configurations | 3-43 |
| 3.3.2.5 | Reports For Download | 3-44 |
| 3.3.3 | Identity Management | 3-46 |
| 3.3.3.1 | Users Summary Page | 3-46 |
| 3.3.3.2 | Groups Summary Page | 3-49 |
| 3.3.3.3 | Roles Summary Page | 3-52 |
| 3.3.3.4 | Folders Summary Page | 3-54 |
| 3.3.3.5 | Functions Summary Page | 3-56 |

4 Data Administration

| | | |
|---------|--|------|
| 4.1 | Data Model Extension | 4-1 |
| 4.1.1 | Registering Dimensions | 4-2 |
| 4.1.1.1 | Register a Simple Dimension | 4-2 |
| 4.1.1.2 | Register a Key Processing Dimension | 4-5 |
| 4.1.2 | Registering Columns | 4-7 |
| 4.1.3 | Registering a Management Ledger | 4-9 |
| 4.1.3.1 | Adding a Management Ledger | 4-10 |
| 4.1.4 | Approving or Rejecting the Registrations | 4-11 |
| 4.2 | Data File Specification | 4-12 |
| 4.2.1 | Loading External Data | 4-12 |

| | | |
|---------|--|------|
| 4.2.1.1 | Data File Specification | 4-13 |
| 4.2.2 | Data Loaders | 4-19 |
| 4.2.2.1 | Dimension Data Loader | 4-19 |
| 4.2.2.2 | Instrument and Ledger Data Loaders | 4-23 |
| 4.2.2.3 | Generic Data Loader | 4-25 |
| 4.2.2.4 | Interest Rates Loader | 4-27 |
| 4.2.2.5 | Generating Holidays for Holiday Calendar using Scheduler | 4-29 |
| 4.2.3 | Data File History | 4-29 |
| 4.3 | File Upload and Download Utility | 4-33 |
| 4.3.1 | Roles and Functions | 4-33 |
| 4.3.2 | File Upload and Download Utility | 4-33 |
| 4.3.2.1 | Upload or Download File from Object Store Using Console | 4-33 |
| 4.3.2.2 | Uploading/Downloading a File Using Utility | 4-34 |
| 4.3.2.3 | Uploading/Downloading a File Using PAR URL | 4-35 |
| 4.3.3 | File Upload Automation | 4-36 |
| 4.3.3.1 | Step 1: Generate Access Token | 4-36 |
| 4.3.3.2 | Step 2: Generate PAR URL | 4-36 |
| 4.3.3.3 | Step 3: Upload file to Object Store | 4-37 |
| 4.3.3.4 | Step 4: Scan the file to ensure Upload was Successful | 4-37 |
| 4.3.3.5 | Automating the File Upload Process Using File Upload Utility | 4-38 |
| 4.3.4 | Generating PAR URL for File Operations | 4-39 |
| 4.3.4.1 | Generating PAR URL for File Upload | 4-39 |
| 4.3.4.2 | Generating PAR URL For File Download | 4-43 |
| 4.4 | Data Maintenance Interface | 4-44 |
| 4.4.1 | Data Maintenance Interface | 4-45 |
| 4.4.1.1 | Process of DMI Windows | 4-45 |
| 4.4.1.2 | User Role Mapping and Access Rights | 4-46 |
| 4.4.1.3 | Access the Data Maintenance Interface | 4-47 |
| 4.4.1.4 | Form Designer Summary Page | 4-48 |
| 4.4.1.5 | Accessing Information in Summary Page | 4-49 |
| 4.4.1.6 | Creating New Forms in Form Designer | 4-50 |
| 4.4.1.7 | Approving and Rejecting New Form Definitions | 4-59 |
| 4.4.1.8 | Managing Form Definitions | 4-59 |
| 4.4.2 | Data View | 4-61 |
| 4.4.2.1 | Viewing Data Entry | 4-62 |
| 4.4.2.2 | Data Entry – Forms Created Using Designer | 4-62 |
| 4.4.2.3 | Forms Created Using Excel Upload | 4-64 |
| 4.4.2.4 | Approving and Rejecting Records | 4-64 |
| 4.4.2.5 | Exporting Forms Creating Using Data Exporter - View Option | 4-66 |
| 4.4.2.6 | Exporting Forms Creating Using Data Exporter - Table Option | 4-67 |
| 4.4.2.7 | Audit Trail | 4-69 |

| | | |
|----------|--|-------|
| 4.5 | Data Quality Framework | 4-69 |
| 4.5.1 | Introduction to Data Quality Framework | 4-69 |
| 4.5.2 | Roles and Functions for Managing DQ Framework | 4-70 |
| 4.5.3 | Data Quality Rules | 4-70 |
| 4.5.3.1 | Data Check Definitions | 4-71 |
| 4.5.3.2 | Creating Expressions | 4-74 |
| 4.5.3.3 | DQ Rules Summary | 4-75 |
| 4.5.3.4 | Creating DQ Rule | 4-76 |
| 4.5.3.5 | Editing DQ Rules | 4-78 |
| 4.5.3.6 | Approving/Rejecting a Data Quality Rule | 4-79 |
| 4.5.3.7 | Deleting a Data Quality Rule | 4-80 |
| 4.5.3.8 | Purging a Data Quality Rule | 4-80 |
| 4.5.4 | Data Quality Groups | 4-80 |
| 4.5.4.1 | DQ Groups Summary | 4-81 |
| 4.5.4.2 | Creating DQ Groups | 4-82 |
| 4.5.4.3 | Editing DQ Groups | 4-83 |
| 4.5.4.4 | Approving/Rejecting a Data Quality Group | 4-83 |
| 4.5.4.5 | Deleting a Data Quality Group | 4-84 |
| 4.5.4.6 | Purging a Data Quality Group | 4-85 |
| 4.5.5 | Adding a DQ Check Task | 4-85 |
| 4.5.6 | Execution Summary | 4-86 |
| 4.5.6.1 | Viewing Run Details | 4-86 |
| 4.6 | Data Verification | 4-87 |
| 4.7 | Cash Flow Edits | 4-91 |
| 4.7.1 | Configure Cash Flow Edits Rule | 4-91 |
| 4.7.1.1 | Create Cash Flow Edits Rule | 4-93 |
| 4.7.1.2 | Cash Flow Edits Process Errors | 4-95 |
| 4.7.2 | Cash Flow Edits Process | 4-139 |
| 4.7.2.1 | Create Cash Flow Edits Process | 4-141 |
| 4.7.2.2 | Executing Cash Flow Edits Process | 4-144 |
| 4.7.2.3 | Viewing Execution Details of Cash Flow Edits Process | 4-146 |
| 4.8 | Cash Flow Output Export | 4-146 |
| 4.8.1 | Steps | 4-146 |
| 4.9 | Cash Flow Table Cleanup | 4-147 |
| 4.9.1 | Steps | 4-148 |
| 4.10 | Balance Reconciliation | 4-149 |
| 4.10.1 | Reconciliation Definition | 4-149 |
| 4.10.1.1 | Adding a New Reconciliation Definition | 4-150 |
| 4.10.1.2 | Reconciliation Balance | 4-151 |
| 4.10.1.3 | Actions Performed on Reconciliation Definition | 4-152 |
| 4.10.2 | Duplicate Runs for Same As-of-Date | 4-155 |

| | | |
|----------|--|-------|
| 4.10.3 | Historical Difference Report | 4-155 |
| 4.10.4 | Default Attributes | 4-156 |
| 4.10.4.1 | Creating a New Product-Currency Combination and Default Attributes | 4-157 |
| 4.10.5 | Reconciliation using Batch Process | 4-160 |

5 Business Rules Administration

| | | |
|---------|------------------------------------|------|
| 5.1 | Reference Data | 5-1 |
| 5.1.1 | Currencies Setup | 5-2 |
| 5.1.1.1 | Currency Setup | 5-2 |
| 5.1.1.2 | Currency Rates | 5-5 |
| 5.1.2 | Interest Rates | 5-11 |
| 5.1.2.1 | Creating an Interest Rate Curve | 5-12 |
| 5.1.3 | Economic Indicators | 5-19 |
| 5.1.3.1 | Add an Economic Indicator | 5-21 |
| 5.1.4 | Dimension Management | 5-23 |
| 5.1.4.1 | Object Security | 5-23 |
| 5.1.4.2 | Components of Dimension Management | 5-24 |
| 5.1.4.3 | Members | 5-24 |
| 5.1.4.4 | Attributes | 5-27 |
| 5.1.4.5 | Hierarchy | 5-31 |
| 5.1.4.6 | Viewing Data in a Summary Page | 5-36 |
| 5.2 | Common Rules | 5-37 |
| 5.2.1 | Setup Preferences | 5-37 |
| 5.2.1.1 | Select Preferences For | 5-37 |
| 5.2.1.2 | Global Preference | 5-38 |
| 5.2.1.3 | Application Preference | 5-40 |
| 5.2.1.4 | User Preference | 5-43 |
| 5.2.2 | Behavior Patterns | 5-45 |
| 5.2.2.1 | Creating Behavior Patterns | 5-47 |
| 5.2.3 | Payment Patterns | 5-52 |
| 5.2.3.1 | Create Payment Patterns | 5-54 |
| 5.2.4 | Repricing Patterns | 5-61 |
| 5.2.4.1 | Create Repricing Patterns | 5-62 |
| 5.2.5 | Holiday Calendars | 5-67 |
| 5.2.5.1 | Create a Holiday Calendar | 5-68 |
| 5.2.5.2 | Holiday Exceptions | 5-71 |
| 5.2.6 | Filters | 5-72 |
| 5.2.6.1 | Filter Definition Types | 5-72 |
| 5.2.6.2 | Accessing Filter Feature | 5-72 |
| 5.2.6.3 | Creating Filter Definitions | 5-73 |

| | | |
|---------|-----------------------------------|-------|
| 5.2.6.4 | Managing Filter Definitions | 5-79 |
| 5.2.7 | Management Ledger Configuration | 5-81 |
| 5.3 | Application Specific Rules | 5-82 |
| 5.3.1 | Prepayment Rules | 5-82 |
| 5.3.1.1 | Create Prepayment Rules | 5-84 |
| 5.3.1.2 | Defining Prepayment Methodologies | 5-89 |
| 5.3.2 | Prepayment Models | 5-100 |
| 5.3.2.1 | Create Prepayment Models | 5-101 |
| 5.3.3 | Forecast Rates | 5-110 |
| 5.3.3.1 | Create Forecast Rate Rule | 5-112 |
| 5.3.4 | Behavior Pattern Rules | 5-135 |
| 5.3.4.1 | Create Behavior Pattern Rules | 5-137 |
| 5.3.4.2 | Defining Behavior Pattern Rule | 5-142 |
| 5.3.5 | Discount Methods | 5-144 |
| 5.3.5.1 | Create Discount Method Rule | 5-147 |
| 5.3.5.2 | Discount Method Examples | 5-154 |
| 5.3.6 | Cash Flow Process | 5-156 |
| 5.3.6.1 | Create Cash Flow Process | 5-158 |
| 5.3.6.2 | Executing Cash Flow Process | 5-165 |
| 5.3.6.3 | View Cash Flow Process Log | 5-166 |

6 Operations

| | | |
|---------|------------------------------|-----|
| 6.1 | Scheduler Services | 6-1 |
| 6.1.1 | Accessing Scheduler Services | 6-2 |
| 6.1.2 | User Roles and Functions | 6-2 |
| 6.1.3 | Define Batch | 6-2 |
| 6.1.3.1 | Creating a Batch | 6-3 |
| 6.1.3.2 | Creating a Batch Group | 6-4 |
| 6.1.3.3 | Editing a Batch | 6-5 |
| 6.1.3.4 | Editing a Batch Group | 6-5 |
| 6.1.3.5 | Copying a Batch | 6-5 |
| 6.1.3.6 | Copying a Batch Group | 6-6 |
| 6.1.3.7 | Deleting a Batch | 6-6 |
| 6.1.3.8 | Deleting a Batch Group | 6-6 |
| 6.1.4 | Define Tasks | 6-7 |
| 6.1.4.1 | Adding a Task | 6-7 |
| 6.1.4.2 | Modifying a Task | 6-8 |
| 6.1.4.3 | Define Task Precedence | 6-8 |
| 6.1.4.4 | Deleting a Task | 6-9 |
| 6.1.5 | Schedule Batch | 6-9 |

| | | |
|----------|--|------|
| 6.1.5.1 | Task Definitions of a Batch | 6-10 |
| 6.1.5.2 | Execute a Batch and Batch Group | 6-10 |
| 6.1.5.3 | Schedule Once | 6-11 |
| 6.1.5.4 | Daily Batch Scheduling | 6-11 |
| 6.1.5.5 | Weekly Batch Scheduling | 6-11 |
| 6.1.5.6 | Monthly Batch Scheduling | 6-12 |
| 6.1.5.7 | Schedule Cron Expression | 6-12 |
| 6.1.5.8 | Re-start a Batch | 6-13 |
| 6.1.5.9 | Re-run a Batch | 6-13 |
| 6.1.5.10 | Edit Dynamic Parameters | 6-13 |
| 6.1.6 | Monitor Batch | 6-14 |
| 6.1.7 | Scheduler Service Dashboard | 6-15 |
| 6.1.8 | External Scheduler Interface | 6-15 |
| 6.1.8.1 | Rest API Status Codes | 6-16 |
| 6.1.8.2 | Execution API | 6-16 |
| 6.1.8.3 | Execution Status API | 6-18 |
| 6.1.8.4 | Interrupt API | 6-20 |
| 6.1.8.5 | Rerun API | 6-22 |
| 6.1.8.6 | Restart API | 6-24 |
| 6.2 | Object Migration | 6-26 |
| 6.2.1 | Migration Object Types | 6-27 |
| 6.2.2 | Accessing Object Export and Object Import Features | 6-29 |
| 6.2.3 | Object Export Definitions | 6-29 |
| 6.2.3.1 | Creating Export Definitions | 6-30 |
| 6.2.3.2 | Editing Export Object Definitions | 6-31 |
| 6.2.3.3 | Exporting Object Definition | 6-31 |
| 6.2.3.4 | Viewing Export Object Details | 6-31 |
| 6.2.3.5 | View Object Definition Export Log Details | 6-32 |
| 6.2.3.6 | Downloading Dump File | 6-32 |
| 6.2.3.7 | Deleting Export Object Definition | 6-33 |
| 6.2.4 | Object Import Definitions | 6-33 |
| 6.2.4.1 | Creating Object Import Definitions | 6-34 |
| 6.2.4.2 | Editing Import Definitions | 6-36 |
| 6.2.4.3 | Importing Object Definitions | 6-36 |
| 6.2.4.4 | Viewing Import Object Details | 6-37 |
| 6.2.4.5 | Viewing Object Import Log Details | 6-37 |
| 6.2.4.6 | Deleting Import Definition | 6-38 |
| 6.3 | Viewing Logs | 6-38 |
| 6.3.1 | Cash Flow Process | 6-38 |
| 6.3.1.1 | Kubectl Commands | 6-39 |
| 6.3.2 | Cash Flow Edits Process | 6-39 |

| | | |
|---------|---|------|
| 6.3.2.1 | KubectI Commands | 6-40 |
| 6.3.3 | Instrument Data Loader (File to Stage) | 6-40 |
| 6.3.4 | Instrument Data Loader (Stage to Processing) | 6-40 |
| 6.3.5 | Dimension Loader (File to Stage to Dimension) | 6-40 |

7 Reports & Analytics

| | | |
|---------|--|-------|
| 7.1 | Cash Flow Engine Cloud Reports & Analytics | 7-1 |
| 7.1.1 | Access Business Intelligence (BI) Reports | 7-1 |
| 7.1.2 | Preparing Data using SQL Query Browser | 7-2 |
| 7.1.3 | Raw Data Analysis | 7-7 |
| 7.1.3.1 | Staging Instrument Data | 7-10 |
| 7.1.3.2 | Staging Instrument Supplementary Data | 7-17 |
| 7.1.3.3 | Staging Ledger Data | 7-21 |
| 7.1.3.4 | Staging Transaction Summary Data | 7-28 |
| 7.1.3.5 | Processing Instrument Data | 7-32 |
| 7.1.3.6 | Processing Instrument Supplementary Data | 7-39 |
| 7.1.3.7 | Processing Ledger Data | 7-43 |
| 7.1.3.8 | Processing Transaction Summary Data | 7-49 |
| 7.1.4 | Operational Analysis | 7-53 |
| 7.1.4.1 | Dimensions Registry | 7-53 |
| 7.1.4.2 | Currency Rates | 7-62 |
| 7.1.4.3 | Interest Rate Curves | 7-65 |
| 7.1.4.4 | Data Quality Checks | 7-69 |
| 7.1.4.5 | File Uploads Report | 7-75 |
| 7.1.4.6 | Groups and Roles Report | 7-78 |
| 7.1.5 | Data Insights | 7-82 |
| 7.1.5.1 | Cash Flow Edits | 7-82 |
| 7.1.5.2 | Common Filters | 7-82 |
| 7.1.5.3 | Report Data Action | 7-84 |
| 7.1.5.4 | Rules | 7-86 |
| 7.1.5.5 | Process Stats | 7-87 |
| 7.1.5.6 | Message Log | 7-89 |
| 7.1.6 | Processed Data Insights | 7-90 |
| 7.1.6.1 | Cash Flow Output | 7-90 |
| 7.1.7 | Cash Flow Report | 7-109 |
| 7.1.7.1 | Overview of Cash Flow Report | 7-110 |
| 7.1.7.2 | Viewing Cash Flow Report | 7-111 |
| 7.1.7.3 | Downloading the Report | 7-112 |

8 Technical Documents

1

About This Content

This guide provides information on the Oracle Financial Services Cash Flow Engine Cloud Service (OFS CFECS).

Audience

This guide is intended for the users of Oracle Financial Services Cash Flow Engine Cloud Service OFS CFECS).

Documentation Accessibility

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Related Resources

See these Oracle resources:

- [What's New in Your Update](#)
- [Oracle Financial Services Profitability and Balance Sheet Management Cloud Service](#)
- [Oracle Financial Services Cash Flow Engine Cloud Service](#)
- [Licensing Information User Manual](#)
- [Public APIs for Profitability and Balance Sheet Management Cloud Service](#)
- [Data Security Management Guide](#)

Conventions

The following text conventions are used in this document.

Table 1-1 Conventions

| Convention | Meaning |
|------------------------|--|
| boldface | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| <i>italic</i> | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values. |
| <code>monospace</code> | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

2

Revision History

Table 2-1 Document Control

| Release and Version Number | Revision Date | Change Log |
|----------------------------|---------------|--|
| R 24.01.01, V 1.0 | January 2024 | Documented the following: <ul style="list-style-type: none">Moved 'Balance Reconciliation' from Analytics to Data Management Tools on LHS. See Data Administration |

3

Getting Started

This section includes the following topics:

- [Get Started with Oracle Cloud Service](#): Oracle Cloud is the industry's broadest and most integrated cloud provider, with deployment options ranging from the public cloud to your data center. Oracle Cloud offers best-in-class services across Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).
- [Get Started with Cash Flow Engine Cloud Service](#): Cash Flow Calculation is an integral part of finance and risk solutions. Cash Flow Engine (CFE) of Profitability and Balance Sheet Management Cloud Service is designed to help institutions to take a fresh and granular look at their cash inflows and outflows. It allows you to calculate Cash Flows of their Assets, Liabilities, and Off-Balance Sheet Products at instrument level. The service measures and models every loan, deposit, and off-balance sheet instrument individually, using Deterministic Methods.
- [Introduction to Admin Console](#): Use the Admin Console to perform System Configuration and Identity Management. It is a single point of access to manage identity functions and view administrative features such as Metering, Audit Trail Report and other miscellaneous configuration details in the Profitability and Balance Sheet Management Cloud Service (PBSMCS).

3.1 Getting Started with Oracle Cloud

This chapter introduces to the Oracle Cloud, Users and Roles, User Groups, User Management, and Session Time Out configuration.

Topics:

- [Users and Roles](#)
- [User Groups](#)
- [User Management](#)
- [Configuring Session Timeout](#)

3.1.1 Welcome to Oracle Cloud

Oracle Cloud is the industry's broadest and most integrated cloud provider, with deployment options ranging from the public cloud to your data center.

Oracle Cloud offers best-in-class services across Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

3.1.1.1 About Oracle Cloud

Oracle Cloud is one of the few cloud providers that can offer a complete set of cloud services to meet all your enterprise computing needs.

Use the Oracle Infrastructure as a Service (IaaS) offering to quickly set up the virtual machines, storage, and networking capabilities you need to run just about any kind of workload. Your infrastructure is managed, hosted, and supported by Oracle.

Use the Oracle Platform as a Service (PaaS) offering to provision ready-to-use environments for your enterprise IT and development teams, so they can build and deploy applications, based on proven Oracle databases and application servers.

Use the Oracle Software as a Service (SaaS) offering to run your business from the Cloud. Oracle offers cloud-based solutions for Human Capital Management, Enterprise Resource Planning, Supply Chain Management, and many other applications, all managed, hosted, and supported by Oracle.

3.1.1.2 Supported Web Browsers

Oracle Financial Services Cloud Services support the latest version of Google Chrome, Microsoft Edge and Mozilla Firefox.

For more details, see [Oracle Software Web Browser Support Policy](#).

3.1.1.3 Order Oracle Cloud Applications

You can order Oracle Cloud Applications (Software as a Service) offerings by contacting Oracle Sales. After your order is processed, you can then activate your services.

To order a subscription to Oracle Cloud Applications:

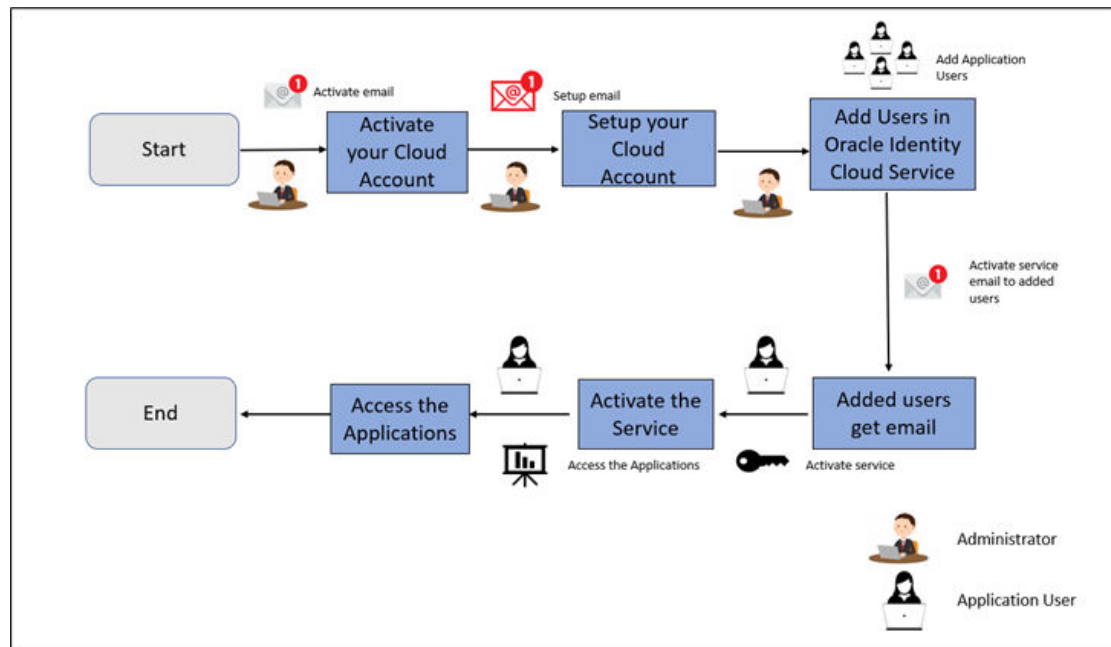
1. Go to - [Oracle Financial Services Risk and Finance Solutions](#) .
2. Scroll down and select the Cloud Service that you are subscribed to.
3. Review the features and capabilities of the service and read the Datasheet.
4. When you are ready to order, scroll up and click **Request a Demo**.
5. You can either write an email or click **Request Now** to receive a call from Sales.
6. Enter your **Business email**, select the confirmation check box, and click **Continue**.
7. Provide a description of your need and click **Request Now**.

After your interaction with the Oracle Sales team to order the Oracle Cloud Application best suited to your requirements, you will receive an email with a link to [activate the service](#) you have ordered.

3.1.2 Get Started with Cloud Service

To get started, you must activate the Cloud Service. After activating the Cloud Service, you can onboard Application Users to use the subscribed Cloud Services.

Figure 3-1 Illustration of the Cloud Subscription Workflow



This topic describes the set of actions that can be performed by:

- An **Administrator** to activate the Cloud Account and onboard Applications Users for the subscribed Cloud Services.
 - [Create and Activate New Cloud Account](#)
 - [Access the Cloud Account](#)
 - [Access the Oracle Identity Cloud Service Console](#)
- The **Application Users** to activate and use the Cloud Services that are provisioned by the Administrator.
 - [Activate your Account as Application Users](#)

3.1.2.1 Create and Activate New Cloud Account

If you are a new Oracle Cloud Applications User, you will receive a **Welcome to Oracle Cloud** email with details to create and activate your Cloud Account.



Note:

You must be an Administrator to create and activate the Cloud account.

Once the Cloud account is created and activated, you will receive an activation email with the sign-in details and steps to use your Cloud applications.

To create and activate a new Cloud Account:

1. Click **Create New Cloud Account** in the email.
2. Complete the **New Cloud Account Information** to sign up.

Figure 3-2 New Cloud Account Information page

What is a Cloud Account?
When you sign up for Oracle Cloud, you get a cloud account and an Oracle Cloud Infrastructure tenancy. Oracle assigns the same name to the cloud account and the tenancy.

About Regions
A region is a localized geographic area, and an availability domain is one or more data centers located within a region. A region is composed of one or more availability domains. Oracle Cloud Infrastructure resources are either region-specific, such as a virtual cloud network, or availability domain-specific, such as a compute instance.

Your Subscriptions
Order Number: 27064076
Subscription ID: 27064076

New Cloud Account Information

First Name:

Last Name:

Email:

Password:

Confirm Password:

Tenancy Name:

● A value for Tenancy Name is required.
● This will be assigned to your company's or organization's environment when signing into the Console. You can always [rename](#) it later from the Console.

Home Region:

● Your [home region](#) is the geographic location where your account and identity resources will be created. It is not changeable after sign-up. [See Regions](#) for service availability.

Terms of Use
By clicking on the button, you understand and agree that the use of Oracle's web site is subject to the [Oracle.com Terms of Use](#). Additional details regarding Oracle's collection and use of your personal information, including information about access, retention, rectification, deletion, security, cross-border transfers and other topics, is available in the [Oracle Privacy Policy](#).

3. Enter the following details:
 - **First Name** and the **Last Name**.
 - **Email:** Provide the same email address to which the Welcome email was sent. Instructions to log into the new Oracle Cloud Account will be sent to this email address.
 - **Password** to access the New Cloud Account, after the account is activated and an activation email is sent to the specific email address.
 - **Tenancy Name:** New **Tenancy Name** to be associated with the Cloud Account.
 - **Home Region:** Select the **Home Region**, where the Identity Resources and Account are located. Check the service availability before selecting the Home Region.
4. Click **Create Tenancy** to access the **New Cloud Creation Confirmation** page.
After successful activation, you will receive a **Setup Complete** email.

3.1.2.1.1 Add to an Existing Oracle Cloud Account

If you already have a Cloud Account associated with your Administrator user name, you can always add another Cloud Service, if required.

To add an existing Cloud account:

1. In the Welcome email, click **Add** to add an existing cloud account.
2. Perform the steps as mentioned in the [Access the Oracle Identity Cloud Service Console](#) section.

3.1.2.2 Accessing the Cloud Account

An Administrator can access the Cloud Account activated and associated with their email address.

After your new cloud account is created and activated, you will receive a **Setup Complete** email, to the email address provided while creating the account.

To access your Cloud account:

1. In the **Setup Complete** email, click **Sign In** and enter the **Username** and **Password** to access the **Oracle Cloud Console URL**, to log in to the Console. Use the same **Username** and the **Password** that you provided during activation setup.
2. Reset the **Password**.
3. Log in again to the **Oracle Cloud Infrastructure Classic Console** with the new credentials.

You can now access the subscribed Oracle Cloud applications.

3.1.2.3 Create an Environment

After logging into the Oracle Cloud Infrastructure Classic Console, you can create one or multiple instances that can be used by different user groups.

To create an instance, follow these steps:

1. Log into Oracle Cloud Infrastructure Classic Console.
Under **My Applications**, you will see the list of environments (instances) provisioned for the one or multiple cloud applications. The following details are provided for each environment:
 - **Name:** The given name to the cloud application's instance.
 - **Type:** The type of the instance.
 - **Life cycle status:** The status of the instance.
 - **Region:** The region from where this instance is active.
 - **Application URL:** The URL to access the instance.
2. To create a new environment, click **Create environment**.
This screen displays a list of Cloud Services to which the customer has subscribed and the Region from where these services are operated.

 **Note:**

If **Region** selection drop-down is displayed, then you must select the appropriate Region as follows.

- US East (Ashburn) for United States of America
- Japan East (Tokyo) for Japan
- Australia east (Sydney) for Australia

If you are not sure about the Region, contact [My Oracle Support \(MoS\)](#).

3. Under **Environment Details**, enter the following information:
 - **Name:** The name of the new environment or instance.
 - **Instance type:** Select from the following options:
 - **Production:** An environment that will be tagged as Production and can be used for Production activities.
 - **Non-production:** An environment that will be tagged as Non-production and which will be used for testing and development purposes. For example, a sandbox environment.
 - **Admin email:** The email ID with which you have logged into the Cloud Console. You can also enter a different email ID that needs to be part of the cloud tenancy. For more details, see [Managing Users](#).
 - **Admin first name** and **Admin last name:** The first and last names of the Admin.
4. Click **Create**.

The environment details are added to the Oracle Cloud Infrastructure Classic Console under the **Environments** tab (visible in the LHS menu). It may take a few hours for the State to change to Active. If there are any issues, you can raise a service ticket with [My Oracle Support \(MoS\)](#) .

After the environment becomes active i.e., the **State** column displays Active, you can click on name link to open the **Environment details** page, and view the details. Under **Environment Information**, click the Service console URL to create users and groups.

3.1.2.4 Access the Identity and Access Management

Oracle Cloud Infrastructure Identity and Access Management (IAM) provides identity and access management features such as authentication, single sign-on (SSO), and identity life cycle management for Oracle Cloud as well as Oracle and non-Oracle applications, whether SaaS, cloud-hosted, or on-premises. Employees, business partners, and customers can access applications at any time, from anywhere, and on any device in a secure manner.

IAM integrates with existing identity stores, external identity providers, and applications across cloud and on-premises to facilitate easy access for end users. It provides the security platform for Oracle Cloud, which allows users to securely and easily access, develop, and deploy business applications such as Oracle Human Capital Management (HCM) and Oracle Sales Cloud, and platform services such as Oracle Java Cloud Service, Oracle Business Intelligence (BI) Cloud Service, and others. Administrators and users can use IAM to help them effectively and securely create, manage, and use a cloud-based identity management environment without worrying about setting up any infrastructure or platform details.

To add users to your Cloud Services, navigate to the **Oracle Identity and Access Management (IAM) Console**.

To access the **IAM Console**:

1. Browse to [Cloud.Oracle.com](https://cloud.oracle.com), to view all the details pertaining to your cloud order.

Access the service link from the console to start using your subscriber cloud service.
2. Enter the **Cloud Account Name** and click **Next** to access the **IAM Console**.
3. Click **Change tenancy** option if you want to use a different tenancy.

4. Select the **Identity domain** from the drop-down list and click **Next**, to access the **IAM Login** page.
5. Log in with your **Username** and **Password**.

As an Administrator, you can create users to have different access rights to the Cloud Service.

For example, the IAM Administrator has superuser privileges for an Oracle Identity and Access Management Domain. This administrator can create users, groups, group memberships, and so on.

3.1.2.5 Activate Application User Account

An Application User is provisioned by their Administrator, and can use the specific subscribed cloud services.

When an Administrator completes provisioning an application user, they will receive an Account Activation email.

To login and activate your application user account:

1. Open the email received from Oracle Cloud and review the information about your service in the email.
2. Click **Activate Your Account**. You will be prompted to change your password on the initial login.
3. Enter your new credentials in the **Reset Password** window to activate your account. After the password is successfully reset, a **Congratulations** message is displayed.
4. Access the Application URL shared by the Administrator.
5. Enter your credentials to sign in to your account. The Welcome page is displayed.

3.1.3 Users and Roles

A brief description of users, roles, groups and functions.

- **Users:** Customers create users in Identity and Access Management (IAM) and can do the following:
 - Map them to existing groups
 - Create new groups to map them

After users are created, they are synced from IAM to the Cloud Service.

- **Groups:** Groups are seeded (available out-of-the-box) by your Cloud Service. Customers can also create new groups in IAM. After groups are created, they are synced from IAM to the Cloud Service. You can map the groups to roles using the subscribed Cloud Service.
- **Roles:** Roles are seeded by the Cloud Service. Customers can also create new roles using the Cloud Service and assign existing functions to these new roles.
- **Functions:** Functions are seeded by the Cloud Service. Customers cannot create new functions; however, they can use the existing functions.

3.1.3.1 User Summary- Application Users

View the list of existing application users in the User Summary.

You can view the details of a user and map the user to one or more User Groups.

- To view the **User ID** and **Username** of the selected User - Select the **Username** in the **User Summary** page and select **Details**.
- To search for a specific User, type the first few letters of the required **Username** in the **Search** box and click **Search**.

Navigation Control

- Using the navigation buttons at the bottom of the summary page, you can browse to the different pages. Also, you can enter the number of entries to be listed on a single page in the **Records** box or use the buttons to increase or decrease the number of entries.
- Enter the page number in the **View Bar Control** and jump to the required page.

3.1.3.2 Create Application Users

After you log in to the IAM console, one of your first tasks is to create additional user accounts.

You should assign specific user groups to the user accounts that you are creating. There are seeded user groups available with the respective services, users must be mapped to one or more of the user groups, depending on the role that they perform.

For example, you can create a user for each member of your team. Each member can then sign into the account with their credentials. You can also assign each user to specific user groups and apply specific security policies or roles to each group. You can create the users and map the users to groups for your service. After creating the users, the users will receive a Welcome email. The users must activate their accounts and enter a new password to access the services.

To create users in the IAM Console:

1. In the IAM Console, click the **Profile** icon and select **Identity domain** to add the Application Users.
2. In the **Identity Domain** left pane, click **Users** and select **Create user**.
3. Enter the following details:
 - To set the email address as the Login ID, check the **Use the email address as the username** check box and enter the email address for the **Username / Email**.
 - To set an username as the Login ID, uncheck the **Use the email address as the username** check box and enter the required username for the **Username / Email**

Note:

The username should be alphanumeric and cannot exceed 20 characters. You can enter only Hyphen (-) and Underscore () as Special Characters.

Figure 3-3 Add User Details

Create user

First name *Optional*

Last name

Username / Email

Use the email address as the username

Groups *Optional*

Select groups to assign this user to.

| <input type="checkbox"/> | Name | Description |
|--------------------------|-----------------------------------|------------------------------|
| <input type="checkbox"/> | RRANALYSTGRP | RR Analyst Group |
| <input type="checkbox"/> | THRESHOLDADMINGRP | Threshold Admin Group |
| <input type="checkbox"/> | RRUSSRMENUGRP | RR US SAR Menu Group |
| <input type="checkbox"/> | OBJMIGADMIN | Object Migration Admin Group |

4. Select the user groups according to your user-specific groups or access, in the **Groups (Optional)**.

 **Note:**

After a user logs in to a specific cloud Service, the User to User-Group Mapping created in the **IAM Console** will onboard into the Master and Mapping Tables. Later, if you deselect (remove) a User from a Group in the **Assign User to Groups** Window after provisioning, ensure that you also unmap the User from the corresponding User-Group in the **Admin Console**. This is a mandatory step to complete the unmapping process.


5. Select one of the following options, to create an Identity **Administrator** or **Authorizer** user:
 - **IDNTY_ADMIN**: Assign the user to create an Administrator User.
 - **IDNTY_AUTH**: Assign the user to create an Authorizer User.

Figure 3-4 Assign Users to Groups

Groups *Optional*
Select groups to assign this user to.

| <input type="checkbox"/> | Name | Description |
|--------------------------|----------------------------|------------------------------|
| <input type="checkbox"/> | IDNTY_AUTH | Identity Authorizer Group |
| <input type="checkbox"/> | IDNTY_ADMN | Identity Administrator Group |

0 selected

 [Show advanced options](#)

[Cancel](#)

- After entering the required information, click **Create** to create and add the new user to the **User Summary**.

For Bulk User Creation, use batch import User Accounts using a comma-separated values (.CSV) file.

3.1.3.3 Create a User Group

Create groups to manage user access to applications and resources.

To create a User Group in IAM Console:

- In the IAM Console, click **Profile** and select **Identity domain** to add a User Group.
- In the Identity Domain left pane, click **Groups** and select **Create group**.

Figure 3-5 Identity Domain

Identity > Domains > Default domain > Groups

Identity domain

Groups in Default Domain

| <input type="checkbox"/> | Name | Description | Created |
|--------------------------|--------------------------------|----------------------|---------------------------------|
| <input type="checkbox"/> | BRAUSMRMENUGRP | RR AU SMR Menu Group | Mon, Sep 26, 2022, 11:27:39 UTC |
| <input type="checkbox"/> | BRSUPERVISRGRP | RR Supervisor Group | Mon, Sep 26, 2022, 11:27:38 UTC |
| <input type="checkbox"/> | BRAUDITGRP | RR Audit Group | Mon, Sep 26, 2022, 11:27:37 UTC |
| <input type="checkbox"/> | BRANALYSTGRP | RR Analyst Group | Mon, Sep 26, 2022, 11:27:37 UTC |
| <input type="checkbox"/> | BRADMINGRP | RR Admin Group | Mon, Sep 26, 2022, 11:27:36 UTC |

- Enter the **Group Name** (mandatory) and the **Group Description**.
- Select **User can request access**, to allow users to request access to this group.
- Check the check box adjacent to each user to add that user to the group.
- Click **Create** to create the new user group with the selected users.

After creating the user group, you must assign various permissions to the group, using one of the following methods:

- Write at least one policy to give group permission to either the tenancy or a compartment. While writing the policy, specify the group using the unique group name or the group's OCID.
- Assign the group to an application.

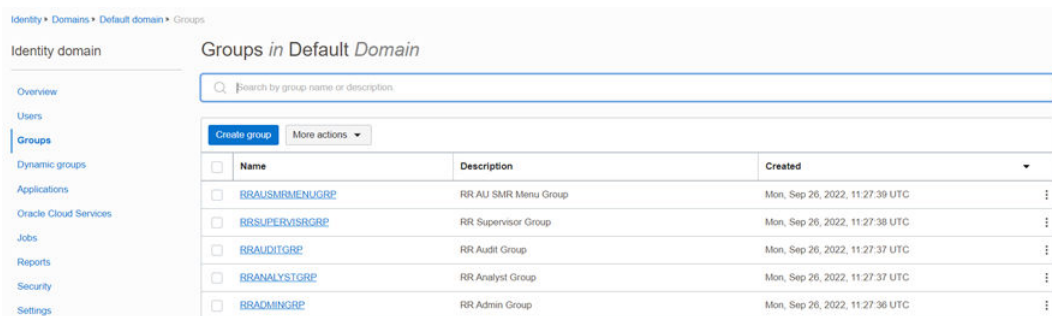
3.1.3.4 Add User to Group

Add a user to the required group, based on the roles required for the user.

To add a User to Group in IAM Console:

1. In the IAM Console, click the **Profile** and select **Identity domain: Default** to add the User Group.
2. In the Identity Domain left pane, click **Groups** and select the group for which you want to add the users.

Figure 3-6 Groups in Default Domain



| <input type="checkbox"/> | Name | Description | Created |
|--------------------------|-----------------|----------------------|---------------------------------|
| <input type="checkbox"/> | BRASMRMENUGRP | RR AU SMR Menu Group | Mon, Sep 26, 2022, 11:27:39 UTC |
| <input type="checkbox"/> | BRSUPERVISORGRP | RR Supervisor Group | Mon, Sep 26, 2022, 11:27:38 UTC |
| <input type="checkbox"/> | BRAUDITGRP | RR Audit Group | Mon, Sep 26, 2022, 11:27:37 UTC |
| <input type="checkbox"/> | BRANALYSTGRP | RR Analyst Group | Mon, Sep 26, 2022, 11:27:37 UTC |
| <input type="checkbox"/> | BRADMINGRP | RR Admin Group | Mon, Sep 26, 2022, 11:27:36 UTC |

3. Click **Assign User to Groups** to view the list of available users.
4. Check the check box adjacent to each user, to add that user to the group.
5. After selecting all the required users, click **Add**.

3.1.3.5 Import Application Users

As an Administrator, you can batch import User Accounts using a Comma-separated Values (.CSV) file.



Note:

Before importing the user accounts, create a .CSV file that is properly formatted for the import process.

To import user accounts:

1. In the IAM Console left pane, click **Users** and select **More Actions** and select **Import Users**.
2. Click **Browse** to locate and select the .CSV file containing the user accounts to import.

 **Note:**

Click **Download sample file** in the dialog box to download a sample file and perform the accounts upload.

3. Verify that the path and name of the selected .CSV is updated in the **Select a file to import**, and click **Import**.

 **Note:**

Oracle Identity Cloud Service cannot import a user account if a mandatory value such as user's first name, last name, or Username, is missing. In such cases, Oracle Identity Cloud Service will skip the incomplete account and proceed to the next account in the .CSV file.

When Oracle Identity Cloud Service evaluates and imports the User Accounts, the imported accounts are updated in the **Jobs**. You can also get information related to the successful/incomplete imports if the import was not completed due to system errors.

3.1.4 User Groups

User Groups are seeded (available out-of-the-box) by the Cloud Service. Groups are mapped to roles using the Cloud Service by the same user that was created using IAM.

Customers can also create new groups in IAM. After groups are created, they are synced from IAM to the Cloud Service.

3.1.4.1 Map Application with the User Groups

After creating a group, you can map the required applications with the group.

To map the application to a User Group, log in to IAM and follow these steps:

1. Search for the required **Domain**.
2. Select the **Default Domain** and then from the LHS menu, select **Oracle Cloud Services**, to view the list of Cloud Services.
3. Select the Cloud Services you are subscribed to (for example: **PBSMCS xxxx-prd** and **PBSMCS xxxx-nprd**, Where **Description** is mentioned as PBSM Cloud Service).
4. From the LHS menu, select **Users** and click **Assign Users**.
5. Select the user and click **Assign**.

3.1.4.2 Map Application with the Groups

To map the application to a User Group, log in to IAM and follow these steps:

1. Search for **Domain**.
2. Select the **Default Domain** and then from the LHS menu, select **Oracle Cloud Services**.

The screen displays the various Oracle Cloud Services.

3. Select the Cloud Services you are subscribed to like, **PBSMCS xxxx-prd** and **PBSMCS xxxx-nprd**
Where **Description** is mentioned as PBSM Cloud Service.
4. From the LHS menu, select **Groups**.
5. Click **Assign Groups**, and then select the relevant **Group**.
6. Click **Assign**.

3.1.4.3 Map Users to Groups

Log in to IAM as an administrator, and map users to user groups.

To map a user to a user group:

1. Select the **User Name** in the **Users Summary**.
2. Select **Mapped Groups**.
3. Select the **User Group Name**.

 **Note:**

To select a User Group, select the check-box corresponding to the User Group. To select all User Groups displayed on the page, select the check-box marked **Select All**.

4. Click **New Mapping** to map the User to the selected User Group.

Or

Click **Unmap** to remove the User Group-Role Mapping.

If the Unmap action requires authorization, refer to [Unmap User from Group](#).

 **Note:**

User-Group mapping changes from IAM will take some time to sync with your Cloud Service. If these changes are made during the active user session, then it will be reflected on the next login.

After a user signs into the Cloud Service, the User to User-Group Mapping created in the IAM Console will onboard into the Master and Mapping Tables. If you unmap a User from a Group in the Admin Console, navigate to the associated Console and open the Assign User to Groups Window. Deselect the User corresponding to the User Group and click **Finish**. This is a mandatory step to complete the Unmapping Process.

For more information, refer to [Unmap User from Group](#).

After you click **New Mapping**, the list of User Groups you can map the user to appears in the **Available Groups Summary**.

5. Select a **User Group**.

 **Note:**

To select a User Group, select the check box corresponding to the User Group. To select all User Groups displayed on the page, select the check box marked Select All.
If the logged-in user has both Administration and Authorization Entitlements, an Authorization View Toggle Button is available. Enable this button to complete the Authorization Process.

6. Click **Map**.

 **Note:**

To select a User Group, select the check box corresponding to the User Group. To select all User Groups displayed on the page, select the check box marked Select All.
If the logged-in user has both Administration and Authorization Entitlements, an Authorization View Toggle Button is available. Enable this button to complete the Authorization Process.

3.1.4.4 Unmap User from Groups

Unmap a user from a specific group to revoke the associated functions

Log in to IAM as an administrator to authorize and unmap a user from a specific user group.

To authorize the unmapping of a user from a user group:

1. Click **Unmapped Groups**.
2. Click the **User Group Name** to select the User Group.
3. Click **Authorize** or **Reject** to approve or reject an unmapping request.

3.1.4.5 Create a User Group

Create groups to manage user access to applications and resources.

To create a User Group in IAM Console:

1. In the IAM Console, click **Profile** and select **Identity domain** to add a User Group.
2. In the Identity Domain left pane, click **Groups** and select **Create group**.

Figure 3-7 Identity Domain

| <input type="checkbox"/> | Name | Description | Created | |
|--------------------------|---------------------------------|----------------------|---------------------------------|---|
| <input type="checkbox"/> | RRASMRMENUGRP | RR AU SMR Menu Group | Mon, Sep 26, 2022, 11:27:39 UTC | ⋮ |
| <input type="checkbox"/> | RRSUPERVISORGRP | RR Supervisor Group | Mon, Sep 26, 2022, 11:27:38 UTC | ⋮ |
| <input type="checkbox"/> | RRAUDITGRP | RR Audit Group | Mon, Sep 26, 2022, 11:27:37 UTC | ⋮ |
| <input type="checkbox"/> | RRANALYSTGRP | RR Analyst Group | Mon, Sep 26, 2022, 11:27:37 UTC | ⋮ |
| <input type="checkbox"/> | RRADMINGRP | RR Admin Group | Mon, Sep 26, 2022, 11:27:36 UTC | ⋮ |

3. Enter the **Group Name** (mandatory) and the **Group Description**.
4. Select **User can request access**, to allow users to request access to this group.
5. Check the check box adjacent to each user to add that user to the group.
6. Click **Create** to create the new user group with the selected users.

After creating the user group, you must assign various permissions to the group, using one of the following methods:

- Write at least one policy to give group permission to either the tenancy or a compartment. While writing the policy, specify the group using the unique group name or the group's OCID.
- Assign the group to an application.

3.1.5 User Management

During implementation, you prepare your Oracle Application's Cloud Service for the Service Users. The decisions made during this phase determine how you manage users by default. Most of these decisions can be overridden. However, for efficient User Management, Oracle recommends that you configure your environment to reflect both enterprise policy and support most or all users.

For more information, see the [View List of Application Users](#) and [User Roles and Privileges](#).

3.1.5.1 Application Users

During implementation, you can use the Create User task to create Test Service Users. By default, this task creates a minimal person record and a user account. After implementation, you should use the Hire an Employee Task to create Service Users. The Create User Task is not recommended after the implementation is complete.

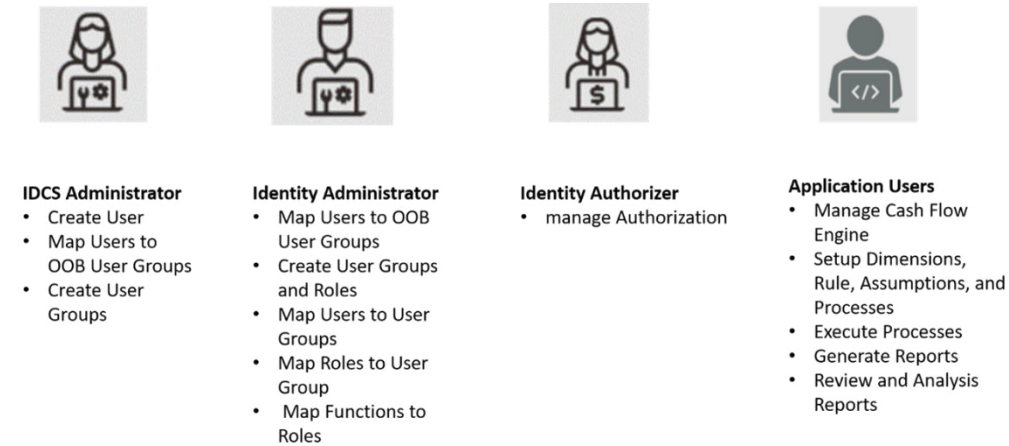
For more information, see [Create Application Users](#).

3.1.5.2 User Roles and Privileges

Oracle Financial Services Cash Flow Engine Cloud Service (CFECS) Users are assigned roles through which they gain access to functions and data. Users can have any number of roles.

The following figure shows User Personas and the tasks they can perform:

Figure 3-8 User Roles and Privileges



3.1.5.2.1 Role Based Access Control

Role-based security in Oracle Financial Services Cash Flow Engine Cloud Service Controls who can do what and to which data.

The following table provides examples of role-based access.

Table 3-1 Examples of Role Based Access

| Role Assigned to a User | Functions which Users with this Role can Perform | Set of Data which Users with the Role can Access when performing the Function |
|----------------------------|--|---|
| Application Administrators | Perform Application Administrator activities | User Group with Administration Roles across all Service Features |
| Business Users | Access to the Application to perform tasks | User Group with Business Tasks' Roles across all Service Features |

3.1.5.2.2 User Groups and Activities

The following table provides the information on the User Groups and related activities.

| User Groups | Activities |
|------------------------|--|
| IDCS User Groups | |
| Identity Administrator | <ul style="list-style-type: none"> • View Reports • View Object Storage • View OAuth Credentials • Perform Identity and Access Management Operations |
| IDCS Administrator | <ul style="list-style-type: none"> • Create Users • Map Users to the Instance |

| | |
|-------------------------------|---|
| Cash Flow Engine User Groups | |
| CFE Admin Group | <ul style="list-style-type: none"> · Configure the Folders · Configure Application, Global and User Preferences · View or Edit Cash Flow Engine Configuration Parameters |
| CFE Analyst Group | <ul style="list-style-type: none"> · Extend Data Model · Setup Dimension Management · Create/import members · Create/import hierarchy · Setup Interest rate curve · Setup Currency · Setup Economic Indicators · Setup Holiday Calendar · Setup Behavior Pattern · Setup Repricing Pattern · Prepayment Rule · Prepayment Model · Forecast Rates · Discount Methods · Setup Filters · Cash Flow Process · Cash Flow Edits Configuration · Cash Flow Edits Process · Data File Specification · Data Loader · Create and Execute Batches · Generate Reports |
| CFE Auditor Group | <ul style="list-style-type: none"> · Review/Analyze Results · Review Process Logs · View reports |
| Scheduler Service User Groups | |
| Job Administrator Group | Manage jobs |
| Scheduler Administrator Group | Manage batches |
| BI User Groups | |
| CFE BI Administrator | <ul style="list-style-type: none"> • Review/Analyze Results • Review Process Logs • View Reports |
| CFE BI Analyst | <ul style="list-style-type: none"> • Review/Analyze Results • Review Process Logs • View Reports |
| CFE BI Auditor | <ul style="list-style-type: none"> • Review/Analyze Results • Review Process Logs • View Reports |

In addition to this, Custom User Groups can be created and managed as per requirement.

3.1.5.2.3 User Roles and Activities

The following User Roles are seeded in the Cash Flow Engine Cloud Service to facilitate the activities expected from the users mapped to the seeded User Groups:

CFE Administrator

- CFE Analyst
- CFE Auditor
- CFE BI Administrator
- CFE BI Analyst
- CFE BI Auditor

In addition to this, Custom User Roles can be created and managed as per requirement.

The user roles CFE Administrator, CFE Analyst, and CFE Auditor are required to access the main application for view, edit and other purposes, based on the User Persona accessing the same. An Analyst User Persona can view all CFE screens and Edit-specific screens. Similarly, an Admin Persona can view and edit all CFE screens. These different Persona tasks are facilitated by the User Roles. Thus, these User Roles facilitates the accesses and activities for the corresponding User Groups. Thus, these three User Roles facilitates the accesses and activities for the corresponding User Groups that are mentioned in the following table.

The User Roles of - CFE BI Administrator, CFE BI Analyst, and CFE BI Auditor - are seeded BI Roles to be used for the users to access the Analytics Menu in the CFE Application. These four roles are created to facilitate Analytics access for four different types of User Persona. These roles can be mapped to any User Group to provide the Analytics access to users under the User Group.

3.1.5.2.4 User Persona and Analytics Menu Access Details

The following table provides the information on the User Persona and access within Analytics menu.

Table 3-2 User Persona and Analytics Menu Access Details

| IDCS User Group Code | Mapped Role Code | User Access Type | Persona |
|----------------------|------------------|------------------|----------------|
| CFEBIADMINGRP | CFEBIADMIN | R/W | CFE BI Admin |
| CFEBIANALYSTGRP | CFEBIANALYST | R/W | CFE BI Analyst |
| CFEBIAUDITORGRP | CFEBIAUDITORGRP | R | CFE BI Auditor |

3.1.5.2.5 Persona, User Group, Access Type and Role Code Mapping

This table lists the reports that the Data Steward, Application Analyst, and Application Auditor personas can access.

Table 3-3 User Persona and Analytics Menu Access Details

| |
|-------------------|
| SQL Query Browser |
|-------------------|

Table 3-3 (Cont.) User Persona and Analytics Menu Access Details

| | |
|-------------------------|--|
| Raw Data Analysis | <ul style="list-style-type: none"> • Staging Instrument Data • Staging Instrument Supplementary Data • Staging Ledger Data • Staging Transaction Summary Data • Processing Instrument Data • Processing Instrument Supplementary Data • Processing Ledger Data • Processing Transaction Summary Data |
| Operational Analysis | <ul style="list-style-type: none"> • Dimensions Registry • Currency Rates • Interest Rate Curves • Data Quality Checks • File Uploads • Groups and Roles |
| Cash Flow Report | |
| Processed Data Insights | |
| Data Insights | |
| Balance Reconciliation | |

3.1.5.2.6 User Group and User Role Mapping

The following table lists the seeded mapping of User Groups to the User Roles.

Table 3-4 User Group and User Role Mapping

| User Group | Mapped User Role |
|--|--|
| Cash Flow Engine Application Administrator | Cash Flow Engine Application Administrator |
| Cash Flow Engine Application Analyst | Cash Flow Engine Application Analyst |
| Cash Flow Engine Application Auditor | Cash Flow Engine Application Auditor |

The BI User Roles of CFE BI Administrator, CFE BI Analyst, CFE BI Auditor are not mapped OOTB to any seeded User Group but can be mapped to any User Group to provide the Analytics access to users under than User Group. Customers can custom User Groups and map the seeded or Custom User Roles as it suites the requirement.

3.1.6 Configuring Session Timeout

Session timeout automatically signs you out of a logged in session after a set time period, for various reasons such as inactive session for a specific time frame.

After you complete your tasks, you can sign out of your application. However, sometimes you might get automatically signed out due to session timeouts.

When you sign in using your credentials, you are authenticated to use the application, and a session is established. But, for security purposes, your session is configured to be active for a predefined duration, which is called the session timeout period. Your sessions can expire due to various reasons, such as an inactive session for a specific time period. In such cases, you are automatically signed out of the application. Your timeout periods may vary on certain

pages. For example, you may observe a longer timeout period on pages that automatically refresh or user portal/tabs that open in separate windows or tabs.

The various session timeouts and the configuration details are as follows:

| Timeout Type | Description | Configuration | Timeout Duration |
|----------------------------|--|---------------|-------------------------|
| Session Lifetime Timeout | After authenticating to the application, your current session remains active for a predefined duration, referred to as the session lifetime timeout period. Your session ends after this period, even if you're using the application. | Yes | 8 Hours (Default value) |
| Session Inactivity Timeout | After authenticating to the application, if your session is idle or inactive for a specific time, the System automatically terminates the session, and you are signed out of the session. | No | 60 Minutes |
| Browser Inactivity Timeout | After authenticating to the application, if your browser session is idle or inactive for a specific time, the System automatically terminates the session, and you are signed out of the session. | No | 60 Minutes |

3.1.6.1 How to configure Session Lifetime Timeout?

You can configure the Session Lifetime Timeout using your Identity Domain Settings in OCI Console.

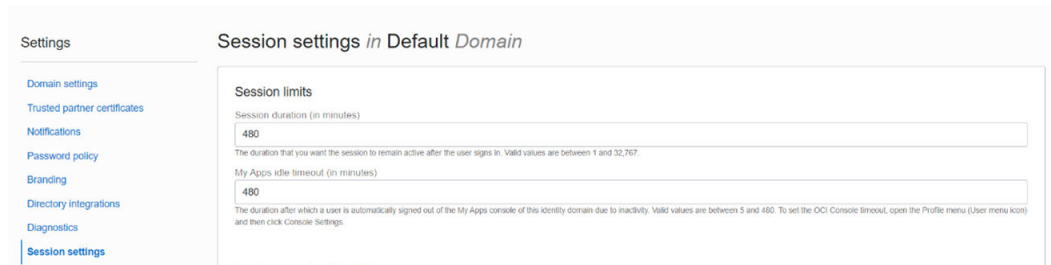
Ensure that you have the Security Administrator Role mapped to access and modify the settings.

To configure the session timeout:

1. Log in with your **Security Administrator Account**.
2. Navigate to the Domain page. Click **Settings** and select **Session Settings**.

3. Specify the **Session Duration** under **Session Limits**. Enter the required value. By default, this is set to 480 Minutes.

Figure 3-9 Session Settings



3.2 Introduction to Oracle Cash Flow Engine Cloud Service

Cash Flow Calculation is an integral part of finance and risk solutions. Cash Flow Engine (CFE) of Profitability and Balance Sheet Management Cloud Service is designed to help institutions to take a fresh and granular look at their cash inflows and outflows. It allows you to calculate Cash Flows of their Assets, Liabilities, and Off-Balance Sheet Products at instrument level. The service measures and models every loan, deposit, and off-balance sheet instrument individually, using Deterministic Methods. This helps gain a better insight into the granularity of cash inflows and outflows to be utilized for multiple non-regulatory and Regulatory purposes. Due to its generic nature CFE is suitable for both financial and non-financial institutions with exposure to financial securities/instruments.

3.2.1 Key Features

The Key Features are as follows:

- Generate account level Cash Flows using Unique Payment and Repricing Characteristics
- Support for principal and interest payments on different dates and at a different frequency
- Daily Rate Forecasting - Unique Rate for a given day on Repricing
- Fully auditable Cash Flow Output
- Calculate Cash Flows for multiple time horizons
- Multiple accrual basis and Compounding Methods
- Inbuilt Data Validation Rules
- Cash Flow Edits to perform comprehensive quality check on input data
- Model-specific characteristics using patterns and schedules
- Amortize one account using multiple methods
- Incorporate Prepayment and Early Redemption Assumptions
- Amortize premiums and discounts
- Calculate Market Value using multiple Discount Methods
- Apply Business Calendar
- Fresh looking application user interfaces with Oracle Redwood Theme

For more information, see the [Cash Flow Engine Reference Guide](#).

3.2.2 User Groups

Table 3-5 User Groups

| User Group | Description |
|-------------------------|---|
| CFE Administrator or | Performs all functional and technical activities. Given to experts who need to create and administer applications and service components. |
| CFE Analyst | Can create and administer service components, such as assumptions, rules, analysis, dashboards, and reports. Enters data and runs analysis for dimension members to which they have access, also designs reports and other analytical outputs. |
| CFE Auditor | View and analyze data using various analytical features |
| For Reports | View and analyze reports |
| CFE BI Administrator or | |
| CFE BI Analyst | |
| CFE BI Auditor | |

3.2.3 Guidelines for Working with a Cash Flow Engine

This topic describes an approach to designing and building applications based on your Security Role and the tasks it enables you to perform.

For CFE Administrators

CFE Administrators can perform the following steps to set up Cash Flow Engine:

- Define the folders before creating the assumptions, rules, and processes.
- Extend the Data Model, if required, by registering placeholder columns and tables.

For CFE Analysts

CFE Administrators and Analyst Users of Cash Flow Engine can perform the following steps to set up an application:

- Activate one or multiple Currency
- Define dimensions (such as business dimensions, and so on) using Dimension Management to build the main objects within the application.
- Define Global, User, and Application Preferences
- Define the Interest Rates and Economic Indicators
- Create assumptions and rules.
- Define Cash Flow Process and Cash Flow Edits Processes
- Load the data.

- Create and execute the batches
- Validate the Cash Flow Engine Application Structure to ensure that the application structure confirms to Validation Rules.
- Set up analysis views and other analytic tools so those with User and Viewer Roles can use them.
- Analysis the results.

For CFE Auditor

All users, including CFE Auditor, can do most of the following:

- View rules and assumptions setup in Cash Flow Engine.
- Analyze the Calculated Result Reports.
- Use the analytics features to track and report on Cash Flows.

3.2.4 Launching Cash Flow Engine

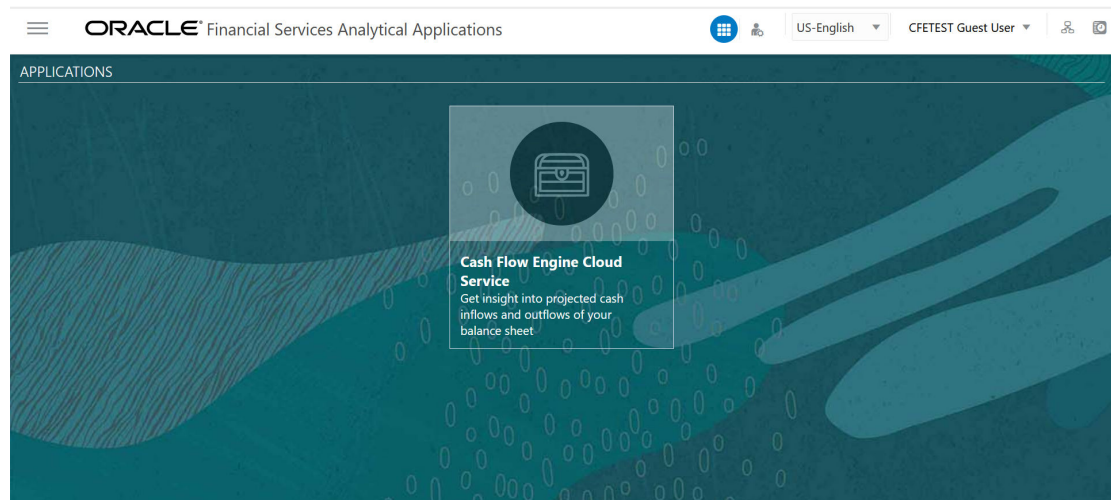
You can launch Cash Flow Engine from the Web Browser.

To open Cash Flow Engine, perform the steps as follows:

1. In the **Web browser**, click the link provided by Oracle.
2. Enter your user name and password.
If requested, select an application.

The password is case-sensitive.
3. Click **Sign In**.
The **Cash Flow Engine Home** Page is displayed.

Figure 3-10 Cash Flow Engine Home Page



3.2.4.1 Cash Flow Engine Home Page

When you log in, you see the Cash Flow Engine Home page.

The Home page contains these main areas:

- **Figure 3-11 Navigator Screen**



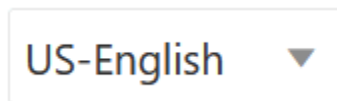
Navigator Screen to access menu items.

- **Figure 3-12 Admin Console**



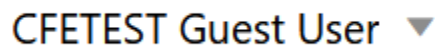
to Navigate to Admin Console.

- **Figure 3-13 Language of service**



Displays the language of service.

- **Figure 3-14 User Name**



The User Name menu with your user name in the header.

- **Figure 3-15 View Setup Information**



Click it to view setup information.

- **Figure 3-16 Last Login Date and Time**



Shows the details of Last Login Date and Time.

Click

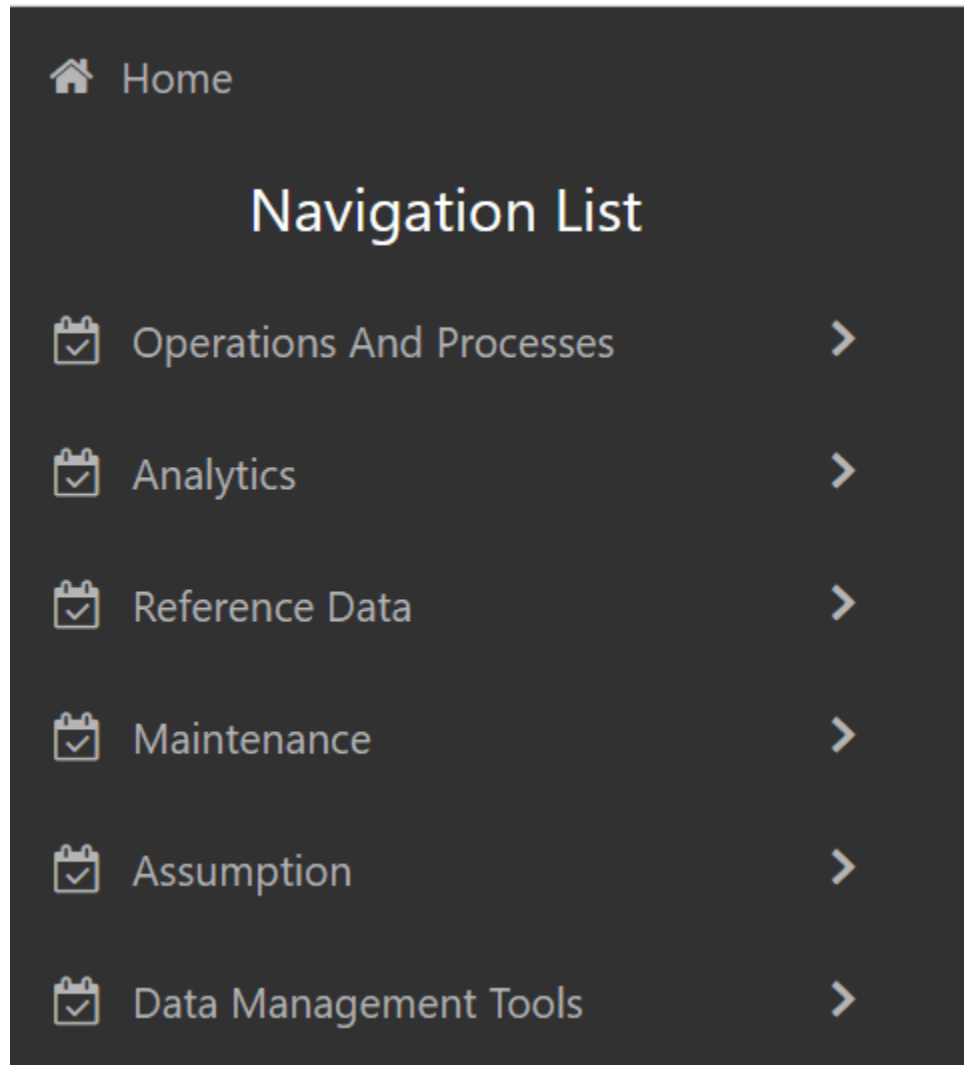
Figure 3-17 Navigation Screen



to display the Navigator Screen. This screen serves as a sitemap of the application features and displays links to all of the pages you can access. Use the Navigator Screen to navigate among the rules and processes required to define, review, and analyze the application, and to report results.

Figure 2: Navigation Path

Figure 3-18 Navigation Path



PBSM Cash Flow Engine Cloud Service Navigation Paths are displayed in the List of Navigation Paths. Access all these pages through the CFE Administrator, CFE Auditor, or CFE Analyst Responsibility.

Table 3-6 List of Navigation Paths for Cash Flow Engine Cloud Service

| Page | Navigation Path |
|-------------------------|--|
| Cash Flow Process | Select Cash Flow Engine Cloud Service menu, select Operations and Processes , and then select Cash Flow Process |
| Cash Flow Edits Process | Select Cash Flow Engine Cloud Service menu, select Operations and Processes , and then select Cash Flow Edits Process |
| Scheduler | Select Cash Flow Engine Cloud Service menu, select Operations and Processes , and then select Scheduler . Following sub-menus are available under Scheduler: Dashboard Define Batch Define Task Schedule Batch Monitor Batch |
| Report Home Page | Select Cash Flow Engine Cloud Service menu, select Analytics , and then select Home Page |
| SQL Query Browser | Select Cash Flow Engine Cloud Service menu, select Analytics , and then select SQL Query Browser |
| My Dashboard | Select Cash Flow Engine Cloud Service menu, select Analytics , and then select My Dashboard |
| Cash Flow Report | Select Cash Flow Engine Cloud Service menu, select Analytics, and then select Cash Flow Report |
| Economic Indicator | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Economic Indicators |
| Interest Rates | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Interest Rates . |
| Currency | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Currency . |
| Currency Rates | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Currency Rates |

Table 3-6 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

| Page | Navigation Path |
|-----------------------|---|
| Dimension Management | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Business Management . Following sub-menus are available under Business Management: Attribute Member Hierarchy |
| Holiday Calendar | Select Cash Flow Engine Cloud Service menu, select Reference Data , and then select Holiday Calendar |
| Preferences | Select Cash Flow Engine Cloud Service menu and select Application Preferences |
| Payment Pattern | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Payment Pattern . |
| Behavior Pattern | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Behavior Pattern . |
| Repricing Pattern | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Repricing Patterns . |
| Configuration | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Configuration |
| Cash Flow Edits | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Cash Flow Edits . |
| Filter | Select Cash Flow Engine Cloud Service menu, select Maintenance , and then select Filter . |
| Prepayment Rule | Select Cash Flow Engine Cloud Service menu, select Assumption , and then select Prepayment Rule |
| Prepayment Models | Select Cash Flow Engine Cloud Service menu, select Assumption , and then select Prepayment Models |
| Forecast Rates | Select Cash Flow Engine Cloud Service menu, select Assumption , and then select Forecast Rates |
| Discount Methods | Select Cash Flow Engine Cloud Service menu, select Assumption , and then select Discount Methods |
| Behavior Pattern Rule | Select Cash Flow Engine Cloud Service menu, select Assumption , and then select Behavior Pattern Rule |
| Data Model Extension | Select Cash Flow Engine Cloud Service menu, select Data Management Tools , and then select Data Model Extension |

Table 3-6 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

| Page | Navigation Path |
|---------------------------|---|
| Data Masking | Select Cash Flow Engine Cloud Service menu, select Data Management Tools , and then select Data Masking |
| Data File Administration | Select Cash Flow Engine Cloud Service menu, select Data Management Tools , and then select Data File Administration . Following sub-menus are available under Data File Administration: Data File Specification File Upload and Download Data File History |
| Data Management Interface | Select Cash Flow Engine Cloud Service menu, select Data Management Tools, and then select Data Management Interface. Following sub-menus are available under Data Management Interface: Data View Designer View |

3.2.4.2 Common Icons

Use the icons to view and analyze data and related information for each features.

Table 3-7 Common Icons

| Icon Name | Icon | Uses |
|-----------|------|-------------------------------------|
| Add | | Click Add icon to build a new rule. |

Figure 3-19 Add icon



Refresh

Click to refresh the Summary Page.

Figure 3-20 Refresh icon



Table 3-7 (Cont.) Common Icons






| Icon Name | Icon | Uses |
|-----------------|--|---|
| Help | <p>Figure 3-21 Help icon</p>  | Click to view the Holiday Calendar Rule Help. |
| Multiple Delete | <p>Figure 3-22 Multiple Delete icon</p>  | Select one or more rules in the table and then click the (-) icon at the top right of the Summary Page to delete more than one rule at the same time. |
| Search | <p>Figure 3-23 Search icon</p>  | To Search the rule(s) |
| List View | <p>Figure 3-24 List View</p>  | To view the Rule Summary Page items in List View. |
| Table View | <p>Figure 3-25 Table View</p>  | To view the Rule Summary Page items in Table View. |

Table 3-7 (Cont.) Common Icons






| Icon Name | Icon | Uses |
|--------------------------|---|--|
| Ascending and Descending | <p>Figure 3-26 Ascending icon</p>  <p>and</p> <p>Figure 3-27 Descending icon</p>  | To sort the rules on Rule Summary Page. |
| Action | <p>Figure 3-28 Action icon</p>  | Click to perform view various action options. |
| View/Edit | <p>Figure 3-29 Edit icon</p>  | Click in the Action column and select View/Edit to view or edit the contents of a rule in Read/Write format. Depending on User Privileges, the rule will open in either View or Edit mode. |
| Copy or Save As | <p>Figure 3-30 Save As icon</p>  | Click in the Action column and select Save As to create a copy of an existing rule. |

Table 3-7 (Cont.) Common Icons







| Icon Name | Icon | Uses |
|-------------------|--|--|
| Delete | <p>Figure 3-31 Delete icon</p>  | Click in the Action column and select Delete to delete an existing rule. |
| Execute | <p>Figure 3-32 Execute icon</p>  | To execute a process |
| Execution Details | <p>Figure 3-33 Execution Details icon</p>  | To view the execution details of the process. |
| Add New | <p>Figure 3-34 Add New icon</p>  | Click Add icon to add new items on Rule screen. |

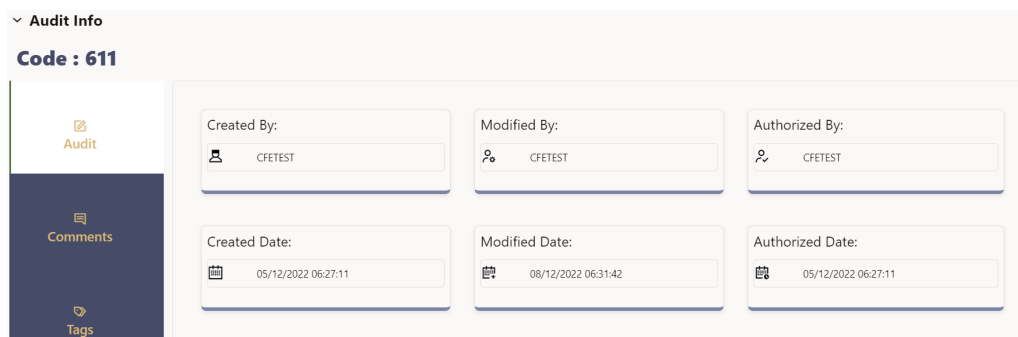
Table 3-7 (Cont.) Common Icons

| Icon Name | Icon | Uses |
|-------------------|---|---|
| Add Multiple Rows | <p>Figure 3-35 Add Multiple Rows</p>  | Click Add Multiple Rows to add multiple rows at a time. |
| Add Row | <p>Figure 3-36 Add Row</p>  | This allows you to Add one Row at a time. |

3.2.4.3 Common Feature Controls

PBSM Cloud Service includes many common feature controls.

Figure 3-37 Audit Info



Audit

The Audit Trail container is a standard footer container for every PBSM rule type. It displays Created By, Creation Date, Last Modified By, Modification Date, Authorized By, and Authorized Date on the Audit tab.

User Comments

The User Comments tab may be used to add comments to any rule, subject to a maximum of 4000 characters.

Tags

The Tags tab allows you to add a tag to the selected Rule ID.

3.2.5 Quick Tour

The following table provides a bird's eye view of the tasks and the order to execute these tasks using the application. Click the links to read details of each task. You can use the links on this page to help you immediately begin using Cash Flow Engine Cloud Service.

Table 3-8 Quick Tour

| Order | Task | Who Does This? | Action |
|-------|---------------------|---------------------------|--|
| 1 | CPQ Order Placement | Tenant Admin | Subscribe to the application. You will receive a Welcome e-mail with the URL and temporary password. |
| 2 | Provision Users | Sys Admin | Configure the Security Management System (SMS) to create users, assign roles, and implement user authorization and authentication. Review Standard User Groups and Roles Create Groups and Roles Create/Import Users Assign applications and groups to users Send notification to users |
| 3 | Set up Application | Business User (CFE Admin) | Performs following tasks: Setup Folder Extend Data Model (if required) Turn on seeded fields Register table-column from UI Placeholder Dimension and Column Registration |

Table 3-8 (Cont.) Quick Tour

| Order | Task | Who Does This? | Action |
|--------------|-------------------------------------|-----------------------------|---|
| 4 | Configure Rules | Business User (CFE Analyst) | Configure following CFE Rules: Activate Currency Configure or load Dimension Members and Attribute Configure or Load Hierarchy Set global application and user preferences Configure Economic Indicator Configure Interest Rate Curve Configure Holiday Calendar Configure Repricing Pattern Configure Behavior Pattern Configure Prepayment Model Configure Prepayment Rule Configure Forecast Rates Configure Discount Methods Configure Filter Configure new Cash Flow Edit Rules Configure Cash Flow Edits Process Configure Cash Flow Process |
| 5 | Create and Execute Jobs and Batches | Operator | Setup Technical Configuration for CFE Configure Batches for Data Loaders Configure Batches for Cash Flow Edits Process Configure Batches for Cash Flow Process |

Table 3-8 (Cont.) Quick Tour

| Order | Task | Who Does This? | Action |
|--------------|---|-----------------------|---|
| 6 | Load Data | Data Admin | Configure Data File Specifications Load Historical Interest Rate Curve Data from UI Load Historical Currency Exchange Rate Data from UI Load Historical Economic Indicator Data from UI Upload Dimension Data files to object store Run Dimension Data Loader Update Dimension Data from UI Upload Instrument Data files to object store Run Stage Instrument Data Loader |
| 7 | Run Process Rules, generate and analyze Reports | Analyst | Review raw Data Analysis Report Correct/reload data files and rerun Stage Loader, if required Run Processing Instrument Data Loader Review Instrument Data Report Run Cash Flow Edits Process from process UI and/or Batch Review Cash Flow edit log and modify data, if required Run Cash Flow Process from process UI and/or Batch Review Cash Flow Process Log Review Cash Flow Report Export Cash Flow Output Delete Cash Flow Output |

3.2.6 Key Terms

As of Date

Date at which the data is current.

At-Risk Period

The time horizon for Value-at-Risk, such as the difference between the time in the future when we evaluate a portfolio loss and the As of Date.

Balance Sheet Planning

Balance Sheet Planning performs distributed budgeting of all balance sheet and income statement accounts.

Base Rates

Section in Oracle Cash Flow Engine Service that stores the interest rates associated with the data As-of-Date.

Basis Points

1/100th of a percent (abbreviated as "bps")

Cash Flow Instrument Table

An instrument table that contains all of the OFSAA Cash Flow Columns required by the cash flow engine.

Cash Flow Column

Column in an instrument table used by the OFSAA Cash Flow Engine to perform Cash Flow analysis on a record.

CPR

Constant Prepayment Rate (CPR) is a measure of an Annualized Prepayment Rate.

Credit Risk

The risk that a loan holder will be unable to repay any portion of the loan. Current Rate Risk Profit Component of funding Center Rate Risk Results attributed to current mismatches of assets and liabilities.

Data Filter Rule

Data Filters are used to define which data should go into a Processing Run.

De-annualize

To compute the monthly equivalent rate of an Annual Rate.

Duration

Duration is the rate of market value change with respect to discount rate changes. It is a measure of market value sensitivity: the lower the value, the less sensitive the market value to changes in interest rates.

Funding Center

Area in a financial institution that receives the transfer pricing charge and credit for funds.

Funds Transfer Pricing

A method for valuing all sources and uses of funds for a balance sheet.

General Ledger

The main data source that defines an institution's financial reality. The General Ledger reflects all accounting entries.

Grid

A logical grouping of cells often surrounded by scroll bars.

Hierarchy

Hierarchical structure for dimension members in OFS Applications (Examples: organizational and product type)

Historical Rates Table

PBSM repository for all historical actual interest rates.

Instrument

Synonymous with an account record or an individual contract.

Instrument Table

A type of table contained in the OFSAA database used to store account level information. Instrument Records Rows in the OFSAA database that carry transaction account level information (Example: deposit account by deposit account)

Interest Rate Code

User defined code to reference a yield curve or single rate index for historical analysis, transfer pricing, and interest rate forecasting purposes.

Last Repricing Date

Date the rate last changed for an adjustable rate instrument and the origination date for a fixed rate instrument.

Liquidity Premiums

A charge levied on a long-term instrument to compensate for liquidity of the funds.

Log in

To access the programs and database of any OFSAA Application by providing a valid user name and password.

Market Price of Risk

In financial economics theory the Market Price of risk is a measure of inter-temporal risk-aversion of the aggregate investor; for example, a high market price of risk during some future period means that investors will be more risk-averse, and that rates for that term should be higher to compensate for this risk; in practical terms, the market price of risk is the "plug" that makes the risk-neutral rates price risk-free bonds correctly.

Market Value

In Monte Carlo, average of the (scenario specific) present values. In deterministic processing, it is the present value of the cash flows of the specific scenario.

Next Repricing Term

Repricing frequency for an adjustable rate instrument and the original term to maturity for a fixed rate instrument.

Profitability Management

Profitability Management assists customers in developing multiple levels of profitability (Example: organizational, product, customer, account profitability).

Prepayment

A reduction in the principal balance of a transaction record prior to the contracted schedule date.

Present Value

In Monte Carlo, sum of cash flows paid by a security along a particular rate scenario, discounted by the stochastic discount factor. In deterministic processing, the sum of the cash flows discounted by the deterministic discount factor.

PSA

A prepayment specification method established by the Public Securities Association, which relates the CPR to the age of that instrument.

Reconciliation

The process of comparing information from one data source to another

Reporting Currency

An active currency to which balances in other currencies are consolidated, often used for reporting.

Single Rate

An interest rate code with only one point defined (Examples: prime rate and 11th District Cost of Funds Index).

3.3 Admin Console

Use the Admin Console to perform System Configuration and Identity Management. It is a single point of access to manage identity functions and view administrative features such as Metering, Audit Trail Report and other miscellaneous configuration details in the Profitability and Balance Sheet Management Cloud Service (PBSMCS).

To access the Admin Console, the PBSM Cloud Administrator must have granted you administrative privileges by mapping your user account to the Identity Administrator and Identity Authorizer user groups. These user groups are seeded in Oracle Identity Cloud Service (IDCS).

3.3.1 Introduction to Admin Console

Use the Admin Console to perform System Configuration and Identity Management. It is a single point of access to manage identity functions and view administrative

features such as Metering, Audit Trail Report and other miscellaneous configuration details in the Cloud Service.

To access the Admin Console, the Application Cloud Administrator must have granted you administrative privileges by mapping your user account to the Identity Administrator and Identity Authorizer user groups. These user groups are seeded in Oracle Identity Cloud Service (IDCS).

When you access the Admin Console, you see the System Configuration and Identity Management tabs. Use these tabs to perform the following tasks:

3.3.1.1 Administrator Tasks

As an Administrator, use the Admin Console to perform the following tasks:

- View the Metering Report, Audit Trial Report, Object Storage, and Object Authentication (OAUTH) credential details in the System Configuration tab.
- Perform the Identity and Access Management operations in the Identity Management tab.

3.3.1.2 Authorizer Tasks

As an Authorizer, use the **Admin Console** to authorize the Identity and Access Management Operations in the **Identity Management** tab.

3.3.2 System Configuration

Using System Configuration, Administrators can view how many units of a service have been consumed. You can also view the following:

- The Audit Report to see what actions the users have performed in the application and when they have performed it
- The provisioned object storage details and the OAUTH authentication details.
- The production instance URL and the email ID of the login user.

The components are as follows:

- **Metering:** Click **Metering** to view the usage of services using the Metering Report.
- **Audit Trail Report:** Click **Audit Trail Report** to view the details of the user's login and logout details, the action they performed, the status of the action, and the date and time when the action was performed.
- **Component Details:** Click **Component Details** to view details such as the Object Storage, Pre-Authenticated Request (PAR) URL, and OAUTH authentication details.
- **Configurations:** Click **Configurations** to specify the instance name and the user or users who receive Emails related to operations tasks.

3.3.2.1 Metering

Use the **Metering** page to view the monthly unit usage of the number of transactions and the number of report types within the PBSM Cloud Service.

3.3.2.2 Component Details

Use the Component Details page to view the OCI Console, Object Storage Standard and Archive details, and OAUTH Authentication details.

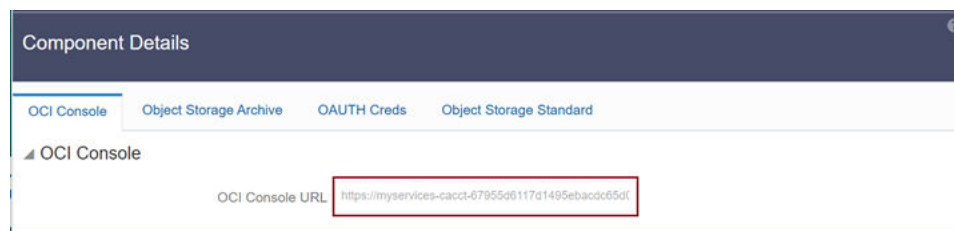
To access Component Details Window

1. Login to PBSM Admin Console.
2. Go to **System Configuration** tab, and click **Component Details** tile.

3.3.2.2.1 OCI Console

Click **OCI Console** tab to view and copy the OCI Console details.

Figure 3-38 OCI Console Page



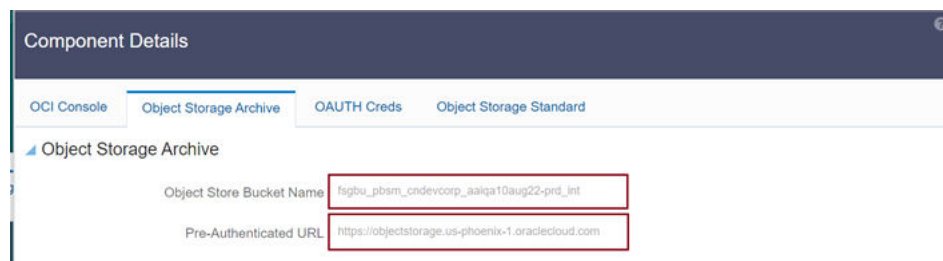
3.3.2.2.2 Object Storage Archive

When you provision an instance of the application, two buckets, a standard storage bucket and an archive storage bucket are automatically provisioned. The objects data that you want to load into the application for processing must be uploaded to the standard storage bucket.

Archive storage is used for storing objects which are not in use but must be retained and preserved for long periods of time. Objects are automatically moved from standard to archive storage, after 7 days.

Click **Object Storage Archive** Tab to view and copy the **Object Store Bucket Name** and the **Pre-Authenticated URL**.

Figure 3-39 Object Storage Archive Page



| Field | Description |
|---------------------------------|--|
| Object Store Bucket Name | The logical container in which objects are stored |
| Pre-Authenticated URL (PAR URL) | Request that enables you to access a bucket without providing any credentials. |

3.3.2.2.3 OAUTH Creds

The OAUTH Creds is used for implementing authentication in cloud services.

Click OAUTH Creds tab to view and copy the OAUTH Client ID and OAUTH Client Secret details.

Figure 3-40 OAUTH Creds Page

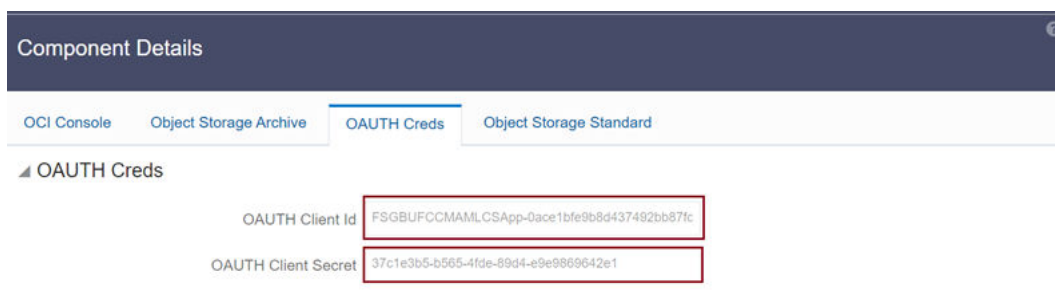


Table 3-9 Field Description

| Field | Description |
|---------------------|---|
| OAUTH Client ID | ID of the OAuth client used for OAuth authentication performed by IDCS while doing any API calls |
| OAUTH Client Secret | Password of the OAuth client secret used for OAuth authentication performed by IDCS while doing any API calls |

3.3.2.2.4 Object Storage Standard

Object Storage Standard is used for storing objects which are currently in use and require fast, immediate, and frequent access.

Click Object Storage Standard Tab to view and copy the Object Store Bucket Name and the Pre-Authenticated URL.

Figure 3-41 Object Storage Standards Page

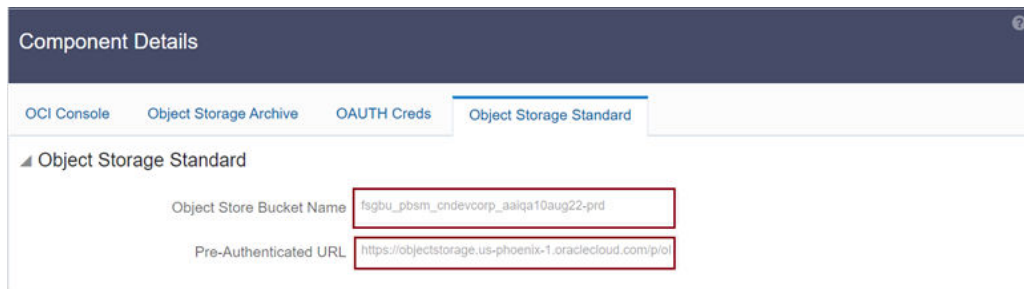


Table 3-10 Field Description

| Field | Description |
|---------------------------------|--|
| Object Store Bucket Name | The logical container in which objects are stored |
| Pre-Authenticated URL (PAR URL) | Request that enables you to access a bucket without providing any credentials. |

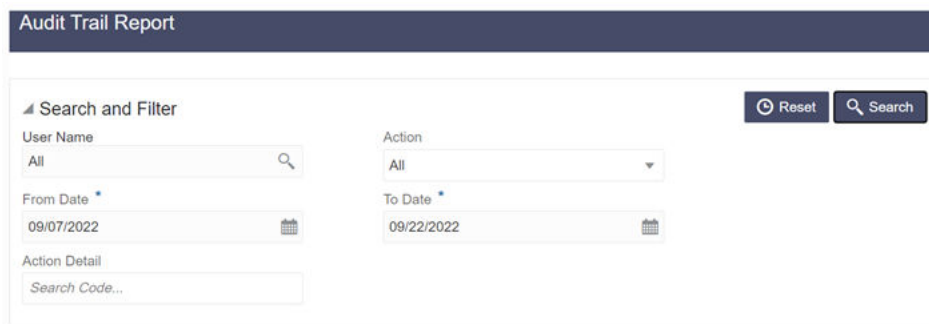
3.3.2.3 Audit Trail Report

You can use Audit Trail Report to view details of the user's activities such as Login, Add Action, Status of the Action, and the Machine Name.

To generate an Audit Trail Report, follow these steps:

1. Login to PBSM Admin Console.
2. Go to **System Configuration** tab, and click **Audit Trail Report** tile. The **Audit Trail Report** page is displayed.

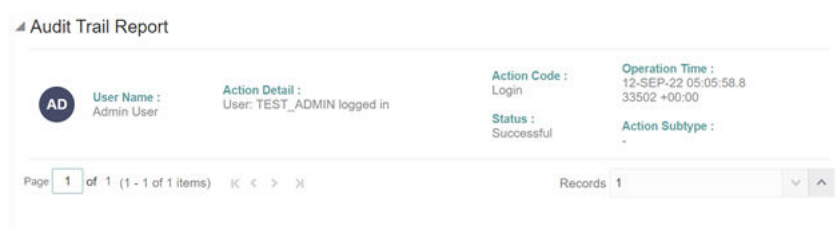
Figure 3-42 Audit Trail Report



3. Enter the following values and click Search to generate the Audit Trail Report for all users or a specific user.

Table 3-11 Audit Trail Report Filters

| Field | Description |
|---------------|---|
| User Name | Enter or Search for a user name to view the report for the selected user. |
| Action | Select the Action from the actions. to generate a report for a specific action. |
| From Date | Select the start date for the report. |
| To Date | Select the end date for the report. |
| Action Detail | Enter the string to search and filter the audit trail report for a specific action. |

Figure 3-43 OAUTH Creds Page**Table 3-12 Audit Trail Report Details**

| Field | Description |
|----------------|---|
| User Name | The user name selected in the User Name filter field. |
| Action Details | The action selected in the Action Detail filter field. |
| Action Code | The type of action performed by the user. |
| Status | The status of the action performed. The values are Successful or Failure. |
| Action Subtype | The sub type of the action. |
| Operation Time | The date and time of the action performed. |

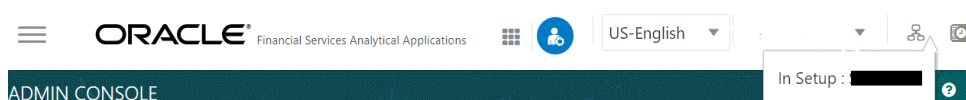
4. Click **Reset** to clear all values from the filter fields and enter new search criteria. The report filters are described in the following table:

3.3.2.4 Configurations

Use the Configurations page to specify the values for the instance name and Email ID of the operations user.

To provide the values, follow these steps:

1. Enter the instance name in the Configurations page. For example, UAT, SIT, or PROD. You can provide alphanumeric characters and special characters such as hyphen (-) or underscore (_). The name you specify in this field is displayed when you click In Setup as shown in the following image:

Figure 3-44 Displayed Instance Name

This allows you to know the instance or setup you are working on at the moment, when you have multiple UI windows open simultaneously from different setups.

2. Enter one or more operations user's Email IDs in the Operations User Email-ID field of the Configurations window. The operations user receives Emails about any operations tasks such as batch or task failure. You can enter multiple email IDs separated by a comma (as comma-separated values).
3. Click **Save** after the changes.

3.3.2.5 Reports For Download

The Reports for Download tile in the Admin Console consists of a set of pre-defined and pre-configured reports that are available for download. You can use the functions in the interface such as filter and sort to segregate the data and drill down to the details of the reports. You can then investigate the information, analyze, and export the data in CSV format.

In the Admin Console, you can download reports from Reports for Download in the System Configuration tab.

3.3.2.5.1 Prerequisites

To use Reports for Download from the Admin Console, your user profile must be mapped to the Data Maintenance Admin group to access the Reports for Download menu.

3.3.2.5.2 Access Reports for Download

To access the Data View window, click **Reports for Download** in the **System Configuration** tab. The **Data Reporting - Data View Page** is displayed.

3.3.2.5.3 Data Reporting - Data View

You can view the list of reports available for download, from the Data Entry window. Use one of the following criteria to view various reports.

- To search reports, click the Search field to display the search criteria pop-up. Enter search terms in the Name, Description, or Created By fields, or use a combination of the fields, and click Search.
The search result displays reports that match the criteria.
- To sort reports, click the Sort By drop-down and select from the options: Name, Description, or Created By.
The reports are displayed in ascending order for the selected option.
- To view the report creation and modification details, click the More Options (three dots) icon of a report to display the pop-up with the details for the following:
 - **Created By** - Displays the User ID of the user who created the report.

- **Created Date** - Displays the date and time of the creation of the report.
 - **Last Modified By** - Displays the User ID of the user who last modified the report.
 - **Last Modified Date** - Displays the date and time of the last modification of the report.
 - **Authorizer** - Displays the User ID of the authorizer who approved the report to be displayed in the window.
 - **Authorizer Comments** - Displays the comments entered by the authorizer when approving the report to be displayed in the window.
- To view a report, mouse over the record, and the hidden menu appears. Click View from the menu.
The details for the selected report are displayed in the Data Entry window.

3.3.2.5.4 View the Report Details

The Data Entry window is the interface where you can apply filter conditions (optional) on the reports and export the details.

You can apply the filter conditions (optional) to the reports in the Attributes Selection tab, and the results are displayed in the Data Preview tab from where you can export the report in the CSV format.

The procedure to view report details is described as follows:

1. In the **Data View** window, click **Attributes Selection**.
The Attributes Selection tab displays the details for the database table name in View Name and the table columns in Attribute Name. Expand View Name to display the columns in Attribute Name.
2. Click **Apply**.
The Data Preview tab displays the report details. The number of records displayed in the Data Preview tab is pre-configured in the system. However, you can export the details in the CSV format by clicking Download CSV.

3.3.2.5.5 Apply a Custom Filter to the Data View

In addition to the reports that you can view, you can also use the filter provided in the Data View window to custom filter the data in the reports for analysis purposes.

To apply a custom filter to the data view, follow these steps:

1. Click **Launch Filter** Condition to display the Filter Condition window.
2. Select **AND** or **OR** from the drop-down.
3. Select the required report column from **Select a Column**.
4. Select the required condition from **Select a Condition**.
5. Click **+ Condition** to add more conditions and click **+ Group** to add more groups.
Repeat the selection procedure to add details. To remove a condition or group, click Remove.
6. Click **Apply** in the **Filter Condition** window to save the custom filter condition.
7. Click **Apply** in the **Attributes Selection** tab.


The Data Preview tab displays the results of the Attributes filtered in the Attributes Selection tab. The number of records displayed in the preview is pre-configured in the

system. However, you can export the details in the CSV format by clicking Download CSV.



3.3.3 Identity Management

Using Identity Management, Administrators can manage fine-grained and coarse-grained entitlements that consist of fewer functions than fine-grained entitlements) entitlements. Authorizers can authorize the entitlement mappings. The components are as follows:



- **Users:** A user is a person who has access to and can perform specific actions based on the user group or groups they are mapped to. Before you can map a user to a user group, your Administrator must have created and authorized the user. After the user is authorized, they are added in the Users Summary page.

Click **Users**  to view the list of available users in the Users Summary page.


- **Groups:** Groups are a set of users that can perform specific activities. For example, the administrator role performs administrative activities. Any user who belongs to a specific user group can access the roles mapped to that user group.

Click **Add**  to add a user group or click **Groups**  to view the list of user groups in the Groups Summary page.

- **Roles:** Roles are a set of functions grouped together and having specific privileges. Any user who belongs to a specific role can access functions mapped

to the role. Click **Add**  to add a role or click **Roles**  to view the list of roles in the Roles Summary page.

- **Folders:** Folders are used to control access rights on defined list of objects. They

are mapped to a specific Information Domain, Click **Folders** , to view the list of folders and edit the access rights, in the Folders Summary page.

- **Functions:** Functions enable users to perform a specific activity. Any user who belongs to a specific function can access the folders mapped to the function. Click

Functions  to view the list of functions in the Functions Summary page.


Note:

Only those user groups and roles which are authorized are displayed in the Groups Summary page and Roles Summary page, respectively.

3.3.3.1 Users Summary Page

The Users Summary page shows the list of available users. You can view the details of a user and map the user to one or more user groups.

To access Users Summary page, complete the following steps:

1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Users** tile (.

The **Users Summary** page is displayed.





Figure 3-45 Users Summary Page



3. Select a specific User Name in the Users Summary page and then click **Details** to view the associated User ID and User Name.
4. Select a User name and click Mapped Groups to view the list of groups that are mapped to the particular user. For more information about mapped groups, refer to [Mapped and Unmapped Groups](#).
You can also Unmap an user from a specific group. For more information, refer to [Mapped and Unmapped Groups](#).

To search for a specific user, type the first few letters of the user name that you want to search in the Search box and click Search. The search results display the names that consist of your search string in the list of available users.

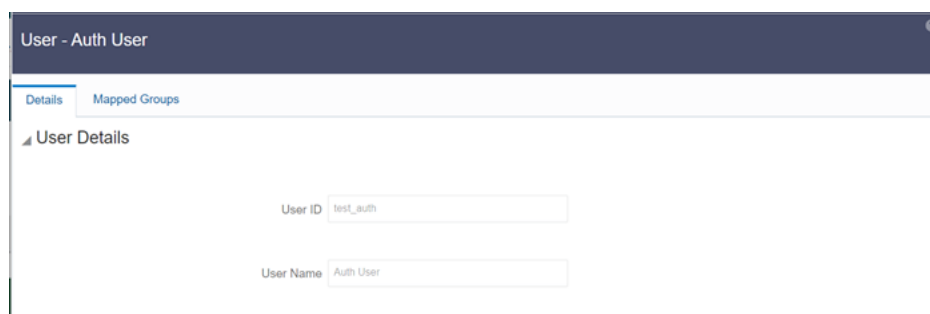
At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. You can increase or decrease the number of entries that are displayed using the up and down arrows. To navigate between pages in the View bar, use the following buttons:

- Use the First page  button to view the entries in the first page.
- Use the Previous page  button to view the entries in the previous page.
- Use the Next page  button to view the entries in the next page.
- Use the Last page  button to view the entries in the last page.

You can also navigate to the desired page. To do this, enter the page number in the View bar control and press Enter.

3.3.3.1.1 User Details

Click a specific User listed in the User Summary page and click Details to view the User ID and the User name of that user.

Figure 3-46 User Details Page

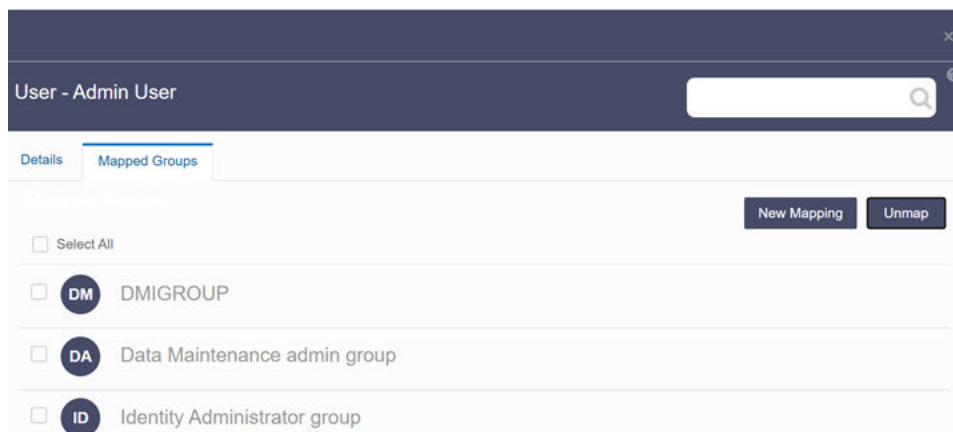
3.3.3.1.2 Mapped and Unmapped Groups

If you are an Administrator, you can map and unmap a user to a User group, from the **Users Summary** page.

3.3.3.1.2.1 Mapped Groups

Complete the following steps, to map an user to a User Group.

1. Select the **User name** in the **Users Summary** page.
2. Select **Mapped Groups**.
The list of groups mapped to the specific user is displayed.

Figure 3-47 Mapped Groups

3. Click **New Mapping**.
After you click New Mapping, the list of user groups you can map the user to appears in the **Available Groups** page.
4. Click **Map**.
A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.

If you are an Authorizer and want to authorize a mapping, follow these steps:

- In **Mapped Groups**, select the user group name.

- Click **Authorize** to authorize the user-user group mapping. Click **Reject** to cancel the authorization request.

3.3.3.1.2.2 Unmapped Groups

To unmap a user from a user group, complete the following steps.

1. Select the User name in the Users Summary page.
2. Select **Mapped Groups**.
The list of groups mapped to the specific user is displayed.
3. Select the check box corresponding to a User Group or click Select All to select all the available User groups.
4. Click **Unmap**.
A confirmation message is displayed after successful unmapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In Mapped Groups, select the user group name.
2. Click **Authorize** to authorize the user-user group unmapping. Click **Reject** to cancel the authorization request.

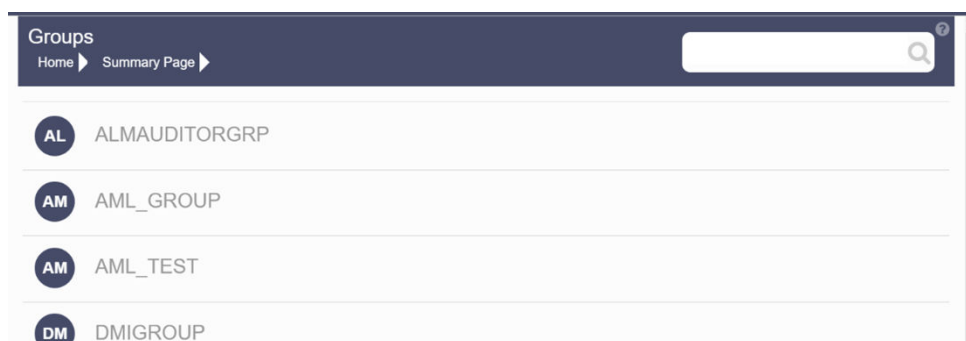
3.3.3.2 Groups Summary Page

The Groups Summary page shows the list of available groups. You can view the details of a group and map the group to one or more user Roles.

To access Groups Summary page, complete the following steps:

1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Groups** tile (👤).
The Groups Summary page is displayed.

Figure 3-48 Groups Summary Page







3. Select a specific Group Name in the Groups Summary page and then click Details to view the associated Group ID, Group Name and Group Description. For more information refer to [Group Details](#).
4. Select a Group name and click Mapped Roles to view the list of Roles that are mapped to the particular Group. For more information about mapped groups, refer to [Mapped and Unmapped Roles](#).

You can also Unmap a group from a specific Role. For more information, refer to [Mapped and Unmapped Roles](#).

To search for a specific user group, type the first few letters of the user group name that you want to search in the search box and click Search. The search results display the names that consist of your search string in the list of available users.

At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. You can increase or decrease the number of entries that are displayed using the up and down arrows. To navigate between pages in the View bar, use the following buttons:

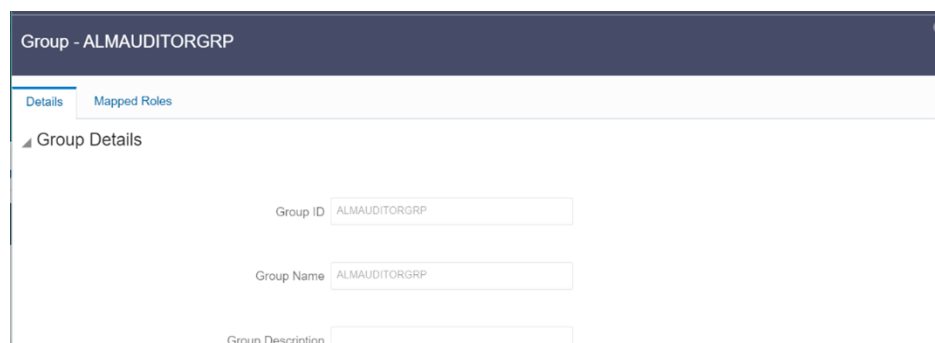
- Use the First page  button to view the entries in the first page.
- Use the Previous page  button to view the entries in the previous page.
- Use the Next page  button to view the entries in the next page.
- Use the Last page  button to view the entries in the last page.

You can also navigate to the desired page. To do this, enter the page number in the View bar control and press Enter.

3.3.3.2.1 Group Details

Select the Group name in the Groups Summary page and then select Details to view the Group ID, Group Name and Group Description.

Figure 3-49 Group Details Page



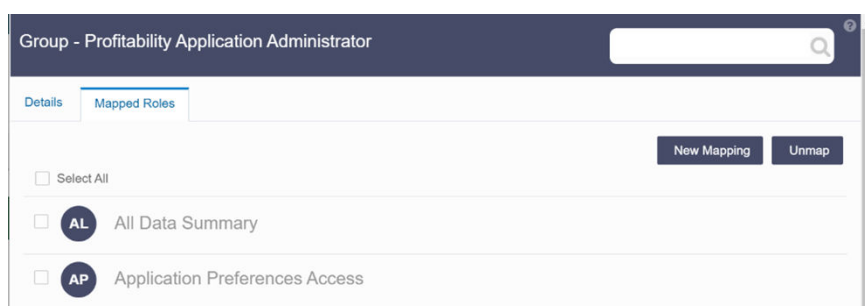
3.3.3.2.2 Mapped and Unmapped Roles

If you are an administrator, you can map and unmap a Group to a User Role, from the Groups Summary page.

3.3.3.2.2.1 Mapped Roles

Complete the following steps, to map an user to a User Group.

1. Select the User name in the Groups Summary page.
2. Select Mapped Roles.
The list of Roles mapped to the specific user is displayed.

Figure 3-50 Mapped Roles

3. Click **New Mapping**.
After you click New Mapping, the list of user Roles you can map the group to appears in the **Available Roles** page.
4. Select the check box corresponding to a User Role or click **Select All** to select all the available User Roles.
5. Click **Map**.
A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Roles**, select the user Role name.
2. Click **Authorize** to authorize the user-user group mapping.
Click **Reject** to cancel the authorization request.

3.3.3.2.2 Unmapped Roles

To unmap a Group from a Role, complete the following steps.

1. Select the Group name in the **Groups Summary** page.
2. Select **Mapped Roles**.
The list of Roles mapped to the specific user is displayed.
3. Select the check box corresponding to a User Role or click **Select All** to select all the available User Roles.
4. Click **Unmap**.
A confirmation message is displayed after successful unmapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Roles**, select the user group name.
2. Click **Authorize** to authorize the user-user Role unmapping.
Click **Reject** to cancel the authorization request.

3.3.3.2.3 Available Roles

Click New Mapping to view the list of roles you can map to the user group.

To select a role, select the check box corresponding to the role. To select all roles, select the check box marked **Select All**.

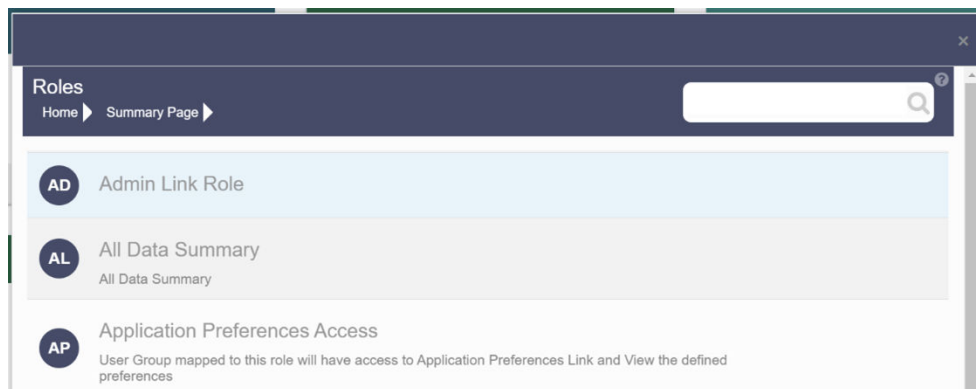
3.3.3.3 Roles Summary Page

The Roles Summary page shows the list of available User Roles. You can view the details of a Role and map the Role to one or more user Functions.

To access Roles Summary page, complete the following steps:

1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Roles** tile (🏠).
The **Roles Summary** page is displayed.





Figure 3-51 Roles Summary Page



3. Select a specific Role Name in the Roles Summary page and then click Details to view the associated Role Code, Role Name and Role Description. For more information refer to [Role Details](#).
4. Select a Role name and click Mapped Functions to view the list of Functions that are mapped to the particular Role. For more information about mapped Functions, refer to [Mapped and Unmapped Functions](#).
You can also Unmap a Role from a specific Function. For more information, refer to [Mapped and Unmapped Functions](#).

To search for a specific role, type the first few letters of the role name that you want to search in the Search box and click Search. The search results display the names that consist of your search string in the list of available users.

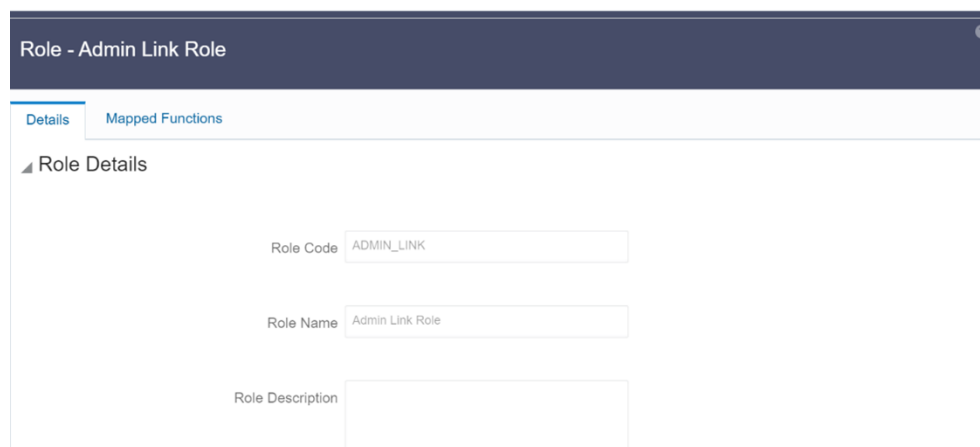
At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. You can increase or decrease the number of entries that are displayed using the up and down arrows. To navigate between pages in the View bar, use the following buttons:

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- Use the Previous page  button to view the entries in the previous page.
- Use the Next page  button to view the entries in the next page.
- Use the Last page  button to view the entries in the last page.
You can also navigate to the desired page. To do this, enter the page number in the View bar control and press Enter.

3.3.3.3.1 Roles Details

Click a specific Role listed in the Roles Summary page and click Details to view the Group ID, Group name and the description of that group.

Figure 3-52 Roles Details Page



The screenshot shows the 'Role - Admin Link Role' page. It has two tabs: 'Details' (selected) and 'Mapped Functions'. Under the 'Details' tab, there is a section titled 'Role Details' with three input fields: 'Role Code' containing 'ADMIN_LINK', 'Role Name' containing 'Admin Link Role', and 'Role Description' which is empty.

3.3.3.3.2 Mapped and Unmapped Functions

If you are an administrator, you can map and unmap a User Role to a Function, from the Roles Summary page.

3.3.3.3.2.1 Mapped Functions

Complete the following steps, to map a Role to a Function.

1. Select the Role name in the **Roles Summary** page.
2. Select **Mapped Functions**.
The list of Functions mapped to the specific user is displayed.

Figure 3-53 Mapped Functions



The screenshot shows the 'Role - Admin Link Role' page with the 'Mapped Functions' tab selected. At the top right, there are 'New Mapping' and 'Unmap' buttons. Below them is a 'Select All' checkbox. A table lists one function: 'AD Admin Link' with a selected checkbox. At the bottom, there is a pagination bar showing 'Page 1 of 1 (1 - 1 of 1 Items)' and 'Records 1'.

3. Click **New Mapping**.
After you click New Mapping, the list of user Functions you can map the Role to appears in the **Available Functions** page.

4. Select the check box corresponding to a Function or click **Select All** to select all the available Functions.
5. Click **Map**.
A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Functions**, select the Function Name.
2. Click **Authorize** to authorize the Role Function mapping.
Click **Reject** to cancel the authorization request.

3.3.3.3.2.2 Unmapped Functions

To unmap a Role from a Function, complete the following steps.

1. Select the Role name in the **Roles Summary** page.
2. Select **Mapped Functions**.
The list of Functions mapped to the specific Role is displayed.
3. Select the check box corresponding to a Function or click **Select All** to select all the available Functions.
4. Click **Unmap**.
A confirmation message is displayed after successful unmapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Functions**, select the Function Name
2. Click **Authorize** to authorize the Role Functions unmapping.
Click **Reject** to cancel the authorization request.

3.3.3.4 Folders Summary Page

You can create multiple Folders, store objects and assign access rights based on the security level of the user.

The Folders Summary page shows the list of available groups. You can view the details of a group and map the group to one or more user Roles.

To access Folders Summary page, complete the following steps:





- Click **Identity Management** tab in the **Admin Console** page.
- Click the **Folders** tile, to access the Folders Summary page.
The **Folders Summary** page is displayed.

Figure 3-54 Folders Summary Page

Select a specific Folder Name in the Folders Summary page and then click Details to view the associated Folder ID, Folder Name and Folder Type. For more information refer to [Folder Details](#).

To search for a specific user group, type the first few letters of the user group name that you want to search in the search box and click Search. The search results display the names that consist of your search string in the list of available users.

At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. You can increase or decrease the number of entries that are displayed using the up and down arrows. To navigate between pages in the View bar, use the following buttons:

- Use the First page  button to view the entries in the first page.
- Use the Previous page  button to view the entries in the previous page.
- Use the Next page  button to view the entries in the next page.
- Use the Last page  button to view the entries in the last page.

You can also navigate to the desired page. To do this, enter the page number in the View bar control and press Enter.

3.3.3.4.1 Folder Details

Select the Folder name in the Folders Summary page and then select Details to view the Folder ID, Folder Name, and Folder Type of the selected Folder.

Figure 3-55 Folder Details

Folder - TEST0811

Details

Folder Details

Folder ID TEST0811

Folder Name TEST0811

Folder Type PUBLIC

Edit Delete

3.3.3.4.1.1 Editing Folder Details

You can edit the Folder Type from the folder details page.

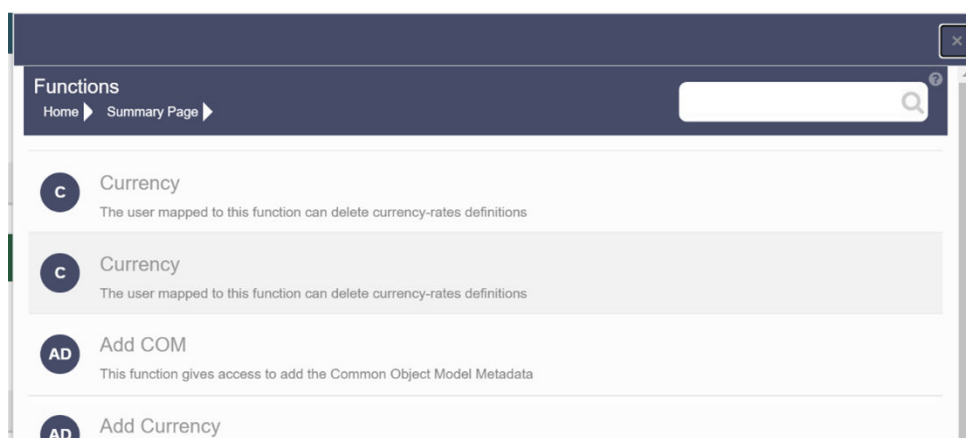
1. Click **Edit** button on the **Folder Details** page.
2. Set the Folder Type to one of the following options:
 - **Public**- These folders are accessible to all users
 - **Private** - These Folders can be viewed only by the users associated with that folder.
 - **Shared** - These folders can be accessed by those users mapped to specific User groups. These User groups are mapped to specific roles that are associated with the folder.

3.3.3.5 Functions Summary Page

The Functions Summary page shows the list of available functions. You can view the Function details.

To access Functions Summary page, complete the following steps:





1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Functions** tile. The **Functions Summary** page is displayed.

Figure 3-56 Functions Summary page

3. Select a specific Folder Name in the Functions Summary page and then click Details to view the associated Function ID, Function Name and Function Description. For more information refer to [Function Details](#).

To search for a specific function, type the first few letters of the function name that you want to search in the search box and click Search. The search results display the names that consist of your search string in the list of available users.

At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. You can increase or decrease the number of entries that are displayed using the up and down arrows. To navigate between pages in the View bar, use the following buttons:

- Use the First page  button to view the entries in the first page.
- Use the Previous page  button to view the entries in the previous page.
- Use the Next page  button to view the entries in the next page.
- Use the Last page  button to view the entries in the last page.

You can also navigate to the desired page. To do this, enter the page number in the View bar control and press **Enter**.

3.3.3.5.1 Function Details

Select the function name in the Functions Summary page and then select Details to view the Function ID, Function Name, and Function Description of the selected function.

Figure 3-57 Function Details

Function - Currency

Details

Function Details

Function ID: CRRLSL

Function Name: Currency

Function Description: The user mapped to this function can delete currency-rates definitions

3.3.3.5.2 Mapped and Unmapped Functions

If you are an administrator, you can map and unmap a User Role to a Function, from the Roles Summary page.

3.3.3.5.2.1 Mapped Functions

Complete the following steps, to map a Role to a Function.

1. Select the Role name in the **Roles Summary** page.
2. Select **Mapped Functions**.
The list of Functions mapped to the specific user is displayed.

Figure 3-58 Mapped Functions

Role - Admin Link Role

Details Mapped Functions

Select All

New Mapping Unmap

AD Admin Link

Page 1 of 1 (1 - 1 of 1 items) Records 1

3. Click **New Mapping**.
After you click New Mapping, the list of user Functions you can map the Role to appears in the **Available Functions** page.
4. Select the check box corresponding to a Function or click Select All to select all the available Functions.
5. Click **Map**.
A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Functions**, select the Function Name.
2. Click **Authorize** to authorize the Role Function mapping.
Click **Reject** to cancel the authorization request.

3.3.3.5.2.2 Unmapped Functions

To unmap a Role from a Function, complete the following steps.

1. Select the Role name in the **Roles Summary** page.
2. Select **Mapped Functions**.
The list of Functions mapped to the specific Role is displayed.
3. Select the check box corresponding to a Function or click **Select All** to select all the available Functions.
4. Click **Unmap**.
A confirmation message is displayed after successful unmapping. The mapping will be completed after authorization.

If you are an authorizer and want to authorize a mapping, follow these steps:

1. In **Mapped Functions**, select the Function Name
2. Click **Authorize** to authorize the Role Functions unmapping.
Click **Reject** to cancel the authorization request.

4

Data Administration

This chapter covers the following topics:

- **Data Model Extension:** The PBSM Cloud Service provides OOTB placeholder Columns and Tables that can be configured to use as custom Columns, Custom Dimensions, and Custom Management Ledger Tables as suitable to the business requirements. However, these Columns and Table are placeholder items and must be registered before use. The Data Model Extension module enables you to register these Columns and Tables.
- **Data File Specification:** The Data File Specification module helps you to load the data from your systems to the PBSM Cloud Services.
- **File Upload and Download Utility**The File Upload and Download Utility enables you to upload or download files to the Object Store.
- **Data Maintenance Interface:** Data Maintenance Interface (DMI) helps to design a Data Form in a user-specified format. Further, it allows to perform maintenance activities using the Designed Form.
- **Data Quality Framework:** Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.
- **Configure Cash Flow Edits Rule:** The Cash Flow Edits Configuration Window allows you to configure a new Cash Flow Edits Rule.
- **Cash Flow Edits Process:** The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.
- **Cash Flow Output Export:** This module discusses the procedure to download the Cash Flow Output details. When you download the data, it moves to Object Store.
- **Cash Flow Table Cleanup:** This module discusses the procedure to delete data from Cash Flow Output Tables. During the delete process, partitions of Output Tables are truncated. The procedure deletes the data from Output Tables permanently and no backup is retained.
- **Balance Reconciliation:** Balance Reconciliation module helps you to Reconcile the selected processing/instrument/account balances against the Management Ledger. If any differences are found, you will have the flexibility to choose significant differences and create plug entries for those in the Ledger_Instruments table.

4.1 Data Model Extension

Customization of Physical Data Model is restricted in the Cloud Service. However, there may be a need to extend the Data Model to meet multiple business requirements. For this purpose, the Cloud Service provides OOTB placeholder Columns and Tables that can be configured to use as custom Columns, Custom Dimensions, and Custom Management Ledger Tables as suitable to the business requirements.

**Note:**

The Management Ledger tables are applicable only to Profitability and Balance Sheet Management Cloud Services.

These placeholder Columns and Tables must be registered before use. The Data Model Extension Module allows you to do the following types of registrations:

- Dimensions Registration
- Columns Registration
- Management Ledger Registration
- Pending Registration

After registration, you can start loading the data in the selected placeholder Columns and Tables and use them to define the Rules and Assumptions for further processing and reporting.

Appropriate user roles must be created and maintained for the users to perform the registration and registration approval processes.

To register the placeholder Columns and Tables, from the LHS Menu, select **Data Management Tools**, and then select **Data Model Extension** to display the DataModel Extension summary screen.

The Data Model Extension summary screen displays the following tiles:

- Dimensions
- Columns
- Management Ledger
- Pending Registration

Using this UI, you do the registration of Dimensions, Columns, and Management Ledger Tables. After the registration is done, the detail will be sent to the Supervisor or Approver User who either approves or rejects the registration.

4.1.1 Registering Dimensions

Through the Dimension Registration UI, you register two types of Dimensions; Simple Dimensions and Key Processing Dimensions that are explained in the following topics.

Dimensions are the Placeholder Columns and Tables. The column names appear in the Instrument Tables as Physical Column Names. The Data Model Extension UI allows you to define the Logical Layer with details Name, Description, and the purpose of the column. After these columns are defined, they appear in the drop-down lists in the application screens as UDPs (User Defined Properties) that you can use. This process of defining the Dimensions is called Registering.

4.1.1.1 Register a Simple Dimension

Simple Dimensions are list of values that support neither attributes nor hierarchies.

Simple Dimensions are list of values that support neither attributes nor hierarchies. Their three key uses are:

- Reserved for use within the Analytical Application Engines
- Stratifying your data for process or report filtering purposes
- Serving as list of values when used as attributes

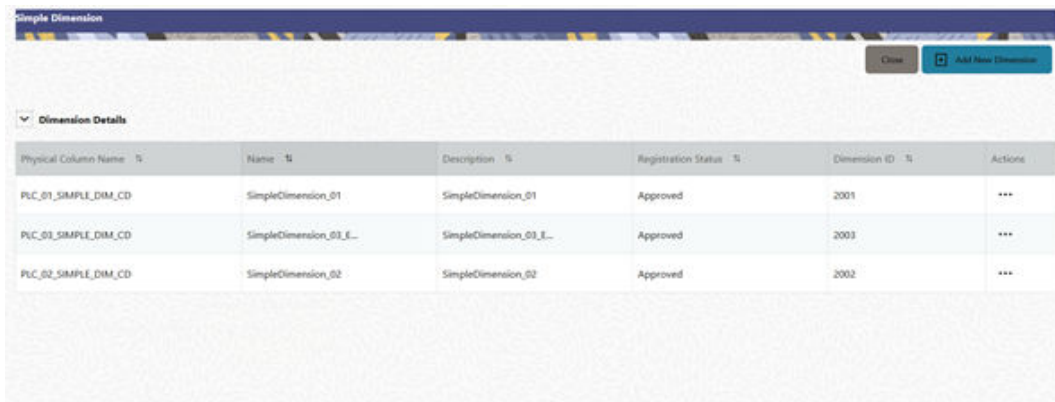
The Cloud Service Data Model comes with a set of placeholder Simple Dimensions for configuration and use. The member details of simple dimensions are stored in two tables:

- A code table (For example, FSI_SIMPLE_DIM_01_CD)
- A Multi-Language Support table (for example, FSI_SIMPLE_DIM_01_MLS)

To register a Simple Dimension:

1. Navigate to the summary screen, and click the **Simple Dimensions** tile to display the **Simple Dimension** summary screen.

Figure 4-1 Simple Dimension summary screen



| Physical Column Name | Name | Description | Registration Status | Dimension ID | Actions |
|----------------------|-------------------------|-------------------------|---------------------|--------------|---------|
| PLC_01_SIMPLE_DIM_CD | SimpleDimension_01 | SimpleDimension_01 | Approved | 2001 | ... |
| PLC_01_SIMPLE_DIM_CD | SimpleDimension_03_E... | SimpleDimension_03_E... | Approved | 2003 | ... |
| PLC_02_SIMPLE_DIM_CD | SimpleDimension_02 | SimpleDimension_02 | Approved | 2002 | ... |

The Simple Dimension summary screen displays the summary of existing Simple Dimensions with the Physical Column Names, Name, Description, Registration Status, Dimension ID details, and Actions icon.

2. Click **Add New Dimension** to collapse the Dimension Details summary and to display the dimension details.

When you click **Add New Dimension**, the UI displays **Save** and **Submit for Approval** buttons.

3. Enter the following details:

- **Name** (mandatory): Specify the required logical name of the dimension.
- **Description** (mandatory): Specify the required description of the dimension.
- **Comment**: Specify the required maker/checker comment. Note that special characters *, newline, and double quotes are not allowed.

The **Details** section displays the Physical Column and Data Type information that the dimension uses for user reference. As and when a registration takes place successfully and the physical column is utilized, the next registration process proceeds to take the next-in-numerical-order physical column available for registration.

4. Click **Save**. The details are saved as a Draft and displayed on the summary screen. You can change the Name, Description, and Comments later by double clicking the details.

5. Click **Submit for Approval** to send the Dimension Details for approval. Or select a Name from the list and click the Actions icon to View, View, Edit, Submit for Approval or Delete the simple dimension.

Or

Select a Name from the list and click the Actions icon to View, View, Edit, Submit for Approval or Delete the simple dimension.

 **Note:**

- You can delete a registration when it is in Draft state.
- If the selected Dimension is in Approved state, then the Actions menu displays only View, Edit, and Submit for Approval actions.

4.1.1.1.1 View a Simple Dimension

To view a Simple Dimension, perform the following steps.

To view a Simple Dimension, perform the following steps:

1. Click the **Actions** Icon against the selected Simple Dimension to expand the Actions Menu.
2. Click **View** to see the details of the selected Simple Dimension.

4.1.1.1.2 Edit a Simple Dimension

To edit a Simple Dimension, perform the following steps:

1. Click the **Actions** Icon against the selected Simple Dimension to expand the Actions Menu.
2. Click **Edit** to display the selected Dimension details in edit mode.
3. Edit the following details:
 - a. **Name:** This is mandatory.
 - b. **Description:** This is mandatory.
 - c. **Comment:** Specify the required maker/checker comment. Note that special characters *, newline, and double quotes are not allowed.
4. Click **Save** to save the details as a draft.
5. Click **Submit for Approval** to send the Dimension Details for approval.

 **Note:**

- When you edit an already approved Dimension, the Dimension must be submitted for approval again. You cannot delete or edit the Dimension again.
- Additionally, if you edit an approved Dimension, then the Actions Icon displays only the View option for the Dimension.

4.1.1.1.3 Delete a Simple Dimension

To delete a Simple Dimension, perform the following steps:

1. Click the **Actions** Icon against the selected Simple Dimension to expand the Actions Menu.
2. Click **Delete** to delete the Dimension.

 **Note:**

You can only delete a Dimension that is in Draft stage. The Actions Menu does not display the Delete action for an approved dimension.

4.1.1.2 Register a Key Processing Dimension

Key Processing Dimensions have the following features:

- Accessible as modeling dimensions for all of the Cloud Service Analytical Engines.
- Expressed as columns in nearly all of your Business Fact Tables.
- Support both attributes and hierarchies.

Metadata for Key Processing Dimensions is stored in four tables:

- A base table (For example, **DIM_<Dimension Name>_B**)
- A translation table (For example, **DIM_<Dimension Name>_TL**)
- An attribute table (For example, **DIM_<Dimension Name>_ATTR**)
- A hierarchy table (For example, **DIM_<Dimension Name>_HIER**)

Base tables store basic information about each Dimension Member and Translation Tables store names and descriptions for each Dimension Member in multiple languages.

Attribute Tables store one or many attribute values for each Dimension Member. Hierarchy Tables store one or more hierarchies for each dimension (you may define as many hierarchies as you wish for any dimension that supports hierarchies).

The DM Extension Module enables you to create Custom Dimensions as required by the business. To register a Key Processing Dimension:

1. Navigate to the summary screen, and click the **Key Processing Dimension** tile to display the Key Processing Dimension summary screen.

Figure 4-2 Key Processing Dimensions summary screen

| Physical Column Name | Name | Description | Registration Status | Dimension ID | Actions |
|----------------------|--------------|--------------|---------------------|--------------|---------|
| PLC_05_KEY_DIM_ID | test_KPD_100 | test_KPD_100 | Draft | | ... |
| PLC_01_KEY_DIM_ID | plc1 kpd | plc 1 kpd | Approved | 1001 | ... |
| PLC_03_KEY_DIM_ID | plc 3 kpd | plc 3 kpd | Approved | 1003 | ... |
| PLC_04_KEY_DIM_ID | plc4 kpd | plc 4 kpd | Approved | 1004 | ... |
| PLC_02_KEY_DIM_ID | plc 2 KPD | plc 2 KPD | Approved | 1002 | ... |

The summary screen displays the summary of existing Key Processing Dimensions with the details Physical Column Names, Name, Description, Registration Status, Dimension ID, and Actions icon.

The Actions icon displays the **View** button. You can click the **View** button and see the Dimension Details in View Only mode.

The registration of a dimension happens after the dimension is approved. The Dimension ID is displayed only for the approved dimensions.

- Click **Add New Dimension** to collapse the Dimension Details summary and to display the dimension details. When you click **Add New Dimension**, the UI displays the **Save** and **Submit for Approval** buttons.

Figure 4-3 Key Processing Dimension screen

- Enter the following details:
 - Name:** This is a mandatory field. Specify the required logical name of the dimension.
 - Description:** This is a mandatory field. Specify the required description of the dimension.
 - Type:** This is a mandatory field. Select a relevant Dimension Type.
 - Product (Prod):** Select this option if you want to use the placeholder Dimension to define Business Rules and Assumptions.
 - Organization (Org):** Select this option if you want to use the Placeholder Dimension to define a new Organization structure.

- **Other:** Select this option if you want to use the placeholder Dimension for any other purpose.
- **Comment** Specify the required maker/checker comment. Note that special characters *, newline, and double quotes are not allowed.

The **Details** section displays the Physical Column and Data Type information that the dimension uses for user reference. As and when a registration is successful and the physical column is utilized, the next registration process proceeds to take the next-in-numerical-order physical column available for registration.

4. Click **Save** to save the details. The details are saved as a Draft and displayed on the summary screen. You can change the Name, Description, and Comments later by double clicking the details.
5. Click **Submit for Approval** to send the Dimension Details for approval.
Or

Select a **Name** from the list and click the **Actions** Icon to View, Edit, Submit for Approval or Delete the key processing dimension.

 **Note:**

- You can delete a registration when it is in Draft state.
- If the selected Dimension is in Approved state, then the Actions Menu displays only View, Edit, and Submit for Approval actions.

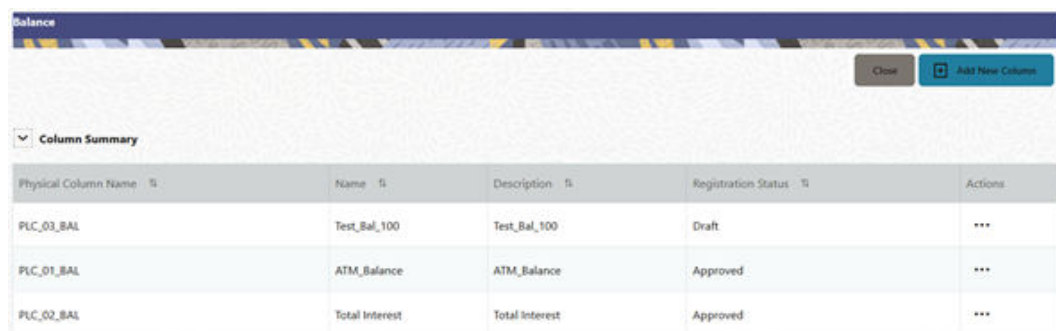
4.1.2 Registering Columns

The Placeholder Columns are categorized under the different domains to be used for different purposes.

The procedures to register the listed Columns are similar. To register a column:

1. Navigate to the Summary screen, and click a **Column** tile to display the Column Summary screen.

Figure 4-4 Column Summary screen



| Physical Column Name | Name | Description | Registration Status | Actions |
|----------------------|----------------|----------------|---------------------|---------|
| PLC_03_BAL | Test_Bal_100 | Test_Bal_100 | Draft | ... |
| PLC_01_BAL | ATM_Balance | ATM_Balance | Approved | ... |
| PLC_02_BAL | Total Interest | Total Interest | Approved | ... |

The summary screen displays the summary of existing Columns with the details Physical Column Names, Name, Description, Registration Status, and Actions icon.

The registration of a Column happens after the Column is approved.

2. Click **Add New Column** to collapse the Column Summary and to display the Column Details.
When you click **Add New Column**, the UI displays the **Save** and **Submit for Approval** buttons.

Figure 4-5 Column Screen

The screenshot shows the 'Column Details' section of the UI. It contains the following fields and a table:

- Name:** Required field, value: PLE_OR_BAL
- Description:** Required field, empty
- Property Name:** Required field, value: OTHER_ADJ_AMOUNT_OUTPUT
- Property Value:** Required field, value: ECONOMIC_VALUE
- Data Type:** NUMBER(22,3)
- Comment:** Empty text area

| Property Name | Property Value |
|--------------------------|--------------------------|
| OTHER_ADJ_AMOUNT_OUTPUT | ECONOMIC_VALUE |
| BREAK_FUNDING_AMOUNT | BREAK_FUNDING_MARKET_VAL |
| BREAK_FUNDING_MARKET_VAL | UE |

3. Enter the following details:
 - **Name:** This is mandatory. Specify the required logical name of the column.
 - **Description:** This is a mandatory field. Specify the required description of the column.
 - **Property Name:** This is an optional field used to select a relevant Property from the drop-down list, as applicable to the Column.
 - **Property Value:** Double click to display a drop-down where you can select Yes if it is applicable to the Column.
 - **Comment:** Specify any maker/approver comment. Note that special characters *, newline, and double quotes are not allowed.
4. Click **Save**. The details are saved as a Draft and are displayed on the Summary screen. You can change the Name, Description, and Comments later by double clicking the details.
5. Click **Submit for Approval** to send the column details for approval.
OR

Select a **Name** from the list and click the **Actions** icon to View, Edit, Submit for Approval, or Delete the Column. Editing, Submitting for Approval, or Deleting procedures are similar to Dimension Edit, Submit for Approval, or Delete procedures.

 **Note:**

- You can delete a registration when it is in Draft state.
- If the selected Column is in *Approved* state, then the Actions menu displays only View, Edit, and Submit for Approval actions.

Domain Types

The below domain types are available for each of the Cloud Service:

Table 4-1 Domain Types

| Profitability and Balance Sheet Management Cloud Service Domain Types | Accounting Standards Cloud Service Domain Types | Climate Change Analytics Cloud Service Domain Types |
|---|--|---|
| <ul style="list-style-type: none"> • DATE • RATE • VOLUME • CHAR • LONG_DESCRIPTION • FLAG • BALANCE | <ul style="list-style-type: none"> • DATE • RATE • VOLUME • CHAR • LONG_DESCRIPTION • FLAG • BALANCE • SHORT_NAME • SHORT_NUMBER • SHORT_DESCRIPTION • CODE_CURRENCY • PERCENT • LOCALE_CD • TIMESTAMP • NAME • LEAF • OBJECT_ID • SYSTEM_IDENTIFIER | <ul style="list-style-type: none"> • BALANCE • CHAR • CODE • DATE • FLAG • LEAF • NUMBER • RATE • PERCENT • LONG_DESCRIPTION • SHORT_DESCRIPTION • COUNTERPARTY_BALANCE • COUNTERPARTY_RATE • COUNTERPARTY_PERCENT • COUNTERPARTY_CHAR |

4.1.3 Registering a Management Ledger

This is applicable only to Profitability and Balance Sheet Management Cloud Services.

PBSM Cloud Service contains the default Management Ledger (FSI_D_MANAGEMENT_LEDGER). However, you can add up to five other Management Ledgers to the Service.

To view and edit the Management Ledger:

1. Navigate to the Summary screen, and click the **Management Ledger** tile to display the **Edit Management Ledger** screen.

Figure 4-6 Edit Management Ledger Screen

The screenshot shows the 'Edit Management Ledger' interface. At the top right, there are 'Close' and 'Submit for Approval' buttons. The main form area includes:

- Name:** Management Ledger
- Physical Name:** FSLD_MANAGEMENT_LEDGER
- Description:** Management Ledger
- Standard Management Ledger Attribute:** A button to collapse the attribute section.
- Status:** Approved
- Dimensions:** A shuttle box with 'Available Dimensions' (No items to display) and 'Selected Dimensions' (Placeholder_KPD_1, Placeholder_KPD_2, Placeholder_KPD_3, Placeholder_KPD_4).

This screen displays the following details of the Management Ledger as follows:

- **Name** (non-editable)
 - **Physical Name** (non-editable)
 - **Description** (non-editable)
2. Click **Standard Management Ledger Attribute** to collapse and see the available Standard Dimensions, Standard Columns, and Approved Dimensions.

The Standard Dimensions section shows the Key Processing Dimensions that are available OOTB for the Management Ledger. In addition to this, the screen enables the selection of custom Key Processing Dimensions for the Management Ledger through a shuttle box component that displays the registered custom dimensions in the Available Dimensions and the Selected Dimensions boxes. You can select from the **Available Dimensions** box and move them to the **Selected Dimension** box using the **Move** button. Additionally, you can remove the Selected Dimensions by clicking the **Move Back** button.

The Standard Columns comprises of the OOTB Ledger-level Simple Dimensions and Admin Columns. The Approved Dimensions shows the list of Custom Dimensions approved for the Management Ledger.

4.1.3.1 Adding a Management Ledger

To add a new Management Ledger, perform the following steps:

1. Navigate to the Summary screen, and click the **Add Management Ledger** tile to display the Add Management Ledger screen.

Figure 4-7 Add Management Ledger Screen

2. Enter the following details:
 - **Name:** This is a mandatory field. Specify the logical name of the Management Ledger.
 - **Description:** This is a mandatory field. Specify the description of the Management Ledger.
3. Select the applicable Dimensions from the **Available Dimensions** box and click the **Move** button to move them to Selected Dimensions box. The selected Dimensions are included as the additional activated Key Processing Dimensions for the Management Ledger.
4. Click **Submit for Approval** to send the column details for approval.

The details are sent to the Supervisor or Approver for approval. The newly added Management Ledger is displayed on the summary screen in a new tile.

 **Note:**

- You can delete a registration when it is in Draft state.
- If the selected Management Ledger table is in *Approved* state, then the Actions Menu displays only View, Edit, and Submit for Approval actions.

4.1.4 Approving or Rejecting the Registrations

The Supervisor or Approver can see the Dimensions or Columns or Management Ledgers that are ready for approval on the Data Model Extension summary screen.

To approve the Dimensions, Columns, and Management Ledgers, perform the following steps:

1. Navigate to the **Data Model Extension** summary screen.

Figure 4-8 Data Model Extension Summary Screen



The Dimensions and Columns that are ready for approval are displayed in one tile and the Management Ledgers that are ready for approval are displayed in another tile against the **Pending Approval** Table.

2. Click on any Tile to open to the **Pending Dimension and Column Registration** screen or **Approve Management Ledger Registration** screen.
3. Enter a comment and click the **Approve** or **Reject** buttons.
4. Select **OK**.
 - a. The approved Dimension or Column or Management Ledger is displayed in the summary screen with *Approved* status.
 - b. Select **Cancel** to keep the Dimension or Column or Management Ledger in a Pending for Approval Status.
5. Click **Reject** to reject the registration. Complete the approval process. The Registration will be marked with status Rejected in the summary screen.
6. After it is approved or rejected, the registration is available for further modification by the Maker and can be submitted again.

A registration cannot be deleted after it has passed the Draft State and is currently in Pending, *Approved* or *Rejected* state.

4.2 Data File Specification

This chapter covers the following topics:

- [Loading External Data](#)
- [Data Loaders](#)
- [Data File History](#)

4.2.1 Loading External Data

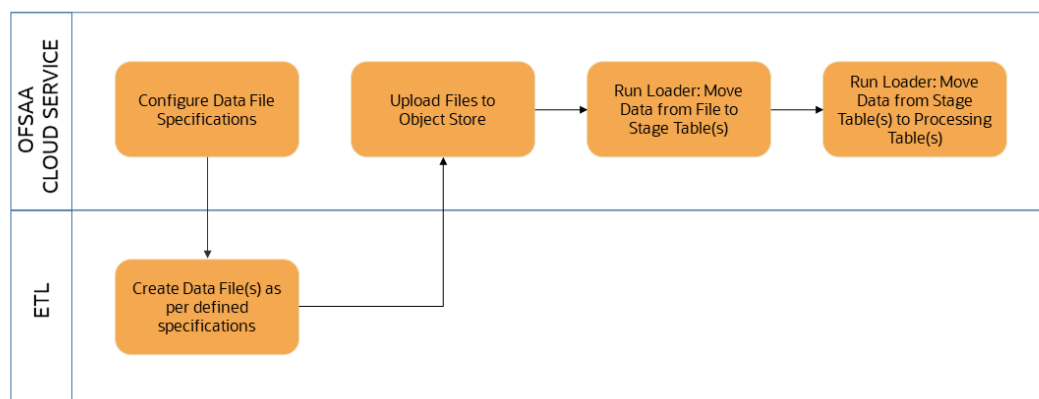
The (OFSA or Oracle) Cloud Services use following categories of data:

- Account or Instrument
- Management Ledger

- Transaction Summary
- Dimensions and Hierarchies
- Market data like Interest Rate, Currency Exchange Rate

The following illustration depicts the process of loading data from your systems into the Cloud Services:

Figure 4-9 Loading External Data



Oracle Cloud Services uses Oracle's Object Store Service to transfer data between your machine/laptop and its databases. Object Storage Service allows storing the files as objects in a highly secure, scalable, and durable way. Files can be uploaded through a Web Console; however, it is possible to do so only with files up to 1 GB.

Uploaded Data Files are temporarily stored in the Object Storage for Data Loaders to read and move them to the corresponding Database Tables for further use by the individual services.

Before the files can be created and uploaded, format, column order and other properties must be defined using Data File Specifications User Interface. This chapter discusses the supported formats and contents of the data file that is being imported into the Object Storage.

For information on uploading files, see the File Upload and Download section. For information on running the Data Loaders, see the [Data Loaders](#) section.

4.2.1.1 Data File Specification

The three supported formats for the Data Files are TXT, DAT, and CSV. These files contain the name of the table for which the specifications are being created.

Ensure that there are no duplicate records in a single Data File. If there are duplicate records, then the Data File Upload results in a failure.

To open the Data File Specification Window, navigate to the **Data Management Tools**, select **Data File Administration**, and then select **Data File Specification** to display the Data File Specification Summary Page.

Figure 4-10 Data File Specification Summary Screen

| <input type="checkbox"/> | Data file name | Target File name | Created By | Created Date | Modified By | Modified Date | Action |
|--------------------------|-----------------------------|------------------|------------|---------------------|-------------|---------------------|--------|
| <input type="checkbox"/> | Flexcube_Corporate_Loan.csv | STG_ASSET | cfeuser1 | 05-24-2022 06:23:42 | cfeuser1 | 05-24-2022 06:23:42 | ... |
| <input type="checkbox"/> | Flexcube_Home_Loan.csv | STG_ASSET | cfeuser1 | 05-24-2022 06:24:13 | | | ... |

The Summary Page of Data File Specification displays the Search Criteria Pane, Specific Search Pane, and the already created Data Files and their details.

4.2.1.1.1 Searching for a Data File Specification

There are two Search Panes provided to search the Data Files on the Summary Page.

To search the Data File:

1. Click the **Search** icon on the Search pane to collapse (display) the Criteria Window.
2. Data File Name and/or Target File Name and click **Search** to display the Data File Names that match the criteria.
3. Click **Cancel/Reset** to remove the filter criteria on the Search Window and refresh the window.
4. Click **Search** after entering the search criteria.
The search results are displayed in a table containing all the Data Files that meet the search criteria with the following details:
 - **Data File Name:** The name of the Data File.
 - **Target File Name:** The Target File Name.
 - **Created By:** Displays the Name of the user who created the Data File.
 - **Created Date:** Displays the Date and Time at which the Data File was created.
 - **Modified By:** Displays the Name of the user who last modified the Data File.
 - **Modified Date:** Displays the Date and Time at which a Data File was last modified.
5. Click on the **Action** icon against the Data File Name to do further actions as follows:
 - **View:** Click View to view the contents of a Data File in read-only format.
 - **Edit:** Click the Edit icon to modify a previously saved Data File. Note that you cannot change the File Name.
 - **Save As:** Click Save As to create a copy of the selected Data File.
 - **Delete:** Click Delete to delete the selected Data File.
6. Click on the **Action** icon against the Data File to do further actions **View, Edit, Save As, and Delete** on the selected Data File.

The other method to search a Data File is using the **Field Search** pane. You can enter any one of the details of a Data File and press the **Enter** key to display the details of the Data File.

4.2.1.1.2 Creating a Data File Specification

The Data File usually contains the Name of the Physical Table on which the specifications are being created and the columns included in the file.

For the complete list of available columns, see the Data Requirements as follows:

- Profitability and Balance Sheet Management Cloud Service: [Doc ID: 28694909.1](#)
- IFRS 9 Cloud Service: [Doc ID: 2959143.1](#)

To create a new Data File Specification:

1. Navigate to the Data File Specification summary page and click the **Add** icon to open the Data File Specification window.

Figure 4-11 Data File Specification

The screenshot shows the 'Data File Specification' window with the following sections:

- Details:** Target Table Name (Required), File Name (Required), File Extension (CSV).
- Load Properties:** Incremental (toggle), File contains Header record (toggle), Validate Manifest File (toggle), Date Format (Required), Field Delimiter, Rejection Threshold (%).
- Columns Order:** Column Type, Logical Name (selected), Physical Name.
- Table Selection:** A table with columns Name, Filter, Column Order, and Default Value. It shows 'No data to display'.

2. Under the Details section of the screen, enter the following details:
 - a. Click on **Target Table Name** to open a list **Category – Table Names**. The tables are categorized into different groups and are as follows:
 - Transaction Summary
 - Ledger
 - Others
 - Schedule o Instruments

Each of the above **Categories** lists the **Tables** available for data loading. The list of categories is dependent on the Metadata from the Seeded Tables that come with the various Cloud Services and may differ from that shown above based on the services you have subscribed.

- b. Select a **Table** from the list for which you want to create the Data File Specification.
 - c. Enter a unique **Name** for Data File Specification with an extension of the file format. The formats supported are TXT, CSV, and DAT types.
3. Under the **Load Properties** Section of the screen, enter the following details:

- a. Select the **Incremental** toggle switch if the data in the file is incremental. If the data is a complete load, then do not select this switch.
This flag identifies if the Data File is incremental or fresh accounts. In the case of incremental accounts, if account 1 is loaded as part of the Data File 1 and needs a correction. In that case, the account is corrected and will be uploaded as part of Data File 2. In this case, Data File 2 is the incremental file.
- b. Select **File contains Header record** toggle switch if the file contains a Header Record.
- c. Select **Validate Manifest File** toggle switch if you want to validate the data in the Data File. This validation checks the Checksum of the file, the number of records that are being loaded from the file and other additional details such as Date Format and so on. To use this toggle switch, a prerequisite is to generate a manifest file for the Data File that is being created and it must be uploaded using the File Upload process. For more details, see the [File Upload and Download](#) section.
This is an optional step. However, if you want to generate a manifest file in JSON format, then enter the following details and save it as a .manifest file. A sample JSON file format is as follows:

```
{"file_name":"test.dat","as_of_date":"2022-03-24","checksum":"2587c  
db6a2b87835c6adfce627671486","record_count":"10","rejection_thresho  
ld":"0"}
```

 **Note:**

Ensure that the name of the manifest file is same as the Data File with .manifest extension. For example, if the Data File Name is asset.csv, then the manifest file must be named asset.manifest.

Table 4-2 MANIFEST File Details

| Property Name | Notes |
|---------------------|--|
| file_name | Full name of the file, without the leading path. Not validated; Only for information purposes. |
| as_of_date | Date for which file contains the data; Not validated; Only for information purposes. |
| checksum | Mandatory. The checksum of the file will be validated before loading commences. |
| record_count | Mandatory. The number of records in the file (ignoring header-record); will be validated after SQL*Loader completes. |
| rejection_threshold | Limit for % of records rejected, for calling the loading as “failed”. This can also be set from the UI. |

- d. Select the **Date Format** from the drop-down list to indicate the Date Format used in the Data File.
- e. Select the **Delimiter** used in the Data File.
- f. Select the **Rejection Threshold**. You should enter a number that is greater than or equal to zero.

The Rejection Threshold is used to check the allowed percentage of rows that can be rejected in a Data File. As an example, if you define a 10% Rejection Threshold for a Data File that has 1000 rows, then the Data File Upload fails if more than 100 rows are rejected. If the number of rows rejected is less than 100, then Data File Upload succeeds.

4. Under the **Columns Order** section of the screen, enter the following details. If you enter zero, then none of the records from the Data File should fail.
 - a. Select the relevant option for Column Type from the following options:
 - **Key Columns:** The Key Columns are the primary keys of the record. A table displays the Key Columns available for the selected Target Table Name. By default, the primary keys will be selected.
 - **Other Columns:** If you select the Other Columns, all remaining columns (key dimensions, simple dimensions, dates, measures, and so on) for the selected Target Table are displayed. Select the applicable columns from the list and click the Move button to display them in the table on the right-hand side.
 - b. There are two options to add other columns to the definition as follows:
 - i. Within the selected Column Type, Column Names can be re-ordered by dragging and dropping. The columns are always ordered by their type, that is, Key Columns will appear before the Dimension Columns and Dimension Columns will always appear before the Other Columns.
 - ii. You can download the template available in the left pane, arrange the columns as required in the downloaded file and upload to the right pane.

After saving a definition, if you add a new Dimension Column then it will appear in the order before the remaining Other Columns.

For example, assume that the initial definition is saved with the below columns:

Figure 4-12 Column Preview



| Name | Default Value | Column Order |
|--------------------------------------|---------------|--------------|
| Account Number | | 1 |
| As Of Date | | 2 |
| General Ledger Account Code | | 3 |
| Ifrs9 Stage Code | | 4 |
| Account Close Date | | 5 |
| Accrual Basis Code | | 6 |
| Accumulated Basis Risk Charge Credit | | 7 |

After this, if a new Dimension Column (say Product Id) is selected, it will push the Other Columns down in order.

Figure 4-13 Columns Preview

Column Preview

Logical Name Physical Name

| Name | Default Value | Column Order |
|--------------------------------------|---------------|--------------|
| Account Number | | 1 |
| As Of Date | | 2 |
| General Ledger Account Code | | 3 |
| Ifrs9 Stage Code | | 4 |
| Product Code | | 5 |
| Account Close Date | | 6 |
| Accrual Basis Code | | 7 |
| Accumulated Basis Risk Charge Credit | | 8 |

The same order must be followed while preparing the Data File.

The default value for each Column can also be given in the table. If the Column Value is null in the Data File, then the default value is used.

- c. Select Logical Name or Physical Name to display the logical or physical names for the columns in the table.
5. Click **Save**. The newly created file will be listed on the Data File Specification summary screen.
6. On the summary screen, click on the **Action** icon against the File Name to perform further actions **View**, **Edit**, **Save as**, and **Delete**.

After you create the Data File, you must upload the file into the Object Store using the File Upload and Download option. If you have created a MANIFEST file for the Data File, you must upload the MANIFEST file too. For more information and procedure to upload or download the file, see the [File Upload and Download](#) section.

4.2.1.1.3 Creating the Data File

After the Data File Specification is defined, follow the below mentioned guidelines to prepare the Data Files:

- Columns to be included in the Data File must be as per the [Data File Specification](#).
- Name of the Data File must be same as the Data File Specification with a prefix of "input_yyyymmdd" where yyyymmdd is the Date (As of Date) for which the Data File is prepared. For example:
 - Data File Specification Name is "Asset.dat"
 - The As of Date is 06-July-2022
 - Data File Name must be "input_20220706_asset.dat"
- Unique Data Validations:
 - Instrument Data Files: Account Numbers must be unique across the data files for a single As of Date.
 - Management Ledger Data Files: The combination of KPDs and Simple Dimensions must be unique across the data files for a single As of Date.
 - Transaction Summary Data Files: The combination of Account Numbers and KPDs must be unique across the data files for a single As of Date.

- Permitted Delimiters are comma (,) and pipeline (|).
- Data Validations:
 - Number fields: only numbers and dot (.) are allowed.
 - Description fields: comma (,) pipeline (|), single quotes ('), and double quotes (" ") are not supported.
 - Any nullable fields which are mapped in the Data File Specification definitions should not be skipped in the Data File.
 - The column order in the Data File should be in sync with the order defined in the Data File Specification definition.
 - Field Enclosures: Only double quotes ("") are considered as Field Enclosures.

See the following sample files for your reference:

- [input_20151009_asset.dat](#)
- [input_20150330_ASSETTXN.dat](#)
- [input_20220110_STGML.dat](#)

For more information about the data required by the Profitability and Balance Sheet Management Cloud Services, see the Data Requirements available at the [Doc ID: 2869409.1](#).

4.2.2 Data Loaders

Oracle Financial Services Cloud Service's Data Loaders are used to move the data from one stage to another stage and in turn update the underlying Database Tables.

Oracle Financial Services Cloud Services support the following types of Data Loaders:

- **Dimension Data Loaders:** The Dimension Data Loaders are used to populate the Dimension Members, Attributes, and Hierarchies from the Staging Dimension Tables to the Dimension Tables registered with the Cloud Services.
- **Instrument Data Loaders:** The Instrument Data Loaders are used to move the data from the files to the staging instrument tables.
- **Management Ledger Data Loaders:** The Management Ledger Data Loaders are used to move the data from the files to the staging Ledger tables and then to the processing Ledger tables.
- **Transaction Summary Data Loaders:** The Transaction Summary Data Loaders are used to move the data from the files to the staging Ledger tables and then to the processing Transaction Summary tables.
- **Exchange Rate Data Loader:** The Exchange Rate Data Loader allows the user to load the Exchange Rate Data required by the Cloud Services to enrich the data.

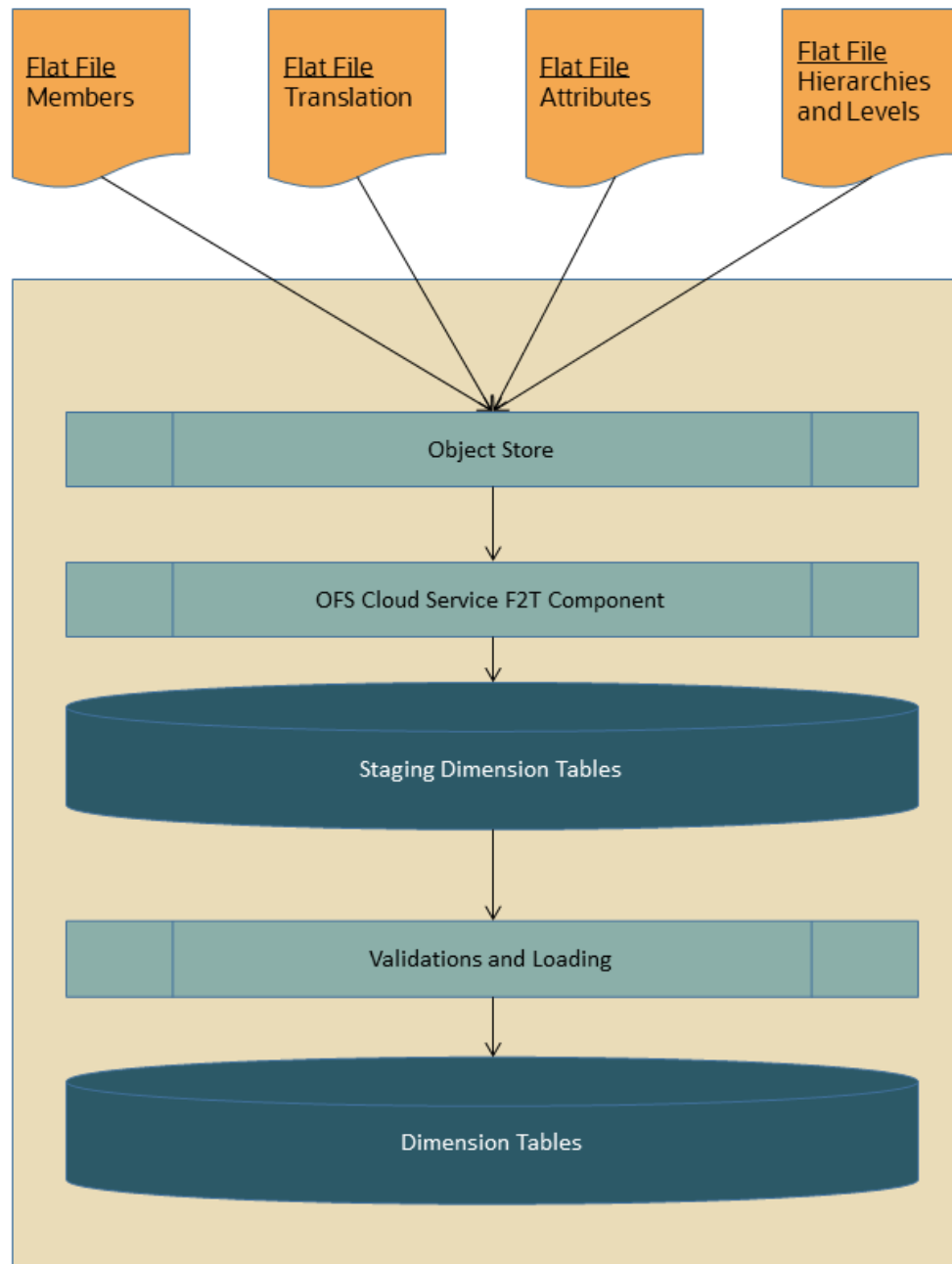
4.2.2.1 Dimension Data Loader

The Dimension Loader procedure populates Dimension Members, Attributes, and Hierarchies from Staging Dimension Tables into the Dimension Tables registered with the Cloud Services. You can view the Members and Hierarchies loaded by the Dimension Loader through the Cloud Service screens.

The Data File Specification is not applicable to Dimension Data Loaders. The file format and the file names are static in nature.

The following illustration depicts the process of Dimension Loading.

Figure 4-14 Dimension Loading Process



The Dimension Loader is used to:

- Load the Dimension Members and their Attributes from the Staging area into the Dimension Tables that are registered with OFS Cloud Service framework.
- Create Hierarchies for Key Dimensions in the Cloud Service.
- Load Hierarchical relationships between Key Dimension Members within the Hierarchies from the Staging area into the Cloud Service.

The following are the features of Dimension Loader:

- Loading Simple Dimensions from Staging Tables.
- Multiple Hierarchies can be loaded from Staging Tables.
- Validations of Members and Hierarchies are similar to that of being performed within the Cloud Service Screens.

Before you start the Dimension Loader, you must upload the Data Files that have the Dimension details.

As part of the File Definition, it is required Dimension Identifier for both Key and Simple Dimensions.

To get the correct DIMENSION ID to be used for the data file definition, you should use the SQL Query Browser and following query under OFSAAMETA schema the REV_DIMENSIONS_B table:

```
SELECT
dimension_id,
member_b_table_name,
member_tl_table_name,
dimension_active_flag,
simple_dimension_flag,
user_defined_flag,
write_flag,
dimension_editable_flag,
key_dimension_flag
FROM
ofsaameta.rev_dimensions_b
WHERE
dimension_active_flag = 'Y';
```

Then for the dimension table desired, available in REV_DIMENSIONS_B.MEMBER_B_TABLE_NAME or REV_DIMENSIONS_B.MEMBER_TL_TABLE_NAME table columns, the End User should pick up the correct value displayed in REV_DIMENSIONS_B.DIMENSION_ID to be used for correct input file definition.

The following sections list the sample files that you can use to build the Dimension Data. The name of the Data Files must be same as mentioned below and the File Extension must be .DAT. Click on each Data File Name to open a Sample Data File.

4.2.2.1.1 For Key Dimensions

The following is a list of sample files that you can use to build the Dimension Data.

The name of the Data Files must be same as mentioned below and the File Extension must be .DAT. Click on each Data File Name to open a Sample Data File.

Stage Dimension Loaders (Task 1):

- [input_stg_dimensions_attr_intf.dat](#)
- [input_stg_dimensions_b_intf.dat](#)
- [input_stg_dimensions_tl_intf.dat](#)
- [input_stg_dimensions_hier_intf.dat](#)

Stage Hierarchy Loaders (Task 2):

- [input_stg_hierarchies_intf.dat](#)
- [input_stg_hierarchy_levels_intf.dat](#)

To load the Dimensions:

1. Define a new Batch and save it.
2. Add the following Tasks to the above Batch:

Table 4-3 Dimension Loading Process Tasks

| Task Code | Task Name | Component | Parent Task |
|-----------|------------------------|------------------------|-------------|
| 1 | Stage Dimension Loader | Stage Dimension Loader | |
| 2 | Stage Hierarchy Loader | Stage Hierarchy Loader | 1 |
| 3 | Stage DRM Loader | Stage DRM Loader | 2 |

 **Note:**

The above Tasks must be executed in the same order.
The Stage DRM Loader allows you to select a Dimension.

3. Execute the Batch.

Dimension Loader with ZIP File Support

You can zip all the DAT files into a single file and upload it to the Object Store.

To process the zip file:

- Create a Batch.
- Create a Task with the Component Name as **Dimension and Hierarchy Loader**.
- Execute the Batch.

For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see [Scheduler Services](#).

4.2.2.1.2 For Simple Dimensions

The following is a list of sample files that you can use to build the Dimension Data.

The name of the Data Files must be same as mentioned below and the File Extension must be .DAT. Click on each Data File Name to open a Sample Data File.

Stage Dimension Loaders (Task 1):

- [input_stg_dimensions_b_intf.dat](#)
- [input_stg_dimensions_tl_intf.dat](#)

To load the Dimensions, perform the following steps:

1. Define a new Batch and save it.

2. Add the following Tasks to the above Batch:

Table 4-4 Dimension Loading Process Tasks

| Task Code | Task Name | Component | Parent Task |
|-----------|------------------------|------------------------|-------------|
| 1 | Stage Dimension Loader | Stage Dimension Loader | |
| 2 | Stage DRM Loader | Stage DRM Loader | 1 |

 **Note:**

The above Tasks must be executed in the same order.
The Stage DRM Loader allows you to select a Dimension.

3. Execute the Batch.

Dimension Loader with ZIP File Support

You can zip all the DAT files into a single file and upload it to the Object Store.

To process the zip file:

- Create a Batch.
- Create a Task with the Component Name as **Dimension and Hierarchy Loader**.
- Execute the Batch.

For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see [Scheduler Services](#).

4.2.2.2 Instrument and Ledger Data Loaders

After the Data Files are uploaded to the Object Store, the Data Loaders are used to move the data from the files to the standing tables and then to processing tables.

File to Stage

To load the Data to Staging Tables:

1. Define a new Batch and save it.
2. Add the following Tasks to the above Batch:

Table 4-5 Data Loader – File to Stage Data

| Task Code | Task Name | Component | Parameters |
|-----------|--------------------|-------------------|--|
| 1 * | Custom Task Name * | Stage Data Loader | <p>Table Name: select the stage table name from the available list.</p> <p>Data File Specification: select the data file specification definition from the available list.</p> <p>File Name: free text where file name uploaded to the object store to be provided.</p> |

 **Note:**

You can also zip the file and then upload. Ensure the file name in the zip file is inline with the Data File Specification.

* Task Code and Task Name in the above table are for illustration purpose only. You can name them as per your requirements.

Execute the Batch for the As-of-Date used in the Data File.

For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see [Scheduler Services](#).

Profitability and Balance Sheet Management Cloud Service - Stage to Processing

To load the Data from Staging Tables to Processing:

1. Define a new Batch and save it.
2. Add the following Tasks to the above Batch:

Table 4-6 Data Loader – Stage to Processing Data

| Task Code | Task Name | Component | Parameters |
|-----------|--------------------|---|--|
| 1 * | Custom Task Name * | Select the relevant Component depending on the Data that you want to process. The options are: <ul style="list-style-type: none"> Instrument Data Loader Ledger Data Loader Transaction Summary Loader | Stage Table: select the stage table name from the available list. Data File Specification: select the Data File Specification name from the available list. |

Climate Change Analytics Cloud Service - Stage to Processing

CCACS is delivered with out-of-the-box seeded batches to load the data from Staging tables to Processing tables. For the list of seeded batches, see the <MOS page>. The user can define custom batches using the following components.

1. Add the following Tasks to the Batch:

Table 4-7 Data Loader – Stage to Processing Data

| Task Code | Task Name | Component | Parameters |
|-----------|--------------------|--|--|
| 1 * | Custom Task Name * | Select the relevant Component depending on the Data that you want to process. The options are: <ul style="list-style-type: none"> CCA Processing Loader | For CCA Processing Loader: select the stage table name and data file name. |

4.2.2.3 Generic Data Loader

The Data Loader service allows the user to load the required data by the Cloud Service to enrich the data. In this service, first you upload the data, and then run a batch to propagate the data into the processing layer.

To load the data:

1. From the LHS menu, select **Data Management Tools**, select **Data File Administration**, and then select **File upload and download** to display the File Upload/Download screen. The File Upload/Download screen displays the list of files that are uploaded to the Object Store and displays the following details for each file:
 - **File ID:** The unique file id. This is auto generated during upload.
 - **Prefix:** The prefix added to the file name.
 - **File Name:** The name of the uploaded file.
 - **Stripe Name:** The unique identifier for storing the files.
 - **Uploaded Date:** The file upload date.
 - **Download File:** Click the Download icon to download a copy of the file.

- **Delete:** Click Delete to delete the uploaded file.
2. Click **Drag and Drop** to browse and select a file for upload from the local directory. You can also browse to the local directory from the File Explorer and select file and drop it here.

The File Upload/Download service supports upload of TXT, DAT, and CSV format files.

Name of the data file must follow the format as given below:

- A prefix as **input_yyyymmdd** where the date format is related to the As of Date (i.e., 02-May-2023 becomes 20230502).
- As per the data that you want to upload, upload the relevant data file from the table:

Table 4-8 Data File

| Data | Data File Name | Object Store File Name |
|------------------|--------------------------|---|
| Exchange Rates | stg_exchange_rates.dat | input_20230622_stg_exchange_rates.dat |
| Behavior Patters | stg_behavior_pattern.dat | input_20230502_stg_behavior_pattern.dat |

 **Note:**

The file name is case-sensitive.

For more information about File Upload and Download, see [File Upload and Download Utility](#).

The following are the sample files for reference:

- [stg_exchange_rates.dat](#)
- [input_20230701_bploaderddata.csv](#)

3. After selecting the file to upload, click **Upload**. The UI displays a confirmation message *Upload successful*.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Schedule Batch**.
5. Create a new Batch with a new Task with Generic Data Loader as Component.

Table 4-9 Loader Type

| Seeded Batch Component | Loader Type Parameter |
|------------------------|-----------------------|
| Generic Data Loader | Exchange Rates |
| Generic Data Loader | Behavior Patterns |

6. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.

8. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Data Loader batch. Select the latest execution and click **Start Monitor**.

The UI displays the status of the batch.

For more details about Scheduler processes, see the [Scheduler Services](#).

4.2.2.4 Interest Rates Loader

The Interest Rates Data Loader allows the users to load the Interest Rate Curves that are consumed by the Oracle Financial Services Cloud Services.

Loading the Interest Rate Data consists of three tasks as follows:

- Stage Loader
- Stage Validator
- Processing Loader

The above three tasks can be executed individually or together under same batch. If created together, then the precedence mapping must be created as follows:

- Stage Validator must be executed after the Stage Loader is executed.
- Processing Loader must be executed after the Stage Loader is executed. Stage Validator is not mandatory.
- If Stage Validator is included, then the Processing Loader must be executed after the Stage Validator is executed.

To upload the Interest Rate Data file:

1. From the LHS menu, select **Data Management Tools**, select **Data File Administration**, and then select **File upload and download** to display the File Upload/Download screen.
2. Click **Drag and Drop** to browse and select a file for upload from a local directory. You can also browse to the local directory from the File Explorer, select the file, and drop it. The File Upload/Download service supports uploading CSV format files.

Name of the Data File must follow the format as given below:

- A prefix as **INPUT_YYYYMMDD** where the date format is related to the As of Date (i.e., 02-October-2023 becomes 20231002).
- A suffix as **_FILENAME.CSV**.
- An example of Data File Name could be:
INPUT_20231002_IRC_<DATAFILENAME>.csv.

The order of the columns in the input file must be as follows:

- INTEREST_RATE_NAME
- EFFECTIVE_DATE (Date format: MM-DD-YYYY)
- INTEREST_RATE_TERM
- INTEREST_RATE_TERM_MULT
- INTEREST_RATE
- RATE_DATA_SOURCE_CODE

For more information about File Upload and Download, see [File Upload and Download Utility](#) section.

3. After selecting the file to upload, click **Upload**.

The UI displays a confirmation message: Upload successful and insert the data into the Stage tables.

At this stage, the **Stage Validation** begins and performs the following checks:

- **Records in the Stage table:** Stage Validation fails when no records are found in the uploaded file and no execution happens after this point.
- **IRC definitions exist:** If there are single IRC definitions in the file, the validator passes and displays a warning message along with the Interest Rate Code for which definitions are missing.
- **Invalid Terms check (Term details not found):** If there are extra terms available in incoming file: A warning message is displayed in the View Logs: Term details not found in the definition: Interest Rate Name: Standard25, Interest RateCd:25, Interest Rate Term: 270 D, 3 M.

Warnings are displayed in the View Log.

If there are multiple rows in the data file and one of the rows does not have the required information or wrong information, the validator leaves that record and proceeds with the remaining records. However, the log displays summary error messages with total number of records, records skipped, records rejected, records read, and records discarded. It does not display which particular records are failed or rejected.

 **Note:**

The As of Date is used to load the file and the Effective Date in the file can be different. The data is loaded based on the Effective Date and if any value exists for corresponding Effective Date, then the loader will update. This also helps to push the IRC History data from on-prem to SaaS, and in the SaaS environments one tenant to other tenant.

4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Create Batch**. For more details, see [Define Batch](#).
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Create Task**. For more details, see [Define Tasks](#).
 - a. Task Type: REST
 - b. Component:
 - Stage Loader: IRCLoader Stage Loader
 - Stage Validator: IRCLoader Stage Validator
 - Processing Loader: IRCLoader Processing Loader
 - c. File Name: INPUT_20231002_IRC_<DATAFILENAME>.csv
6. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant As-of-Date, and then save the batch.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
8. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see [Monitor Batch](#).

9. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Exchange Rate Data Loader batch. Select the latest execution and click **Start Monitor**.
The UI displays the Status of the batch.

4.2.2.5 Generating Holidays for Holiday Calendar using Scheduler

The **Generate Holidays** option on the **Holiday Calendar Definition** page allows you to generate Holiday for a definition at a time. Using the Scheduler Service, you can generate the Holidays for multiple Calendar definitions in bulk.

To execute the batch, navigate to **Operations and Processes** , select **Scheduler**, and then select **Schedule Batch**.

You can also define new batch to execute any Holiday Calendar Generation by the following these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Create a new Batch with a new Task with Holiday Generator as Component.
For the selected From to To date parameters, you can generate Holidays for single or multiple calendar definitions.
3. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
5. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Data Loader batch. Select the latest execution and click **Start Monitor**.

The UI displays the status of the batch.

For more details about Scheduler processes, see the [Scheduler Services](#).

4.2.3 Data File History

The Data File History screen in the OFS Cloud Service allows you to see the data files that are uploaded to the staging tables and their status.

The Data File History summary screen allows you to do the following:

- Search for data files for which the stage data loader batch is already executed.
- Move the data from stage to processing tables.
- Delete the data from the stage or processing tables.
- Scan for invalid members.
- Create invalid members.

To open the Data File History window:

1. Navigate to the **Data Management Tools**, select **Data File Administration**, and then select **Data File History** to display the Data File History summary screen.

Figure 4-15 Data File History summary screen

| Batch Run ID | File Name | File Loaded On | Records Loaded | Records Rejected |
|--|------------------|----------------|----------------|------------------|
| ML_STG_LOAD_2022-03-01_165570311646_1 | ML_File_Spec.dat | 06-20-2022 | 117 | 0 |
| ML_STG_LOAD_2022-03-01_165580202012_1 | ML_File_Spec.dat | 06-16-2022 | 294 | 0 |
| ML_STG_LOAD_2022-03-01_165582608943_1 | ML_File_Spec.dat | 06-16-2022 | 294 | 0 |
| ML_STG_LOAD_2022-03-01_165581908522_1 | ML_File_Spec.dat | 06-16-2022 | 294 | 0 |
| ML_STG_LOAD_2022-03-01_1655704223963_1 | ML_File_Spec.dat | 06-20-2022 | 19 | 0 |
| ML_STAGE_LOAD_2022-03-01_1655725079935_1 | ML_File_Spec.dat | 06-20-2022 | 19 | 0 |

The summary screen displays the following information of the data files:

- **Batch Run ID:** The ID used to run the batch.
- **File Name:** The data file name.
- **File Loaded On:** The date on which the data file is loaded.
- **Records Loaded:** The number of records loaded using the data file.
- **Records Rejected:** The number of records that are rejected from the data file.
- **View Details (Icon):** Select a Batch Run ID and click the details of the data file.

The following illustration is a sample of the data file's details.

Figure 4-16 File Details

| Details | |
|-----------------------------|-----------------------|
| File Name | ML_File_Spec.dat |
| File Loaded By | pft_qauser |
| File Loaded On | 06-16-2022 |
| Number of Records Loaded | 294 |
| Number of Records Rejected | 0 |
| File Load Status | Failed |
| Task ID | ML_STG_LOAD_TASK |
| Table Name | STG_MANAGEMENT_LEDGER |
| Stage Load Start Time | 06-16-2022 11:50:54 |
| Stage Load End Time | 06-16-2022 11:50:55 |
| File Promoted to Processing | Ongoing |
| Process Load Start Time | |
| Process Load End Time | |
| Process Load Initiated By | |

- **Promote selected files to Processing (button):** To promote the selected file or files for processing. This triggers the Batch Scheduler and queues the selected file or files for processing.
- **Advanced Actions (button):** There are four options in the Advances Actions. The following table explains the four options and the related information that is required to complete the actions:

Table 4-10 Advanced Actions

| | As Of Date | Table Name | Data File Specification | File Name(s) | Comments / Notes |
|------------------------------------|------------|------------|-------------------------|--------------|------------------|
| Delete Data from Staging | Required | Required | Required | Optional | Required |
| Delete Data from Processing | Required | Required | Required | Required | Required |
| Scan for Invalid Members | Required | Required | Required | Optional | Not applicable |
| Create Invalid Members | Required | Required | Required | Optional | Not applicable |

- Click **Delete/Scan/Create** button as applicable.
 - * **Delete Data from Staging:** The staging data uploaded from a data file will be deleted.
 - * **Delete Data from Processing:** The processing data uploaded from a file will be deleted.
 - * **Scan for Invalid Members:** To scan the staging data and identifying the dimension member codes present in the staging table, but not present in the corresponding dimension tables.
 - * **Create Invalid Members:** To populate the dimension tables with members identified in the above scan.
- **Help** (Button): Click the Help icon to view the Data File History help.

Scan for Invalid Members and Create Invalid Members is also possible using the Scheduler Services.

Table 4-11 Scan and create Invalid Members

| Task Code | Task Name | Component | Parameters |
|-----------|----------------------------------|----------------------------------|--|
| 1 * | Scan_Staging_for_Invalid_Members | Scan_Staging_for_Invalid_Members | <ul style="list-style-type: none"> • Table Name • Data File Specification: select the Data File Specification name from the available list. • Data File Name • Fail When Invalid Members |
| | Create_Invalid_Members | Create_Invalid_Members | <ul style="list-style-type: none"> • Table Name • Data File Specification: select the Data File Specification name from the available list. • Data File Name |

* Task Code in the above table is for illustration purpose only. You can name them as per your requirements.

Promoting a Data File for Processing

By promoting a Data File for processing, you insert the Data from the staging tables to the processing tables.

To promote a Data File for processing:

1. Click on the **Table Name** icon to display the **Category – Table Names** window. This window displays the Stage Table Names where data is already loaded. The tables are categorized into different groups and are as follows:
 - Transaction Summary
 - Ledger
 - Others
 - Schedule
 - InstrumentsEach of the above categories lists the tables available to which the data is loaded. The list of categories is dependent on the Metadata from the seeded tables that come with the various OFS Cloud Services and may differ from that shown above based on the services you have subscribed.
2. Select the **Table** for which you want to see the File History from the list.
3. Select the relevant **As Of Date** from the drop-down list. This drop-down list displays different As-of-Dates. These dates are based on processed or not processed data loading. For example, if you have already processed some data on a previous date, this drop-down displays that date and displays the current date.
4. Click on **Promoted to Processing** and select the following options:
 - **All**: To display all the Data Files that are specified on the selected As-of-Date.
 - **Yes**: To display only the Data Files that are already specified and processed on the selected As-of-Date.
 - **No**: To display only the Data Files that are specified but are in the queue to be processed on the selected As-of-Date.
5. Click the **Search** icon to display the Data Files information as per the option you selected in the previous step.
6. Select one or more **Batch Run IDs** that you want to promote for processing and click the **Promote selected files to Processing** button. This triggers the Batch Scheduler and schedules the Batch for processing. You can monitor the status using the Monitor Batch screen.

Reloading a Data File

OFS Cloud Services allow you to reload a Data File. For the detailed instructions on Reloading the Data File, see the [Scheduler Service](#) section.

**Note:**

While defining the Task, ensure that you select Delete Data Loader from the Component drop-down list.

4.3 File Upload and Download Utility

The File Upload and Download Utility enables you to upload or download files to the Object Store.

Topics:

- [Roles and Functions](#)
- [File Upload and Download Utility](#)
- [File Upload Automation](#)
- [Generating PAR URL for File Operations](#)

4.3.1 Roles and Functions

The following table lists the role codes and function codes required to configure the File Upload/Download Utility.

Role Codes

| Role Code | Function Code |
|---------------|---------------|
| FILE_READ | FILE_SUMMARY |
| FILE_UPLOAD | FILE_UPLOAD |
| FILE_DOWNLOAD | FILE_DOWNLOAD |
| FILE_ADV | FILE_UPLOAD |
| | FILE_DOWNLOAD |
| | FILE_DELETE |
| | FILE_SUMMARY |

4.3.2 File Upload and Download Utility

The File Upload and Download Utility enables you to upload or download files to the Object Store. Complete the following steps to Upload or Download a file.

- [Upload or Download File from Object Store Using Console](#)
- [Uploading/Downloading a File Using Utility](#)
- [Uploading/Downloading a File Using PAR URL](#)

4.3.2.1 Upload or Download File from Object Store Using Console

1. From the left menu, click **Common Object Maintenance**.
2. Click **Data Management** in the left navigation pane.

The **File Upload and Download** Page is displayed. The Files that are uploaded to the Object Store are listed here. The following details are provided for each File.

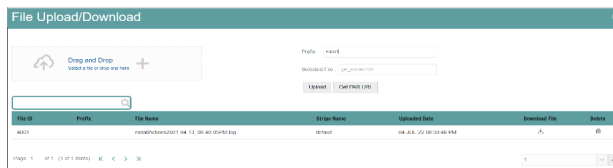
- **File ID** - The unique file ID associated with the file. This is auto-generated during the upload.
- **Prefix** - The prefix is added to the file name.
- **File Name** - The name of the file that is uploaded. This is automatically updated after you select the file.
- **Stripe Name** - The Unique Identifier for storing a collection of files. Collection examples: Project, organization, tenant.
- **Uploaded Date** - The file upload date.
- **Download File** - Click to download a copy of the uploaded file.
- **Delete** - Click to delete the file.

Related Topics

- [Uploading/Downloading a File Using Utility](#)
Complete the following steps to Upload or Download a file using the Utility.
- [Uploading/Downloading a File Using PAR URL](#)
Complete the following steps to upload or download a file using the PAR URL.

4.3.2.2 Uploading/Downloading a File Using Utility

Complete the following steps to Upload or Download a file using the Utility.



1. Click **Drag and Drop** to browse and select a file for upload from the local directory.

You can also browse to the local directory from the **File Explorer** and select the file and drop it here.

The file name is automatically updated in the **Selected File** field.

2. Enter the **Prefix** to be added to the file name.

The Prefix is added to the file name. In case, you have two files with the same file name, you can save them with different prefixes.

Example: **/abc/test.txt** and **/def/test.txt**. Both these files have the same file name but different Prefixes.

3. Click **Upload** to upload the selected file.

A confirmation message is displayed after successful upload and the file is listed in the Uploaded Files list.

4.3.2.3 Uploading/Downloading a File Using PAR URL

Complete the following steps to upload or download a file using the PAR URL.

Figure 4-17 Get PAR URL

The screenshot shows a web interface for file management. At the top left, there is a 'Drag and Drop' area with a plus sign and the text 'Select a file to drop one here'. Below this is a search bar. To the right, there are input fields for 'Prefix' and 'Selected File'. Below these fields are two buttons: 'Upload' and 'Get PAR URL'. The 'Get PAR URL' button is highlighted. Below the buttons, there is a 'PAR URL' field containing a long URL and a 'Copy URL' button. At the bottom, there is a table with columns: 'File ID', 'Prefix', 'File Name', 'Storage Name', 'Uploaded Date', 'Download File', and 'Details'. The table is currently empty, with the text 'No data to display' below it. At the very bottom, there is a pagination control showing 'Page 1' and '0 of 0 items'.

1. Click **Drag and Drop** to browse and select a file for upload from the local directory.

You can also browse to the local directory from the File Explorer and select the file and drop it. The file name is automatically updated in the **Selected File**.

2. Enter the **Prefix** to be added to the file name.
3. Click **Get PAR URL**, to generate the PAR URL and File ID which are required to upload the file.

You can also generate PAR URL using Rest API. For more information refer to, [Calling the API to Generate the URL](#).

4. Copy the PAR URL and note the related File ID.
5. Upload the file content referred with the specific PAR URL into the object store using the Console, CLI, or SDK.

To upload using the CLI, enter the following curl command directly in local Gitbash.

```
curl -X PUT --data-binary '@<local-filename>' <unique-PAR-URL>
```

You can also use the following command.

```
curl -T '<Filepath>' -X PUT <PAR_URL>
```

6. Scan the file referred with the specific File ID (obtained in Step 3) using Console, CLI, or SDK.

Use the following CURL command, to Scan using CLI:

```
curl -k --location --request PUT 'https://<Host:Port>/<Tenant-ID>/utils-service/v1/file/scan/<FileID>' \
--header 'ofs_tenant_id: <Tenant-ID>' \
--header 'ofs_service_id: <Service-ID>' \
--header 'ofs_workspace_id: <WorkspaceId>' \
--header 'Authorization: Bearer <Generated_Token>'
```

To generate a bearer token, refer to [Generate access token](#).

A confirmation message is displayed after successful upload and the file is listed in the Uploaded Files list.

4.3.3 File Upload Automation

To simplify the file upload process, configure and execute the File Upload automation utility.

File Upload automation can be implemented by completing the following steps in sequence.

- [Step 1: Generate Access Token](#)
- [Step 2: Generate PAR URL](#)
- [Step 3: Upload file to Object Store](#)
- [Step 4: Scan the file to ensure Upload was Successful](#)

4.3.3.1 Step 1: Generate Access Token

Generate the Access Token for your Profitability and Balance Sheet Management Cloud Service by:

1. Submitting a RESTful API Post Request to your Oracle IDCS environment as defined in the Identity Cloud Service User Guide. For information, see [OAuth Runtime Tokens REST Endpoints](#).

Note that a sample code snippet has been provided below using cURL to generate the access token for Basic Authorization and assign it to a variable for use within a script:

```
access_token=`curl -s --insecure -H "Authorization: Basic $ENCODED" -H
"Content-Type: application/x-www-form-urlencoded;charset=UTF-8" --
request POST $IDCS_URL -d
"grant_type=password&username=$USERNAME&password=$PASSWORD&scope=urn:op
c:ldm:myscopes urn:opc:resource:expiry=9153600" | python3 -c
"import sys, json; print(json.load(sys.stdin)['access_token'])`
```

4.3.3.2 Step 2: Generate PAR URL

Generate the PAR URL for your Profitability and Balance Sheet Management Cloud Service by:

1. Submitting a RESTful API Post Request to your Cloud Service as defined in the [Calling the API to Generate the URL](#) section.

Note a sample code snippet has been provided below using cURL to generate the PAR URL and assign it to a variable for use within a script:

PAR URL Generation Code Snippet

```
curl --location --insecure --request POST "$FILEUPLOADURL" --header
"Authorization: Bearer $access_token" --header 'Content-Type:
application/json' --data-raw "{
  \"fileName\": \"$1\",
  \"fileSize\": \"$2\",
  \"mimeType\": \"$3\"
}" >> "$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse.out 2>&1
```


PAR URL Variable Assignment Code Snippet

```
grep -oE '(https)[^ ]*' "$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse.out >
"$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse1.csv
while IFS="," read -r H1 H2
do
    URLtrim="$H1"
    FinalPAR=${URLtrim::-1}
    echo -e "\n PAR_URL is $FinalPAR"
done < "$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse1.csv
```

PAR URL Variable Assignment Code Snippet – Used in File Scanning Step

```
grep -oE '(fileId)[^ ]*' "$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse.out >
"$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse2.csv
while IFS="," read -r F1 F2
do
    FILEIDtrim="$F1"
    FINALFILEID=`echo "$FILEIDtrim"| sed -r 's/^{8}//'`

    echo -e "\n FILE ID is $FINALFILEID"
done < "$HOME"/FILEUPLOAD_UTIL/"$1"_PARURLresponse2.csv
```

4.3.3.3 Step 3: Upload file to Object Store

Upload the file to the Object Store of your Profitability and Balance Sheet Management Cloud Service by:

1. Submitting a RESTful API Post Request to your Cloud Service as defined in the [Uploading/Downloading a File Using PAR URL](#) topic.

Note a sample code snippet has been provided below using cURL to upload the file:

```
curl -T "$HOME"/FILEUPLOAD_UTIL/"$1" -X PUT "$FinalPAR"
```

4.3.3.4 Step 4: Scan the file to ensure Upload was Successful

Scan the file that was uploaded to the Object Store of your Profitability and Balance Sheet Management Cloud Service by:

1. Submitting a RESTful API Put Request to your Cloud Service as defined by the code snippet below:

File Scanning Code Snippet – Using File ID from Step 2 – Generate PAR URL

```
if [ $last_error -eq 0 ]; then
    echo -e "\n *****Scanning the File *****"
    curl -k --location --request PUT "$SCANURL/$FINALFILEID" --header
'ofs_tenant_id: $TENANT' --header 'ofs_service_id: OFS_FTP' --header
'ofs_workspace_id: WS001' --header "Authorization: Bearer $access_token"
    last_error=$?
    if [ $last_error -eq 0 ]; then
        echo -e "\n ***File Upload is Successful please check File
```

```

Upload / Download UI***"
    else
        echo "Scan failed"
        exit -2;
    fi
else
    echo "Upload failed"
    exit -3;
fi

```

4.3.3.5 Automating the File Upload Process Using File Upload Utility

This section provides the procedure including the script to automate the process of uploading input data files using the File Upload utility.

You can download this script from this MoS Doc ID [2927077.1](#).

4.3.3.5.1 Executing the File Upload Automation Script

File Upload Automation script assists you to upload the files seamlessly.

Complete the following procedure to execute the fileupload automation script.

Python 3.10 is required to access data elements from the API JSON responses.

1. Extract the **FILEUPLOAD_UTIL.zip** file located in the **\$HOME** directory.
2. Copy the Data Loader input file (text file) to the **\$HOME/FILEUPLOAD_UTIL** directory.
3. Edit the script **Env_setup.sh** file to update the following environment variables.

- **IDCS URL** - The Service Instance URL to access your IDCS console. You can get the IDCS URL from the following menu:

Oracle Cloud Infrastructure Console > Identity Cloud.

Syntax: <idcs-url>/oauth2/v1/token

- **Encoded** - The <OAuth Client ID>:<OAuth Client Secret> encoded using **base64encode**

To extract and encode the Client ID and Client Secret, refer to the following steps:

- a. Login to **Admin Console**.
- b. Go to **System Configuration** tab, and click **Component Details** tile.
- c. Click **OAUTH Creds** tab to view and copy the **OAUTH Client ID** and **OAUTH Client Secret** details.
- d. Using any **base64encode** utility, encode <OAUTH Client ID>:<OAUTH Client Secret>.

Example (Input OAUTH Client ID and Client Secret):

```
ftptenant-prd_APPID:99140e14-4d30-4e86-85fb-09501fe45fe0
```

Example (Encoded OAUTH Client ID and Client Secret):

```
ZnRwcWEzMDEyMzEtcHJkX0FQUElEOjBkMmU5MDBiLTlhYjItNGFmOS05OWM0LTEwNTYyMDVkyWYwNQ==
```

- **Username** - The Username to access the application.

 **Note:**

The user should have appropriate roles and privileges. For more information about roles and privileges, refer to [Roles and Functions](#).

- **Password** - The password to login to the application.
 - **Tenant** - The tenant associated with the application.
 - **PBSM Host** - Details of the PBSM host on which the application is hosted.
- Sample Env_setup.sh**

```
IDCS_URL=https://idcs-xyz123.identity.c9xyz.oc9xyz.com/oauth2/v1/token
ENCODED=ZnRwbWFydXAxNDIyMzEtchJkX0FQUElEOjk5MTQwZTE0LTRkMzAtNGU4Ni04NW
ZiLTA5NTAxZmU0NWZlMA==
USERNAME=<user_name>
PASSWORD=<password>
TENANT=<tenant-prd>
PBSMHOST=dc.pbsmcloud.us-xxxxx -1.ocs.oc-test.com
```

4. Execute **PBSMCS_PAR_fileupload.sh** with the following parameters –

- **filename** - The file to be uploaded
- **filesize** - The file size in Bytes
- **Mimetype** - The mimetype of the file.

Format: Filename<space>Filesize<space>mimetype

Example: ./PBSMCS_PAR_fileupload.sh input_20150101_filename_example_8007.txt
334 text/plain

This script generates the access token and the PAR URL. It also uploads the file into the object store and scans the file too.

 **Note:**

To upload multiple files, you must execute the script for each file, separately.

Once the script is executed successfully, the file is uploaded and added to the list of files in the File Upload/Download page. To access the File Upload/Download page refer to [Upload or Download File from Object Store Using Console](#).

4.3.4 Generating PAR URL for File Operations

The PAR URL for File Operations API creates a PAR File that you can use to perform file operations in the Object Store for end-to-end integrations.

4.3.4.1 Generating PAR URL for File Upload

Generate PAR URL for File Upload

You can use this REST API to generate the PAR URL for File Upload. See the following sections for information on how to perform the POST operation.

4.3.4.1.1 End Point Details

- **Method** – POST
- **URL** - `https://<HOST_NAME:PORT>/<TENANT>/utils-service/v1/file/uploadfile/parURL?prefix=<prefix>`
- **Content-Type** - Application/Json

4.3.4.1.2 Calling the API to Generate the URL

To call the API, follow these steps:

1. Open a relevant tool, such as via cURL command.
2. Prepare a cURL command with the authentication token and other details. For more information refer to the following code.

Syntax

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/
utils-service/v1/file/uploadfile/parURL?prefix=' \
--data-raw '{"fileName": "<remote filename>", "fileSize": <file
size>, "mimeType": "<file type>"}' \
--header 'ofs_remote_user: <USERID>' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: <TENANT-ID>' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer <TOKEN>'
```

Example (truncated)

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/
utils-service/v1/file/uploadfile/parURL?prefix=' \
--data-raw '{"fileName": "idcs_log1.txt", "fileSize": 100,
"mimeType": "text/plain"}' \
--header 'ofs_remote_user: cneadmin' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer
eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0ha
dk4wWkkiLCJ4
...
...
sQXj0iohsSIEmQXVvwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7US
xHv-6LhBzw'
```

4.3.4.1.2.1 Request JSON Parameters

This section provides the list of parameters in the JSON Request.

Table 4-12 Request JSON Parameters

| Name | Type | Required | Description |
|-------------|---------|----------|---|
| fileName | STRING | Yes | <p>The name of the file to be uploaded.</p> <p>The following are the conditions for to enter in this field:</p> <ul style="list-style-type: none"> • Must start with an Alphanumeric Character • Allowed characters are alphabets, numbers, and special characters - hyphen(-), dot(.), and underscore(_) • Length of characters must not be greater than 255 characters |
| fileSize | INTEGER | Yes | <p>The size of the file (in Bytes) to be uploaded.</p> <p>The size of the file should be greater than 1 Byte and should be less than 10 TB.</p> <p>It is recommended to use multipart upload for uploading files of size more than 100 MB. For more information about uploading large objects and multipart uploads, refer to Working with Pre-Authenticated Requests.</p> |
| contentType | STRING | Yes | <p>The mime type to be uploaded.</p> <p>The following mime types are allowed:</p> <ul style="list-style-type: none"> • Text/CSV • Text/plain • DAT |

Request JSON Sample

```
[{
  "fileName": "File.csv",
  "fileSize": 7654,
  "contentType": "text/csv"
}]
```

4.3.4.1.2.2 Response JSON Parameters

This section provides the list of parameters in the JSON Response.

Table 4-13 POST JSON Response

| Name | Type | Description |
|-----------|---------|---|
| fileName | STRING | The name of the file to be uploaded. |
| uploadURL | STRING | The generated pre-authenticated URL to upload a file. |
| fileId | INTEGER | The unique File Identifier. |

Response JSON Sample

```
{
  "payload": {
    "uploadURL": "https://objectstorage.us-
    phoenix-1.oraclecloud.com/p/bdSI-
    hzigiAoUU0lyEKnuK0YGs05L172gt_woZAgqNFYmUFQeexV3BDfTO97mhBI/n/
    oraclegbudevcorp/b/fsgbu_pbsm_cndevcorp_ftpqa101231-prd_default/o/
    default/2023-01-31/jfr/f9ce031f-4a42-471d-b4da-d0577f3eca15",
    "createUser": "user1",
    "stripeName": "default",
    "fileId": 5025,
    "createDate": "2023-01-31T09:14:16",
    "token": "",
    "status": "success"
  }
}
```

4.3.4.1.3 Viewing List of Uploaded Files

Run the following cURL command to generate and view all the files that are uploaded using PAR URL.

Syntax

```
curl -k --location --request GET 'https://<hostname>/<TENANT-ID>/utils-
service/v1/listfiles stripeName=default' \
--header 'locale: en-US' \
--header 'ofs_remote_user: <user id>' \
--header 'ofs_tenant_id: < TENANT-ID >' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer <TOKEN>"
```

Example

```
curl -k --location --request GET 'https://dc.pbsmcloud.us-
phoenix-1.ocs.oc-test.com/aaitestdev1001-prd/utils-service/v1/
listfiles?stripeName=default' \
```

```
--header 'locale: en-US' \
--header 'ofs_remote_user: cneadmin' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer ${TOKEN}"
```

Response

```
{ "payload":
[{"v_file_name": "Idcs_log3.txt", "n_file_id": 9916, "d_upload_date": "31-JAN-23
06:33:43 AM", "v_stripe_name": "default"},
{"v_file_name": "Idcs_log4.txt", "n_file_id": 9917, "d_upload_date": "31-JAN-23
06:40:25 AM", "v_stripe_name": "default"}], "count": 2}
```

4.3.4.2 Generating PAR URL For File Download

You can use this REST API to generate the PAR URL for File Download. See the following sections for information on how to perform the post operation.

4.3.4.2.1 Calling the API to Generate PAR URL for File Download Using File ID

To call the API, follow these steps:

1. Open a relevant tool, such as via the cURL command.
2. Prepare a cURL command with the authentication token and other details. For more information, refer to the following code.

Syntax

```
curl -k --location --request GET 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/downloadfile/<file id>' \
--header 'ofs_remote_user: <userid>' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: < TENANT-ID>' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer <TOKEN>"
```

Example

```
curl -k --location --request GET 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/downloadfile/9916' \
--header 'ofs_remote_user: cneadmin' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer ${TOKEN}"
```

Response

```
{ "payload": { "downloadURL": "https://objectstorage.us-
phoenix-1.oraclecloud.com/p/
gTxxzhqLEea4Or2TrkBqTqHxt_JogVFfa9G_0wtN8NYy_op0Zk4lvKGDxxeXGhLq7/n/
```

```

oraclegbudevcorp/b/fsgbu_pbsm_cndevcorp_aaitestdev1001-
prd_default/o/default/2023-01-31/fae/2d63d2fe-2090-4fb7-
a4c8-9940d22987db?
httpResponseContentDisposition=ATTACHMENT%3B%20filename%3DIcsc_log3.
txt"}}

```

4.3.4.2.2 Calling the API to Generate PAR URL for File Download Using File Name

To call the API, follow these steps:

1. Open a relevant tool, such as via the cURL command.
2. Prepare a cURL command with the authentication token and other details. For more information refer to the following code.

Syntax

```

curl -k --location --request GET <'https://<hostname>/<TENANT-ID>/
utils-service/v1/file/download?fileName=<file
name>&stripeName=default&prefix=' \
--header 'ofs_remote_user: <userid>' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: <TENANT-ID>' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer <TOKEN>"

```

Example

```

curl -k --location --request GET 'https://<hostname>/<TENANT-ID>/
utils-service/v1/file/download?
fileName=test3GB.xml&stripeName=default&prefix=' \
--header 'ofs_remote_user: cneadmin' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer ${TOKEN}"

```

Response

```

{"payload":{"downloadURL":"https://objectstorage.us-
phoenix-1.oraclecloud.com/p/8R68eVcQAxQjNjK__S04MZjs-
v4BqEbWSILvu0w40kJNrzfKeCB8vWBwugW5XvsK/n/oraclegbudevcorp/b/
fsgbu_pbsm_cndevcorp_aaitestdev1001-prd_default/o/default/
2023-01-20/rnz/6c023e75-09e2-4265-815e-32cedcd2415e?
httpResponseContentDisposition=ATTACHMENT%3B%20filename%3Dtest3GB.xml
1"}}

```

4.4 Data Maintenance Interface

Data Maintenance Interface (DMI) helps to design a Data Form in a user-specified format. Further, it allows to perform maintenance activities using the Designed Form.

Topics:

- [Data Maintenance Interface](#)
- [Data View](#)

4.4.1 Data Maintenance Interface

Data Maintenance Interface (DMI) helps to design a Data Form in a user-specified format. Further, it allows to perform maintenance activities using the Designed Form.

Designer View

The Designer allows the user to design a form to maintain the underlying data.

Data View

This allows the user to maintain the data either through the form that has been defined or do a bulk upload using the excel upload mechanism. A strong data governance process is enabled through an approval workflow of the data maintained.

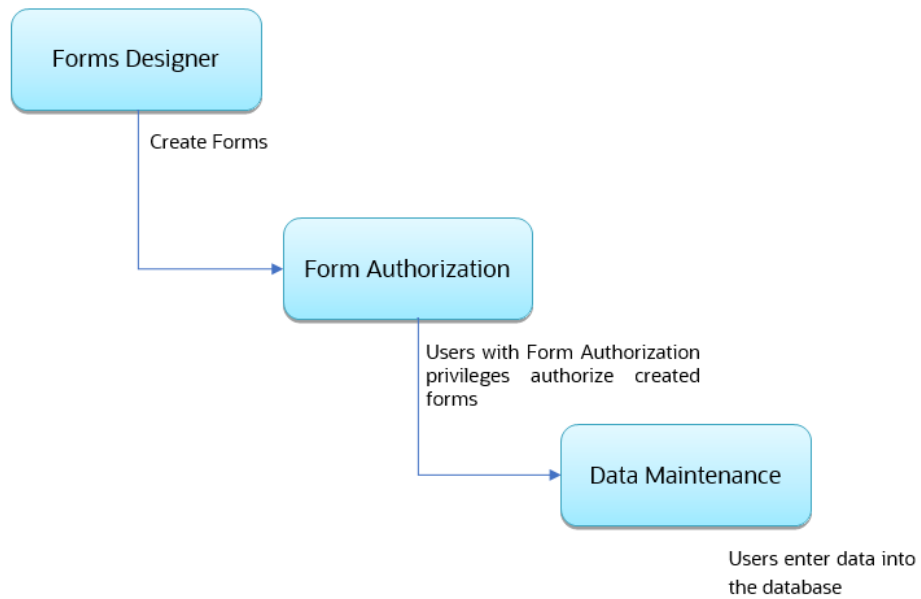
Related Topics

- [Process of DMI Windows](#)
- [User Role Mapping and Access Rights](#)
- [Access the Data Maintenance Interface](#)
- [Form Designer Summary Page](#)
- [Creating New Forms in Form Designer](#)
- [Approving and Rejecting New Form Definitions](#)
- [Managing Form Definitions](#)

4.4.1.1 Process of DMI Windows

The DMI Process starts with a user creating forms in the Form Designer. After the creation of forms, a user with Authorization Privileges authorizes the forms. The Authorized Forms are then used by users to enter data into the database.

Figure 4-18 DMI Process Flowchart



4.4.1.2 User Role Mapping and Access Rights

User access to the DMI UI and the ability to perform functions in it is dependent on the mapping of the user profile to the roles and the access rights assigned.

To access the DMI features, you must be mapped to the following roles:

Table 4-14 User Role Mapping for Data Maintenance Interface

| Role Code | Role Name | Functionality |
|----------------|------------------------|--|
| DMIDSGNREAD | Data Designer Read | Assign this role to the user to access the Configure View menu from Navigation Tree. NOTE: The mapping of this role does not allow view, edit, and add actions. |
| DMIDSGNAUTH | Data Designer Auth | Assign this role to the user to Authorize, Excel Upload, and Designer Summary. |
| DMIDSGNREJ | Data Designer Reject | Assign this role to the user to Reject, Excel Upload, and Designer Summary. |
| DMIDGNFORM | Data Designer Form | Assign this role to the user to Create Designer Form Definition. |
| DMIDGNTEMPLATE | Data Designer Template | Assign this role to the user to Create Excel upload Definition. |

Table 4-14 (Cont.) User Role Mapping for Data Maintenance Interface

| Role Code | Role Name | Functionality |
|--------------|----------------------|---|
| DMIDSGNDEL | Data Designer Delete | Assign this role to the user to Delete, Excel upload, and Designer Summary. |
| DMIDGNVIEW | Data Designer View | Assign this role to the user to Create View Definition. |
| DMIDSGNWRITE | Data Designer Write | Assign this role to the user to Add, Edit and Copy all kinds of definitions in Designer screen. |
| DMIDATAREAD | Data Entry Read | Assign this role to the user to access the Data View menu from the Navigation Tree. NOTE: The mapping of this role does not allow view, edit, and add actions. |
| DMIDATAALL | Data All Summary | Assign this role to view the list of all Component Records in Data Entry Screen. |
| DMIDATAWRTE | Data Entry Write | Assign this role to the user to Add, Edit Records in Data Entry Screen. |
| DMIDATADEL | Data Entry Delete | Assign this role to the user to Delete a Record Summary Data Entry Screen |
| DMIDATAAUTH | Data Entry Auth | Assign this role to Authorize a Record Summary in Data Entry Screen. |
| DMIDATAREJ | Data Entry Reject | Assign this role to Reject a Record Summary in Data Entry Screen. |
| DMIDGNAUTO | Enable Auto Approve | The user mapped to this function will have access to create Auto Approved Forms |

 **Note:**

All the DMI roles are mapped to a single group, Data Maintenance admin group. If a user is mapped to this group all the DMI roles are automatically assigned to the user.

4.4.1.3 Access the Data Maintenance Interface

To access the Data Maintenance Interface (DMI), proceed with the following steps:

1. Login to your Oracle Cloud account, with the required credentials to access DMI.
2. Select an application, to access the DMI for that application.

For example, to access DMI for CFECS, select **Cash Flow Engine Cloud Service (CFECS)**.

 **Note:**

The navigation steps vary for different applications. Refer to the respective application documentation for accessing Data Maintenance Interface.

3. Click **Data Management Tools** and click **Data Management Interface**.
The **Navigation List** is displayed.
4. Click one of the following menu items to access the respective windows:
 - [Designer View](#)
 - [Data View](#)

4.4.1.4 Form Designer Summary Page

You can create forms from the Form Designer View. The forms in the application are created with details configured for data maintenance and require authorization for use after creation.

To view the Forms Designer page, follow these steps:

1. Click **Data Maintenance Interface**.
2. Click **Designer View**, in the DMI navigation list.

The Form Definitions Summary page comprising the list of Form definitions is displayed. The following details are included the Summary page.

Table 4-15 Field Description

| Field | Description |
|-------------|--|
| Name | The unique name of the Form Definition. |
| Status | The processing status of the form definition. The various processing statuses are: <ul style="list-style-type: none"> • Draft – when the form is under development and is yet to be submitted for approval. • Waiting for Approval – When the approval is pending. • Approved – When the form definition is approved. |
| Type | The form definition type: <ul style="list-style-type: none"> • Data Exporter – creates form based on an entity table. • Excel Upload – creates form based on uploaded Excel Sheet. • View – Creates form based on Database views. • Designer – creates the form based on the entities, attributes and rulesets provided by the user. |
| Description | The Form Definition description. |
| Created By | The username of the logged in User who created the form. |

It has a [Search](#) tile to search for forms and a Forms tile that shows a list of existing forms in the application. You can sort the Form definition based on Name, Description and Created By fields.

To filter and view Form definitions with a specific processing status, click the respective status name in the top of the page.

You can also add, edit, view, and delete forms, from the Forms Definitions Summary page, based on the assigned roles and privileges. For more information, refer [User Role Mapping and Access Rights](#).

Related Topics

- [Creating Forms Using Data Exporter](#)
Forms created using Data Exporter are used to export table data to CSV or JSON format.
- [Creating Forms Using Excel Upload](#)
- [Creating Forms Using View](#)
- [Creating Forms Using Designer](#)

4.4.1.5 Accessing Information in Summary Page

A Form definition Summary Page contains a list of existing Form definitions. You can search, filter, and customize the view to access the required data.

4.4.1.5.1 Searching a Summary Page

Search for forms in the application from this pane. The search pane is common to all the windows in DMI and shows at the top. Enter search terms in the **Form Name** or **Form Code** field, or use a combination of both the fields. Click **Search**. The search result is displayed in the Forms pane. Click **Cancel**, to clear the search criteria and view all the form records.

Select the required records, to view data, and edit or delete records.

4.4.1.5.2 Sorting a Summary Page

You can sort the Definitions list using **Name**, **Description** and **Created By** fields. You can also sort the page in ascending/descending order.




4.4.1.5.3 Setting Number of Records Per Page

At the bottom of the page, you can enter the number of entries that are available on a single page in the Records box. By default, this value is set to 10.

You can increase or decrease the number of entries that are displayed using the up and down arrows.

To access a particular page, enter the page number in the Page Box located at the bottom of the page.

To navigate between pages, use the following buttons:

- Use the **First Page** () to view the entries in the First page.
- Use the **Previous Page** () to view the entries in the Previous page.
- Use the **Next page** () to view the entries in the Next page.

- Use the **Last page** (>>) to view the entries in the Last page.

4.4.1.6 Creating New Forms in Form Designer

Form creation involves selecting entities, displaying columns with attributes on the form, and if required, selecting authorization of data. Security settings provide for the creation of specific-user access for the forms and authorization.

To add a form, follow these steps:

1. In the DMI Summary page, click **Add**.
The **Create Forms Definition page** is displayed.
2. Enter/select the following details.

Table 4-16 Field Description

| Field | Description |
|-------------|--|
| Type | Select the Definition Type: <ul style="list-style-type: none"> • Data Exporter – creates form based on an entity table. • Excel Upload – creates form based on uploaded excel sheet. • View – Creates form based on Database views. • Designer – creates the form based on the entities, attributes and rulesets provided by the user. |
| Code | The application generates a unique value for Form Code and does not require any input. |
| Name | Enter the name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Description | The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed |
| Created By | The username of the logged in User who created the form. |

3. Click **Apply** to create a new Form definition or **Close** to cancel the Form creation process.

The **New Form Configuration page** is displayed based on the selected input type.

For more information about each form creation method, refer to the respective sections:

Related Topics

- [Creating Forms Using Data Exporter](#)
Forms created using Data Exporter are used to export table data to CSV or JSON format.
- [Creating Forms Using Excel Upload](#)

- [Creating Forms Using View](#)
- [Creating Forms Using Designer](#)

4.4.1.6.1 Creating Forms Using Data Exporter

Forms created using Data Exporter are used to export table data to CSV or JSON format.

You can also include filters and Dynamic placeholders to view and export specific set of data.

1. Select **Data Exporter** in Create New Form Definition page.
2. Enter the following details:
 - **Source** - Select one of the following input sources for the new form definition.
 - Table
 - View
 - **Code** - The application generates a unique value for Form Code and does not require any input.
 - **Name** - The name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
 - **Description** - The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
 - **Created By** - The username of the logged in User who created the form.

3. Click **Apply** to proceed with the Form creation.

Click **Close** to return to the Form Designer Summary Page.

The **Table selection** tab is displayed.

4. Select the Table from the drop-down list and click **Apply**.

The **Attributes tab** is displayed.

5. Click the drop-down arrow corresponding to the table in the **Entity Name** field.

The source attributes from the table and the mapped attributes from the Excel file are displayed.

If the selected table has Child tables, the Child tables that you select from the Mapped Entities tab are also displayed in the **Attributes** tab. You can configure the attributes for the master table and its child tables.

6. Click **Filter** to apply filters to the form data. For more information, refer [Creating Data Filters for New Form Definitions](#).

7. Select **Participate in Data Security** if you want to configure a specific condition. The condition that you configure is applicable when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry Page. For more information, refer [Enabling Data Security for New Form Definitions](#).

8. Click **Select columns** to view only specific columns.

9. Click **Data Preview** to preview the form data.

10. Select **Auto Approve** if you do not want to the Forms Definition through the PMF workflow. When you select this option, the Forms Definition is automatically approved from Forms **Definition Summary Page** and is available for Data Entry. A user with the required role can then perform the data entry without the need for an approval process. For more information, see [Enabling Data Security for New Form Definitions](#).

11. Click **Save as Draft** if you want to save the Forms Definition in draft format.
12. Click **Submit** if you want to submit the Forms Definition for approval.

4.4.1.6.2 Creating Forms Using Excel Upload

Excel Upload Definition Type creates new forms based on the uploaded Excel file that has column names as per the table in the application data source. You can also modify the mapping for the attributes while you create the Forms Definition. When the Forms Definition that you create using the Excel option is approved from the Forms Definition Summary Page, users with the necessary role and permission can perform Data Entry for the records updated by the Excel file.

1. Select **Excel Upload** in Create New Form Definition pane.
2. Select **Auto Map Entities**, to auto map the attributes in the Excel file with the attributes in the Entity Table.
3. Enter the following details:

Table 4-17 Field Description

| Field | Description |
|-------------|---|
| Code | The application generates a unique value for Form Code and does not require any input. |
| Name | The name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Description | The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Created By | The username of the logged in User who created the form. |

4. Click **Apply**.
The **File Upload tab** is displayed.
5. Enter the following details. a name and description for the excel template in the Template Name, and Description Fields.

Table 4-18 Field Description

| Field | Description |
|-------------|---|
| Name | Enter the name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Description | The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Created By | The username of the logged in User who created the form. |

6. Click **Drag and Drop** and select the excel file to update the required table.

 **Note:**

You can also drag and drop the required excel file in the Drag and Drop Field.

The excel file is uploaded and a confirmation box is displayed.

The **Mapped Entities Tab** is displayed.

7. Enter the name of the table that you want to modify in the Primary Entity Field.

If the table has Child tables, the Child tables also get displayed in the **Mapped Entities** tab. You can select the required child tables for which data should be input during data entry.

8. Select **Enable Bulk Authorization** if you want to enable the bulk authorization of all the records when you edit an approved Form from Data Entry.
9. Click **Apply**. To update the data in the mapped attribute tab, you have click **Apply** every time you update the Mapped entities.

The **Mapped Attributes Tab** is displayed.

10. Click the drop-down arrow corresponding to the table in the Entity Name.

The source attributes from the table and the mapped attributes from the Excel file are displayed.

If the selected table has Child tables, the Child tables that you select from the Mapped Entities tab are also displayed in the Attributes tab. You can configure the attributes for the master table and its child tables here.

11. Click the required mapping in the **Override Mapping Column** and enter the required attribute name if you want to change the default mapping.

12. Click **Select Columns** to select the columns for bulk update, during Data entry.

13. Select **Participate in Data Security** if you want to configure a specific condition. The condition that you configure is applicable when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry Page. For more information, refer [Enabling Data Security for New Form Definitions](#).

14. Click **Filter** to apply filters to the form definition.

This filters the data based on specified filter conditions. For more information, refer [Creating Data Filters for New Form Definitions](#).

15. Click **User Security** to select the user or user groups who can perform data entry to maintain the data in the table. For more information about adding user security, refer to [Enabling User Security for New Form Definitions](#).

16. Click **Data Preview** to preview the form data.

17. Select **Auto Approve** if you do not want to the Forms Definition through the PMF workflow. When you select this option, the Forms Definition is automatically approved from Forms Definition Summary page and is available for Data Entry. A user with the required role can then perform the data entry without the need for an approval process. For more information, see [User Role Mapping and Access Rights](#).

18. Click **Save as Draft** if you want to save the Forms Definition in draft format. The form is added to the summary page with Draft status.

- Click **Submit** if you want to submit the Forms Definition for approval. For more information refer to [Approving and Rejecting New Form Definitions](#). After approval/ auto approval, the form is added to the Form Definition Summary page.

4.4.1.6.3 Creating Forms Using View

View Definition Type creates new forms based on Database views. You can also download the Database data in CSV format.

- Select **View** Option in Create New Form Definition pane.
- Enter the following details:

Table 4-19 Field Description

| Field | Description |
|-------------|---|
| Code | The application generates a unique value for Form Code and does not require any input. |
| Name | Enter the name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Description | The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Created By | The username of the logged in User who created the form. |

- Click **Apply**.
The **View Selection tab** is displayed.
- Click **Apply**.
The **Attribute Selection Tab** is displayed.
- Click the drop-down arrow in the **View Name** field.
The source attributes from the table and the mapped attributes from the Excel file are displayed. If the selected table has Child tables, the Child tables that you select from the Mapped Entities tab are also displayed in the Attributes tab.
- Click the check-box next to an Attribute Name , to include the Attribute in the Form definition.
To remove the attribute from the form definition, uncheck the selection.
- Click **Filter** to apply filters to the form definition.
For more information, refer [Creating Attribute Filters for New Form Definitions](#).
- Click **Apply**.
The **Data Preview Tab** is displayed. You can view the sample form based on the selected view, attributes and filter conditions.
- Click **Download CSV** to download the preview data.
- Click **Save as Draft** if you want to save the Forms Definition in draft format.
- Click **Submit** if you want to submit the Forms Definition for approval.

4.4.1.6.4 Creating Forms Using Designer

You can use the Designer option to create a Forms Definition and select the table and attributes that you want to modify. When the Forms Definition that you create using the Designer option is approved from the Forms Definition Summary Page, you can enter the values for the table records in the approved Forms Definition from Data Entry.

To create a Forms Definition by using the Designer option, perform the following steps:

1. Select **Designer** in Create New Form Definition page.
2. Enter the following details:

Table 4-20 Field Description

| Field | Description |
|-------------|---|
| Code | The application generates a unique value for Form Code and does not require any input. |
| Name | The name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Description | The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed. |
| Created By | The username of the logged in User who created the form. |

3. Click **Apply**.

The **Entities tab** is displayed.

4. Select the table that you want to modify in the **Primary Entity** Field.

If the selected table have child tables, the child tables is also displayed. You can select the required Child tables for which you wish to input the data during data entry.

 **Note:**

You can select up to four Child tables only for each Master table.

5. Select **Enable Bulk Authorization**, if you want to enable the bulk authorization of records while performing data entry.

6. Click **Apply**.

The **Attributes tab** is displayed.

7. Click the drop-down arrow corresponding to the table in the Entity Name field.

The attributes in the entity table are displayed.

If your table has Child tables, the Child tables that you select from the Entities tab also gets displayed in the Attributes tab.

8. Select the attributes for which you want to modify the data from the Attribute Name field.
9. Select **Participate in Data Security** if you want to configure a specific condition. The condition that you configure is applicable when a user performs the data entry for the

table records for each approved Forms Definition from the Data Entry Page. For more information, refer [Enabling Data Security for New Form Definitions](#).

10. Click **Filter** to apply filters to the form definition.

For more information, refer [Creating Attribute Filters for New Form Definitions](#).

11. Click **Select Columns** to search and select specific columns.

12. Click **Apply**.

The **Ruleset Tab** is displayed. This tab enables you to give permission to add data during data entry for those attributes that are set to Editable mode. The key fields that cannot be modified are set to Read-only mode.

Attributes that you select from the Child tables are also displayed in the Ruleset tab.

13. Select the checkbox corresponding to **Allow Add column** for the attributes that you want to modify.

14. Click **User Security** to select the user or user groups who can perform data entry to maintain the data in the table. For more information about adding user security, refer to [Enabling User Security for New Form Definitions](#).

15. Select **Auto Approve** if you do not want to the Forms Definition through the PMF workflow. When you select this option, the Forms Definition is automatically approved from Forms Definition Summary Page and is available for Data Entry.

A user with the required role can then perform the data entry without the need for an approval process. For more information, see [Enabling Data Security for New Form Definitions](#).

16. 16. Click **Save as Draft** if you want to save the Forms Definition in draft format.

Click **Submit** if you want to submit the Forms Definition for approval.

4.4.1.6.5 Creating Data Filters for New Form Definitions

Complete the following steps if you want to add filters to the Forms Definition:

1. Click **Launch Filter** Condition.

The Filter Condition pane is displayed.

2. Enter/ select the following details.

- **Column** - Select the column from the applying the filter.
- **Condition** - Select one of the following filter conditions, to filter the column data.
 - = - Equal to
 - **IN** - <Verify>Validates the filter condition and return True or False.
 - <> - Not equal to
 - < - Lesser than
 - <= - Lesser than or equal to
 - > - Greater than
 - >= - Greater than or equal to
 - **IS** - <TBD>

- **Type** - Select one of the following filter types.
 - **Static** - Select Static, to enter a value and execute the filter using only one value. You cannot change the value at a later point.
 - **Dynamic** - Select Dynamic, to change the filter value when needed. After setting the filter type to Dynamic, select the **Placeholder** and set one of the default seeded values, to process the filter.

 **Note:**

Only values that are already seeded in the Database table, are displayed in the Placeholder drop-down list.

- **Filter Value** - Select/enter the filter value.

 **Note:**

For Language Placeholder the default locale language is displayed and cannot be modified.

3. Click **Add**. to add a new Filter expression. You can add multiple Filter expressions to the same filter.

The filter is added to the list of filters.

Mouse-over the place holder filter, to view more details about the filter.

4. Click **Validate** to verify the filter condition is valid.

A confirmation message is displayed, if the filter is valid.
5. Click **Apply**.

The filter is displayed in the Filter Condition Field.
6. Click **Reset**, to clear all the filter expressions and create a new expression.
7. Click **Delete** to delete an existing filter expression.
8. Click **Edit** to modify a filter expression. After editing the expression, click **Validate**, to verify if the condition is valid.
9. Click **Apply** to add the filter expression to the form definition.

4.4.1.6.6 Enabling Data Security for New Form Definitions

Data security conditions allows you to apply certain filters when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry page.

For example, consider that you configure the condition `COUNTRY_NAME = 'INDIA'` for the reference table **DIM_COUNTRY**. When a user performs the data entry for this Forms Definition from the Forms Definition - Summary Page and enters a country name other than 'INDIA', the record gets rejected by the application when another user approves this record.

Complete the following steps to configure Data Security for the Forms Definition:

1. Select the check box next to the **Attribute Name**, in the **Participate in Data Security** Column.

 **Note:**

Data Security information must be configured for each attribute name, separately.

2. Click **Data Security**.
The **Data Security page** is displayed.
3. Select the table based on which you want to build your condition from the Reference Table drop-down list.
4. Build your expression by selecting the required column, condition, and filter value.
5. Click **Apply**.

4.4.1.6.7 Enabling User Security for New Form Definitions

The User Security option helps you to select the users/user groups who can add, edit, delete and/or authorize data entry.

1. Click **User Security** to select the user or user groups who can perform data entry to maintain the data in the table.

The **User Security** page is displayed.

2. Enter the required user group or user to assign permissions from the Map Users / Groups Field.

When you select the user group or user, the permissions for each approved Forms Definition are displayed. These permissions are the actions that the selected user group or user can perform while performing Data Entry.

Table 4-21 Permissions in the Map Users / Groups Pane

| Option | Description |
|---------------|--|
| Add /Edit | Add or modify records in an approved Forms Definition |
| Delete | Delete records in an approved Forms Definition |
| Authorize | Authorize the records in an approved Forms Definition |
| Duration From | Optional. Select the start date for which the permissions are available to the user or user group. |
| Duration To | Optional. Select the end date for which the permissions are available to the user or user group. |

The User Security Configuration is complete.

 **Note:**

If you select a user group for User Security, you can view the users mapped to that group by clicking the **Users** icon.

4.4.1.7 Approving and Rejecting New Form Definitions

You can validate and approve the new Forms Definition if you have the required role assigned to you.

If the configuration in the Forms Definition is incorrect, you can reject the Forms Definition. The rejected Forms Definition changes into Draft status. You can then request the required user to edit the Forms Definition and submit it for approval again.

You can also view, copy, and edit each Forms Definition from the Forms Definition – Summary page by clicking Menu. These actions are available based on the roles assigned to you. For more information, refer [User Role Mapping and Access Rights](#).

4.4.1.7.1 Approving a Forms Definition

You can approve new forms based on the assigned roles. For more information about the roles, refer. [User Role Mapping and Access Rights](#).

To approve a Forms Definition, perform the following steps:

1. In the Designer View, click **Menu** in the Forms Definition that is in Awaiting status, and then click **Approve**.

The **Configure page** is displayed.

2. Click **Approve** and then enter the required description for the approval in the Comments field.
3. Click **Submit**.

The Forms Definition is approved and is displayed in the **Data Entry page** as a new entry.

4.4.1.7.2 Rejecting a Forms Definition

You can reject new forms based on the assigned roles. For more information about the roles, refer. [User Role Mapping and Access Rights](#).

To reject a Forms Definition, perform the following steps:

1. In the Designer View, click **Menu** in the Forms Definition that is in Awaiting status, and then click **Reject**.

The **Configure page** is displayed.

2. Click **Reject** and then enter the required description for the approval in the Comments field.
3. Click **Submit**.

The Forms Definition is rejected, moved to draft status. The form definition is displayed in Forms Definition Summary page. You can then edit the Forms Definition in draft status and submit it for approval again.

For more information on editing a Forms Definition, see [Editing Form Definitions](#).

4.4.1.8 Managing Form Definitions

You can view, edit, copy, and delete the existing Form Definitions from the Form Definition Summary Page, based on the assigned roles. For more information, refer to [User Role Mapping and Access Rights](#).

In the Summary Page, highlight a specific Definition and click **Action**. The following options are displayed:

Table 4-22 Action Details

| Action | Description |
|-------------------------|--|
| View | View the Member details for a specific Member Definition. |
| Edit | Edit the Member details of a form definition. |
| Copy | Copy the Member Definition Details and create another Member Definition by changing Alphanumeric Code, Numeric Code and Name. |
| Upload | Upload a new Excel sheet for an Excel upload form definition. You need to delete the attached excel sheet before uploading the new data. |
| Delete | |
| Approve | If you have the required role, you can approve a new Form that is in Awaiting Approval status. For more information, refer to Approving a Forms Definition . |
| Reject | If you have the required role, you can approve a new Form that is in Awaiting Approval status. For more information, refer to Rejecting a Forms Definition . |

4.4.1.8.1 Viewing Form Definitions

To view a form definition, you will require specific roles. For more information about Roles, refer [User Role Mapping and Access Rights](#).

You can view the details of an individual Form Definition, using the following procedure:

1. Highlight the Form Definition and click **Action**.
2. Click **View**.

The **Form Definition page** is displayed.

4.4.1.8.2 Editing Form Definitions

Editing form details requires specific assigned roles. For more information about the roles, refer [User Role Mapping and Access Rights](#). Forms that are already approved cannot be edited.

You can edit individual Definition Details, using the following procedure:

1. Highlight the Definition and click the Action button
2. Click **Edit**.

The **Form Definition page** is displayed with the details.

3. Edit the required information and click **Save**.

4.4.1.8.3 Copying Form Definitions

You can copy form details, based on the assigned roles. For more information about the roles, refer. [User Role Mapping and Access Rights](#).

You can copy individual Definition Details, to recreate another new Definition, using the following procedure:

1. Highlight the Definition and click **Action**.
2. Click **Copy**.

The **Form Definition Page** is displayed with the Details.

3. Edit the unique information and modify details like entity table, attribute filters, user and data security details and click **Save**.

4.4.1.8.4 Re-Uploading Form Definitions

You can upload a new Excel Sheet based on the assigned roles.

For more information about the roles, refer. [User Role Mapping and Access Rights](#).. You can change the Excel Sheet attached to an Excel Upload form Definition, using the following procedure:

1. Highlight the Definition and click **Action**.
2. Click **Upload**.

The **Definition page** is displayed with the details.

3. In the Entities tab, click **Remove**, to delete the existing Excel sheet.
4. Click **Drag and Drop** and select the new Excel sheet to be uploaded.

4.4.1.8.5 Deleting Form Definitions

You can only delete the form definitions that are in Draft status, you can delete a form based on the assigned roles. For more information about the roles, refer. [User Role Mapping and Access Rights](#).

Highlight the draft form definition and click **Delete**.

4.4.2 Data View

The Data View feature of Data Maintenance Interface (DMI) enables you to maintain or modify the table data by using the Forms Definition that is created and approved from Forms Definition Summary page. For more information on Forms Definitions, see [Creating Forms Definition](#).

If the approved Forms Definition is created by using the designer option, a user with the necessary role can add or modify the records in the table as per the configuration in the Forms Definition. These records are then sent to another user with the necessary permission for final approval.

If the approved Forms Definition is created by using an Excel file, a user with the necessary permission can verify and approve the records that are modified with the values from the Excel file. If the records modified by the Excel file are incorrect, the user can reject the records. The rejected record can be modified by a different user with the necessary role and

can be sent for the final approval again. The Forms Definitions that are created by using an Excel file are labeled with an Excel icon in Data Entry.

4.4.2.1 Viewing Data Entry

You can view records based on the assigned roles. For more information about the roles, refer. [User Role Mapping and Access Rights](#).

Complete the following steps to view Data entry:

1. Login to your Oracle Cloud account, with the required credentials to access DMI.
2. Select an application, to access the DMI for that application.

For example, to access DMI for CFECS, select **Cash Flow Engine Cloud Service (CFECS)**.

Note:

The navigation steps vary for different applications. Refer to the respective application documentation for accessing Data Maintenance Interface.

3. Click **Data Management Tools** and click **Data Management Interface**.

The **Navigation List** is displayed.

4. Click **Data View**.

The **Data Entry page** is displayed. All the approved forms are displayed in the Data Entry page. Forms in Draft and Awaiting Approval status can be accessed from the Designer View page.

4.4.2.2 Data Entry – Forms Created Using Designer

If the Forms Definition is created by using the designer option, the user with the necessary role can enter the values for the table records as per the configuration in the Forms Definition. This user can also add or delete records. These records are then submitted for approval to another user with the necessary role. For more information, refer to [User Role Mapping and Access Rights](#).

Complete the following procedure, to update/delete data in the table records:

1. Click **Menu** button in the required Forms Definition from the Data Entry Page.
2. Click **Edit**.

The **Entity Details Page** is displayed.

The records are classified based on the following Status:

- **Draft** – Records that are created but not submitted. In Draft state, you can add, new rows or delete/edit an existing row submit for Auto-approval.
- **Ready** – Records that are approved. You can only edit the records.

For adding/deleting records and editing existing draft or Ready records, refer to the following sections:

Related Topics

- [Adding/Editing a Draft Record](#)

- [Deleting Draft Records](#)

4.4.2.2.1 Adding/Editing a Draft Record

To Add or Edit a draft record, follow these steps:

1. Select **Draft** from the Status drop-down list.

The entity records with Draft status are displayed.

2. To add a new record, click **Add**.

A new entry with Draft Status is added to Entity details page. This entry is empty. Edit the record to add the attribute details.

3. To edit a record, click **Edit** next to the record.

The **Edit page** is displayed.

4. Enter the values in the attributes that you want to modify and click **OK**.

You can repeat the steps for all the records for which the data needs to be entered.

5. Click the modified record in draft status, and then click **Submit for Approval** or **Submit with Auto Approval**.

If the record is submitted with Auto approval, it is approved instantaneously.

If the record is submitted for approval, is sent for approval, and is changed to **Awaiting status**. A user with the necessary role can approve these records. For more information, see [Approving and Rejecting Records after Data Entry](#).

After Approval, the status is changed from Draft to Ready. Refer [Editing Approved Records](#), to edit the records in Ready Status.

 **Note:**

If the user has configured the Participate In Data Security option while creating a Forms Definition, you must enter the value as per the configured condition. If you enter a value that does not meet the condition, then the record is rejected by the application and the approval gets failed. You can view the details of the rejection by using the Audit trail option for each record. For information on the Participate In Data Security option, see [Enabling Data Security for New Form Definitions](#).

4.4.2.2.2 Deleting Draft Records

You can delete the records in Draft status. If the record is approved and moved to Ready status, it cannot be deleted.

1. Select **Draft** from the Status drop-down list.

The entity records with Draft status are displayed for entering data are displayed.

2. Select a record and click **Delete**.

To delete multiple records, select all the required records and click **Delete**.

To bulk delete all the records, select the Check box on the Header. All the records are selected. Then, click **Delete**.

4.4.2.2.3 Editing Approved Records

The Approved records are set to Ready Status. When you edit the record, it is moved to Draft Status.

1. Select **Ready** from the Status drop-down list.

The entity records with Ready status are displayed for entering data are displayed.

2. To edit a record, click **Edit** next to the record.

An edit pane is displayed.

3. Update the values for the attributes that you want to modify and click **OK**.

4. Enter a valid reason for modification.

You can repeat the steps for all the records for which the data needs to be entered.

5. Click the modified record in draft status, and then click **Submit for Approval** or **Submit with Auto Approval**.

To submit multiple records, select all the required records and click **Submit**.

To bulk submit all the records, select the Check box on the Header. All the records are selected. Then, click **Submit**.

If the record is submitted with Auto approval, it is approved instantaneously. The record is sent for approval and is changed to Awaiting status. A user with the necessary role can approve these records. For more information, see [Approving and Rejecting Records after Data Entry](#).

4.4.2.3 Forms Created Using Excel Upload

When a Forms Definition created using an Excel file is approved from Forms Definition Summary Page, the table records in the selected table are updated using the data in the Excel file. These records are in Awaiting status for the approved Forms Definition in Data Entry. You can verify the records modified by the Excel file records and approve them if you are assigned to the necessary role. If the records modified by the Excel file are incorrect, you can reject the records. The status of the rejected records is changed to Draft. A user with the necessary role can edit the records in draft status and submit them for approval again.

- To approve records, see [Approving a Record](#).
- To reject records, see [Rejecting a Record](#).
- To edit a record in draft status, see [Editing a Rejected Record](#).

4.4.2.4 Approving and Rejecting Records

A user with the necessary role can approve or reject the edited records. For more information, refer to [User Role Mapping and Access Rights](#).

4.4.2.4.1 Approving Draft Records

To approve records that are in the Draft status, perform the following steps:

1. In the **Entity Details page**, select **Draft** from the Status drop-down list.

The entity records with Draft status are displayed.

2. Select the required record.

You can select multiple records, to perform bulk Approval. Bulk Approval is enabled only if Bulk Authorization is activated during Form Creation.

3. Enter the required comment in the Comments Field, and then click **Approve**.

The record is approved successfully with the values from the Excel file.

4.4.2.4.2 Rejecting a Record

To reject a record in Awaiting status, perform the following steps:

1. Click **Menu button** in the required Forms Definition from the Data Reporting - Data Entry page.

2. Click **Edit**.

The Entity Details page is displayed. The records that are waiting for the final approval are displayed here.

Select the required record, and then click **Reject**.

You can select multiple records to perform bulk rejection. Bulk rejection is enabled only if Bulk Authorization is activated during Form Creation.

3. Enter the required comment in the Comments field, and then click **Reject**.

The record is rejected, and the status is changed to **Draft**. A user with the necessary role can now edit the record.

4.4.2.4.3 Editing a Rejected Record

You can edit the records that are in draft status and send them approval to the user with the necessary role.

To edit a record, perform the following steps:

1. Select **Draft** from the Status drop-down list.
2. Click **Edit** in the record that you want to edit.

The Edit pane is displayed.

3. Modify the required attributes, and click **OK**.
4. Select the record and then click **Send for Approval**.

The modified record is now moved to **Awaiting** status. A user with the necessary role can approve the record.

Note:

If the user has configured the Participate In Data Security option while creating a Forms Definition, you must enter the value as per the configured condition. If an incorrect value is entered, the record gets rejected by the application and the approval is failed. You can view the details of the rejection by using the Audit Trail option for each record. For information on the Participate In Data Security option, see [Enabling Data Security for New Form Definitions](#).

4.4.2.5 Exporting Forms Creating Using Data Exporter - View Option

After creating Forms using View as the source, you can export or download the reports to CSV or JSON format.

Complete the following steps to export or download a report.

1. Login to your Oracle Cloud account, with the required credentials to access Data Management Interface (DMI)s.
2. Select an application, to access the DMI for that application.

For example, to access DMI for CFECS, select **Cash Flow Engine Cloud Service (CFECS)**.

 **Note:**

The navigation steps vary for different applications. Refer to the respective application documentation for accessing Data Maintenance Interface.

3. Click **Data Management Tools** and click **Data Management Interface**.
The **Navigation List** is displayed.
4. Click **Data View**.
The **Data Entry page** is displayed.
5. Click **Action** next to the form to be exported and click **Export**.
6. Use one of the following options to export or download the report.
 - [Exporting Forms Created using Data Exporter - View Option - Without Placeholder](#)
 - [Exporting Forms Created using Data Exporter - View Option - With Placeholder](#)

4.4.2.5.1 Exporting Forms Creating Using Data Exporter - View Option - Without Placeholder

When you create forms using Data Exporter option, you can export the report to .CSV format.

Complete the following steps to export forms created using Data Exporter (View) option and Static Filter type. Forms created with static filter type do not have placeholders.

1. Click **Action** next to the form to be exported and click **Export**.
The **Data View** page with the **View** details associated with the form, is displayed.
2. Click **Attribute Selection** tab, to review the values and the filters and modify if required. You can also use the default values for export.
You can also change the filter type to **Dynamic** and assign a placeholder.
3. Click **Data Preview**, to view the form based on the selected table, columns and the set filter attributes.

4. Click **Export CSV** to export the report in CSV format.
5. After the confirmation, click **Download Report**, to save the exported report to your local directory.

4.4.2.5.2 Exporting Forms Creating Using Data Exporter - View Option - With Placeholder

Forms created using Data Export option can be exported as a .CSV file or a JSON file.

Complete the following steps to export Data Export forms:

1. Click **Action** next to the form to be exported and click **Export**.
The **Data View** page with the **View** details associated with the form, is displayed.
2. Click **Attribute Selection** tab, to review the values and the filters and modify if required.
You can also use the default values for export.
You can also change the filter type to **Static**. Then, the existing placeholder filter condition will be deleted.
3. Click **Data Preview**, to view the form based on the selected table, columns and the set filter attributes.
4. Click **Export CSV** to export the report in CSV format.
5. After the confirmation, click **Download Report**, to save the exported report to your local directory.

4.4.2.6 Exporting Forms Creating Using Data Exporter - Table Option

Forms created using Data Export option can be exported as a .CSV file or a JSON file.

Complete the following steps to export or download a report.

1. Login to your Oracle Cloud account, with the required credentials to access Data Management Interface (DMI)s.
2. Select an application, to access the DMI for that application.
For example, to access DMI for CFECS, select **Cash Flow Engine Cloud Service (CFECS)**.

 **Note:**

The navigation steps vary for different applications. Refer to the respective application documentation for accessing Data Maintenance Interface.

3. Click **Data Management Tools** and click **Data Management Interface**.
The **Navigation List** is displayed.
4. Click **Data View**.
The **Data Entry page** is displayed.
5. Click **Action** next to the form to be exported and click **Export**.
6. Use one of the following options to export or download the report.
 - [Exporting Forms Created using Data Exporter - Table Option - Without Placeholder](#)
 - [Exporting Forms Created using Data Exporter - Table Option - With Placeholder](#)

4.4.2.6.1 Exporting Forms Creating Using Data Exporter - Table Option - Without Placeholder

When you create forms using Data Exporter option, you can export the report to .CSV or .JSON format.

Complete the following steps to export forms created using Data Exporter (Table) option and Static Filter type. Forms created with static filter type do not have placeholders.

1. Click **Action** next to the form to be exported and click **Export**.

The **Data View** page with the **Table** details associated with the form, is displayed.

2. Click **Attribute Selection** tab, to review the values and the filters and modify if required. You can also use the default values for export.

You can also change the filter type to **Dynamic** and assign a placeholder.

3. Click **Data Preview**, to view the form based on the selected table, columns and the set filter attributes.

4. To export the report, complete one of the following steps:

- Click **Export CSV** to export the report in CSV format.
- Select the **File Format** as **CSV** or **JSON** and click **Export**.

A confirmation message is displayed after the export is completed, and the **Data Entry Summary** is displayed.

5. To download an exported report, click **Action** and click **Status**.

The **Data Exporter Status** page with the list of all the reports that are exported is displayed.

- Click **Download**, to save the report to the local directory.
- Click **Download Link**, to copy the link. You can paste the link in a Web browser and download the CSV report to the local directory.
- Click **Delete** to delete the exported report.

4.4.2.6.2 Exporting Forms Creating Using Data Exporter

Forms created using Data Export option can be exported as a .CSV file or a JSON file.

Complete the following steps to export Data Export forms:

1. Click **Action** next to the form to be exported and click **Export**.

The Export Page with the default values is displayed.

2. Click **Apply** to proceed with the export.

3. In the **Generate Report Confirmation** pop-up,

- Click **Yes** to use the default values for the report.
- Click **No** to change the default values.

The **Data View** page with the **View** details associated with the form, is displayed.

4. Click **Attribute Selection** tab, to review the values and the filters and modify if required. You can also use the default values for export.

You can also change the filter type to **Static**. Then, the existing placeholder filter condition will be deleted.

5. Click **Data Preview**, to view the form based on the selected table, columns and the set filter attributes.
6. To export the report, complete one of the following steps:
 - Click **Export CSV** to export the report in CSV format.
 - Select the **File Format** as **CSV** or **JSON** and click **Export**.

A confirmation message is displayed after the export is completed, and the **Data Entry Summary** is displayed.

7. To download an exported report, click **Action** and click **Status**.

The **Data Exporter Status** page with the list of all the reports that are exported is displayed.

- Click **Download**, to save the report to the local directory.
- Click **Download Link**, to copy the link. You can paste the link in a Web browser and download the CSV report to the local directory.
- Click **Delete** to delete the exported report.

4.4.2.7 Audit Trail

The Audit Trail option for each record enables you to view the history of changes made to that record.

4.5 Data Quality Framework

Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.

Topics:

- [Introduction to Data Quality Framework](#)
- [Roles and Functions for Managing DQ Framework](#)
- [Data Quality Rules](#)
- [Data Quality Groups](#)
- [Adding a DQ Check Task](#)
- [Execution Summary](#)

4.5.1 Introduction to Data Quality Framework

Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.

Data Quality Framework within the Infrastructure system facilitates you to define rules and execute them to query, validate, and correct the transformed data existing in an environment. This framework includes the following components:

- [Data Quality Rules](#) - Data Quality Rules allows you to create a DQ (Data Quality) definition and perform Data Quality checks using Single column and Multi-column checks.

- [Data Quality Groups](#) - Data Quality Groups facilitates you to logically group the defined DQ definitions.

4.5.2 Roles and Functions for Managing DQ Framework

The following roles and function are required to create, view and manage the Rules and Groups in DQ Framework.

| Role | Action |
|---|----------------------------------|
| DQACC - DQ Access | Data Quality Rule Access Role |
| DQADVND - DQ Advanced | Data Quality Rule Advanced Role |
| DQAUTH - DQ Authorize | Data Quality Rule Authorize Role |
| DQAUTOAUTHR - DQ Auto Authorize Rule | Data Quality Auto Authorize Rule |
| DQREAD - DQ Read | Data Quality Rule Read-only Role |
| DQWRITE - DQ Write | Data Quality Rule Write Role |

| Functions | Action |
|---|---|
| DQ_SUMM - Data Quality Rule Summary | Access DQ Rule Summary |
| DQ_GP_EXEC - Execute Data Quality Group | Execute DQ Rule Group |
| DQ_GP_ADD - Add Data Quality Group | Add DQ group |
| DQ_ADD - Add Data Quality Rule | Add DQ Rule |
| DQ_EDT - Data Quality Edit Rule | Edit DQ Rule |
| DQ_VIW - Data Quality View Rule | View DQ Rule |
| DQ_GP_VIW - Data Quality View Rule Group | View DQ Rule Group |
| DQ_GP_DEL - Data Quality Delete Rule Group | Delete DQ Rule Group |
| DQ_DEL - Data Quality Delete Rule | Delete DQ Rule |
| DQ_AUTH - Data Quality Authorisation Rule | Authorize DQ Rule |
| DQ_GP_EDT - Data Quality Edit Rule Group | Edit DQ Rule Group |
| DQ_GP_ADD -Data Quality Add Rule Group | Add DQ Rule Group |
| DQAUTOAUTH - Data Quality Auto Authorize | Save the Rule/Group in authorized state |
| DQ_PURGE - DQ Rule Purge | Purge the DQ Rule |
| DQ_GP_SUMM - Data Quality Group Summary | Access DQ Group Summary |
| DQ_GP_EXEC - Data Quality Execute Rule Group | Execute DQ Rule |
| DQ_GP_PURGE - DQ Group Purge | Purge the DQ Group |
| DQ_GP_AUTH - DQ Group Authorisation | Authorize DQ Group |
| DQ_EXE_SUMMARY - DQ Execution Summary | Access DQ Execution Summary |
| DQ_EXE_ASSIGN - DQ Execution Assignment | Enable Data correction in the execution summary |

4.5.3 Data Quality Rules

Data Quality Rules allows you to create a DQ (Data Quality) definition using data quality checks based on single column or multiple columns of a single base table. The defined Data Quality Rules can be logically grouped and executed together.

4.5.3.1 Data Check Definitions

Data Check definitions included the Data Quality Rules help in performing data quality check and correction.

You can include the following Data quality checks in the DQ Rule.

- **Single Column Check** - You can set the Check Type to Single Column Check during DQ Rule creation. This check will perform Data Quality Check on only one column selected during Rule creation. For more details about the various Single column Checks, refer to [Single Column Data Check Definitions](#).
- **Multi Column Check** - You can set the Check Type to Multi Column Check during DQ Rule creation. This check will perform Data Quality Check on one or more columns of a single base table, selected during Rule creation. For more details about the various Multi-column Checks, refer to [Multi Column Data Check Definitions](#).

4.5.3.1.1 Single Column Data Check Definitions

Single Column Data Checks help to perform data quality check on only one column selected during DQ Rule creation.

You can include the following Data Quality checks in the DQ Rule, if the check type is set to Single Column Check.

- **Range Check** - Range Check identifies if the base column data falls outside a specified range of Minimum and Maximum value. Range check can be enabled only if the base column has date or number value.
 - Select the check-box to enable the Range check.
 - Set the warning level to **Severity, Warning or Information**.
 - If the selected Base Column is of **Date** type, select Minimum and Maximum date range. If the selected base column is of **Number** type, enter the Range value. You can specify numeric, decimal, and negative values for number Data type.
 - Check the Inclusive check-box, to include the specified date/value during the data check.
 - Click **Edit** to add specific filter expressions, as additional conditions. For more information, refer to [Creating Expressions](#).
 - Select the **Assignment** option. The Assignment option is enabled only if Warning/Information is selected as the Warning level.
 - * Select the Assignment Type from the drop-down list. For more information, see [Assignment Types](#).
 - * Specify the **Assignment Value**.
 - * Select the **Message Severity** as 1 or 2 from the drop-down list.
 - * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Null Value Check** - Null Value Check checks identifies if there is any null value in the selected column.
 - Select the check-box to enable the Null Value check.

- Set the warning level to **Severity, Warning** or **Information**.
- Click **Edit** to add specific filter expressions, as additional conditions.
- Select the **Assignment** option. The Assignment option is enabled only if Warning/Information is selected as the Warning level.
 - * Select the Assignment Type from the drop-down list. For more information, see [Assignment Types](#).
 - * Specify the **Assignment Value**.
 - * Select the **Message Severity** as 1 or 2 from the drop-down list.
 - * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Blank Value Check** -Null Value Check checks identifies if there is any entry in the selected column is blank.
 - Select the check-box to enable the Blank Value check.
 - Set the warning level to **Severity, Warning** or **Information**.
 - Click **Edit** to add specific filter expressions, as additional conditions.
 - Select the **Assignment** option. The Assignment option is enabled only if Warning/Information is selected as the Warning level.
 - * Select the Assignment Type from the drop-down list. For more information, see [Assignment Types](#).
 - * Specify the **Assignment Value**.
 - * Select the **Message Severity** as 1 or 2 from the drop-down list.
 - * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Data Length Check** -Data Length Check checks for the length of the base column data using a minimum and maximum value and identifies if it falls outside the specified range.
 - Select the check-box to enable the Data Length check.
 - Set the warning level to **Severity, Warning** or **Information**.
 - Enter the Minimum and maximum values for validation.
 - Click **Edit** to add specific filter expressions, as additional conditions.
- **Duplicate Check** - Duplicate Check can be used when a combination of column is unique and identifies all the duplicate data of the base table in terms of the columns selected for the duplicate check.
 - Select the check-box to enable the Duplicate Check.
 - Set the warning level to **Severity, Warning** or **Information**.
 - Click **Edit** to add specific filter expressions, as additional conditions.
 - Click **Edit** and select the required column to be added to the **Column List**, for duplicate check validation.

- **Custom Check/Business Check**- Custom Check/Business Check is a valid SQL query to identify the data with the query specified as the Custom/business SQL. You can define the SQL, but the Select clause of the query has to follow the order as specified in the template of the Custom Check panel.
Sample Template : "SELECT 'N_COUNTRY_SKEY' PKNAMES, N_COUNTRY_SKEY PK1, null PK2, null PK3, null PK4, null PK5, null PK6, null PK7, null PK8, V_COUNTRY_DESC ERRORCOL FROM DIM_COUNTRY WHERE N_COUNTRY_SKEY >50"
 - Select the check-box to enable the Custom Check.
 - Set the warning level to **Severity, Warning or Information**.
 - Enter the SQL Query to perform the custom check.
- **Column Reference/Specific Value Check** - Column Reference / Specific Value Check compares the base column data with another column of the base table or with a specified direct value using the list of pre-defined operators.
 - Select the check-box to enable the Column Reference check.
 - Set the warning level to **Severity, Warning or Information**. Column reference check can be enabled only if the base column has date or number value.
 - Select the **Mathematical Operator** from the drop-down list.
 - Select the **Filter Type** as one of the following:
 - * Select **Specific Value** and specify the Value. You can specify numeric, decimal, and negative values for number Data type.
 - * Select **Another Column** and select Column Name from the drop-down list.
 - Click **Edit** to add specific filter expressions, as additional conditions.
 - Select the **Assignment** option. The Assignment option is enabled only if Warning/Information is selected as the Warning level.
 - * Select the Assignment Type from the drop-down list. For more information, see [Assignment Types](#).
 - * Specify the **Assignment Value**.
 - * Select the **Message Severity** as 1 or 2 from the drop-down list.
 - * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **List of Value** - List of Value Check verifies the values where a dimension / master table is not present. This check identifies if the base column data is not matching with any value or code specified in a list of values.
 - Select the check-box to enable the List of Value check.
 - Set the warning level to **Severity, Warning or Information**.
 - Select **Input Values** and specify the List of Values. You can specify numeric or String values.
 - Click **Edit** to add specific filter expressions, as additional conditions.
 - Select the **Assignment** option. The Assignment option is enabled only if Warning/Information is selected as the Warning level.

- * Select the Assignment Type from the drop-down list. For more information, see [Assignment Types](#).
 - * Specify the **Assignment Value**.
 - * Select the **Message Severity** as 1 or 2 from the drop-down list.
 - * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Referential Integrity Check** - Referential Integrity Check identifies all base column data which has not been referenced by the selected column of the referenced table. Here, the reference table and columns are user specified.
 - Select the check-box to enable the Referential Integrity Check.
 - Set the warning level to **Severity**, **Warning** or **Information**. Column reference check can be enabled only if the base column has date or number value.
 - Select the **Table** (Referential Integrity Check dimension table) from the drop-down list. The base table selected under the Select grid is excluded from the drop-down list.
 - Select the Column from the drop-down list. The list displays those columns that have the same Data Type as that of the Base Column selected under Select grid.
 - Select the **Is Composite Key** check-box if the base column is part of a Composite Key.
 - Click **Edit** to add specific filter expressions, as additional conditions.

4.5.3.1.2 Multi Column Data Check Definitions

Multi Column Data Check definitions help in data quality checks and correction of one or more columns of a single table, selected during Rule creation.

4.5.3.1.3 Assignment Types

To populate the Assignment Type details, select any of the below Assignment Type option from the dropdown list and do the following:

- **No Assignment** - This assignment is selected by default and does not have any target column update, but the message details are pushed.
- **Direct Value** - Enter the **Assigned Value**. You can specify number, date or string values, as required.
- **Another Column** - Select the required Column as **Assigned Value** from the drop-down list.
- **Expression** - Specify the required expression in the Specify Expression Page. For more information, refer to [Creating Expressions](#).

4.5.3.2 Creating Expressions

You can define an expression in the Expression Builder to combine two selected tables.

The expression builder includes the following sections:

- **Entities** - consists of the Entities folder with the list of tables that you selected from the Entity Groups folder. Double-click the Entities folder to view the selected dimension tables (Product and Segment tables).
- **Functions** – The 2 types of functions are,
 - **Database Functions** - consists of functions that are specific to databases.
 - **User Defined Functions** - use these functions along with Operators to specify the join condition.
- **Operators** - Consists of the function operators categorized into folders. The various types of operators are,
 - **Arithmetic** - +, -, %, * and /
 - **Comparison** - '=', '!=', '< >', '>', '<', '>=', '<=', 'IN', 'NOT IN', 'ANY', 'BETWEEN', 'LIKE', 'IS NULL', and 'IS NOT NULL'.
 - **Logical** - 'NOT', 'AND' and 'OR'
 - **Set** - UNION, UNION ALL, INTERSECT and MINUS
 - **Other** - The Other operators are 'PRIOR', '(+)', '(' and ')'

To specify the join condition:

1. Select the **Entity** of the fact table to which you want join the dimension entities.
2. Select a **Function** depending on the database type.
3. Select the **Operator** you want to use for the join condition.
4. Select the **Second Entity** from the Entities pane that you want to join with the first entity. You can also select more than one table and link to the fact table.

The defined expression is displayed in the Expression pane. Click **Reset** to reset the values.

5. Click **OK**.

The defined expression is validated as per the selected table and entity definition and on successful validation, it is added to the DQ Rule.

4.5.3.3 DQ Rules Summary

The Data Quality Rule Summary page contains the list of user-defined Data Quality Rules with details such as Name, Status, Folder, Is Executed, Version, Is Grouped, Check Type and Base table.

Refer to the following procedure to view DQ Rules Summary and the relevant details:

- Click **Data Quality Rules**, to access the Data Quality Rules Summary.

The Data Quality Rules Summary page with the following details is displayed.

- **Name** - The Unique Identifier Name of the Data Quality Rule.
- **Status** - The Approval status of the specific rule.
 - **Approval** - The Rule is approved and ready for execution. The approved rules can be grouped further for execution.
 - **Pending for Approval** - The rule requires approval and can be executed only after approval.

- **Draft** - A defined rule is set to **Draft** status until it is submitted for approval by the creator.
- **Rejected** - The rejected rules are sent back to the creator with the Approver comments.
- **Folder** - The folder associated with the rule.
- **Version** - The current active version of the rule.
When a new definition is created, it will be saved as version 1 and once it is authorized, it will be in Active status. After you modify any DQ Rule and save, it will be saved with version as highest available version +1. For example, if you modify a DQ Rule of version 2 and the highest version available is 4, after you save the definition, its version becomes 5. Only the latest version will be in Active status.
- **Check Type** - Select one of the following check types:
 - **Single Column Check** - define conditions based on individual checks on a single column. For more information, refer to [Single Column Data Check Definitions](#).
 - **Multi Column Check** - define conditions based on multiple columns of a single base table. These checks are not pre-defined and can be specified (user-defined) as required. For more information, refer to [Multi Column Data Check Definitions](#).
- **Base Table** - The base table within the environment, associated with the rule.
- **Created By** - The login name of the user who created the rule.
- **Created Date** - The rule creation date.
- **Action** - Click **Action**, to view, approve, reject edit, or delete the rule.

To search for a particular rule, enter the first few letters of the rule name in the Search column.

You can also sort the rule summary based on the Status, Folder name, check type, record status, Rule name and Select table.

To sort the Summary based on the Status, click **Status** in the Search bar, and select the required status.

4.5.3.4 Creating DQ Rule

You can create a Data Quality Rule Definition by specifying the DQ Definition details along with the entity details and the type of data quality check to be performed on the selected base table. You can also define the required search conditions to query and correct the transformed data.

1. To create a DQ Rule, click **Add Rule** on the DQ Rules Summary.

The Data Quality Rules page with DQ Group Details and DQ Rules Mapping tab is displayed.

2. Click **Start**, to enter the following basic details for the new DQ Rule.

- **Name** - The unique identifier name for the rule.
The name should start with alphabet and should not be more than 50 characters.

Blank space (), Underscore (_) and **Hyphen (-)** are allowed as special characters.

- **Description** - The description/details for the rule.
The description should start with alphabet and should not be more than 250 characters.
- **Folder** - Select the folder present in the current environment, to be associated with the rule.
- **Check Type** - Select one of the following check types for the rule.
 - **Single Column** - Select Single column to perform data quality check only on one column. For more information, refer to [Single Column Data Check Definitions](#).
 - **Multi-Column** - Select Multi-Column to perform data quality check on more than one column in a single table. For more information, refer to [Multi Column Data Check Definitions](#).
- **Access-type** - Select one of the following Access types.
 - **Read-only** - only the creator can edit the rule. Other users can only view the rule.
 - **Read-Write** - all users can view, modify any fields (including Access Type), and also delete the DQ Rule.
- Check **Auto DQ Group Required** option, to create a new DQ group, for this Rule. The new group will be associated only with the created DQ rule. The group name will be set as <DQ_Rule_Name_group>, and this group will have only Read-only access.
- Check **Auto Assignment**, to execute the rule, and also perform the assignment.

 **Note:**

The Auto Assignment is applicable only to the Auto DQ Group.

- Click **Continue** to proceed with the Entity Selection page.
3. Enter/select the following entities:
 - **Table** - Select the basic table on which the rule is executed.
 - If the rule is a single-column rule, select the **Base Column**, to be included for the rule execution. Base column will not be present for Multi-Column rule. You can search table and columns based on their physical and logical names, using the toggle button.
 - Select the **Identifier Columns** required to execute the rule. The default primary key fields present in the selected entity table are automatically added as identifier columns. They cannot be deleted.
 - To select multiple columns, click **Edit**.
 - Select the required columns from the **Available Members** pane and move them to **Selected Members** pane.
 - Click **Edit**, to include the filter expression. The **Specify Expression** page is displayed. For more information refer to [Creating Expressions](#).
 - Select the entities to be included in the filter expression and click **OK**.
 4. Click **Continue**, to proceed with the **Data Check Definitions**.
 5. Select the required Data Check Definitions, to validate the data.

Enter/select the required information for each Data Check Definition. For more information about each Data check type, refer to [Data Check Definitions](#).

6. Click **Submit**, to submit the new DQ Rule for approval.

The DQ Rule is saved with the status **Pending for Approval**, in the Rules Summary and a confirmation message is displayed.

While creating the DQ Rule, you can also click **Save As Draft**, to save the new incomplete DQ Rule at any point of time and resume the process at a later point. A confirmation message is displayed, after the draft is saved successfully.

The new Rule added to the DQ Rules Summary, and is set to **Draft** Status in the DQ Rules Summary.

 **Note:**

If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-approved.

4.5.3.5 Editing DQ Rules

You can update all the definition details except for the Definition Name, Check Type, Table, and the Base Column selected.

You can only edit the DQ rules that are set to **Draft**, **Approved** and **Rejected** status. You cannot edit the rules that are set to **Pending for Approval** status.

To edit the required Data Quality Rule definition details:

1. Click **Action** adjacent to the DQ Rule to be modified.
2. Click **Edit**, to modify the DQ Rule.
3. Click **Start** to edit the **DQ Rule Details**.
4. Modify the description and click **Continue** to proceed with editing the Entity Selection details.

You can also click **Save as Draft**, to save the changes and proceed with Submission later.

5. Modify the Filter expression and click **Continue** to proceed to **Data Check Definitions** page.
6. Add/remove the data checks required during rule execution and click **Submit**, to submit the modified rule for approval.

The rule is updated and added to the DQ Rules Summary. A confirmation message is displayed.

The Rule is set to **Pending for Approval** state.

 **Note:**

If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-approved.

4.5.3.6 Approving/Rejecting a Data Quality Rule

An authorizer can approve a user-defined Data Quality Rule definition or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

 **Note:**

You can only approve those DQ Rules that are set to **Pending for Approval** status. If the user has **DQAUTOAUTH** Role assigned, the DQ rule will be auto-approved.

To view a Data Quality rule, and approve/ reject Data Quality rule:

1. Click **Action** adjacent to the DQ Rule to be approved/rejected.
2. Click **Preview**, to view the DQ Rule.
All the details pertaining to the selected rule is displayed.
3. Click **Approve/Reject**, after reviewing the rule.
4. Enter valid reason for approval or rejection.
5. Click **Approve/Reject**.

The DQ Rule is approved/rejected and a confirmation message is displayed.

4.5.3.6.1 Bulk Approving/Rejecting Data Quality Rules

An authorizer can approve multiple user-defined Data Quality Rule definitions or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

 **Note:**

You can only approve those DQ Rules that are set to **Pending for Approval** status. If the user has **DQAUTOAUTH** Role assigned, the DQ rule will be auto-approved.

 **Note:**

When you initiate bulk approval/rejection, all the selected rules are approved/ rejected based on the user input. If you want to stop the approval/rejection of one specific rule, cancel the whole process and restart again.

To view several Data Quality rules, and approve/ reject them:

1. Filter Rule Summary, to view only the rules with **Pending For Approval** Status.
All the rules that need be approved/rejected are displayed.

2. Select the rules for approval/rejection.

You can select all the rules displayed in a page, by clicking the check box next to the **Name** header. To select all the rules in the Summary, with **Pending** Status, select **Click All Rules in Summary** link.

3. Click **View Details**, to view the Rule details of all the selected rules.

All the rule details, and base table for the selected rules are displayed. Review the details and add appropriate comments and click **OK**.

You can also **Proceed without Viewing** the details.

4. Click **Approve/Reject**.

The selected DQ Rules are approved/rejected and a confirmation message is displayed.

4.5.3.7 Deleting a Data Quality Rule

You can remove the Data Quality Rule definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).

To delete a DQ Rule:

1. Click **Action** adjacent to the DQ Rule to be approved/rejected.
2. Click **Delete**, to delete the DQ Rule.

The selected rule is set to **Pending for Approval** status and is deleted after approval.

Note:

If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-deleted.

4.5.3.8 Purging a Data Quality Rule

You can delete a Data Quality Rule definition permanently from the setup.

You can purge only those DQ Rules that are deleted after approval.

To delete a DQ Rule:

1. Click **Action** adjacent to the deleted DQ Rule.
2. Click **Purge**, to delete the DQ Rule from the setup.

The selected rule is deleted permanently after confirmation.

4.5.4 Data Quality Groups

Data Quality Groups facilitates you to logically group the defined DQ Definitions .

DQ Group Definitions can be executed through Scheduler Services. For more information, refer to [Adding a DQ Check Task](#) .

4.5.4.1 DQ Groups Summary

The Data Quality Groups Summary displays the list of user-defined Data Quality Groups with the other details such as Name, Folder, Creation Date, Created By, Last Modification Date, Last Modified By, Last Run Date, and Last Run Status. .

You can create and execute DQ Group definitions and view, modify, copy, refresh, or delete DQ Group definitions within the Data Quality Groups Summary.

- Click **Data Quality Groups**, to access the Data Quality Groups Summary.

The Data Quality Rules Summary with the following details is displayed.

- **Name** - The Unique Identifier Name of the Data Quality Group.
- **Status** - The Approval status of the specific group.
 - **Approval** - The group is approved and ready for execution.
 - **Pending for Approval** - The group requires approval and can be executed only after approval.
 - **Draft** - A defined group is set to **Draft** status until it is submitted for approval by the creator.
 - **Rejected** - The rejected rules are sent back to the user with the Approver comments.
- **Version** - The current active version of the group.
When a new definition is created, it will be saved as version 1 and once it is authorized, it will be in Active status. After you modify any DQ Group and save, it will be saved with version as highest available version +1. For example, if you modify a DQ Group of version 2 and the highest version available is 4, after you save the definition, its version becomes 5. Only the latest version will be in **Active** status.
- **Folder** - The folder associated with the group.
- **Created Date** - The group creation date.
- **Created By** - The login name of the user who created the Group.
- **Last Run Date** - The last date on which the DQ Group was executed.
- **Last Run Status** - The last execution state if the specific DQ Group.
 - **Success** - The last execution of the selected DQ Group was completed successfully.
 - **Failed** - The last execution did not complete.
 - **NA** - The DQ Group was not executed.
- **Action** - Click **Action**, to view, approve, reject edit, or delete the group.

To search for a particular group, enter the first few letters of the group name in the Search column.

You can also sort the groups summary based on the Status, Folder name, record status and group name.

4.5.4.2 Creating DQ Groups

You can create a DQ Group definition by defining the DQ Definition details and mapping the required DQ Rules which are authorized and approved within the system.

The DQ Group definition is flexible and purpose driven. Groups can be created for different subject areas such as Credit and Market or it can be application specific like Basel II, Economic capital.

1. To create a DQ Group, click **Add Group** in the DQ Group Summary.

The Data Quality Group page with DQ group Details and DQ Rules Mapping tab is displayed.

2. Click **Start**, to enter the following basic details for the new DQ Group.

- **Name** - The unique identifier name for the groups.
The name should start with alphabet and should not be more than 50 characters.
Blank space (), Underscore (_) and Hyphen (-) are allowed as special characters.
- **Folder** - Select the folder present in the current environment, to be associated with the group.
- **Description** - The description/details for the group.
The description should start with alphabet and should not be more than 250 characters.
- Check **Auto Assignment**, to execute the group, and also perform the assignment.

3. Click **Continue** to proceed with the Data Rules Mapping page.

The list of available rules are displayed in the Data Rules Mapping page.

4. Select the Rules to be added to the new DQ Group.

5. Click **Submit**, to submit the new DQ Group for approval.

The DQ Groups is saved with the status **Pending for Approval**, in the Group Summary and a confirmation message is displayed.

While creating the DQ Group, you can also click **Save As Draft**, to save the new incomplete DQ Group at any point of time and resume the process at a later point. A confirmation message is displayed, after the draft is saved successfully.

The new Group added to the DQ Groups Summary, and is set to **Draft** Status in the DQ Groups Summary.

 **Note:**

If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediately after creating it.

4.5.4.3 Editing DQ Groups

You can modify all the details of a saved Data Quality Group Definition, except the Group name.

To edit the required Data Quality Group Definition details:

1. Click **Action** adjacent to the DQ Group to be modified.
2. Click **Edit**, to modify the DQ Group.
3. Click **Start** to edit the **DQ Group Details**.
4. (Optional). Modify the description and click **Continue** to proceed with adding/deleting the rules associated with the DQ Group.
5. Add/remove the DQ Rules associated with the DQ Groups and click **Submit**, to submit the modified group for approval.

The group is updated and added to the DQ Groups Summary. A confirmation message is displayed.

The Group is set to **Pending for Approval** state.

 **Note:**

If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediately after creating it.

4.5.4.4 Approving/Rejecting a Data Quality Group

An authorizer can approve a user-defined Data Quality Group definition for further execution or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

 **Note:**

You can only approve those DQ Rules that are set to **Pending for Approval** status. If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediately after creating it.

To view a Data Quality Group, and approve/ reject it:

1. Click **Action** adjacent to the DQ Groups to be approved/rejected.
2. Click **Preview**, to view the DQ Groups.
All the details pertaining to the selected rule is displayed.
3. Click **Approve/Reject**, after reviewing the groups.
4. Enter valid reason for approval or rejection.
5. Click **Approve/Reject**.
6. The DQ Group is approved/rejected and a confirmation message is displayed.

4.5.4.4.1 Bulk Approving/Rejecting Data Quality Groups

An authorizer can approve multiple user-defined Data Quality Groups or reject an inappropriate DQ Groups listed within the Data Quality Group Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

 **Note:**

You can only approve those DQ Groups that are set to **Pending for Approval** status.
If the user has **DQAUTOAUTH** Role assigned, the DQ group will be auto-approved.

 **Note:**

When you initiate bulk approval/rejection, all the selected groups are approved/rejected based on the user input. If you want to stop the approval/rejection of one specific group, cancel the whole process and restart again.

To view several Data Quality groups, and approve/ reject them:

1. Filter Group Summary, to view only the groups with **Pending For Approval** Status.
All the groups that need be approved/rejected are displayed.
2. Select the groups for approval/rejection.
You can select all the groups displayed in a page, by clicking the check box next to the **Name** header. To select all the groups in the Summary, with **Pending** Status, select **Click All Groups in Summary** link.
3. Click **View Details**, to view the Group details of all the selected Groups.
All the group details, and base table for the selected groups are displayed. Review the details and add appropriate comments and click **OK**.
You can also **Proceed without Viewing** the details.
4. Click **Approve/Reject**.
The selected DQ groups are approved/rejected and a confirmation message is displayed.

4.5.4.5 Deleting a Data Quality Group

You can remove the Data Quality Group definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).

To delete a DQ Group:

1. Click **Action** adjacent to the DQ Group.

2. Click **Delete**, to delete the DQ Group.
The selected group is deleted after confirmation.

 **Note:**

If the user has **DQAUTOAUTH** Role assigned, the Group will be auto-deleted.

4.5.4.6 Purging a Data Quality Group

You can delete a Data Quality Group definition permanently from the setup.

To delete a DQ Group:

1. Click **Action** adjacent to the deleted DQ Group.
2. Click **Purge**, to delete the DQ Group from the setup.

The selected Group is is deleted permanently after confirmation.

4.5.5 Adding a DQ Check Task

You can add a new DQ check Task in the Scheduler Services and add the task to a Batch Definition, for execution.

For more information about adding a task to the Batch and about Scheduler Services, refer to [Scheduler Services](#) documentation.

To add new task using the Define Tasks page in Scheduler Services, perform the following steps:

1. Click **Define Tasks** from the Header panel.
2. Select the **Batch**, to add new task.
3. Click **Add**, to add a new DQ task in the **Create Task** page.
 - Complete all the generic details in the Create Task Page. For more information refer to [Adding a Task](#).
 - Select the **Task Type** as DQ Task.
 - Select the **Group** to perform the DQ check.
 - Enter the **Threshold** percentage for the maximum number of errors permissible during the DQ check. By default this value is set to 100.
 - Set **Fail If Threshold Breaches** to **TRUE**, to abort the job and not include the failure records in the DQ table, when the DQ check errors are more than the set threshold value.

If the **Fail If Threshold Breaches** is set to **FALSE**, the job will proceed further and the failure records will be inserted in the DQ Result tables.
 - Enter the **Additional Parameters** required for the Run DQ Rule filtering criteria for execution in the pattern: Key#Data type#Value; Key#Data type#Value; and so on.
4. Click **Save** to add the new DQ task to the selected Batch.

4.5.6 Execution Summary

The Execution Summary provides the consolidated list of executed DQ batches, for the last 30 days .

You can also view the consolidated details related to the total number of records analysed, total number of passed records and the pass percentage and total number of error records and their percentage. The number of error records categorized based on the Data checks is also displayed as a pie chart.

To view the Execution Summary Details:

- Click **Execution Summary**, to access the consolidated Execution Summary.

The Execution Summary page with the following details is displayed.

- **Batch ID** - The Unique Identifier Name of the particular Batch in which the DQ group is added for Data Quality Check.
- **Process Instance ID** - The unique identifier of the execution process.
- **DQ Group** - The DQ group associated with the Batch for Data Quality check.
- **DQ Group Desc** - The DQ group description.
- **FICMIS Date** - FICMIS Date refers to the date with which the data for the execution would be filtered. In case the specified MIS date is not present in the target table, execution completes with the message **No Records found**.
- **Execution Date** - The last execution date of the Batch.
- **Scanned Records** - The total number of records scanned for Data Quality check.
- **Erroneous Records** - The total number of records that failed the Data Quality check.
- **Execution Status** - The DQ Batch execution status.
- **Assignment Status** - The current Assignment status of the DQ Batch.
- **Action** - Click **Action**, to view the Run Details of the DQ Batch.

To search for a particular Batch, enter the first few letters of the Batch name in the Search column.

You can also sort the Execution summary based on the Execution Date, FICMIS Date, Execution status and Group Name, Assignment Status, Batch Id and Process Instance ID.

4.5.6.1 Viewing Run Details

Execution Details page provides the information related to the Data Quality Rule and the Data Quality Check executed during a Batch Execution.

You can also view the consolidated details related to the total number of records analysed, total number of passed records and the pass percentage and total number of error records and their percentage.

The number of error records categorized based on the Data checks is also displayed as a pie chart.

1. Click **Action** adjacent to the specific Batch.

- Click **View Run Details**, to access the Run details of the particular Batch execution. The Run details of the selected Batch is displayed with the following information.
 - Rule** - The Rule name of the executed DQ Rule.
 - Entity** - The Table entity associated with the Rule.
 - Column** - The column associated for Data Quality check
 - Check Type** - The type of check performed on the Data.
 - Consolidated Records Scanned** - The total number of records scanned.
 - Error Records** - The total number of erroneous records.
 - Assignment Type** - The assignment type set during the DQ rule creation.
- Generate and download the report, and perform assignment action based on the report.

 **Note:**

To perform assignment, you must have the **DQ_EXE_ASSIGN** role assigned.

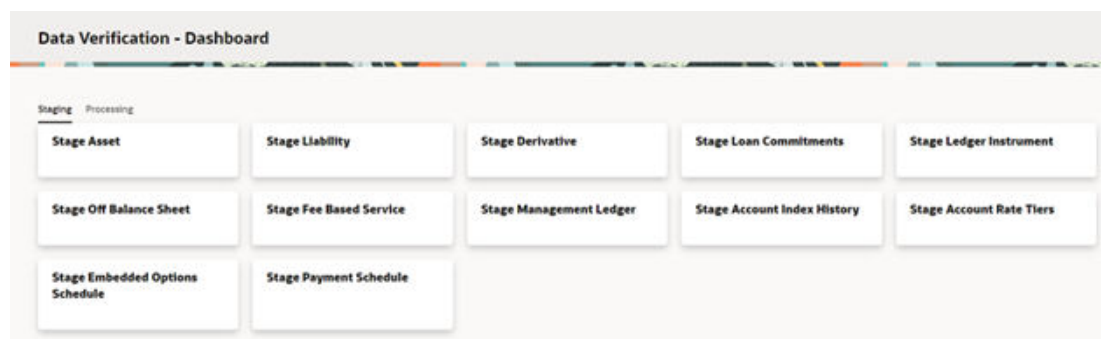
After the assignment process is completed, the Assignment status of the particular DQ Batch is set to **Success**.

4.6 Data Verification

The Data Verification UI helps you to verify the data that is loaded from the source systems to the Cloud Service's stage and processing tables, make minor corrections/adjustment to the data, and add new data directly into the tables. This UI allows you to add one record at a time and is not recommended for high volume additions as entering data is a lengthy process.

To open the Data Verification screen, from the LHS menu, select **Data Management Tool**, and then select **Data Verification**.

Figure 4-19 Data Verification Dashboard



This screen displays two tabs namely Staging and Processing. The Staging tab displays the tables that are in the staging level where you can select a table, see the data, carry out corrections, or add new data. The Processing tab displays the tables that are at the processing level and you can do all the actions similar to Staging tables.

When you select a table, a new window is displayed with a grid where you can see the selected columns.

Figure 4-20 Data Verification – Stage Asset (sample Staging table)

| Account Number | Acct Date | Account Type Code | Account And Health Insurance Company Code | Current Pre Balance | Investment Type Code | Currency Code | Maturity Date | Organization |
|----------------|------------|-------------------|---|---------------------|----------------------|---------------|---------------|--------------|
| 909090 | 11/09/2025 | Fixed Rate | | 10000.000 | Annuity Contracts | US Dollar | 05/31/... | Default M |

Users and Roles

The following roles and functions are required to use the Data Verification UI, edits the data, and add data to the Stage and Processing tables.

Table 4-23 Roles and Role Names

| Role | Role Name |
|-------------|---------------------------|
| RLGADMACC | Data Management Access |
| RLGADMWRITE | Data Management Write |
| RLGADMREAD | Data Management Read Only |
| RLGADMPASRN | Data Management PA Access |

The access to the users can be restricted up to table level because all the users need not have access to all the tables.

Add a New Record

To add a new record to a selected stage/processing table, click **Add Row**. Enter/populate the mandatory and the relevant columns and then click Save. When you click **Add Row**, you must enter the mandatory key columns first, and then click ellipsis (...) icon. After this you can click the ellipsis (...) icon to open the Edit Table window, fill the relevant details and then save the details.

Delete a Row

To delete a row, select the row and click the hamburger icon to collapse the menu where you can select **Delete Row**.

Duplicate a Row

You can select a row and click **Duplicate Row** from the hamburger menu. This creates duplicate row with the same values in the Data Verification - <Table> screen.

Edit a Record

To edit a record, select a row from the Data Verification window. There are two ways in which you can edit the columns from the table.

- Select a row from the Data Verification grid and click the **Edit** button. This enables the columns that are exposed. You can double-click the entry to edit. Editing the key columns in the table is restricted.
- Select a row from the Data Verification grid and click the ellipsis (...) icon, and then click **Edit**. This opens the Edit Table window. This window displays all the columns from the table. The columns are categorized based on their nature and displayed in different tabs. You can select the relevant columns and edit. After you update the relevant details, click **Save**.

Figure 4-21 Sample Edit Table

The screenshot shows the 'Edit Stage Asset' window with the following fields and values:

| General Attributes | Balance | Cost Expense Fee | Dimension | Payment Attributes | Rate and Repricing | Transfer Price and Add-on | Others |
|---|---------|------------------|-----------|--------------------|--------------------|--|--------|
| As Of Date 11/09/2025 | | | | | | Account Number 909090 | |
| Account Open Date | | | | | | Account Close Date | |
| Common Chart Of Account Code | | | | | | General Ledger Account Code | |
| Instrument Type Code Annuity Contracts | | | | | | Currency Code US Dollar | |
| Issue Date | | | | | | Legal Entity Code | |
| Maturity Date 03/31/2026 | | | | | | Organization Unit Code Default Member | |
| Origination Date 11/09/2025 | | | | | | Product Code | |
| Commit Start Date | | | | | | Commit Mat Date | |
| Data File Specifications Id | | | | | | Input File Name | |

Buttons at the bottom: Cancel, Delete, Save.

Actions Menu

The Actions menu displays a list of actions that you can perform on a selected record. Few actions are explained below:

- **Columns:** This displays the Columns window where you reorder the displayed columns, remove from display columns that you don't want to be displayed. If you don't want to display a particular column, select the check-box against the column name, and then click Save.
- **Filter:** This helps you to set a criterion to search a particular record. You can also set a filter by selecting the Search button on the top-left-corner of the grid. This collapses list of all the columns in the selected table. You can select a column and filter the records based on it.
- **Data:** Displays sorting options.
- **Format:** From here, you can set the number of rows per page to be displayed.
- **Report:** This option allows you to generate and save a report.

View History

This option displays the changes carried out on a selected record. To see the history on a record, select the record, click the ellipsis (...) icon, and then select View History. This

displays the history of updates on the selected record with details such as Column Name, New Value, Old Value, Updated Date, and Updated By.

Figure 4-22 History at Record Level

| Column Name | New Value | Old Value | Updated Date (T) | Updated By |
|-----------------|--------------|--------------|---------------------|------------|
| AVG_BOOK_BAL | 486509.1 | 486509.198 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| COMMON_COA_CODE | -1 | 100 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| AVG_BOOK_BAL | 486509.198 | 486509.1 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| COMMON_COA_CODE | 100 | -1 | 05-DEC-2023 04:27AM | FTP_QAUZER |
| Currency Code | Albanian Lek | Indian Rupee | 23-NOV-2023 12:50PM | FTP_QAUZER |
| CUR_PAR_BAL | 200200 | 100100 | 23-NOV-2023 12:50PM | FTP_QAUZER |
| CUR_PAR_BAL | 100100 | 486509.1 | 23-NOV-2023 07:54AM | FTP_QAUZER |
| Currency Code | Indian Rupee | US Dollar | 23-NOV-2023 07:54AM | FTP_QAUZER |

To navigate back to the Dashboard or the selected table's Data Verification screen, you can click on the O logo at the right-bottom corner, and then select Dashboard on the next screen. You can also type the table name for a quick search.

To see the history of all the records on a particular table, select the record and click the History button on the top right-hand corner of the screen. This displays all the updates done on the all the records in the table. A sample screen of the history on the table is as follows:

Figure 4-23 History at Table Level

| Column Name | New Value | Old Value | Updated Date (T) | Updated By |
|--|-------------------|--------------|---------------------|------------|
| Accident And Health Insurance Company Id | NA | NULL | 05-DEC-2023 04:31AM | FTP_QAUZER |
| AVG_BOOK_BAL | 486509.1 | 486509.198 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| COMMON_COA_CODE | -1 | 100 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| AVG_BOOK_BAL | 486509.198 | 486509.1 | 05-DEC-2023 04:29AM | FTP_QAUZER |
| COMMON_COA_CODE | 100 | -1 | 05-DEC-2023 04:27AM | FTP_QAUZER |
| Currency Code | Indian Rupee | US Dollar | 23-NOV-2023 12:52PM | FTP_QAUZER |
| CUR_PAR_BAL | 10000.1 | 486509.1 | 23-NOV-2023 12:52PM | FTP_QAUZER |
| Currency Code | Albanian Lek | Indian Rupee | 23-NOV-2023 12:50PM | FTP_QAUZER |
| CUR_PAR_BAL | 200200 | 100100 | 23-NOV-2023 12:50PM | FTP_QAUZER |
| CUR_PAR_BAL | 999991111111111 | 9999999999 | 23-NOV-2023 11:11AM | FTP_QAUZER |
| CUR_PAR_BAL | 100100 | 486509.1 | 23-NOV-2023 07:54AM | FTP_QAUZER |
| Currency Code | Indian Rupee | US Dollar | 23-NOV-2023 07:54AM | FTP_QAUZER |
| INT_PMT_FREQ | 1 | NULL | 23-NOV-2023 05:24AM | FTP_QAUZER |
| INT_PMT_FREQ | NULL | 1 | 23-NOV-2023 05:23AM | FTP_QAUZER |
| INPUT_FILE_NAME | Test_union_allLib | NULL | 23-NOV-2023 05:23AM | FTP_QAUZER |
| DATA_FILE_SPEC_ID | 9000003 | NULL | 23-NOV-2023 05:23AM | FTP_QAUZER |
| CUR_PAR_BAL | 140000 | NULL | 23-NOV-2023 05:20AM | FTP_QAUZER |
| CUR_PAR_BAL | NULL | 140000 | 23-NOV-2023 05:19AM | FTP_QAUZER |

4.7 Cash Flow Edits

In this section, you can find the details about all Cash Flow Edits.

- **Configure Cash Flow Edit Rules:** The Cash Flow Edits Configuration window allows you to configure a new Cash Flow Edits Rule and this rule configuration can be used and executed using Cash Flow Edits Process.
- **Cash Flow Edits Process:** The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.

4.7.1 Configure Cash Flow Edits Rule

The Cash Flow Edits Configuration Window allows you to configure a new Cash Flow Edits Rule. Later, this rule configuration can be used and executed using Cash Flow Edits Process UI. 140 rules are seeded as part of OFSA Cloud Service.

Cash Flow Edits Rule Summary

This page is the gateway to all Cash Flow Edits Rules and related functionality. You can navigate to other pages relating to Cash Flow Edits Rules from this point.

Figure 4-24 Cash Flow Edits Summary

| Rule Id | Rule Name | Group | Condition Columns | Last Modified By | Last Modified Date | Status | Is Editable | Is User Defined | Action |
|---------|--|--------|---|------------------|---------------------|--------|-------------|-----------------|--------|
| 1 | Original Term > Amortization Term | Others | AMRT_TYPE_CD#AMRT_TERM#AMRT_TERM_MULT#ORG_TERM#ORG_TE | SYSADMIN | 09-05-2022 05:24:01 | ACTIVE | NO | NO | ... |
| 2 | Current Par Balance = Original Par Balance | Others | ORIGINATION_DATE#AS_OF_DATE#CUR_PAR_BAL#ORG_PAR_BAL | SYSADMIN | 09-05-2022 05:24:01 | ACTIVE | NO | NO | ... |
| 3 | Deferred Current Balance = Deferred Original Balance | Others | ORIGINATION_DATE#AS_OF_DATE#DEFERRED_CUR_BAL#DEFERRED_ORG_BAL | SYSADMIN | 09-05-2022 05:24:01 | ACTIVE | NO | NO | ... |
| 4 | Current Gross Rate < 0 | Others | CUR_GROSS_RATE | SYSADMIN | 09-05-2022 05:24:01 | ACTIVE | NO | NO | ... |
| 5 | Current Net Rate < 0 | Others | CUR_NET_RATE | SYSADMIN | 09-05-2022 05:24:01 | ACTIVE | NO | NO | ... |

Search Cash Flow Edits Rule

Prerequisites: Predefined Cash Flow Edits Rule

To search for a Cash Flow Edits Rule, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Edits Rules that meet the search criteria.

Or

The other method to search a Cash Flow Edits Rule is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Cash Flow Edits Rule and click **Search**.

The Cash Flow Edits Rule summary displays the following information:

Add: Click **Add** icon at the top right of the summary page to build a new Cash Flow Edits Rule.

Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- **Rule Id:** The code of Cash Flow Edits Rule.
- **Rule Name:** The Cash Flow Edits Rule's short name.
- **Group:** The Group of Cash Flow Edits Rule.
- **Condition Columns:** The Columns on which of Cash Flow Edits Rule is made.
- **Last Modified By:** The user who last modified the Cash Flow Edits Rule.
- **Last Modified Date:** The Date and Time when the Cash Flow Edits Rule was last modified.
- **Status:** The Status of Cash Flow Edits Rule.
- **Is Editable:** The editable status of Cash Flow Edits Rule.
- **Is User Defined:** The user defined status of Cash Flow Edits Rule.
- **Action:** Click this icon to view a list of actions that you can perform on the Cash Flow Edits Rule.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Cash Flow Edits Rules. To edit a rule, you must have Read/Write privilege.

 **Note:**

You cannot edit out-of-box seeded rules.

- Save As: You can reuse a Cash Flow Edits Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- Delete: You can delete Cash Flow Edits Rules that you no longer require. Note that only Cash Flow Edits Rule owners and those with Read/Write privileges can delete Cash Flow Edits Rules. A Cash Flow Edits Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.

 **Note:**

You cannot edit out-of-box seeded rules.

- Dependency Check: You can perform a dependency check to know where a particular Cash Flow Edits Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Cash Flow Edits Rules that have dependencies. A report of all rules that utilize the selected Cash Flow Edits Rule is generated.

 **Note:**

This is functionality will intended for a future release.

You must create and run Cash Flow Edits processes on your Instrument Table Data before you submit Cash Flow Engine based rules for processing.

Also See:

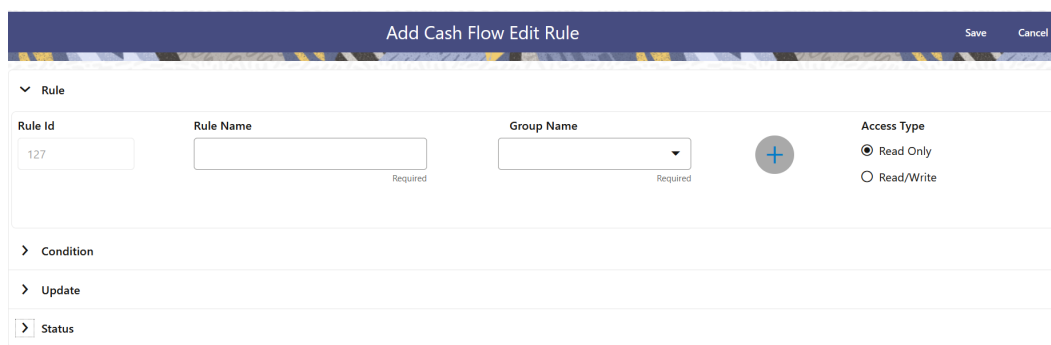
- [Create Cash Flow Edits Rule](#)
- [Cash Flow Edits Process Errors](#)

4.7.1.1 Create Cash Flow Edits Rule

To add a new Cash Flow Edits Rule, follow these steps:

1. Navigate to **Cash Flow Edits Summary** Page.
2. Click the **Add** icon. The **Add Cash Flow Edits Rule** Window is displayed.

Figure 4-25 Add Cash Flow Edits Rule



3. Enter the following details:

Table 4-24 List of fields used for Creating Cash Flow Edits Process

| Field | Description |
|-----------|---|
| Rule ID | Shows the ID of the Cash Flow Edits Rule. This is an auto generated numeric field. You cannot modify this. |
| Rule Name | Enter the name of the Cash Flow Edits Rule. This is an alphanumeric field. The maximum length of this field is 1000 characters. |

Table 4-24 (Cont.) List of fields used for Creating Cash Flow Edits Process

| Field | Description |
|----------------------|---|
| Group Name | <p>Select the Group Name from Group Name drop-down list. For example, Cash Flow. You can add new a Group and Sub Group using Add icon.</p> <p>Adding a Sub Group</p> <p>To add a Sub Group, follow these steps:</p> <ol style="list-style-type: none"> a. Click Add. The Add Group Window is displayed. b. Enter the following details: <ul style="list-style-type: none"> • Group Name: Name of new Group • Parent Group: Select Parent Group • Group Id is auto populated. <p>To add a new Group select the 'Praent Group' switch and enter Group Name.</p> <p>These added Group/Sub Group Names will be populated in Cash Flow Edits Details section of Cash Flow Edits Process window.</p> |
| Access Type | Select the Access Type as Read-Only or Read/Write. |
| Condition ID | This field shows the Condition ID. This is an auto generated numeric field. You cannot modify this. |
| Condition Columns | Select the Columns using which you want to define the error condition expression. |
| Condition Statement | <p>This field allows you to define the expression of a rule. You can define condition expression for selected Condition Columns (using the Condition Columns field).</p> <p>When you click the Condition Statement Field, the Expression Window is displayed. Define the condition and click Save.</p> |
| Condition Message | <p>Select the Condition message. You can add a new condition message using Add icon. For more information on Cash Flow Edits messages, see the Cash Flow Edits Execution section.</p> <p>To add a Condition Message, follow these steps:</p> <ol style="list-style-type: none"> a. Click Add icon. The Add Message Window is displayed. Enter the following details: <ul style="list-style-type: none"> • Message Type: Select as Error, Warning, or Information • Message Description: Enter the Message details. • Message ID is auto populated. b. Click Save. |
| Update Columns | Select the columns which you want to update if error condition is met |
| Default Value Column | Select the columns from which you want to update columns selected in Update Columns. |

Table 4-24 (Cont.) List of fields used for Creating Cash Flow Edits Process

| Field | Description |
|---------------|--|
| Default Value | Enter the values that you want to update the columns selected in Update Columns. |
| Update Order | If the same column is getting updated by more than one rule then the order in which each rule applies must be selected here. |
| Status | Set the status of the rule as Active or Inactive. |
| User Defined | This field shows the User Defined status as Yes or No. You cannot modify this. |
| Editable | Set the Editable status of rule as Yes or No. |

4. Click **Save**.

4.7.1.2 Cash Flow Edits Process Errors

 **Note:**

- Error: Engine does not process, however sometimes default value can get used for calculations.
- Warning: Engine may use the default value or given wrong data for calculation, results may be incorrect.
- Info: Does not impact any processing but results may not be as expected.

Table 4-25 List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|--|---|-------------|----------------|
| 1 | (AMRT_TY PE_CD <> 700 OR (amrt_type _cd = 700 AND amrt_term <> 0)) AND (CASE amrt_term_ mult WHEN 'Y' THEN amrt_term * 365 WHEN 'M' THEN amrt_term * 30.41667 ELSE amrt_term END) < (CASE org_term_m ult WHEN 'Y' THEN org_term * 365 WHEN 'M' THEN org_term * 30.41667 ELSE org_term END) THEN 'P' ELSE 'F' END | Amortizatio n term can only be equal to zero on Non- Amortizing instruments | AMRT_TER M = ORG_TER M and AMRT_TER M_MULT = ORG_TER M_MULT | Original Term > Amortizatio n Term | Warning | |
| 2 | (ORIGINATI ON_DATE < AS_OF_DA TE and CUR_PAR_ BAL is not NULL and ORG_PAR_ BAL is not NULL and CUR_PAR_ BAL = ORG_PAR_ BAL) | Instrument has originated in past but Current Par Balance and Original Par Balance are equal | | Current Par Balance = Original Par Balance | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|-----------------------------|---|-------------|----------------|
| 3 | (ORIGINATI ON_DATE < AS_OF_DA TE and DEFERRED _CUR_BAL is not NULL and DEFERRED _ORG_BAL is not NULL and DEFERRED _CUR_BAL = DEFERRED _ORG_BAL) | Instrument has originated in past but Deferred Current Balance and Deferred Original Balance are equal | | Deferred Current Balance = Deferred Original Balance | Warning | |
| 4 | (CUR_GRO SS_RATE is NULL or CUR_GRO SS_RATE < 0) | Current gross rate is negative | | Current Gross Rate < 0 | Info | |
| 5 | (CUR_NET _RATE is NULL or CUR_NET_ RATE < 0) | Current net rate is negative | | Current Net Rate < 0 | Info | |
| 6 | (ACCRUAL _BASIS_CD is NULL or ACCRUAL_ BASIS_CD <1 or ACCRUAL_ BASIS_CD >7) | Accrual basis code must be between 1 and 7 inclusively | ACCRUAL_ BASIS_CD = 3 | Invalid Accrual Basis | Warning | |
| 7 | (AMRT_TY PE_CD is NULL or AMRT_TYP E_CD not in (100, 400, 600, 700, 710, 800, 801, 802, 820, 840, 850, 10, 20)) | Amortizatio n type must be a valid OFSA code | AMRT_TYP E_CD = 700 | Invalid Amortizatio n Type | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|------------------------|---------------------------|-------------|----------------|
| 8 | (AMRT_TY PE_CD = 20 and (PMT_PATT ERN_CD is null or PMT_PATT ERN_CD <= 0)) | Amortization type is Payment Pattern but Payment Pattern Code is invalid | AMRT_TYP E_CD = 700 | Invalid Payment Pattern | Warning | |
| 9 | (AMRT_TY PE_CD = 20 and PMT_PATT ERN_CD is not null and PMT_PATT ERN_CD > 0 and PMT_PATT ERN_CD not in (select AMRT_TYP E_CD from fsi_payment _pattern)) | Amortization type is Payment Pattern definition does not exist | AMRT_TYP E_CD = 700 | Invalid Payment Pattern | Warning | |
| 10 | (AMRT_TY PE_CD = 10 and (BEHAVIOU R_PATTER N_CD is null or BEHAVIOU R_PATTER N_CD <= 0)) | Amortization type is Behaviour Pattern but Behaviour Pattern Code is invalid | AMRT_TYP E_CD = 700 | Invalid Behaviour Pattern | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|------------------------|---------------------------|-------------|----------------|
| 11 | (AMRT_TYP PE_CD = 10 and BEHAVIOU R_PATTER N_CD is not NULL and BEHAVIOU R_PATTER N_CD > 0 and BEHAVIOU R_PATTER N_CD not in (select PATTERN_ CD from fsi_behavio ur_pattern_ master)) | Amortization type is Behaviour Pattern but Behaviour Pattern definition does not exist | AMRT_TYP E_CD = 700 | Invalid Behaviour Pattern | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|------------------------|--|-------------|----------------|
| 12 | (AMRT_TY PE_CD in (800, 801, 802) and NOT EXISTS (select 1 from FSI_D_Pay ment_Sche dule WHERE FSI_D_Pay ment_Sche dule.ID_NUM BER=SO URCE_TAB LE.ID_NUM BER AND FSI_D_Pay ment_Sche dule.IDENTI TY_CODE = SOURCE_T ABLE.IDEN TITY_COD E AND FSI_D_Pay ment_Sche dule.INSTR UMENT_TY PE_CD = SOURCE_T ABLE.INST RUMENT_T YPE_CD)) | Cannot find record with matching ID Number, Identity Code and Instrument Type Code in Payment Schedule table | AMRT_TYP E_CD = 700 | Invalid Payment schedule data | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|---------------------------|--|-------------|----------------|
| 13 | (AMRT_TY PE_CD in (800, 801, 802) and ORIGINATI ON_DATE > (select max(PAYME NT_DATE) from FSI_D_Pay ment_Sche dule WHERE FSI_D_Pay ment_Sche dule.ID_NU MBER=SO URCE_TAB LE.ID_NUM BER AND FSI_D_Pay ment_Sche dule.IDENTI TY_CODE = SOURCE_T ABLE.IDEN TITY_COD E AND FSI_D_Pay ment_Sche dule.INSTR UMENT_TY PE_CD = SOURCE_T ABLE.INST RUMENT_T YPE_CD)) | Origination Date is greater than highest date in Payment Schedule | AMRT_TYP E_CD = 700 | Invalid Payment schedule data | Warning | |
| 14 | (AMRT_T ERM_MULT is NULL or AMRT_TER M_MULT not in ('D', 'M', 'Y')) | Amortizatio n term multiplier must be D, M, or Y | AMRT_TER M_MULT = M | Invalid Amortizatio n Term Multiplier | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|-----------------------------------|--|-------------|----------------|
| 15 | (AMRT_TY PE_CD = 600 AND (NEG_AMR T_EQ_MUL T is NULL or NEG_AMRT _EQ_MULT not in ('D', 'M', 'Y')) | Negative Amortization Equalization Frequency multiplier must be D, M, or Y | NEG_AMRT _EQ_MULT = M | Invalid Negative Amortization Equalization Frequency Multiplier | Warning | |
| 16 | (AMRT_TY PE_CD = 600 and (NEG_AMR T_LIMIT is NULL or NEG_AMRT _LIMIT >=200 or NEG_AMRT _LIMIT < 0)) | Negative Amortization limit value does not fall in a valid range (0 to 200), Applicable to Negative amortization instruments only | NEG_AMRT _LIMIT = 0 | Invalid Negative Amortization Limit | Warning | |
| 17 | (ORG_TER M_MULT is NULL or ORG_TER M_MULT not in ('D', 'M', 'Y')) | Original term multiplier must be D, M, or Y | ORG_TER M_MULT= M | Invalid Original Term Multiplier | Warning | |
| 18 | (AMRT_TY PE_CD = 600 and (NEG_AMR T_PMT_CH G_FREQ is NULL or NEG_AMRT _PMT_CHG _FREQ < 0)) | Payment Change Frequency cannot be negative, Applicable to Negative amortization instruments only | NEG_AMRT _PMT_CHG _FREQ = 0 | Invalid Negative Amortization Payment Change Frequency | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|--|---|-------------|----------------|
| 19 | (AMRT_TY PE_CD = 600 and (NEG_AMR T_PMT_CH G_FREQ_M ULT is NULL or NEG_AMRT _PMT_CHG _FREQ_MU LT not in (‘D’, ‘M’, ‘Y’)) | Negative Amortization Payment Change Frequency Multiplier must be D, M, or Y | NEG_AMRT _PMT_CHG _FREQ_MU LT = M | Invalid Negative Amortization Payment Change Frequency Multiplier | Warning | |
| 20 | (INT_PMT_ FREQ_MUL T is NULL or INT_PMT_F REQ_MULT not in (‘D’, ‘M’, ‘Y’)) | Interest Payment frequency multiplier must be D, M, or Y | INT_PMT_F REQ_MULT = M | Invalid Interest Payment Frequency Multiplier | Warning | |
| 21 | (PRIN_PMT _FREQ_MU LT is NULL or PRIN_PMT _FREQ_MU LT not in (‘D’, ‘M’, ‘Y’)) | Principal Payment frequency multiplier must be D, M, or Y | PRIN_PMT _FREQ_MU LT = M | Invalid Principal Payment Frequency Multiplier | Warning | |
| 22 | (RATE_CH G_RND_CD is NULL or RATE_CHG _RND_CD RATE_CHG _RND_CD > 4) | Rate change round code must be between 0 < 0 or and 4 | RATE_CHG _RND_CD = 0 | Invalid Rate Change Rounding Code | Warning | |
| 23 | (ADJUSTAB LE_TYPE_ CD > 0 and (RATE_SET _LAG_MUL T is NULL or RATE_SET _LAG_MUL T not in (‘D’, ‘M’, ‘Y’)) | Rate Set Lag Multiplier must be D, M, or Y | RATE_SET _LAG_MUL T = M | Invalid Rate Set Lag Multiplier | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|------------------------------|--|-------------|----------------|
| 24 | (ADJUSTABLE_TYPE_CD > 0 and (REPRICE_FREQ_MULT is NULL or REPRICE_FREQ_MULT T not in ('D', 'M', 'Y'))) | Repricing Frequency Multiplier must be D, M, or Y | REPRICE_FREQ_MULT = M | Invalid Repricing Frequency Multiplier | Warning | |
| 25 | (RATE_CHANGE_ROUND_FACTOR is NULL or RATE_CHANGE_ROUND_FACTOR < 0 or RATE_CHANGE_ROUND_FACTOR > 1) | Rate change round factor must be between 0 and 1 | RATE_CHANGE_ROUND_FACTOR = 0 | Invalid Rate Change Rounding Factor | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|--|--|-------------|----------------|
| 26 | (MATURITY_DATE < NEXT_INT_PAYMENT_DATE) | Maturity date cannot be before the next interest payment date | MATURITY_DATE = (CASE PRIN_PMT_FREQ_MU LT WHEN 'Y' THEN ADD_MON THS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ * 12)) WHEN 'M' THEN ADD_MON THS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ)) ELSE NEXT_PRIN_PAYMENT_DATE + ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ) END) | Maturity Date < Next Interest Payment Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|---|--|-------------|----------------|
| 27 | (MATURITY_DATE < NEXT_PRI_N_PAYMENT_DATE) | Maturity date cannot be before the next principal payment date | MATURITY_DATE = (CASE PRIN_PMT_FREQ_MU LT WHEN 'Y' THEN ADD_MON_THS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ * 12)) WHEN 'M' THEN ADD_MON_THS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ)) ELSE NEXT_PRI_N_PAYMENT_DATE + ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ) END) | Maturity Date < Next Principal Payment Date | Warning | |
| 28 | (AMRT_TY PE_CD = 600 and (NEG_AMRT_EQ_FREQ_Q is NULL or NEG_AMRT_EQ_FREQ < 0)) | Negative amortization equalization frequency cannot be negative, Applicable to Negative amortization instruments only | NEG_AMRT_EQ_FREQ = 0 | Negative Amortization Equalization Frequency < 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|---|--|-------------|----------------|
| 29 | (AMRT_TY PE_CD = 600 and NEG_AMRT _EQ_FREQ is not null and NEG_AMRT _EQ_FREQ > 0 and NEG_AMRT _EQ_DATE <= greatest(OR ORIGINATION _DATE, AS_OF_DA TE)) | Negative Amortization equalization date is less than origination date (future origination) or less than the as-of- date (past origination), Applicable to Negative Amortization instruments only | NEG_AMRT _EQ_DATE = NEXT_REP RICE_DATE | Negative Amortization Equalization Date < Origination Date or As of Date | Warning | |
| 30 | (AMRT_TY PE_CD = 600 and NEG_AMRT _EQ_FREQ is not NULL and NEG_AMRT _EQ_FREQ > 0 and NEG_AMRT _EQ_DATE > MATURITY _DATE) | Next interest payment date is less than as-of- date (past origination case), As of Date cannot be greater than the origination date and greater than the next payment date. | NEG_AMRT _EQ_DATE = NEXT_REP RICE_DATE | Negative Amortization Equalization Date > Maturity Date | Warning | |
| 31 | (AS_OF_DA TE > ORIGINATI ON_DATE and AS_OF_DA TE >= NEXT_INT_ PAYMENT_ DATE) | Negative Amortization equalization date is after Maturity Date, Applicable to Negative Amortization instruments only | NEXT_INT_ PAYMENT_ DATE = AS_OF_DA TE + 1 | Next Interest Payment Date < As of Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|------------------------------------|--|-------------|----------------|
| 32 | (AS_OF_DATE > ORIGINATE and AS_OF_DATE >= NEXT_PAYMENT_DATE) | Next principal payment date is less than as-of-date (past origination case), As of Date cannot be greater than the origination date and greater than the next payment date. | NEXT_PAYMENT_DATE = AS_OF_DATE + 1 | Next Principal Payment Date < As of Date | Warning | |
| 33 | (ORIGINATE >= AS_OF_DATE and ORIGINATE >= NEXT_INTEREST_DATE) | Next interest payment date is less than origination date (future origination case) | NEXT_INTEREST_DATE = ORIGINATE + 1 | Next Interest Payment Date < Origination Date | Warning | |
| 34 | (ORIGINATE >= AS_OF_DATE and ORIGINATE >= NEXT_PAYMENT_DATE) | Next principal payment date is less than origination date (future origination case) | NEXT_PAYMENT_DATE = ORIGINATE + 1 | Next Principal Payment Date < Origination Date | Warning | |
| 35 | (ORIGINATE <= AS_OF_DATE and NEXT_REPRICE_DATE <= AS_OF_DATE and REPRICE_FREQ > 0) | Next repricing date is less than as-of-date (past origination case) | NEXT_REPRICE_DATE = AS_OF_DATE + 1 | Next Reprice Date < As of Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---|--|-------------|----------------|
| 36 | (ORIGINATI ON_DATE > AS_OF_DA TE and NEXT_REP RICE_DATE < ORIGINATI ON_DATE and REPRICE_ FREQ > 0) | Next repricing date is less than the origination date (future origination case) | NEXT_REP RICE_DATE = ORIGINATI ON_DATE + 1 | Next Reprice Date < Origination Date | Warning | |
| 37 | (AMRT_TY PE_CD = 600 and (ORG_PAY MENT_AMT is NULL or ORG_PAYM ENT_AMT = 0) and NEG_AMRT _PMT_DEC R_LIFE > 0) | Payment decrease life is expressed as a percent of a original payment, Applicable to negative amortization instruments only | NEG_AMRT _PMT_DEC R_LIFE = 0 | Original Payment Amount = 0 and Negative Amortizatio n Payment Decrease Limit (Life) <> 0 | Warning | |
| 38 | (AMRT_TY PE_CD = 600 and (ORG_PAY MENT_AMT is NULL or ORG_PAYM ENT_AMT = 0) and NEG_AMRT _PMT_INC R_LIFE > 0) | Payment increase life is expressed as a percent of a original payment, Applicable to negative amortization instruments only | NEG_AMRT _PMT_INC R_LIFE = 0 | Original Payment Amount = 0 and Negative Amortizatio n Payment Increase Limit (Life) <> 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|---|---|-------------|----------------|
| 39 | (ORG_TER M = 0 OR ORG_TER M <> (CASE ORG_TER M_MULT WHEN 'Y' THEN MONTHS_ BETWEEN(MATURITY _DATE, ORIGINATI ON_DATE)* 12 WHEN 'M' THEN MONTHS_ BETWEEN(MATURITY _DATE, ORIGINATI ON_DATE) ELSE (MATURITY _DATE - ORIGINATI ON_DATE) END)) | Original term should equal the time between the origination date and the maturity date | ORG_TER M#ORG_TE RM_MULT = MONTHS_ BETWEEN(MATURITY _DATE, RIGINATIO N_DATE)# | Original Term <> Maturity Date - Orgination Date | Warning | |
| 40 | (ORIGINATI ON_DATE is NULL or ORIGINATI ON_DATE < '1- Aug-1950' or ORIGINATI ON_DATE > '1- Aug-2099') | Origination date must be acceptable | ORIGINATI ON_DATE = 1-Jan-50 | Origination date < 01/01/1950 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|--|---------------------------------------|-------------|----------------|
| 41 | (INT_PMT_FREQ > (CASE INT_PMT_FREQ_REQ_MULT WHEN 'Y' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE)* 12 WHEN 'M' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE) ELSE (MATURITY_DATE - ORIGINATI ON_DATE) END)) | Interest Payment frequency cannot be greater than original term | INT_PMT_FREQ#INT_PMT_FREQ_MULT = MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE)# | Interest Payment Freq > Original Term | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|--|---|-------------|----------------|
| 42 | (PRIN_PMT_FREQ >(CASE PRIN_PMT_FREQ_MULT WHEN 'Y' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE)* 12 WHEN 'M' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE) ELSE (MATURITY_DATE - ORIGINATI ON_DATE) END)) | Principal Payment frequency cannot be greater than original term | PRIN_PMT_FREQ#PR IN_PMT_F REQ_MULT = MONTHS_BETWEEN(MATURITY_DATE, ORIGINATI ON_DATE)# | Principal Payment Freq > Original Term | Warning | |
| 43 | ((CUR_PAYMENT is NULL or CUR_PAYM ENT < 0 and CUR_PAR_BAL > 0) or (CUR_PAYMENT > 0 and CUR_PAR_BAL < 0)) | Current payment and current par balance cannot have opposite signs | CUR_PAYM ENT = 0 | Current Payment and Current Par Balance have opposite signs | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|---|--|-------------|----------------|
| 44 | (AMRT_TY PE_CD = 600 and NEG_AMRT _PMT_CHG _FREQ > 0 and AS_OF_DA TE > NEG_AMRT _PMT_ADJ UST_DATE) | Negative Amortization Payment Adjustment Date is less than the as- of-date (past origination), Applicable to negative amortization instruments only | NEG_AMRT _PMT_ADJ UST_DATE =NEXT_RE PRICE_DATE | Negative Amortization Payment Adjustment Date < As of Date | Warning | |
| 45 | (AMRT_TY PE_CD = 600 and NEG_AMRT _PMT_CHG _FREQ > 0 and AS_OF_DA TE < NEG_AMRT _PMT_ADJ UST_DATE and NEG_AMRT _PMT_ADJ UST_DATE < ORIGINATI ON_DATE) | Negative Amortization Payment adjustment date is less than origination date (future origination), Applicable to negative amortization instruments only | NEG_AMRT _PMT_ADJ UST_DATE =NEXT_RE PRICE_DATE E | Negative Amortization Payment Adjustment Date < Origination Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---|----------------------------------|-------------|----------------|
| 46 | ((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE and MATURITY_DATE > ORIGINATION_DATE))) | Interest Payment frequency is less than or equal to zero, and both maturity date and origination date are valid dates and can be used to calculate payment frequency. | NEXT_INT_PAYMENT_DATE#ORG_TERM#ORG_TERM_MULT#INT_PMT_FREQ_MULT#REMAIN_NO_PMTS=MATURITY_DATE#MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)# | Interest Payment Frequency <= 0 | Warning | |
| 47 | ((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE and MATURITY_DATE > ORIGINATION_DATE))) | Principal Payment frequency is less than or equal to zero, and both maturity date and origination date are valid dates and can be used to calculate payment frequency. | NEXT_PRIN_PAYMENT_DATE#ORG_TERM#M_MULT#PRIN_PMT_FREQ#PRIN_PMT_FREQ_MULT#REMAIN_NO_PMTS=MATURITY_DATE#MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)# | Principal Payment Frequency <= 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|--|---------------------------------|-------------|----------------|
| 48 | ((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and Maturity_DATE <= AS_OF_DATE and NEXT_INT_PAYMENT_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND Maturity_DATE < ORIGINATION_DATE and NEXT_INT_PAYMENT_DATE > ORIGINATION_DATE)) | Interest payment frequency is less than or equal to zero and maturity date is invalid, but next interest payment date can be used to calculate a valid payment frequency | Maturity_DATE#ORIG_TERM#RG_TERM_MULT#INT_PMT_FREQ_MULT#REMAIN_NO_PMTS=NEXT_INT_PAYMENT_DATE#MONTHS_BETWEEN(Maturity_DATE, ORIGINATION_DATE)# | Interest Payment Frequency <= 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|---|----------------------------------|-------------|----------------|
| 49 | ((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATE_DATE <= AS_OF_DATE and MATURITY_DATE <= AS_OF_DATE and NEXT_PRTN_PAYMENT_T_DATE > AS_OF_DATE) or (ORIGINATE_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATE_DATE and NEXT_PRTN_PAYMENT_T_DATE > ORIGINATE_DATE)) | Principal payment frequency is less than or equal to zero and maturity date is invalid, but next interest payment date can be used to calculate a valid payment frequency | MATURITY_DATE#ORIG_TERM#RG_TERM_MULT#PRIN_PMT_FR EQ#PRIN_PMT_FREQ_MULT#REMAIN_NO_PMTS=NEXT_PRTN_PAYMENT_DATE#MONTHS_BETWEEN(MATURITY_DATE, ORIGINATE_DATE)# | Principal Payment Frequency <= 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|--|---------------------------------|-------------|----------------|
| 50 | ((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and NEXT_INT_PAYMENT_DATE <= AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATION_DATE and NEXT_INT_PAYMENT_DATE < ORIGINATION_DATE)) | Interest payment frequency is less than or equal to zero and all dates which can be used to calculate payment frequency are in the past | MATURITY_DATE#NEXT_INT_PAYMENT_DATE#ORG_TE#ERM#ORG_TERM_MULT#INT_PMT_FREQ#INT_PMT_FR#EQ_MULT#REMAINING_PMTS=AS_OF_DATE + 1#AS_OF_DATE + 1#MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)#MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)# | Interest Payment Frequency <= 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|--|--|-------------|----------------|
| 51 | ((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and Maturity_DATE <= AS_OF_DATE and NEXT_PMT_DATE <= AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND Maturity_DATE < ORIGINATION_DATE and NEXT_PMT_DATE < ORIGINATION_DATE))) | Principal payment frequency is less than or equal to zero and all dates which can be used to calculate payment frequency are in the past | Maturity_DATE#NEXT_PMT_DATE#PRIN_PMT_DATE#ORIGINATION_DATE#TERM#MULT#PRIN_PMT_FR#EQ#PRIN_PMT_FREQ#MULT#REMAIN_NO_PMTS=AS_OF_DATE + 1#AS_OF_DATE + 1#MONTHS_BETWEEN(Maturity_DATE, ORIGINATION_DATE)#MONTHS_BETWEEN(Maturity_DATE, ORIGINATION_DATE)# | Principal Payment Frequency <= 0 | Warning | |
| 52 | (AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_INCREMENT cannot be NULL or NEG_AMRT_PMT_INCREMENT < 0)) | Negative Amortization Payment increase limit (cycle) cannot be less than zero, Applicable to negative amortization instruments only | NEG_AMRT_PMT_INCREMENT#R_CYCLE=0 | Negative Amortization Payment Increase Limit (Cycle) < 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|------------------------------|---|-------------|----------------|
| 53 | (RATE_CAP_LIFE < CUR_GROSS_RATE and RATE_CAP_LIFE <> 0 and CUR_GROSS_RATE <> 0 and TEASER_END_DATE < AS_OF_DATE) | Current gross rate is greater than the rate cap life | RATE_CAP_LIFE=CUR_GROSS_RATE | Rate Cap Life < Current Gross Interest Rate | Info | |
| 54 | (RATE_CAP_LIFE < CUR_NET_RATE and RATE_CAP_LIFE <> 0) | Current net rate is greater than the rate cap | | Rate Cap Life < Current Net Interest Rate | Info | |
| 55 | (RATE_CHANGE_MIN is NULL or RATE_CHANGE_MIN < 0) | Minimum rate change cannot be negative | RATE_CHANGE_MIN=0 | Rate Change Minimum < 0 | Warning | |
| 56 | (RATE_DECREASE_CYCLE is NULL or RATE_DECREASE_CYCLE < 0) | Rate decrease limit (cycle) must not be negative | RATE_DECREASE_CYCLE=0 | Rate Decrease Limit (Cycle) < 0 | Warning | |
| 57 | (RATE_FLOOR_LIFE > CUR_GROSS_RATE and CUR_GROSS_RATE <> 0 and TEASER_END_DATE < AS_OF_DATE) | Current gross rate is less than the rate floor | | Rate Floor Life > Current Gross Interest Rate | Info | |
| 58 | (RATE_FLOOR_LIFE > CUR_NET_RATE) | Rate floor life must not be greater than the current net rate | RATE_FLOOR_LIFE=CUR_NET_RATE | Rate Floor Life > Current Net Interest Rate | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|--|--|-------------|----------------|
| 59 | (RATE_INC R_CYCLE is NULL or RATE_INC R_CYCLE < 0) | Rate increase limit (cycle) cannot be less than 0 | RATE_INC R_CYCLE= 0 | Rate Increase Limit (Cycle) < 0 | Warning | |
| 60 | (REMAIN_N O_PMTS is NULL or REMAIN_N O_PMTS < 1) | There has to be at least 1 payment left | REMAIN_N O_PMTS=1 | Remaining Number of Payments < 1 | Warning | |
| 61 | (ADJUSTAB LE_TYPE_ CD > 0 and (RATE_SET _LAG is NULL or RATE_SET _LAG < 0)) | Rate set lag cannot be negative | RATE_SET _LAG=0 | Rate Set Lag < 0 | Warning | |
| 62 | (TEASER_ END_DATE < ORIGINATI ON_DATE) | Teaser End Date cannot be before Origination Date | TEASER_E ND_DATE= ORIGINATI ON_DATE | Teaser End Date < Origination Date | Warning | |
| 63 | (TEASER_ END_DATE > MATURITY _DATE) | Teaser End Date cannot be after Maturity Date | TEASER_E ND_DATE= MATURITY _DATE | Teaser End Date > Maturity Date | Warning | |
| 64 | (AMRT_TY PE_CD = 710 and ORG_PAR_ BAL < CUR_PAR_ BAL) | Original balance on Rule of 78's instruments should be greater than current balance | | Original Par Balance < Current Par Balance | Info | |
| 65 | (AMRT_TY PE_CD = 600 and (REPRICE_ FREQ is NULL or REPRICE_ FREQ = 0)) | Reprice Frequency cannot be zero for Adjustable Negative Amortizatio n instrument | | Adjustable Negative Amortizatio n instrument has Reprice Frequency = 0 | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---|---|-------------|----------------|
| 66 | (REPRICE_ FREQ <> 0 and LAST_REP RICE_DATE > NEXT_REP RICE_DATE) | Last repricing date is greater than next repricing date | LAST_REP RICE_DATE =(CASE REPRICE_ FREQ_MUL T WHEN 'Y' THEN ADD_MON THS(NEXT _REPRICE _DATE, - REPRICE_ FREQ*12) WHEN 'M' THEN ADD_MON THS(NEXT _REPRICE _DATE, - REPRICE_ FREQ) ELSE NEXT_REP RICE_DATE - REPRICE_ FREQ END) | Last Reprice Date > Next Reprice Date | Warning | |
| 67 | (ADJUSTAB LE_TYPE_ CD in (50, 250) and (INTEREST _RATE_CD is NULL or INTEREST_ RATE_CD <= 0)) | Interest rate code must be valid for adjustable rate instruments | ADJUSTAB LE_TYPE_ CD=0 | Adjustable Rate instrument has invalid Interest Rate Code | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---------------------------|---|-------------|----------------|
| 68 | (ADJUSTABLE_TYPE_CD > 0 and INTEREST_RATE_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.interest_rate_cd = SOURCE_TABLE.interest_rate_cd and fsi_ircs.volatility_curve_flag > 0)) | Interest rate code of instrument is not an yield curve. Repricing attributes will be ignored and processed as fixed interest rate; | ADJUSTABLE_TYPE_CD=0 | Invalid Interest Rate Code. Curve Type is not Interest Rate Curve | Warning | |
| 69 | (NET_MARGIN_CD is NULL or NET_MARGIN_CD not in (0, 1)) | Valid net margin codes are 0 or 1. | NET_MARGIN_CD=0 | Invalid Net Margin Code | Warning | |
| 70 | (AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_DECR_CYCLE cannot be less than zero. NEG_AMRT_PMT_DECR_CYCLE < 0)) | Payment Decrease Limit (Cycle) cannot be less than zero. Applicable to negative amortization instruments only | NEG_AMRT_PMT_DECR_CYCLE=0 | Negative Amortization Payment Decrease Limit (Cycle) = 0 | Warning | |
| 71 | (AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_DECR_LIFE is NULL or NEG_AMRT_PMT_DECR_LIFE < 0)) | Payment Decrease Limit (Life) cannot be less than zero. Applicable to negative amortization instruments only | NEG_AMRT_PMT_DECR_LIFE=0 | Negative Amortization Payment Decrease Limit (Life) = 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|-------------------------------------|---|-------------|----------------|
| 72 | (AMRT_TY PE_CD = 600 and NEG_AMRT _PMT_DEC R_LIFE <> 0 and CUR_PAYM ENT < ORG_PAYM ENT_AMT * (1 - NEG_AMRT _PMT_DEC R_LIFE/ 100)) | Current payment is less than the minimum payment amount. Applicable to negative amortization instruments only | | Current Payment is less than Life Pay Floor | Info | |
| 73 | (AMRT_TY PE_CD = 600 and (NEG_AMR T_PMT_IN CR_LIFE is NULL or NEG_AMRT _PMT_INC R_LIFE < 0)) | Payment Increase Limit (Life) cannot be less than zero. Applicable to negative amortization instruments only | NEG_AMRT _PMT_INC R_LIFE=0 | Negative Amortizatio n Payment Increase Limit (Life) = 0 | Warning | |
| 74 | (AMRT_TY PE_CD = 600 and NEG_AMRT _PMT_INC R_LIFE <> 0 and CUR_PAYM ENT > ORG_PAYM ENT_AMT * (1 + NEG_AMRT _PMT_INC R_LIFE/ 100)) | Current payment is greater than the maximum payment amount. Applicable to negative amortization instruments only | | Current Payment is greater than Life Pay Cap | Info | |
| 75 | (ISSUE_DA TE > ORIGINATI ON_DATE) | Issue date cannot be greater than origination date | ISSUE_DAT E=ORIGINA TION_DATE | Issue Date > Origination Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|-------------------------------------|--|-------------|----------------|
| 76 | (REPRICE_FREQ is NULL or REPRICE_FREQ < 0) | Repricing frequency must not be negative | REPRICE_FREQ=0 | Reprice Frequency < 0 | Warning | |
| 77 | (AMRT_TY PE_CD = 710 and REPRICE_FREQ <> 0) | Rule of 78's instruments are implicitly fixed rate. | REPRICE_FREQ=0 | Amortization type is Rule of 78's but Reprice Frequency is not 0 | Warning | |
| 78 | (ORG_PAR_BAL = 0 and (REPRICE_FREQ is NULL or REPRICE_FREQ = 0)) | For transfer pricing of fixed rate instruments, the original balance should be populated. | | Original Par Balance is 0 for a fixed rate instrument | Info | |
| 79 | (REPRICE_FREQ <> 0 and TEASER_END_DATE > ORIGINATION_DATE and TEASER_END_DATE > AS_OF_DATE and NEXT_REPRICE_DATE > TEASER_END_DATE) | Next repricing date is greater than teaser end date. | NEXT_REPRICE_DATE = TEASER_END_DATE | Next Reprice Date > Teaser End Date | Warning | |
| 80 | (ADJUSTABLE_TYPE_CD <> 0 and (LRD_BALANCE_NCE is NULL or LRD_BALANCE_NCE = 0)) | The balance as of the last repricing date cannot be equal to 0 | LRD_BALANCE_NCE=CUR_PAR_BAL | Balance on Last Reprice Date = 0 | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|------------------------------------|--|-------------|----------------|
| 81 | (ADJUSTABLE_TYPE_CD <> 0 and (LAST_REPRICE_DATE < ISSUE_DATE or LAST_REPRICE_DATE < ORIGINATION_DATE)) | Transfer pricing will not occur when the last repricing date is less than the issue date and origination date | LAST_REPRICE_DATE=ORIGINATION_DATE | Last Reprice Date < Issue/Origination Date | Info | |
| 82 | (ADJUSTABLE_TYPE_CD = 0 and REPRICE_FREQ > 0) | Repricing frequency and adjustable type code are inconsistent | REPRICE_FREQ=0 | Reprice Frequency > 0 for fixed rate instrument | Info | |
| 83 | (ADJUSTABLE_TYPE_CD <> 0 and (REPRICE_FREQ is NULL or REPRICE_FREQ = 0)) | Repricing frequency and adjustable type code are inconsistent | | Adjustable Type is not fixed but Reprice Frequency is 0 | Info | |
| 84 | (AMRTYPE_CD = 710 and ADJUSTABLE_TYPE_CD <> 0) | Rule of 78's instrument should only have a Fixed adjustable type code. | ADJUSTABLE_TYPE_CD=0 | Amortization type is Rule of 78's but Adjustable Type is not fixed | Warning | |
| 85 | (AMRTYPE_CD = 600 and ADJUSTABLE_TYPE_CD = 0) | Negative amortization instruments cannot have fixed adjustable type code | AMRTYPE_CD=100 | Adjustable Type is fixed rate for Negative amortization instrument | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|--|---------|-------------|----------------|
| 86 | (LAST_INT_PAYMENT_DATE > NEXT_INT_PAYMENT_DATE and INT_PMT_FREQ > 0) | Last interest payment date is greater than next interest payment date and can be calculated using interest payment frequency | LAST_INT_PAYMENT_DATE=(CASE INT_PMT_FREQ WHEN 'Y' THEN ADD_MONTHS(NEXT_INT_PAYMENT_DATE, - INT_PMT_FREQ*12) WHEN 'M' THEN ADD_MONTHS(NEXT_INT_PAYMENT_DATE, - INT_PMT_FREQ) ELSE NEXT_INT_PAYMENT_DATE - INT_PMT_FREQ END) | | Warning | |
| 87 | (LAST_INT_PAYMENT_DATE > NEXT_INT_PAYMENT_DATE and (INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0)) | Last interest payment date is greater than next interest payment date, but cannot be calculated using interest payment frequency. | LAST_INT_PAYMENT_DATE=ORIGINATION_DATE | | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---|---|-------------|----------------|
| 88 | (LAST_PRI N_PAYMEN T_DATE > NEXT_PRI N_PAYMEN T_DATE and PRIN_PMT _FREQ > 0) | Last principal payment date is greater than next principal payment date and can be calculated using principal payment frequency | LAST_PRIN _PAYMENT _DATE=(CA SE PRIN_PMT _FREQ_MU LT WHEN 'Y' THEN ADD_MON THS(NEXT _PRIN_PAY MENT_DAT E, - PRIN_PMT _FREQ*12) WHEN 'M' THEN ADD_MON THS(NEXT _PRIN_PAY MENT_DAT E, - PRIN_PMT _FREQ) ELSE NEXT_PRI N_PAYMEN T_DATE - PRIN_PMT _FREQ END) | | Warning | |
| 89 | (LAST_PRI N_PAYMEN T_DATE > NEXT_PRI N_PAYMEN T_DATE and (PRIN_PMT _FREQ is NULL or PRIN_PMT _FREQ <= 0)) | Last principal payment date is greater than next principal payment date, but cannot be calculated using principal payment frequency. | LAST_PRIN _PAYMENT _DATE=ORI GINATION_ DATE | Last principal payment date > Next principal payment date | Warning | |
| 90 | (LAST_INT _PAYMENT _DATE < ORIGINATI ON_DATE) | Last interest payment date cannot be less than the origination date | LAST_INT_ PAYMENT_ DATE=ORI GINATION_ DATE | Last Interest Payment Date < Origination Date | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|---|--|-------------|----------------|
| 91 | (LAST_PRIN_PAYMENT_DATE < ORIGINATION_DATE) | Last principal payment date cannot be less than the origination date | LAST_PRIN_PAYMENT_DATE=ORIGINATION_DATE | Last Principal Payment Date < Origination Date | Warning | |
| 92 | (LAST_INTEREST_PAYMENT_DATE > AS_OF_DATE and ORIGINATION_DATE <= AS_OF_DATE) | Last interest payment date cannot be greater than the as-of-date if the instrument originated in the past. | LAST_INTEREST_PAYMENT_DATE=AS_OF_DATE | Last interest payment date > As of Date | Warning | |
| 93 | (LAST_PRIN_PAYMENT_DATE > AS_OF_DATE and ORIGINATION_DATE <= AS_OF_DATE) | Last principal payment date cannot be greater than the as-of-date if the instrument originated in the past. | LAST_PRIN_PAYMENT_DATE=AS_OF_DATE | Last principal payment date > As of Date | Warning | |
| 94 | (INTEREST_TIMING_TYPE_CD = 2 and AMRT_TYPE_CD in (100, 400, 600, 710, 800, 840, 850)) | Interest type can only be arrears for conventionally amortizing instruments. | INTEREST_TIMING_TYPE_CD=1 | Amortization Type is conventional but interest timing is Advance | Warning | |
| 95 | (INTEREST_TIMING_TYPE_CD is NULL or INTEREST_TIMING_TYPE_CD not in (1, 2, 3)) | Interest type must be a valid OFSAA code. | INTEREST_TIMING_TYPE_CD=1 | Invalid interest timing type | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|---|-----------------------|--|-------------|----------------|
| 96 | (COMPOUND_BASIS_CD is NULL or COMPOUND_BASIS_CD not in (110, 120, 130, 140, 150, 160, 170)) | Compounding basis code must be a valid OFSAA code | COMPOUND_BASIS_CD=160 | Invalid Compounding Basis Code | Warning | |
| 97 | (ACCRUAL_BASIS_CD IN (1, 4, 5) and (INT_PMT_FREQ_MULT = 'D' or AMRT_TYPE_CD in (800,801, 802))) | Accrual basis code cannot have a 30 day month assumption on instruments defined by a payment schedule | ACCRUAL_BASIS_CD=3 | Amortization Type / Accrual Basis Error | Warning | |
| 98 | (ACCRUAL_BASIS_CD = 7 and (HOLIDAY_CALENDAR_CODE is NULL or HOLIDAY_CALENDAR_CODE <=0 or HOLIDAY_CALENDAR_CODE is NULL or HOLIDAY_CALENDAR_CODE not in (1, 2) or HOLIDAYROLLING_CONVENTION_CD is NULL or HOLIDAYROLLING_CONVENTION_CD not in (2,3,4,5))) | Holiday calendar must be given when using Business/25 2 accrual basis | | Holiday calendar not given for B/252 accrual basis | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|---------------------------------------|--|-------------|----------------|
| 99 | (AMRT_TY PE_CD = 10 and BEHAVIOU R_TYPE_C D is NULL) | Behaviour Type Code is Null, defaulted to 1 (Non- Maturity) | BEHAVIOU R_TYPE_C D=1 | Behaviour Type Code is Null | Warning | |
| 100 | (AMRT_TY PE_CD = 10 and BEHAVIOU R_TYPE_C D not in (1,2,3)) | Behaviour Type Code is invalid, defaulted to 1 (Non- Maturity) | BEHAVIOU R_TYPE_C D=1 | Invalid Behaviour Type Code | Warning | |
| 101 | (AMRT_TY PE_CD = 10 and BEHAVIOU R_TYPE_C D = 2 and (BEHAVIOU R_SUB_TY PE_CD is NULL or BEHAVIOU R_SUB_TY PE_CD not in (201, 202, 203))) | Behaviour Sub Type should be 201 or 202 or 203 when Behaviour Type is Non- Performing | BEHAVIOU R_SUB_TY PE_CD=20 1 | Invalid Behavior Sub Type Code | Warning | |
| 102 | (AMRT_TY PE_CD = 10 and BEHAVIOU R_TYPE_C D = 3 and (BEHAVIOU R_SUB_TY PE_CD is NULL or BEHAVIOU R_SUB_TY PE_CD not in (305, 306))) | Behaviour Sub Type should be 305 or 306 when Behaviour Type is Development and Recovery | BEHAVIOU R_SUB_TY PE_CD=30 5 | Invalid Behavior Sub Type Code | Warning | |
| 103 | (AMRT_TY PE_CD = 840 and RESIDUAL_ AMOUNT < 0) | Residual Amount cannot be less than 0 for Lease instrument | RESIDUAL_ AMOUNT=0 | Invalid Residual Amount for Lease instrument | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|------------------------------|---|-------------|----------------|
| 104 | (AMRT_TY PE_CD = 840 and RESIDUAL_ AMOUNT > CUR_PAR_ BAL) | Residual Amount cannot be higher than Current Par Balance for Lease instrument | RESIDUAL_ AMOUNT=0 | Invalid Residual Amount for Lease instrument | Warning | |
| 105 | (AMRT_TY PE_CD = 850 and MATURITY_ AMOUNT > 0 and ADJUSTAB LE_TYPE_ CD > 0) | Annuity instrument with maturity amount must have fixed interest rate | ADJUSTAB LE_TYPE_ CD=0 | Invalid Adjustable Type for Annuity with Maturity Amount | Warning | |
| 106 | (MOA_EXP ECTED_BA L > 0 and (MOA_OFF SET_PERC ENT is NULL or MOA_OFFS ET_PERCE NT < 0)) | Expected balance is greater than 0 but offset percentage is less than 0 | MOA_OFFS ET_PERCE NT=0 | Invalid offset percent | Warning | |
| 107 | ((MOA_EXP ECTED_BA L * MOA_OFFS ET_PERCE NT/100) > CUR_PAR_ BAL) | Calculated Offset Balance is higher than Current Par Balance | | Calculated Offset Balance > Current Par Balance | Info | |
| 108 | (ADJUSTAB LE_TYPE_ CD = 10 and (REPRICE_ PATTERN_ CD is NULL or REPRICE_ PATTERN_ CD <= 0)) | Invalid reprice pattern code given for instrument | ADJUSTAB LE_TYPE_ CD=0 | Invalid reprice pattern code | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|-------------------------|---------------------------------|-------------|----------------|
| 109 | (ADJUSTABLE_TYPE_CD = 10 and REPRICE_PATTERN_CD > 0 and REPRICE_PATTERN_CD not in (select ADJUSTABLE_TYPE_CD from fsi_reprice_pattern)) | Invalid reprice pattern code given for instrument | ADJUSTABLE_TYPE_CD=0 | Invalid reprice pattern code | Warning | |
| 110 | (ADJUSTABLE_TYPE_CD = 0 and (ORG_PAYMENT_AMT is NULL or ORG_PAYMENT_ENT_AMT <= 0)) | Original payment amount is required for fixed-rate instruments | ORG_PAYMENT_ENT_AMT= | Invalid Original Payment Amount | Warning | |
| 111 | (PERCENT_SOLD < 0 or PERCENT_SOLD > 99) | Percent Sold must be greater than or equal to zero and less than 100 | PERCENT_SOLD=0 | Invalid Percent Sold | Warning | |
| 112 | (CUR_PAR_BAL is NULL or CUR_PAR_BAL = 0) | Instruments with Current Par Balance zero are not processed. | | Current Par Balance = 0 | Warning | |
| 113 | (EMBEDDED_OPTION_S_FLG = 1 and AMRT_TYPE_CD <> 700) | Embedded option is supported only for non-amortizing instrument | EMBEDDED_OPTION_S_FLG=0 | Invalid embedded options flag | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|------------------------------------|---------------------------|-------------|----------------|
| 114 | (ADJUSTABLE_TYPE_CD = 0 and TP_EFFECTIVE_DATE > ORIGINATE_DATE) | TP Effective Date must not be after Origination Date for fixed rate instrument | | Invalid TP Effective Date | Info | |
| 115 | (ADJUSTABLE_TYPE_CD = 0 and TP_EFFECTIVE_DATE < ORIGINATE_DATE) | TP Effective Date must not be before Origination Date for fixed rate instrument | | Invalid TP Effective Date | Info | |
| 116 | (ADJUSTABLE_TYPE_CD > 0 and TP_EFFECTIVE_DATE > LAST_REPRICE_DATE) | TP Effective Date must not be after Last Reprice Date for non-fixed rate instrument | | Invalid TP Effective Date | Info | |
| 117 | (ADJUSTABLE_TYPE_CD > 0 and TP_EFFECTIVE_DATE <= NEXT_REPRICE_DATE) | TP Effective Date must not equal to Next Reprice Date for non-fixed rate instrument | | Invalid TP Effective Date | Info | |
| 118 | (TP_EFFECTIVE_DATE is not NULL and TP_EFFECTIVE_DATE < '01-JAN-1970') | TP Effective Date is before '01-JAN-1970' | TP_EFFECTIVE_DATE = ORIGINATE_DATE | Invalid TP Effective Date | Info | |
| 119 | (TP_EFFECTIVE_DATE > MATURITY_DATE) | TP Effective Date is after maturity date | TP_EFFECTIVE_DATE = ORIGINATE_DATE | Invalid TP Effective Date | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|-------------------------------------|-----------------------------------|-------------|----------------|
| 120 | (ADJUSTABLE_TYPE_CD = 0 and ADJ_EFFECTIVE_DATE > ORIGINATION_DATE) | Adjustment Effective Date must not be after Origination Date for fixed rate instrument | | Invalid Adjustment Effective Date | Info | |
| 121 | (ADJUSTABLE_TYPE_CD = 0 and ADJ_EFFECTIVE_DATE < ORIGINATION_DATE) | Adjustment Effective Date must not be before Origination Date for fixed rate instrument | | Invalid Adjustment Effective Date | Info | |
| 122 | (ADJUSTABLE_TYPE_CD > 0 and ADJ_EFFECTIVE_DATE > LAST_REPRICE_DATE) | Adjustment Effective Date must not be after Last Reprice Date for non-fixed rate instrument | | Invalid Adjustment Effective Date | Info | |
| 123 | (ADJUSTABLE_TYPE_CD > 0 and ADJ_EFFECTIVE_DATE <= NEXT_REPRICE_DATE) | Adjustment Effective Date must not equal to Next Reprice Date for non-fixed rate instrument | | Invalid Adjustment Effective Date | Info | |
| 124 | (ADJ_EFFECTIVE_DATE is not NULL and ADJ_EFFECTIVE_DATE < '01-JAN-1970') | Adjustment Effective Date is before '01-JAN-1970' | ADJ_EFFECTIVE_DATE=ORIGINATION_DATE | Invalid Adjustment Effective Date | Info | |
| 125 | (ADJ_EFFECTIVE_DATE > MATURITY_DATE) | Adjustment Effective Date is after maturity date | ADJ_EFFECTIVE_DATE=ORIGINATION_DATE | Invalid Adjustment Effective Date | Info | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|------------|---------------------------------------|-------------|----------------|
| 10001 | (OPTION_RFR_IRC_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.RISK_FREE_RATE_FLAG is null or fsi_ircs.RISK_FREE_RATE_FLAG = 0 and fsi_ircs.INTEREST_RATE_SOURCE_TABLE_OPTION_RFR_IRC_CD)) | Risk Free Interest Rate Curve is not defined as Risk-Free. | | Invalid Risk Free Interest Rate Curve | Error | |
| 10002 | (OPTION_RFR_IRC_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.ISO_CURRENCY_CODE != SOURCE_TABLE.ISO_CURRENCY_CODE and fsi_ircs.INTEREST_RATE_SOURCE_TABLE_OPTION_RFR_IRC_CD)) | Currency of risk free Interest Rate Curve is different from currency of instrument record. | | Invalid Risk Free Interest Rate Curve | Error | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|--|------------|---|-------------|----------------|
| 10003 | (OPTION_VOL_IRC_CD > 0 and exists (select 1 from FSI_VOL_SURFACE_MASTER where FSI_VOL_SURFACE_MASTER.ISO_CURRENCY_CD != SOURCE_TABLE.ISO_CURRENCY_CD and FSI_VOL_SURFACE_MASTER.VOL_SURFACE_SYS_ID = SOURCE_TABLE.OPTION_VOL_IRC_CD)) | Currency of Volatility Surface is different from currency of instrument record. | | Invalid Volatility Surface | Error | |
| 10004 | (EMBEDDED_OPTION_S_FLG = 1 and STRIKE_TYPE_CD not in (1,2)) | Strike Type must be Rate or Price for instruments with embedded options. | | Invalid Strike Type for Embedded Option | Error | |
| 10005 | (EMBEDDED_OPTION_S_FLG = 1 and EXERCISE_TYPE_CD not in (1,2,3)) | Exercise type for instrument with embedded options must be American, Bermudan or European. | | Invalid Exercise Type for Embedded Option | Error | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|--|--|------------|--|-------------|----------------|
| 10006 | (EMBEDDED_OPTION_S_FLG = 1 and EXERCISE_TYPE_CD = 1 and OPTION_START_DATE <= AS_OF_DATE) | Option Start Date for an American option must be after As of Date. | | Invalid Option Start Date for American Option | Info | |
| 10007 | (EMBEDDED_OPTION_S_FLG = 1 and OPTION_TYPE_CD not in (1,2)) | Option Type must be Call or Put for instrument with Embedded Option. | | Invalid Option Type for Embedded Option | Error | |
| 10008 | (EMBEDDED_OPTION_S_FLG = 1 and STRIKE_TYPE_PE_CD = 2 and nvl(STRIKE_IRC_CD,0) < 1) | Strike type is Rate for instrument with Embedded Option but Strike Interest Rate Curve is not available. | | Invalid Strike Interest Rate Curve for Embedded Option | Error | |
| 10009 | (EMBEDDED_OPTION_S_FLG = 1 and STRIKE_TYPE_PE_CD = 2 and nvl(RATE_LOOKUP_CD,0) not in (1,2,3,4)) | Strike type is Rate for instrument with Embedded Option but Rate Lookup Code is not available. | | Invalid Rate Lookup Code for Embedded Option | Error | |
| 10010 | (EXCHG_OF_PRINCIPAL is NULL OR EXCHG_OF_PRINCIPAL not in (0,1)) | Invalid Exchange of Principal flag | | Invalid Exchange of Principal flag. | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|------------|---|-------------|----------------|
| 10011 | (ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and AMRT_TYPE_CD not in (10, 820, 801, 700, 802)) | Invalid Amortization Type. | | Invalid Amortization Type for non earning assets and liabilities | Warning | |
| 10012 | (ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and (CUR_NET_RATE <> 0 or CUR_GROSS_RATE <> 0)) | Interest Rate of non earning assets and liabilities must be 0. | | Invalid Interest Rate for non earning assets and liabilities | Warning | |
| 10013 | (ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and ADJUSTABLE_TYPE_CD <> 0) | Adjustable Type of non earning assets and liabilities must be 0. | | Invalid Adjustable Type for non earning assets and liabilities | Warning | |
| 10014 | (ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and INTEREST_TIMING_TYPE_CD <> 1) | Interest timing type of non earning assets and liabilities must be Arrears. | | Invalid Interest timing type for non earning assets and liabilities | Warning | |

Table 4-25 (Cont.) List of Error Codes for Cash Flow Edits

| Rule ID | Error Condition | Error Description | Assignment | Warning | Error Level | Edits Priority |
|---------|---|---|------------|---|-------------|----------------|
| 10015 | (ADJUSTABLE_TYPE_CD in (50, 250) and not exists (select 1 from fsi_ircs where fsi_ircs.interest_rate_cd = SOURCE_TYPE.interest_rate_cd and nvl(fsi_ircs.volatility_curve_flg,0) = 0)) | Interest rate code of instrument does not exist. Repricing attributes will be ignored and processed as fixed interest rate. | | Wrong Interest Rate Code for adjustable rate instrument | Warning | |

4.7.2 Cash Flow Edits Process

This module discusses the procedure for validating and cleansing your Instrument Table Data before you process it to generate Cash Flow-based results. The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.

Cash Flow Edits Process Summary

This page is the gateway to all Cash Flow Edits Process Rules and related functionality. You can navigate to other pages relating to Cash Flow Edits Process Rules from this point.

Figure 4-26 Cash Flow Edits Process Summary Page

| Process Id | Name | Folder | Access Type | Status | Last Run By | Last Run Date | Action |
|---------------|--------|--------|-------------|------------|-------------|---------------|--------|
| 1702280199628 | New123 | ALMSEG | Read/Write | INCOMPLETE | | | ... |

Search Cash Flow Edits Process

Prerequisites: Predefined Cash Flow Edits Process

To search for a Cash Flow Edits Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Edits Process Rules that meet the search criteria.

Or

The other method to search a Cash Flow Edits Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Id, Name, Group, Condition Column, or Is User Defined** of the Cash Flow Edits Process and click **Search** .

The Cash Flow Edits Process summary table displays the following columns:

- **Process ID:** Displays the Process ID of Cash Flow Process .
- **Name:** Displays the Cash Flow Process's short name.
- **Folder:** Displays the Folder name where the Cash Flow Process is saved.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Last Run By:** Displays the Name of the user who last runs the Cash Flow Process .
- **Last Run Date:** Displays the Date and Time when Cash Flow Process was run last.
- **Status:** Displays the status of the Cash Flow Process.
- **Action:** Displays the following list of actions that can be performed on the selected Cash Flow Edits Process.
 - **Add:** Click **Add** icon at the top right of the summary page to build a new Cash Flow Edits Process.
 - **Multiple Delete:** Select one or more Rules in the table and then click the **Multiple Delete** icon at the top right of the Summary Page to delete more than one Rule at the same time.
 - **View/Edit:** You can view existing Cash Flow Edits Process, and you can edit existing Cash Flow Edits Process Rules, provided you have read/write privileges. View/Edit to view or edit the contents of a Cash Flow Edits Process in Read/Write format. Depending on user privileges the Rule will open in either View or Edit mode.
 - **Save As:** You can copy Cash Flow Edits Process Rules to avoid having to enter data multiple times. This saves time and effort and reduces mistakes. Click on the **Action** icon against the Cash Flow Edits Process Name and select **Save As** to create a copy of an existing Cash Flow Edits Process.
 - **Delete:** You can delete Cash Flow Edits Process Rules that are no longer required. Click on the **Action** icon against the Cash Flow Edits Process Name and select **Delete** to delete an existing Cash Flow Edits Process.

 **Note:**

A Cash Flow Edits Process cannot be retrieved after deletion. Restrictions on deleting Cash Flow Edits Process Rules are:

- * You cannot delete Cash Flow Edits Process Rules if you have only Read privileges. Only users with Read/Write privileges and Cash Flow Edits Process owners can delete Cash Flow Edits Process Rules.
- * You cannot delete a Cash Flow Edits Process that has a dependency.

- **Dependency Check:** You can check dependencies for rules to know where a particular Cash Flow Edits Process has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Cash Flow Edits Process Name and select Dependency Check to generate a report on all Rules that utilize your selected Cash Flow Edits Process.

 **Note:**

This is functionality will be released in future.

- **Execute:** Select Execute to execute an existing Cash Flow Edits Process . After clicking Execute, the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run.
- **Execute Details:** Select Execute Details to view execution details of the Cash Flow Edits Process .

Also See:

- [Create Cash Flow Edits Process](#)
- [Execute Cash Flow Edits Process](#)
- [View Cash Flow Edits Process Execution Details](#)

4.7.2.1 Create Cash Flow Edits Process

Creating a Cash Flow Edits Process is a one-step process. You define both the attributes that uniquely describe a particular Cash Flow Edits Process and the data to be validated or cleansed by that process on the Create Cash Flow Edits Process Page.

1. Navigate to the **Cash Flow Edits Process Summary** Page.
2. Click the **Add** icon. The **Create Cash Flow Edits Process** Page is displayed.

Figure 4-27 Process Details

3. Enter the process details as shown in the following table:

Table 4-26 List of Process details used for Creating Cash Flow Edits Process

| Field | Description |
|----------------------------|---|
| Name | Enter the name of the Cash Flow Edits Process. |
| Description | Enter the description of the Cash Flow Edits Process. |
| Select to view errors only | Selecting this parameter allows you to view the results of running a Cash Flow Edits Process before the system updates the underlying records in the Instrument tables. The default value of this parameter is checked. |
| Folder | Enter the Folder details where Cash Flow Edits Process needs to be saved. |
| Access Type | Select the Access Type as Read-Only or Read/Write. |

4. Click **Apply** to navigate to the **Cash Flow Edits Rules** section.

Figure 4-28 Cash Flow Edits Rules

| Rule Id | Rule Name | Condition Columns | Error Level | Description | Assignment |
|---------|--|--|-------------|--|------------------------|
| 1 | Original Term > Amortization Term | AMRT_TYPE_CD#AMRT_TERM#AMRT_TERM_MULT#ORG_TERM#ORG_TERM_MULT | Warning | Amortization term can only be equal to zero on Non-Amortizing instruments | ORG_TERM#ORG_TERM_MULT |
| 2 | Current Par Balance = Original Par Balance | ORIGINATION_DATE#AS_OF_DATE#CUR_PAR_BAL#ORG_PAR_BAL | Warning | Instrument has originated in past but Current Par Balance and Original Par Balance are equal | NA |

5. Enter the Cash Flow Edits Rules details shown in the following table:

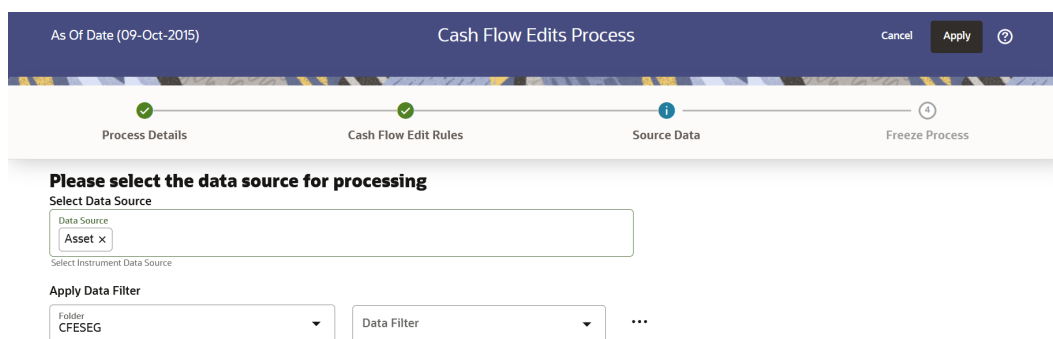
Table 4-27 List of Cash Flow Edits Rules details used for Creating Cash Flow Edits Process

| Field | Description |
|-----------|--|
| Group | Select the group of Cash Flow Edits Rules that you want to include in the process. For example, Cash Flow |
| Sub Group | Select the sub group of Cash Flow Edits Rules that you want to include in the process. The value of this field varies based on the selected Group. The list of Rules with conditions is displayed. |

The details of the process for the selected group and sub-group are listed on the screen for reference.

- Click **Apply** to navigate to the **Source Data** section.

Figure 4-29 Source Data



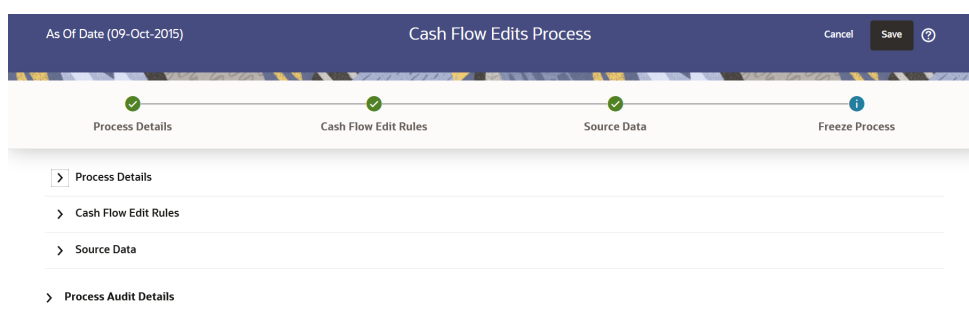
- Enter the Source Data details as shown in the following table:

Table 4-28 List of Source Data details used for Creating Cash Flow Edits Process

| Field | Description |
|--------------------|--|
| Data Source | This field allows you to select the Instrument tables that must be included in a Cash Flow Edits Process. |
| Data Filter Folder | Select the Folder from which you want to apply Data Filter. |
| Data Filter | This field allows you to select a subset of data for processing by selecting a filter that was previously created. Click Action button next to Data Filter to add, edit or view the Data Filter. |

- Click **Apply** to navigate to the **Freeze Process** section.

Figure 4-30 Freeze Process



9. Click **Save** on the **Freeze Process** Window after verifying all the details.
10. The Cash Flow Edits Process is saved and the Summary Page is displayed.

4.7.2.2 Executing Cash Flow Edits Process

Execute a Cash Flow Edits Process to check the accuracy and the completeness of your Instrument Table Data. When run in Preview Mode, you can view the results of running a Cash Flow Edits Process by querying the FSI_O_CFE_EDITS_MESSAGES_HIST table for generated errors before the system updates the underlying records in the Instrument tables.

You can execute Cash Flow Edits Process using following methods:

- [Cash Flow Edits Process UI](#)
- [Scheduler Service](#)

4.7.2.2.1 Using Cash Flow Edits Process UI

To execute the Cash Flow Edits Process, follow these steps:

1. Navigate to the **Cash Flow Edits Process Summary** Page.
2. Search for a process.
3. Click on the **Action** icon against the Cash Flow Edits Process Name and select Execute to execute an existing Cash Flow Edits Process. The **Run Parameter Execution** Window is displayed.
4. Select the **As of Date (Execution Date)** and **Legal Entity**, and then click **Run**.

Note:

You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected then data of selected entity along with its child and descendants are processed.

5. The **Cash Flow Edits Run Confirmation** Page is displayed. The status of the process is displayed in the **Status** Column. After completion of the process, you can navigate to the Execution Details Page by selecting the **Execution Details** option under the **Action** Column.

 **Note:**

You can view the results of running a Cash Flow Edits Process before the system updates the underlying records in the Instrument tables, provided you selected Preview Mode while defining it. If the Process runs in Preview Mode, query the FSI_O_CFE_EDITS_MESSAGES_HIST table for any generated errors

4.7.2.2.2 Using Scheduler Service

A batch with following details gets automatically created when Cash Flow Edits Process is saved:

- **Code:** Process Id of Cash Flow Edits Process
- **Name:** Name of Cash Flow Edits Process
- **Description:** Description of Cash Flow Edits Process

To execute the batch, navigate to Operations and Processes , select Scheduler, and then select Schedule Batch.

You can also define new batch to execute any Cash Flow Edits Process by following these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Define a new batch.
3. Enter the Batch Name and Description, and then Save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from the **Batch** drop-down list on the **Define Task** Window.
6. Click the **Add** button.
7. Define the task with below details:
 - **Task Code:** Must be same as the Process Id of Cash Flow Edits Process
 - **Task Name:** This can be same a name of the Cash Flow Edits Process or something else
 - **Task Description:** This can be same a name of the Cash Flow Edits Process or something else
 - **Task Type:** REST
 - **Component:** Cash Flow Edits
 - **Process Name:** Select one value from the list
 - **Legal Entity Hierarchy:** Select one value from the list
 - **Legal Entity:** Select one value from the list
8. **Save** and **Execute** the batch with Batch ID and MIS Date.

For more information, see the [Scheduler Service](#).

4.7.2.3 Viewing Execution Details of Cash Flow Edits Process

To view the execution details of the Cash Flow Edits Process, follow these steps:

1. Navigate to the **Cash Flow Edits Process Summary** Page.
2. Search for a Process.
3. Click on the **Action** icon against the Cash Flow Edits Process Name and select **Execution Details**. The **Execution Details** window is displayed.
4. Click any **Execution ID** to view the log details. The **Log Viewer** Window shows the complete details of process along with Batch Run ID Information.
5. Click **Download** to export the details of cash flow edits in **csv** format. This will help you to understand errors found in instrument data.
6. If process is executed in '**Non-preview**' mode, then records which are modified by Cash Flow Edits Process can be identified by looking at columns `CF_EDITS_BATCH_RUN_ID` and `UPDATED_BY_CF_EDITS` in instrument processing table.

4.8 Cash Flow Output Export

This module discusses the procedure to download the Cash Flow Output details. When you download the data, it moves to Object Store.

4.8.1 Steps

To export the Cash Flow Output, follow these steps:

- Navigate to **Operations and Processes**, and then select **Scheduler**.
- Select **Define Batch**. Create a new batch by entering Code, Name and Description.
- Save the batch.
- Navigate to Define Task. Select the Batch created above from the **Batch** drop-down list.
- Click the **Add** button.
- Enter the following details in the Task Details Section:
 - **Task Code:** Enter a code for the task.
 - **Task Name:** Enter name for the task.

The Task Name must be alphanumeric and must not start with a number. The Task Name must not exceed 60 characters in length. The Task Name must not contain any special characters except underscore (_).

- **Description:** Enter the Task Description. Special characters are not allowed in Task Description. Words like Select From or Delete From (identified as potential SQL injection vulnerable strings) should not be entered in the Description.
- Select **Component** "Cash Flow Output Data Export".
- Leave **Batch Service URL** blank.
- Enter the following Mandatory Task Parameters:

- **Output Table Name:** Select one table for the displayed list.
- **Execution IDs:** Select one or more execution IDs from displayed list. You may prefer to select only one Execution ID at a time so that separate files get created for each else one file may have data from multiple executions.

Save the task and execute the batch with Batch ID and MIS Date.

For more information, see the [Scheduler Service](#).

After the batch is completed successfully, navigate to Data Management Tools, select the Data File Administration, and then select File Upload and Download. Download the exported file from object store.

Figure 4-31 Cash Flow Output Export

| File ID | Prefix | File Name | Stripe Name | Uploaded Date | Download File | Delete |
|---------|--|------------------------------|-------------|-----------------------|---------------|--------|
| 68 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_34.csv | default | 18-MAY-22 04:05:45 AM | ⬇ | 🗑 |
| 67 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_33.csv | default | 18-MAY-22 04:05:43 AM | ⬇ | 🗑 |
| 66 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_32.csv | default | 18-MAY-22 04:05:40 AM | ⬇ | 🗑 |
| 65 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_31.csv | default | 18-MAY-22 04:05:37 AM | ⬇ | 🗑 |
| 64 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_30.csv | default | 18-MAY-22 04:05:34 AM | ⬇ | 🗑 |
| 63 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_29.csv | default | 18-MAY-22 04:05:32 AM | ⬇ | 🗑 |
| 62 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_28.csv | default | 18-MAY-22 04:05:29 AM | ⬇ | 🗑 |
| 61 | 2015-10-09/1652802138955_2022-05-17_1652802166599_1/ | FSI_O_CFE_OUTPUT_HIST_27.csv | default | 18-MAY-22 04:05:26 AM | ⬇ | 🗑 |

You can define the maximum number of rows to include in the file using the EXPORT_FILE_ROW_COUNT. For more information, see the [Application Preferences](#).

For example, if you have 11000 records in a table and the EXPORT_FILE_ROW_COUNT parameter is set to 10000, then two part files will be created. The first file will have 10000 records and the second file will have rest 1000 records. When these part files are created, a suffix number such as _1, _2 and so on will be added to Name of these files.

The File Name Column shows the name of file with Part number. The Prefix is displayed as a combination of As of Date, Process ID and Run execution ID.

Data can be exported from the following list of tables:

- Cash Flow Process Output
- Cash Flow Process Messages
- Forecast Interest Rates
- Forecast Economic Indictors
- Cash Flow Edits Messages

You can export the Cash Flow Output using Export option of Cash Flow Process UI. For more information, see the [View Cash Flow Process Log](#) section.

4.9 Cash Flow Table Cleanup

This module discusses the procedure to delete data from Cash Flow Output Tables. During the delete process, partitions of Output Tables are truncated. The procedure deletes the data from Output Tables permanently and no backup is retained.

4.9.1 Steps

To clean up the Cash Flow Output, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Select **Define Batch**. Create a new batch by entering Code, Name and Description.
3. Save the batch.
4. Navigate to **Define Task**.
5. Select the Batch created above from the **Batch** drop-down list.
6. Click the **Add** button.
7. Enter the following details in the Task Details Section:
 - **Task Code:** Enter a Code for the task.
 - **Task Name:** Enter Name for the task.
The Task Name must be alphanumeric and must not start with a number. The Task Name must not exceed 60 characters in length. The Task Name must not contain any special characters except underscore (_).
 - **Description:** Enter the Task Description. Special characters are not allowed in Task Description. Words like Select From or Delete From (identified as potential SQL injection vulnerable strings) should not be entered in the Description.
8. Select the **Task Type** as **REST**.
9. Select **Batch Service URL** as **DMT_SERVICE**.
10. Select Component as Transform Data.
11. Enter the following mandatory Task Parameters:
 - **Name:** Select Name as CASH_FLOW_OUTPUT_DEL
 - **Extra Parameters:** Enter the following extra parameters:
 - **TABLE_NAME:** Name of the Output Table. You can enter the table name in Upper or Lower case. Only one table is allowed at a time. The following tables store output from the Cash Flow Engine.
FSI_O_CFE_OUTPUT_HIST
FSI_O_CFE_MESSAGES_HIST
FSI_O_FCAST_IRC_RATES_HIST
FSI_O_FCAST_ECO_IND_RATES_HIST
FSI_O_CFE_EDITS_MESSAGES_HIST
 - **EXECUTION_ID_VALUE:** Enter the Execution ID of Cash Flow Process
 - **Use Effective Date:** Select this as YES or NO. This parameter does not impact on Cash Flow Table Cleanup functionality.
12. Save the Task.
13. Navigate to **Schedule Batch** and execute the batch created above created batch with **Batch ID** and **MIS Date**.

For more information, see the [Scheduler Service](#).

4.10 Balance Reconciliation

The Profitability and Balance Sheet Management Cloud Services's Balance Reconciliation module helps you to Reconcile the selected processing/instrument/account balances against the Management Ledger. If any differences are found, you will have the flexibility to choose significant differences and create plug entries for those in the Ledger_Instruments table.



Note:

All General Ledger Accounts must mandatorily have a Reconciliation product mapped to them.

You can define the dummy attributes for the Product-Currency combinations, whichever General Ledger Account is used for Reconciliation. Default dummy attributes are auto populated based on the linked product ID and currency selected in Reconciliation dimensions.

Reconciliation is a three-step process.

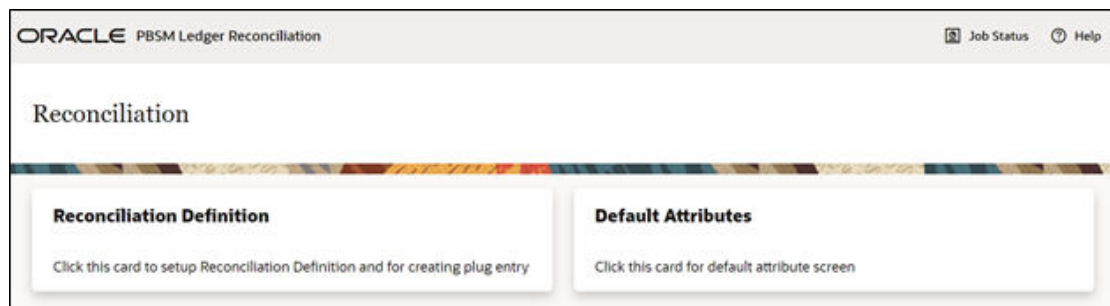
- Reconciliation Definition and Default Attributes setup
- Reconciliation Report verification
- Plug entry creation and writing the Reconciliation differences back to Ledger Instruments table

To access the Balance Reconciliation module, from the LHS Menu, navigate to Analytics, and select Balance Reconciliation.

The Balance Reconciliation landing screen displays the following two cards:

- Reconciliation Definition
- Default Attributes

Figure 4-32 Reconciliation Landing Screen

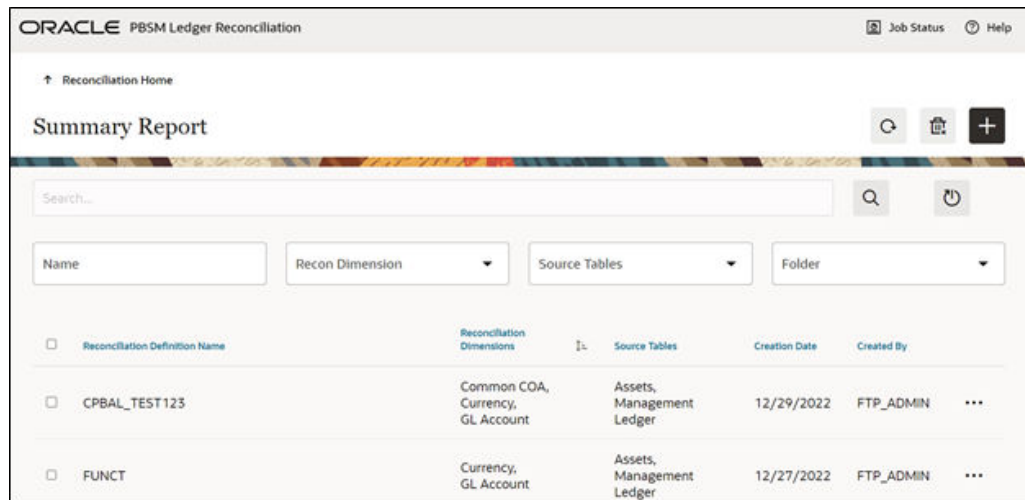


4.10.1 Reconciliation Definition

The Reconciliation Definition summary screen allows you to search for any definitions from the displayed list.

The Reconciliation Definition summary screen is as follows:

Figure 4-33 Reconciliation Definition Summary Screen



The screenshot displays the Oracle PFSM Ledger Reconciliation Summary Report interface. At the top, there is a navigation bar with 'ORACLE PFSM Ledger Reconciliation', 'Job Status', and 'Help'. Below this is a 'Reconciliation Home' link and a 'Summary Report' title. A search bar is present, followed by filters for 'Name', 'Recon Dimension', 'Source Tables', and 'Folder'. The main content is a table with the following columns: Reconciliation Definition Name, Reconciliation Dimensions, Source Tables, Creation Date, and Created By. Two entries are visible in the table.

| <input type="checkbox"/> | Reconciliation Definition Name | Reconciliation Dimensions | Source Tables | Creation Date | Created By |
|--------------------------|--------------------------------|----------------------------------|---------------------------|---------------|---------------|
| <input type="checkbox"/> | CPBAL_TEST123 | Common COA, Currency, GL Account | Assets, Management Ledger | 12/29/2022 | FTP_ADMIN ... |
| <input type="checkbox"/> | FUNCT | Currency, GL Account | Assets, Management Ledger | 12/27/2022 | FTP_ADMIN ... |

This screen displays the following definition attributes for easy identification:

- Reconciliation Definition Name
- Reconciliation Dimensions across which reconciliation is performed
- Source Tables against which reconciliation is performed
- Creation Date
- Created By

4.10.1.1 Adding a New Reconciliation Definition

The Create Reconciliation screen allows you to define a new Reconciliation Definition.

Figure 4-34 Create Reconciliation Definition Screen

Create Reconciliation Definition [X]

Name Required

Description

Folder: COMMON

Access Type: Read

Reconcile Against: Entered Balance Required

Ledger Balance: Average Balance Required

Instrument Balance: Average Book Balance Required

Source Tables

- Assets
- Liabilities
- Ledger Instruments

Required

Reconciliation Dimensions

Common COA Currency GL Account

Legal Entity Org Unit Product

Audit Panel

Id
F16EA4EC70FA6D0FE0531513000AE0D8

To add a new Reconciliation Definition, click the **Add** button, and populate all the required fields as follows:

Reconciliation Definition set up allows you to choose for which Instrument Table, across which Dimensions and on which Balance Type (Cur Book Bal or Cur Par Bal); you would like to perform reconciliation. For example, you can choose to reconcile against just GL Account ID and Currency or do reconciliation at much granular level by selecting the Org Unit, Legal Entity along with GL Account ID and Currency.

4.10.1.2 Reconciliation Balance

Management Ledger stores balance using Financial Elements, while corresponding Cur/Avg Balance can be picked directly from the dedicated columns in the Instrument Tables. So, you have an option to choose if you want to reconcile against 100 (ending balance)/140 (average balance). In the Management Ledger for FE 100, you can further select between CUR_BOOK_BAL/CUR_PAR_BAL from Instrument table. By Default, CUR_PAR_BAL would remain selected. You are allowed to create plug entries only when comparison is done against ending balance. For Average balance, you can only see the difference report but would not be allowed to create plug entries.

You can choose to reconcile in functional or local currency as per the selection made under 'Reconcile Against'; Functional or Entered Currency.

You can do the comparison only for Asset, Liability, or can include Ledger Instrument table also. At run time, the As-of-Date can be passed for which Balance Reconciliation will be performed.

4.10.1.3 Actions Performed on Reconciliation Definition

To delete one or multiple Reconciliation Definitions, you can select the checkboxes against each one of them and press the **Delete** button.

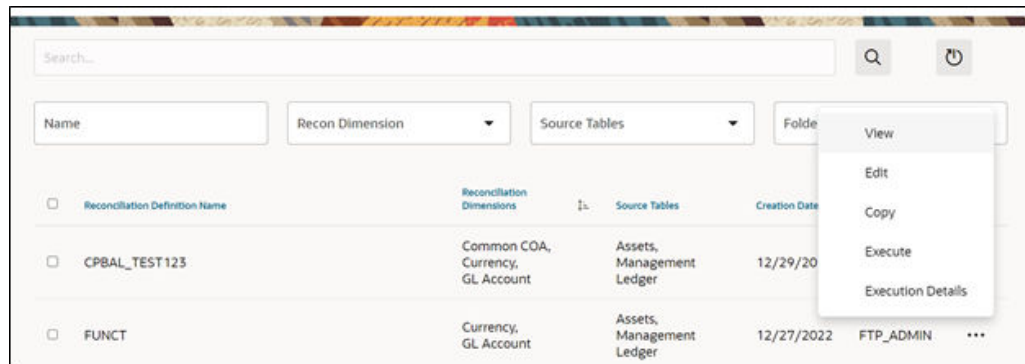
A confirmation message will let you confirm and delete selected definitions.

You can also perform search based on following fields:

- Name
- Reconciliation Dimensions
- Source tables against which reconciliation is performed
- Folder where the reconciliation definition is stored

The following screen display the Actions menu from which the different actions that you can perform on existing Reconciliation Definitions.

Figure 4-35 Actions Icon and Different Actions



The following are the actions:

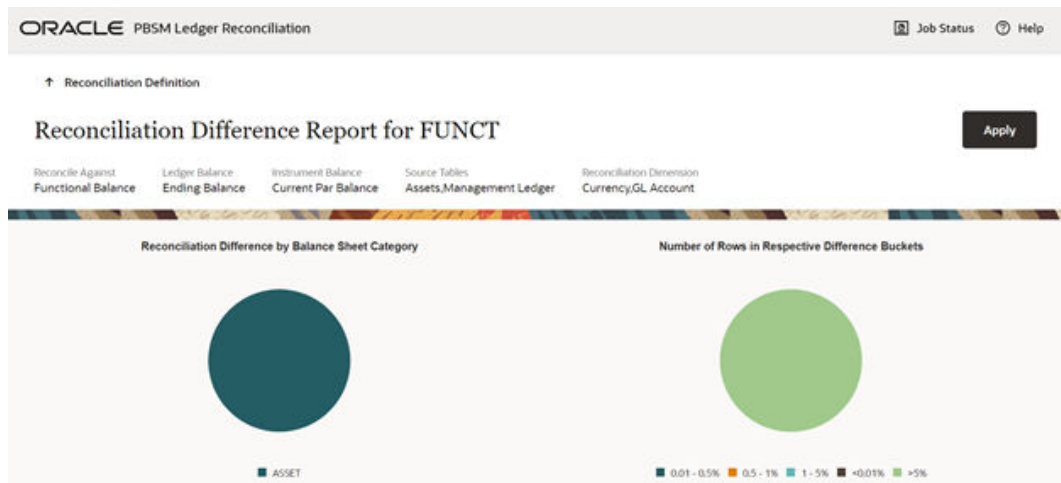
- **View:** Click this action button and view the definition in read only format.
- **Edit:** Click this action button and edit the definition.
- **Copy:** Click this action button and copy the definition to create another definition with similar parameters.
- **Execute:** Click this action button and perform the reconciliation as per the selected parameters.

As-of-Date is a run time parameter, you can choose for which date reconciliation needs to be performed. After clicking **Process**, the Reconciliation Difference Report will be generated as follows:

Figure 4-36 Reconciliation Report

Report starts with the summary across Balance Sheet categories and difference buckets pie charts, which can help you to get an idea about the reconciliation difference in a quick glimpse.

Figure 4-37 Reconciliation Difference Report



The detailed report is displayed as follows, where you can filter out insignificant difference using 'Threshold Percentage', also threshold can be applied at each row level or for whole Balance Sheet category level. If threshold is applied at Balance Sheet category level, all the rows that belong to the Balance Sheet category which is less than given percentage will be hidden from the Reconciliation Difference Report. A download button allows you to download the Reconciliation Report.

You can see difference in both percentage and absolute format.

Figure 4-38 Differences in Percentage and Absolute Formats

As of Date: 31 January 2021

| Category | % Diff (Against Ledger Balance) | % Diff (Against Account Balance) |
|----------|---------------------------------|----------------------------------|
| ASSET | 72.0538 | 260.3900 |

row(s) 1 - 1 of 1

| <input checked="" type="checkbox"/> | Category | GL Account | Currency | Ledger Balance (Thousands) | Account Balance (Thousands) | Reconciliation Difference (Thousands) | % Diff (Against Ledger Balance) | % Diff (Against Account Balance) |
|-------------------------------------|----------|------------------------|----------|----------------------------|-----------------------------|---------------------------------------|---------------------------------|----------------------------------|
| <input checked="" type="checkbox"/> | ASSET | Assets Ledger - 891 | USD | 33,672.98 | 37,754.61 | -4,081.63 | 12.1214 | 10.8110 |
| <input checked="" type="checkbox"/> | ASSET | Assets Ledger - 891 | SGD | 0.00 | 19,156.41 | -19,156.41 | | 100.0000 |
| <input checked="" type="checkbox"/> | ASSET | Liability Ledger - 892 | SGD | 1,564.06 | 626.68 | 937.38 | 59.9324 | 149.5790 |

As a next step to create the plug entries for filtered rows, you can click the **Apply** button in extreme right corner. Following a grid appears, along with default attributes fetched from default product attributes: if you like, you can update any of these attributes before plug entries are created for the selected difference records. You can use the **Edit** and **Save** button to edit the default product attributes like Amortization Type, Interest Rate Code, and so on. You cannot edit any Code (CD) or VARCHAR attributes. Only attributes like Number, Rates, Dates, Term can be edited. All types of balances like Org balance, Current/Average balance are same as the reconciliation difference.

After you are convinced with the entered values for all the account attributes, you can click Apply. A job will be submitted and plug entries will be created in the FSI D Ledger Instruments table. To differentiate the plug entries from the customer real accounts, Data source CD will be used, with value 3, which signifies the 'Difference balance entries due to reconciliation performed between account and ledger'.

Figure 4-39 Differences in Percentage and Absolute Formats

As of Date: 31 January 2021

| <input type="checkbox"/> | % Difference (Against Ledger Balance) | % Difference (Against Account Balance) | Comments | Amortization Type * | Adjustable Type * | Interest Rate Code | Net Rate | Original T |
|--------------------------|---------------------------------------|--|----------|---------------------|-------------------|--------------------|----------|------------|
| <input type="checkbox"/> | 12.1214 | 10.8110 | | 700 | 50 | USD Curve | 222.00 | |
| <input type="checkbox"/> | | 100.0000 | | 820 | 50 | AUD Curve | 99.00 | |
| <input type="checkbox"/> | 59.9324 | 149.5790 | | 820 | 50 | AUD Curve | 99.00 | |

- **Execution Details:** You can click this action button and view all the runs for a selected definition, along with the user information who has triggered the execution.

Figure 4-40 Execution Details

| Execution Details | | | | | | |
|---|----------------------------------|----------------|------------|------------------|-------------|---------------|
| Reconciliation Definition FOCC2C97784B2942E0535613000A65BA | | | | | | |
| Workspace Id | Object Id | Execution Mode | As Of Date | Execution Status | Executed By | Executed Date |
| d604b2a3-9cbb-4b5d-9dfb-350a3fb3258c | FOCC2C97784B2942E0535613000A65BA | | 01/31/2021 | | FTP_ADMIN | 12/30/2022 |
| d604b2a3-9cbb-4b5d-9dfb-350a3fb3258c | FOCC2C97784B2942E0535613000A65BA | | 01/31/2021 | | FTP_ADMIN | 01/03/2023 |
| d604b2a3-9cbb-4b5d-9dfb-350a3fb3258c | FOCC2C97784B2942E0535613000A65BA | | 01/31/2021 | | FTP_ADMIN | 01/03/2023 |

4.10.2 Duplicate Runs for Same As-of-Date

If for a particular As-of-Date plug entries are already created, you have an option to cancel the latest run and exit without creating any plug entries.

You can append to existing entries for same As-of-Date. This case is possible if different reconciliation definitions are being executed for different instrument tables.

You can delete all the existing plug entries for concerned As-of-Date and create all fresh entries. This case is possible if the intermediate day runs took place locally and finally at night a global run took place.

Figure 4-41 Confirm Plug Entry Creation

Confirm Plug Entry Creation

Duplicate Plug Entry

Reconciliation has already been performed for selected as of date, would you like to delete existing plug entries before creating as per latest run?

- Yes - Truncate existing and create fresh
- No - Keep existing and insert new
- Cancel - Abort the operation

Yes
No
Cancel

4.10.3 Historical Difference Report

You can open the Reconciliation Definition in **View** mode and get the Historical Difference Report using the **View Report** button.

Figure 4-42 View Reconciliation Report

Here you can give a historical period by selecting the **From Date**, **To Date** and fetch all the reconciliation difference records along with the user comments to get the justification for plug entries creation.

Figure 4-43 Historical Differences Report for FUNCT

| Product | Total Ledger Balance | Total Account Par Balance | Total Account Book Balance | Reconciliation Diff | % Diff Against Ledger Balance | % Diff Against Account Balance | Comments |
|---------|----------------------|---------------------------|----------------------------|---------------------|-------------------------------|--------------------------------|----------|
| -1 | 33,672,978.21 | 37,754,609.04 | 37,754,609.04 | -4,081,630.83 | 12.1214 | 10.8110 | |
| -1 | 0.00 | 38,312,827.50 | 38,312,827.50 | -38,312,827... | | 100.0000 | |
| -1 | 3,128,112.08 | 1,253,357.98 | 1,253,357.98 | 1,874,754.10 | 59.9324 | 149.5790 | |

4.10.4 Default Attributes

The following is the Default Attribute Summary screen, where you can find all the default attributes defined for various Product-Currency combinations.

You can select one or multiple Product-Currency combinations and delete at once, by clicking the **Delete** button.

Figure 4-44 Default Attributes Summary

| Product Name | Product ID | Currency | Status |
|----------------|------------|----------|--------|
| Default Member | -1 | SGD | ... |
| Default Member | -1 | 000 | ... |

row(s) 1 - 2 of 2

You can view/edit/copy an existing default attribute using respective button inn the Actions icon as follows.

Figure 4-45 Default Attributes Summary – Actions Column

| Product Name | Product ID | Currency | Status |
|----------------|------------|----------|--------|
| Default Member | -1 | SGD | ... |
| Default Member | -1 | 000 | ... |

row(s) 1 - 2 of 2

- View
- Edit
- Copy

4.10.4.1 Creating a New Product-Currency Combination and Default Attributes

To create a new Product-Currency combination and default attributes for that. You can click the Add button, and a slide in pop-up will appear with three tabs:

Core Product Attributes Tab: Here you can select one or multiple products and one or multiple currencies and start defining core product attributes as follows:

- Amortization Type
- Adjustable Type
- Interest Rate Code
- Net Interest Rate
- Original Term
- Original Term Type

Figure 4-46 Core Product Attributes

The screenshot shows a dialog box titled "Default Attribute Details" with a close button (X) in the top right corner. At the top, there are two required fields: "Product" with the value "Asset - 100" and "Currency Code" with the value "US Dollar - USD". Below these are three tabs: "Core Product Attributes" (selected), "Payment Attributes", and "Adjustable-Rate Attributes". Under the "Core Product Attributes" tab, there is an "Apply" button. The main area contains several fields: "Amortization Type" (Conventional), "Adjustable Type" (Fixed Rate), "Interest Rate Code", "Net Rate", "Original Term", and "Original Term Type". At the bottom right, there are three buttons: "Reset", "Close", and "Save".

Click **Apply** and move to the Payment Attributes tab.

Payment Attributes Tab: To Define payment attributes, you can select this tab and start filling the following details:

- Payment Frequency
- Payment Frequency Type
- Accrual Basis
- Interest Type
- Compounding Basis
- Payment Amount
- Remaining Number of Payments

Figure 4-47 Payment Attributes

Default Attribute Details

Core Product Attributes **Payment Attributes** Adjustable-Rate Attributes

Payment Attributes Apply

Payment Frequency: 1 Required Payment Frequency Type: Months Required

Accrual Basis: Actual/Actual Required Interest Type: Interest In Arrears Required

Compounding Basis: Simple Required

Payment Amount Remaining Number of Payments: 1

Click **Apply** and move to the Adjustable-Rate Attributes tab, which is applicable only for adjustable rate instruments:

Adjustable-Rate Attributes Tab: Here you can define following attributes:

- Repricing Frequency
- Repricing Frequency Type
- Rate Change Rounding Type
- Net Margin

Click **Apply** and then click **Save**. The Default Product Attribute for the selected Product-Currency combination is saved.

Figure 4-48 Adjustable-Rate Attributes

The screenshot shows a dialog box titled "Default Attribute Details" with a close button (X) in the top right corner. At the top, there are two required fields: "Product" with a dropdown menu showing "Asset - 100" and "Currency Code" with a dropdown menu showing "US Dollar - USD". Below these are three tabs: "Core Product Attributes", "Payment Attributes", and "Adjustable-Rate Attributes", with the latter being selected and highlighted with a blue border. Under the "Adjustable-Rate Attributes" section, there is an "Apply" button on the right. Below the button are four input fields: "Repricing Frequency" (text input), "Repricing Frequency Type" (dropdown menu), "Rate Change Rounding Type" (dropdown menu), and "Net Margin" (text input).

4.10.5 Reconciliation using Batch Process

You can do Reconciliation using the Scheduler Services.

To run the Reconciliation using Batch Process, follow these steps:

1. With the Define Batch feature, it is possible to create new batches and review existing ones.
2. Click + to create a new batch.
3. In the **Create Batch** screen, enter the following values:
 - a. Code (spaces are not allowed in the code section).
 - b. Batch Name
 - c. Select the Service URL name as **RUN_CMD_SERVICE**.
 - d. Click **Save**.
4. In the **Define Task** screen, you can define the tasks related to a specific batch.
 - a. Navigate to Define Task.
 - b. Select the name of the batch that has been created for this task.
5. Click + to create a new task.
6. In the **Create Task** screen, enter the following values:
 - a. Task Code (Spaces are not allowed in the code section).
 - b. Task Name.
 - c. Select the task type as **REST**.
 - d. Select the component as **RUNCMD**.
 - e. Select Batch Service URL as **RUN_CMD_SERVICE**.
 - f. Click **Save**.

7. In the **Task Parameter** section, enter the following values:
 - a. Select the Code as **RUN CMD RECONCILIATION**.
 - b. Select the Execution Venue as **NATIVE**.
 - c. Select the Optional Parameter as **THRESHOLD_OBJECTCODE_OPTION** format.
 - d. Select the IP as **localhost**.

The allowed values for the Option are either 0 or 1.

- **0**: Truncate all existing data for concerned AS_OF_DATE/MIS_DATE for which reconciliation batch is getting executed and insert new data.
- **1**: Append data on top of existing data for concerned AS_OF_DATE/MIS_DATE to ledger instrument and reconciliation difference Audit table (Table to retain comments for each plug entry).

Threshold values must be greater than or equal to zero (0), negative values are not supported. Threshold values should be expressed as “threshold >= 0” The threshold will accommodate null values, allowing all data to be inserted into the ledger instrument and reconciliation difference audit tables.

When a threshold is applied, plug entries will be created only for filtered data into the ledger instrument and reconciliation difference audit tables.

 **Note:**

Select the appropriate object code/reconciliation definition to avoid errors in the batch process.

The optional values should be passed in the following format:
“THRESHOLD_OBJECTCODE_OPTION”

Example 1: “_F405734331FD795BE053D71A000AD329_0

(Threshold is null, and object code is: F405734331FD795BE053D71A000AD329, option value is 0)

Example1: 12_F405734331FD795BE053D71A000AD329_1

(Threshold is 12, and object code is: F405734331FD795BE053D71A000AD329, option value is 1)

8. Schedule the batch using the **Schedule Batch** screen.
Select the **Name** of the batch that has been created.

You can use the **Edit Parameters** option to review the batch parameters and make any necessary changes to initializing the batch process.
9. The following tasks should be performed in a manner similar to what was outlined in point number 7.
 - a. The **MIS Date** is used as the **As of Date** in the Reconciliation UI. Select the appropriate **MIS Date**.
 - b. The values in point 6 are the default values for a specific environment.
 - c. After completing the changes, click **Execute** or **Save**.
 - i. By clicking **Save**, the definition of the batch will be saved, however, the batch will not be executed.

- ii. By clicking **Execute**, the batch will be executed.

After the batch is executed, an **Execute Status** dialog is displayed, providing information about the executed batch.

After the batch is executed, the information about the executed batch will be available in the **Monitor Batch** screen. Select the following options and check the Batch Status.

Sometimes, a batch may fail. The reason for the batch failure could be as follows:

- Entering an incorrect object code.
- Entering an incorrect option value. Only values of 0 or 1 are supported.
- Entering an incorrect threshold value. Only null or a value ≥ 0 are supported.

 **Note:**

Following roles mapping to the SKU User group should be present to enable RUNCMD listing and execution.

- RCMDREAD
- RCMDADVND

For detailed instructions for defining, executing, and monitoring a Batch, see the [Scheduler Service](#) documentation.

5

Business Rules Administration

This section covers the following topics:

1. **Reference Data:** This section explains about the baseline configurations like interest rate curves, Currencies set up, Economic indicators on which Various rules/assumptions can be defined. These configurations are referred across various modules and used in subsequent calculations.
2. **Common Rules:** This section explains about rules which are common across all multiple applications in Profitability and Balance Sheet Management Cloud Service suite like ALM, CFE, PFT, and FTP.
3. **Cash Flow Engine Cloud Service Specific Rules:** This section explains about Cash Flow Engine Cloud Service specific modules which are particularly referenced for Cash Flow Engine calculations.

5.1 Reference Data

This section covers the following topics:

1. **Currencies:** Currencies module allows you to define and maintain the currencies and currency rates.
 - **Currencies:** Currency module supports the definitions and maintenance of currencies.
 - **Currency Rates:** Currency Rates module uses the currencies defined and activated in the Currency module to support the creation and maintenance of Historical Exchange Rates.
2. **Interest Rate Curve:** The Interest Rate Curve in PBSM Cloud Service allows you to define and manage complex Yield Curve definitions using multiple Rate Formats and other Rate Attributes to give you data storage capabilities appropriate to your market. The Interest Rate Curve supports the creation and maintenance of Historical Rate Data for each Yield Curve you define.
3. **Economic Indicator:** An Economic Indicator is any economic statistic such as the Consumer Price Index (CPI), growth rate of the Gross Domestic Product (GDP), unemployment rate, Purchasing Managers Index, indices of consumer confidence, and so on.
4. **Dimension Management:** Dimension Management facilitates you to categorize data into a single object as a Member; define levels and aggregate data to form the Hierarchies, and distinguish each member by defining the required Attributes.
 - **Members:** Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object such as Product, Organization, Time, and so on.
 - **Attributes:** Attributes refers to the distinguished properties or qualifiers that describes a Dimension Member.

- **Hierarchies:** Hierarchies refer to Dimension Members that are arranged in levels, with each level representing the aggregated total of the data from the level below. One dimension type can have multiple hierarchies associated with it.
5. **Behavior Patterns:** User Defined Behavior Patterns allow you to define Principal Amortization Schedules for Non-Maturity Products in your portfolio.
 6. **Repricing Patterns:** User Defined Repricing Patterns provide a mechanism to capture Instrument Repricing Patterns that are too complex to be accommodated through the use of the Standard Account Table Fields.
 7. **Payment Patterns:** User defined payment patterns allow you to define custom repayment patterns for products in your portfolio.

5.1.1 Currencies Setup

Currencies module supports the definitions and maintenance of currencies. Currency definitions are fundamental to the definition of both interest rate yield curves and currency exchange rates.

5.1.1.1 Currency Setup

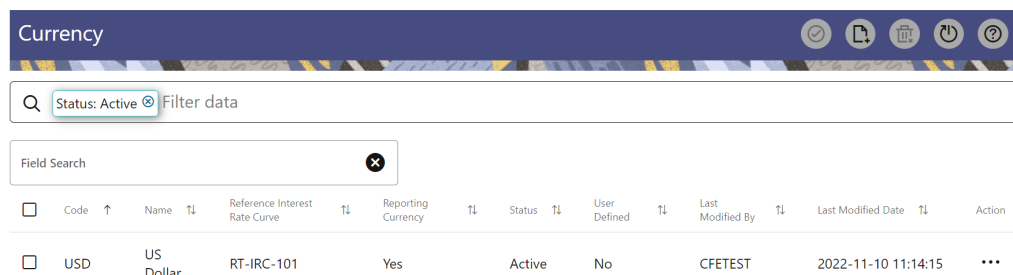
Financial institutions transact business in more than one currency. Transacting business in multiple currencies demands functional capabilities for multi-currency accounting and currency rate management.

Currency module supports the definitions and maintenance of currencies. Currency definitions are fundamental to the definition of both interest rate yield curves and currency exchange rates. A key attribute of every yield curve is the currency with which it is associated, and currency exchange rates can only be established between defined currencies. A comprehensive list of ISO-defined currencies is provided; you can also define and add your user-defined currencies.

Currency Summary

This page is the gateway to all Currencies and related functionality. You can navigate to other pages relating to Currencies from this point.

Figure 5-1 Currency Summary



| <input type="checkbox"/> | Code | Name | Reference Interest Rate Curve | Reporting Currency | Status | User Defined | Last Modified By | Last Modified Date | Action |
|--------------------------|------|-----------|-------------------------------|--------------------|--------|--------------|------------------|---------------------|--------|
| <input type="checkbox"/> | USD | US Dollar | RT-IRC-101 | Yes | Active | No | CFETEST | 2022-11-10 11:14:15 | ... |

Search Currency

Prerequisites: Predefined Currency

To search for a Currency:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Currencies that meet the search criteria.

Or

An alternative method to search a Currency Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Currency Rule Summary. Enter the **Code, Name, Status, Reporting Currency, or User Defined** of the Currency and click **Search**.

The Currency Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Currency Rule.

- **Code:** The 3-letter ISO code of Currency
- **Name:** The Currency's short name.
- **Reference Interest Rate Curve:** Displays the Reference Interest Rate Curve of Currency
- **Reporting Currency:** Indicates whether currency is marked for use as Reporting Currency
- **Status:** Displays the Active or Inactive status of Currency.
- **User Defined:** Identifies any user-defined currency, that is, a currency not seeded by Cloud Service
- **Action:** Click this icon to view a list of actions that you can perform on the Currency Rule.
 - **Multiple Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
 - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Currency Rules. To edit a rule, you must have Read/Write privilege.
 - **Save As:** You can reuse a Currency Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - **Delete:** You can delete Currency Rules that you no longer require. Note that only Currency Rule owners and those with Read/Write privileges can delete Currency Rules. A Currency Rule that has a dependency cannot be deleted.
 - **Dependency Check:** You can perform a dependency check to know where a particular Currency Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Currency Rules that have dependencies. . A report of all rules that utilize the selected Currency Rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

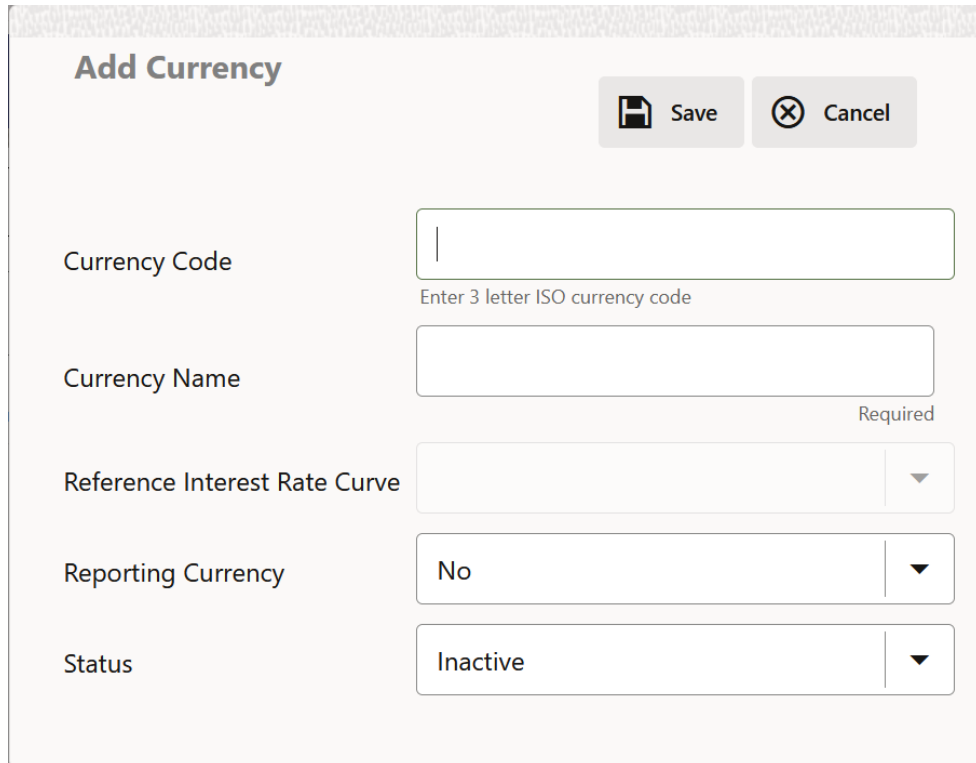
- [Add a Currency](#)

5.1.1.1.1 Add Currency

To add a Currency, follow these steps:

1. Navigate to **Reference Data** and select **Currency**.
2. Click **Add** icon on Currency summary page. The **Add Currency** page is displayed.

Figure 5-2 Add Currency Page



Add Currency

Save Cancel

Currency Code
Enter 3 letter ISO currency code

Currency Name Required

Reference Interest Rate Curve

Reporting Currency

Status

3. Enter the following details:

Table 5-1 Adding a Currency – Fields and Descriptions

| Fields | Description |
|---------------|---|
| Currency Code | For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these can be any pure character string (no numbers) up to a length of 3 characters. |
| Currency Name | For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these can be any string up to a length of 40 characters. |

Table 5-1 (Cont.) Adding a Currency – Fields and Descriptions

| Fields | Description |
|-------------------------------|---|
| Reference Interest Rate Curve | Reference Interest Rate Curve is the Interest Rate Curve with which currency is associated for exchange rate forecasting purposes. Define multiple yield curves each of which has the same Reference Currency, but a currency can only have one Reference Interest Rate Curve. |
| Reporting Currency | A reporting currency is an active currency to which balances in other currencies can be consolidated to facilitate reporting. Balances in reporting currencies can be, in turn, consolidated to the functional currency. For example, an American multinational bank might consolidate its holdings in Asian currencies to the Japanese yen (Reporting Currency) and its balances in European currencies to the Euro (Reporting Currency) after which it might consolidate these reporting currencies to the U.S. dollar (Functional Currency). |
| Status | The status of any currency can be either Active or Inactive. You must Activate a currency before doing the followings: <ul style="list-style-type: none"> a. Define that currency as a Reference Currency for an Interest Rate curve. b. Enter Exchange Rate data for a currency. c. Define Forecast Rates for that currency. d. Define any other business rule like Prepayment, Transfer Pricing for that currency. |

 **Note:**

- For the Oracle Financial Services Climate Change Analytics Cloud Service application, select 'Yes' for the Reporting Currency. This supports the Exchange Rate Conversion in the Currency Rate feature.
- The Reference Interest Rate Curve is not applicable for processing and analytical purposes in Oracle Financial Services Climate Change Analytics Cloud Service.

4. Click **Save**.

5.1.1.2 Currency Rates

Currency Rates Module uses the currencies defined and activated in the Currency Module to support the creation and maintenance of Historical Exchange Rates. In the Currency Rate Window, you can manage historical Exchange Rates between currencies.

To Currency defaults to the Initial Currency selection from the Assumption Management defaults in the Active Preferences Window. You can select another To Currency from the drop-down list that displays all Active Currencies.

Editing Exchange Rate Data

Select the check box on the left-hand side of any row to enable the **Edit** icon. After clicking Edit, the row becomes active to edit the **Effective Date** and (or) the **Exchange Rate**. Click **Save** to save the changes.

Viewing Exchange Rate Data

By default, both the Floating Currency Rates Pane and the Fixed Currency Rates Pane display the most recent month of historical Exchange Rate Data. You can control the amount of data displayed by selecting a different value from the **Effective Date Range** drop-down list in the **Currency Selection** Window.

From Date and **To Date** can also be modified to view relevant Currency Rates.

Deleting Exchange Rate Data

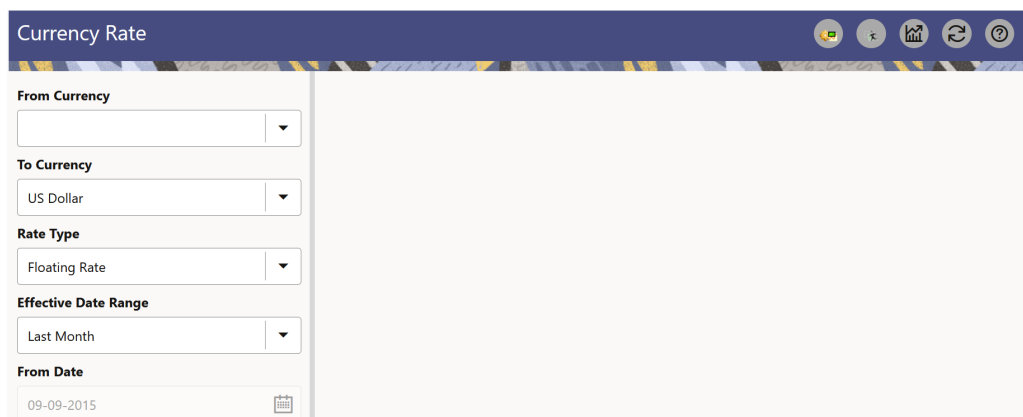
Select one or more check boxes on the left-hand side of any row to enable the **Delete** icon. After clicking Delete, a confirmation message is displayed. Click **Ok**.

5.1.1.2.1 Adding Exchange Rate Data

Based on the Rate Types, you can add the following Exchange Rate Data:

- **Floating Rates**
Floating Exchange Rates, such as those between the US Dollar (USD), the Pound Sterling (GBP), the Japanese Yen (JPY), and the Euro (EUR), are market-driven and can change from day-to-day, hour-to-hour, or minute-to-minute.
- **Fixed Rates**
Some countries, especially smaller countries or countries that have experienced significant inflation in the recent past, can wish to “peg” their currency to a larger, more stable currency such as the US Dollar, Japanese Yen, or Euro.

Figure 5-3 Currency Rates



The screenshot shows a window titled "Currency Rate" with a dark blue header. Below the header, there are several configuration options:

- From Currency:** A dropdown menu with a downward arrow.
- To Currency:** A dropdown menu with "US Dollar" selected and a downward arrow.
- Rate Type:** A dropdown menu with "Floating Rate" selected and a downward arrow.
- Effective Date Range:** A dropdown menu with "Last Month" selected and a downward arrow.
- From Date:** A text field containing "09-09-2015" and a calendar icon to its right.

Adding Floating Rate Data

To add the Exchange Rate Data, follow these steps:

1. Select a **From Currency**.
2. Select a **To Currency**.
3. Select **Rate Type** as **Floating Rate** (default selection is Floating Rate).
4. The RHS pane is displayed as Floating Currency Rates.
5. Select **Effective Date Range** to enter the values in From Date and To Date fields.
6. Select the **Rate Provider**.
7. Currency Rate Pane initially displays a single blank row followed by the most recent month's Exchange Rate data (if any such Exchange Rate Data already exists). To enter a single new Exchange Rate Data Point, enter data into the blank row.

Table 5-2 Floating Currency Rates

| Fields | Description |
|----------------|--|
| Effective Date | Directly enter a date or select the Calendar icon to choose an effective date for your new Exchange Rate data point. Rate Management Stores the Historical Exchange Rate Data. You cannot enter Exchange Rate data for dates greater than the current date. |
| Exchange Rate | This must be entered as 1 unit of From Currency are converted to n unit of To Currency. |
| Status | Status is a read-only display that is updated after the Currency Rates Validation has been run. |
| Data Origin | The Data Origin is displayed read-only and indicates whether the rates were input through the UI or the Data Loader. |

8. Click **Save**.
9. Click **Add** to add additional blank rows to enter the additional Effective Dates and Exchange Rates. After adding the multiple new Exchange Rates, click **Save**.

Adding Fixed Rate Data

To add the Exchange Rate Data, follow these steps:

1. Select a **From Currency**.
2. Select a **To Currency**.
3. Select **Rate Type** as **Fixed Rate**.
4. After selecting a **To Currency** value, the RHS pane is displayed as Fixed Currency Rates.
5. Select **Effective Date Range** to enter the values in From Date and To Date fields.
6. Select the **Rate Provider**.
7. Currency Rate Pane initially displays a single blank row followed by the most recent month's Exchange Rate Data (if any such Exchange Rate Data already exists). To enter a single new Exchange Rate Data Point, enter data into the blank row.

Table 5-3 Fixed Currency Rates

| Fields | Description |
|------------------------|--|
| Effective From Date | Directly enter a date or select the Calendar icon to choose a starting effective date for your new Exchange Rate Data Point. |
| Effective To Date | Directly enter a date or select the Calendar icon to choose a ending effective date for your new Exchange Rate Data Point. |
| Currency Exchange Rate | This must be entered as 1 unit of From Currency are converted to n unit of To Currency. |
| Status | Status is a read-only display that is updated after the Currency Rates Validation has been run. |
| Data Origin | The Data Origin is displayed read-only and indicates whether the rates were input through the UI or the Data Loader. |

8. Click **Save**.
9. Click **Add** to add additional blank rows to enter the additional Effective Start and End Dates and Exchange Rates. After adding the multiple new Exchange Rates, click **Save**.

5.1.1.2.2 Currency Exchange Rate Validation

Exchange Rate Validation has the following features:

- Movement of historical Exchange Rates to the Currency Direct Access Table.
- Calculation of inverse Exchange Rates for Reporting Currencies.
- Calculation of triangulated Exchange Rates where possible.

Features of Exchange Rate Validation

The goal of Exchange Rate Validation is to ensure that Exchange Rates from all active currencies to all reporting currencies are available for processing. Some of these rates can come from the validated direct input, others are calculated based on relationships with other rates. To support triangulation, all fixed Exchange Rates are available for all currencies that make up an exchange that needs to be triangulated. Also, a direct Exchange Rate between each Child Currency and each reporting currency is calculated and supplied to support quick access to Exchange Rates. If a Child currency is a Reporting Currency, then Exchange Rates are calculated for all currencies having an exchange relationship with the Parent Currency.

Validating Exchange Rate Relationships

You must run the Exchange Rate Validation Process after adding or modifying Exchange Rate Data. Run the process immediately or schedule one or more to be run in the future.

Each Exchange Rate has one of the following statuses:

Table 5-4 Details of Exchange Rates

| Fields | Description |
|-------------------|---|
| Not Yet Validated | The Exchange Rate has been input or loaded but not yet validated. |
| Valid | The Exchange Rate has been validated. |
| Invalid | The Exchange Rate has violated one or more acceptance rules. |

Only Exchange Rates in valid status are available for processing and they are not subject to future validation unless you edit them. The Rate Validation Status is displayed in the Currency Rates Window of the Rate Management.

Exchange Rate Validation Criteria

In the Rate Validation Process, all Exchange Rate relationships in the database are examined for compliance with the following criteria. Error messages and warnings are displayed if one or more criteria are not met.

- If a currency is defined as a Child in a fixed exchange relationship then it must not be in any floating (standard) Exchange Rate Relationship at the same time. Consequently, all floating Exchange Rates to or from the Child Currency must be defined through the Parent Currency. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child Currency exists in a standard Exchange Rate within the same time period.
- A Child Currency within a fixed relationship must not be a Child Currency in any other Fixed Relationship during the same time period. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child Currency already exists in a fixed relationship for the same time period.
- A Circular Relationship must not exist. In other words, a Child Currency cannot link back to its Parent in any other fixed rate Relationship within the same time period. If it does, then the following message is displayed: Invalid fixed relationship creates a circular relationship with other fixed Exchange Rates.
- Regarding new Floating (standard) Exchange Rates, from and To currencies must not exist as Child Currencies within any Fixed Exchange Rate Relationships. If this criterion is not met then the following message is displayed: From/To/Both currency(ies) in the new Exchange Rate already exist in a fixed relationship for the same time period.
- If any Exchange Rate is equal to 0, then a warning message is displayed. Generally speaking, 0 is a valid value. You can use it, for example, to designate an Exchange Rate with a currency of a country that no longer exists.

If two Exchange Rate Relationships fail to meet these criteria then both of them will be labeled Invalid. (Exception, if one of the relationships is already in Valid status, then the other one will be labeled Invalid.) For example, if a currency is defined as a Child in a Fixed Rate Relationship and is also defined as being in a Floating Relationship at the same time, then both Fixed and Floating Rates for that currency will be labeled Invalid.

If there are both direct and Inverse Floating Exchange Rates defined for any two currencies (in other words, one currency is both a To and a From Currency in relation to the other), then both relationships will be marked valid.

Running an Exchange Rate Validation

You can run a validation immediately or schedule one or more for later. The Validation Status is displayed in the **Currency Rates** window.

You can execute the Exchange Rate validation using the **Currency Rates Validation** option.

To execute the Exchange Rate Validation, follow these steps:

1. Click **Currency Rates** Validation.
2. To execute Exchange Rate validation from the **Currency Rates** window, the following options are available:
 - **Specify Dates:** After selecting this option, a Select Dates Pane is displayed to enter or verify the Start Date and End parameters. These dates will be passed to the batch for execution.
 - **Start Date:** This defaults to the date of last rate validation.
 - **End Date:** This defaults to the current date.
 - **Validate For All Dates:** Select this option to validate all the rates irrespective of dates.

 **Note:**

This option will replace all of the validated Exchange Rate History and can be a time-consuming process depending on the amount of history available to be processed.

5.1.1.2.3 Download

The Download functionality is used to download the Historical Exchange Rates.

5.1.1.2.4 Importing Currency Rates

To import the Currency Rate, follow these steps:

1. Navigate to the **Currency Rate** page.
2. Select **Upload Data**.
3. Select the type of Rate as **Floating** or **Fixed**.
4. Click the **Drag and Drop** option to select the file.

 **Note:**

The excel file, you are uploading should be in a specific format. You can download the template using the Download Template option. The Templates for Fixed and Floating Rate Types.
Currency rates UI bulk upload supports only **YYYY-MM-DD** date format

5. Click **Upload**.

5.1.2 Interest Rates

The quality and availability of Interest Rate information vary throughout the world. In many markets, gathering comprehensive rate information is a challenge because of insufficient security types, inconsistent quoting conventions, and lack of liquidity. The Interest Rate Curve in Cloud Service allows you to define and manage complex Yield Curve definitions using multiple Rate Formats and other Rate Attributes to give you data storage capabilities appropriate to your market. The Interest Rate Curve supports the creation and maintenance of Historical Rate Data for each Yield Curve you define.

Historical Interest Rate Data is utilized in the Cloud Service to generate the Transfer Rates, add-On Rates, rates for market value calculations, Option Costs, and Forecasted Interest Rate Scenarios.

Interest Rate Rule Summary

This page is the gateway to all Interest Rate Rules and related functionality. You can navigate to other pages relating to Interest Rate Rules from this point.

Figure 5-4 Interest Rate Curves Summary

| Interest Rate Codes | Name | Structure Type | Currency | Created By | Creation Date | Last Modified By | Last Modified Date | Action |
|---------------------|--------------|----------------|----------|------------|---------------|------------------|--------------------|--------|
| 12 | IRC | Standard | USD | ALMUSER | 2023-11-21 | almqa | 2023-12-12 | ... |
| 13 | Afghan IRC | Standard | AFA | almqa | 2023-11-30 | almqa | 2023-11-30 | ... |
| 101 | RT-IRC-101 | Standard | USD | CFETEST | 2023-07-20 | CFETEST | 2023-09-15 | ... |
| 102 | SaveAsAPL102 | Standard | USD | almqa | 2023-06-13 | almqa | 2023-06-13 | ... |
| 201 | RT-IRC-201 | Standard | USD | CFETEST | 2023-07-20 | almqa | 2023-11-15 | ... |

Search Interest Rate Rule

Prerequisites: Predefined Interest Rate Rule

To search for an Interest Rate Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Interest Rate Rules that meet the search criteria.

Or

An alternative method to search an Interest Rate Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Interest Rate Rule Summary. You can enter the **Interest Rate Code**, **Name**, **Currency**, **Rate Format**, and **Structure Type** of the Interest Rate Rule and click **Search**.

The Interest Rate Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Interest Rate Rule.

- **Interest Rate Code:** The Interest Rate Curve's Code. The code is a unique number in the range of 1 to 9999999. Hover on a row in the pane to display the Interest Rate Curve's detailed description.
- **Name:** The Interest Rate Curve's short name.
- **Structure Type:** The Structure Type (Standard, Hybrid) of the Interest Rate Curve.
- **Currency:** The Currency (Reference Currency) for which Interest rate curve is defined.
- **Created By:** The Name of the user who created the Interest Rate Curve.
- **Creation Date:** The Date and Time when Interest Rate Curve was created.
- **Last Modified By:** The user who last modified the Interest Rate Rule.
- **Last Modified Date:** The Date and Time when the Interest Rate Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Interest Rate Rule.
 - **Multiple Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
 - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Interest Rate Rules. To edit a rule, you must have Read/Write privilege.
 - **Save As:** You can reuse an Interest Rate Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - **Delete:** You can delete Interest Rate Rules that you no longer require. Note that only Interest Rate Rule owners and those with Read/Write privileges can delete Interest Rate Rules. An Interest Rate Rule that has a dependency cannot be deleted.
 - **Dependency Check:** You can perform a dependency check to know where a particular Interest Rate Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Interest Rate Rules that have dependencies. A report of all rules that utilize the selected Interest Rate Rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Create Interest Rate Rule](#)

5.1.2.1 Creating an Interest Rate Curve

To create an Interest Rate Curve, perform the following steps:

1. Click **Add** from the **Interest Rate Curve Summary** Page to display the **Interest Rate Curve** Page.

2. Enter the following information in the **Interest Rate Curve Details** Window.
 - **Interest Rate Code:** When constructing a new Yield Curve, you must specify an Interest Rate Code between 1 and 9999999. Interest Rate Codes are used internally to uniquely identify Yield Curves. When working with Cloud service, you reference Yield Curves by Name, not by Interest Rate Codes. Interest Rate Codes are embedded within your instrument data (for example, the INTEREST_RATE_CD columns within the Instrument Data are populated with Interest Rate Codes). After you have saved a Yield Curve, you cannot modify its Interest Rate Code.
 - **Name:** Provide a unique Name for the Interest Rate Curve.
 - **Description:** You can enter a description for the Interest Rate Curve. You can modify this description at any time using the Edit action.
 - **Display for All Currencies:** This flag allows you to designate certain Interest Rate Curves to make them available for assumption mapping to any currency. Assumption Rules filter the list of Interest Rate Codes based on the currency when defining assumptions for a specific Product/Currency combination. When this option is enabled, the Interest Rate Curve appears in assumption rules for all currencies.
 - **Reference Currency:** Select a Reference Currency for your Interest Rate Curve. You can change the Reference Currency for previously saved Interest Rate Curves though such changes are unlikely. An Interest Rate Curve's Reference Currency is the currency for which your market rates are valid. For example, the Reference Currency for a Prime Rate Yield Curve would be US Dollars. The Reference Currencies drop-down list displays only Active currencies. For more information on Active and Inactive currencies, see the [Currency](#) Documentation.
 - **Date Based Term Points:** This toggle switch is applicable only for Standard Structure Type. If you select Structure Type as Hybrid, the toggle switch is disabled. When you select the Date Based Term Points, and add a Term Point, the Historical Rates Tab allows you to define a Custom Date and Rate for each Term Point. By default, the Date is inserted based on the Term that you define. You can change the Date to a custom Date and define the Rate.
 - **Risk-Free:** (Optional) This flag is for tagging the Interest Rate Curve as risk-free. That is Edit Table in new and Edit Modes. It is available for Non-Hybrid Curves and Hybrid Curves.
 - **Structure Type:** This attribute is required for each Yield Curve. Structure Type supports both Standard and Hybrid Yield Curve Definitions. Hybrid Yield Curves are re-expressions of one or more pre-existing Standard Yield Curves. For more information, see Hybrid Term Structure Tab under Interest Rate Code Tabs. After you have saved the Yield Curve, you cannot change the selected Structure Type.

5.1.2.1.1 Standard Interest Rate Curves

Interest Rate Curve Tabs are used to define the Yield Curve and to add, edit, or delete Historical Interest Rate Data. The Interest Rate Curve Tabs are:

- Terms & Attributes
- Historical Rates
- Hybrid Term Structure

For new Yield Curves, you must begin with the Terms & Attributes Tab. After you have selected the term structure and attributes for a Yield Curve, you cannot edit them. After assigning the attributes, navigate to the Terms Tab to define a term structure for your Yield

Curve, for example, an overnight rate, a one-month rate, a three-month rate, and so on. Click Apply after defining the term structure and attributes to the Interest Rate Curve.

 **Note:**

You must specify an Interest Rate Code and Name in the Interest Rate Curve Details Window before navigating to the Terms & Attributes Tab.

The first time you navigate to the Terms & Attributes Tab, an initial 1-month term point is provided, but even if this is the only term point you want for the curve, you must click **Apply** to finish term structure specification. In future revisions to the Curve's Definition, navigate directly to the **Historical Rates** Tab, but if you modify the term structure, you must always click **Apply** on the **Terms & Attributes** Tab before navigating to the **Historical Rates** Tab.

The **Historical Rates** Tab is used to input historical interest rate data. This Tab is used for maintaining the Interest Rates Database. To navigate to the Historical Rates Tab, either click **Apply** on the **Terms & Attributes** Tab or select the **Historical Rates** Tab if you have already defined your term structure.

 **Note:**

You must specify the following before navigating to the **Historical Rates** Tab:

- An Interest Rate Code, Name, and Reference Currency in the Interest Rate Code Details Window.
- A term structure in the **Terms & Attributes** Tab.

5.1.2.1.1.1 Terms & Attributes

The Terms & Attributes Tab displays the following fields:

- **Adding New Term Points:** Click **Add** to add a new row. (New term points by entering a Term value and selecting a Multiplier (such as 7 days, 2 months, 5 years, and so on). Rate Format, Compounding Basis, and Accrual Basis can be selected for the term point. Zero Coupon Yield, Annual, Actual/Actual are the pre-selected values in UI which you can modify.
One Yield Curve can have two combinations of attributes. For example, first 3 term points have Zero Coupon Yield, Annual, Actual/Actual attributes and remaining term points are Yield to Maturity, Annual and 30/360.

Figure 5-5 Terms and Attributes Tab

| Terms & Attributes | | | Historical Rates | | Hybrid Term Structure | |
|--------------------------|------|------------|-------------------|-------------------|-----------------------|---------|
| <input type="checkbox"/> | Term | Multiplier | Rate Format | Compounding Basis | Accrual Basis | Actions |
| <input type="checkbox"/> | 1 | Months | Zero Coupon Yield | Annual | Actual/Actual | |
| <input type="checkbox"/> | 2 | Months | Zero Coupon Yield | Annual | Actual/Actual | |
| <input type="checkbox"/> | 3 | Months | Zero Coupon Yield | Annual | Actual/Actual | |
| <input type="checkbox"/> | 6 | Months | Zero Coupon Yield | Annual | Actual/Actual | |
| <input type="checkbox"/> | 1 | Years | Zero Coupon Yield | Annual | Actual/Actual | |
| <input type="checkbox"/> | 2 | Years | Zero Coupon Yield | Annual | Actual/Actual | |

Click “+” at the term point where you want to modify attributes. Rate Format, Compounding Basis, and Accrual Basis fields are enabled for modification.

- **Rate Format:** You should select either the Zero Coupon Yield or Yield to Maturity Rate Format. Rates entered in the Historical Rates Tab are always entered in the nominal form, such as 5.125% or 6.875%, not as discount factors.
- **Compounding Basis:** Select a Compounding Basis for the term point:
 - Daily
 - Monthly
 - Quarterly
 - Semiannual
 - Annual
 - Simple
 - Continuous
 - At Maturity
- **Accrual Basis:** Select an Accrual Basis for the Yield Curve.
 - 30/360
 - Actual/360
 - Actual/Actual
 - 30/365
 - 30/Actual
 - Actual/365
 - Business/252
- **Deleting Existing Term Points:** To delete an existing term, select the term point (or terms), and click **Delete**.

You can also click **Add Multiple Rows** to select the number of multiple rows that you want to add.

You can construct the Yield Curve's Term Structure. You can specify as many Yield Curve Terms from the 1 day to 100 years range. However, the UI allows only two combinations of Rate Format, Compounding Basis, and Accrual Basis per one Interest Rate Curve Definition.

The Interest Rate Curve Definition Module automatically selects the combination of Rate Format, Compounding Basis, and Accrual Basis when a new Term Point is greater than the already defined Term Points. For example, if you define two Term Points with 15 Days, one Month Multipliers, and another Term Point with 2 Years Multiplier. When you define a new Term Point with 45 Days Multiplier, the Interest Rate Curve Definition Module automatically selects the combination of Rate Format, Compounding Basis, and Accrual Basis that is selected for the first two Term Points. Similarly, if you define a Term Point, which is greater than the 2 Years Multiplier, then the module selects the combination of Rate Format, Compounding Basis, and Accrual Basis that is selected for the 2 Years Term Point.

5.1.2.1.1.2 Historical Rates

Use the Historical Rates Tab to define, modify, or view Interest Rate Data. Enter data in simple percentages (such as 5.125, 4.875, and so on).

The **Rate Data Source** Column shows from where the rates are taken from, they are either entered through the User Interface, loaded through the Data Loader, or generated using the Generate Rates of Hybrid IRC.

You can perform the following tasks:

- Add Historical Rates
- Excel Import or Export
- Deletion of Historical Rates

5.1.2.1.1.2.1 Add Historical Rates

By default, the **Historical Rates** Tab displays Interest Rate Data for the past month (for example, for the 30 days leading up to the current date). Click the **Effective Date Range** drop-down list to expand your view to the last 3 months, 6 months, one year, 3 years, 6 years, or all rate data.

5.1.2.1.1.2.2 Deletion of Historical Rates

To delete Historical Rates entered, select one or more rows and then click **Delete**.

5.1.2.1.1.2.3 Excel Import or Export

To aid in data entry, use the Excel Import or Export functionality to add or edit rate data to Historical Rates. This is an optional step.

Excel Export:

To export the data, perform the following steps:

1. Click **Export** to export data for the chosen selected effective date range. Within the same block, select Export to Excel, which launches the Excel application and displays the Data Window including headers.

Excel Import:

The excel file exported above can be used as a template to import the Historical Rates.



Note:

Ensure that the date format is yyyy-MM-dd in the excel file. For example, 2022-06-13.

1. On the Interest Rates toolbar, click the **Import** icon. Select the file containing the Historical Rates.
2. Data from the file is displayed on the UI. If appending data that pre-existed for the same effective date, the import will overwrite existing data.
3. Add or edit data if required.
4. Click **Apply** to save.

5.1.2.1.2 Hybrid Interest Rate Curves

Hybrid Term Structures allows you to specify the following types of Hybrid Yield Curves:

- Merge
- Spread
- Moving Average
- Custom Weighted Average

Hybrid Yield Curves are built up from either one or more Standard Yield Curves. When you add, modify, or delete any historical rate data from a Standard Yield Curve, the data associated with any related Hybrid Yield Curve must be updated. After defining, the Hybrid Yield Curves can be used like any other Interest Rate Curve in the system. You can reference these curves within the Cloud Service Business Rules that allow the selection of an Interest Rate Code.

Hybrid Curve Type Spread: A Spread Hybrid Yield Curve is defined as the difference between two standard yield curves. The Spread type of hybrid yield curve is useful in establishing liquidity risk or basis risk yield curves.

- **Merge:** Merge hybrid yield curves represent a blending of two or more underlying yield curves. In constructing a Merge type of Hybrid Yield Curve, specify the percentage weighting applied to each of the underlying Standard Hybrid Yield Curves.
- **Spread:** A Spread hybrid yield curve is defined as the difference between two standard yield curves. The Spread type of Hybrid Yield Curve is useful in establishing liquidity risk or basis Risk Yield Curves.
- **Moving Average:** Moving average Hybrid Yield Curves represent moving average data of a single underlying Standard Yield Curve. These curves are used in Funds Transfer Pricing.
- **Custom Weighted Average:** Custom Weighted Average Rate is the sum of weighted rates as per the defined Custom Weights for the Historical Rates.

5.1.2.1.2.1 Define Hybrid Curve

Defining a Hybrid Curve supports the following different definitions based on the Hybrid Curve Type:

- [Hybrid Curve Type as Merge](#)
- [Hybrid Curve Type as Spread](#)
- [Hybrid Curve Type as Moving Average](#)
- [Hybrid Curve Type as Custom Weighted Average](#)

5.1.2.1.2.1.1 Defining a Hybrid Curve with Hybrid Curve Type as Merge

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Merge**.
2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. You must select at least two Interest Rate Curve Definitions.

The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.
3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. You can click on the icon next to the Selected Term Structure to see the Term Points for the Interest Rate Curve. A box displays the Term and Multiplier for the select Interest Rate Curve.
5. Enter the Weights for the selected Terms.
6. Click **Apply** to save the Weights in the grid.

5.1.2.1.2.1.2 Defining a Hybrid Curve with Hybrid Curve Type as Spread

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Spread**.
2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. Only two Interest Rate Curves are allowed for selection.
3. Click the **Swap** icon to re-order the Interest Rate Curves.

The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.
4. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
5. Click **Apply** to save the selected Terms.

5.1.2.1.2.1.3 Defining a Hybrid Curve with Hybrid Curve Type as Moving Average

To define a hybrid curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Moving Average**.
2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. Only one Interest Rate Curve Definition is allowed for selection.

The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.
3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. Enter the Terms and Multipliers for each of the selected Terms.

OR Optionally, you can select the **Moving Average Term** toggle switch to define the Terms and Multipliers for the selected terms at once.
5. Click **Apply** to save the Terms in the grid.

5.1.2.1.2.1.4 Defining a Hybrid Curve with Hybrid Curve Type as Custom Weighted Average

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Custom Weighted Average**.
2. Select the **Interest Rate Curves** for the Hybrid Type and click **Apply**. Only one Interest Rate Curve Definition is allowed for selection.

The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.
3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. Enter the Terms and Multipliers for each of the selected Terms.

OR Optionally, you can select the **Moving Average Term** toggle switch to define the Terms and Multipliers for the selected terms at once.
5. Enter the Weights for the each term and respective Historical Effective Dates. By default, all the Weights are zero. You can change the values as per your requirement.
6. Click **Apply** to save the Terms in the grid.

5.1.2.1.2.2 Generate Hybrid Rates

After a Hybrid Curve is defined, generate the Historical Rates as far back as the Rate Source Curves allow. The Generate Frequency determines the frequency of the historical rates populated with the Generate function. If you select the Generate Frequency as monthly, it generates month-end values only. If you select daily, it generates the maximum number of Historical Values. By default, the Interpolation is selected as Linear and you cannot change it.

To generate the rates, perform the following steps:

1. Select the **Generate Frequency** (Daily, Weekly, Bi-Weekly, or Monthly) and enter the **Specific Date Range** (From Date and To Date). For Custom Weighted Average Hybrid Curve Type, you need to select only the From Date.
2. Click **Generate**. The rates will be populated and you will be directed to the Historical Rates Tab to view the results.

5.1.3 Economic Indicators

An Economic Indicator is any economic statistic such as the Consumer Price Index (CPI), growth rate of the Gross Domestic Product (GDP), unemployment rate, Purchasing Managers Index, indices of consumer confidence, and so on. Such macroeconomic statistics tell us how well the economy has behaved in the past. Some economic indicators are referred to as lagging indicators while others are classified as leading indicators. Leading indicators can provide insights into the future direction of the economy.

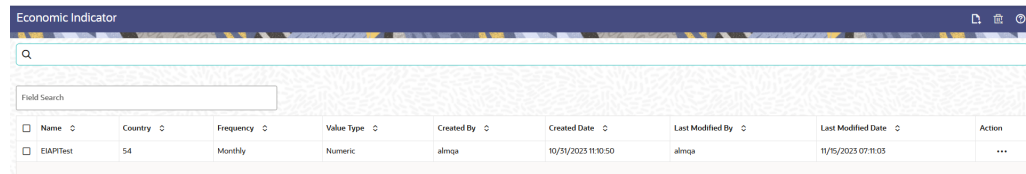
Economic Indicators Module allows you to define and store such historical indicators. It provides baseline from which forecasts of future values can be generated that can affect cash flow calculation for Inflation Indexed Instruments, new business or other modeling assumptions.

To view the Economic Indicators, navigate to Maintenance and then select Economic Indicators, an empty window is displayed. After you have defined one or more Economic Indicators, the Economic Indicators Summary Page shows all the Economic Indicators that you have previously defined.

Economic Indicator Rule Summary

This page is the gateway to all Economic Indicator Rules and related functionality. You can navigate to other pages relating to Economic Indicator Rules from this point.

Figure 5-6 Economic Indicator Summary



The screenshot shows a web interface titled "Economic Indicator". It features a search bar at the top with a magnifying glass icon. Below the search bar is a "Field Search" input field. The main content is a table with the following columns: Name, Country, Frequency, Value Type, Created By, Created Date, Last Modified By, Last Modified Date, and Action. A single row is visible in the table with the following data: Name: EIAPTst, Country: 54, Frequency: Monthly, Value Type: Numeric, Created By: almqa, Created Date: 10/25/2023 11:30:50, Last Modified By: almqa, Last Modified Date: 11/15/2023 07:11:05, and Action: ...

| Name | Country | Frequency | Value Type | Created By | Created Date | Last Modified By | Last Modified Date | Action |
|---------|---------|-----------|------------|------------|---------------------|------------------|---------------------|--------|
| EIAPTst | 54 | Monthly | Numeric | almqa | 10/25/2023 11:30:50 | almqa | 11/15/2023 07:11:05 | ... |

Search Economic Indicator Rule

Prerequisites: Predefined Economic Indicator Rule

To search for an Economic Indicator Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Economic Indicator Rules that meet the search criteria.

Or

The other method to search an Economic Indicator Rule is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Code, Name, Description, , and Country** of the Economic Indicator Rule and click **Search** .

The Economic Indicator Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Economic Indicator Rule.

- **Code:** The Economic Indicator Rule's code.
- **Country:** The Country of for which Economic Indicator has been defined.
- **Frequency:** The Frequency at which value of Economic Indicator is expected to be updated.
- **Hierarchy:** Hierarchy that is used to define Economic Indicator Rule.
- **Value Type:** The Value Type of an Economic Indicator.
- **Created By:** The Name of the user who created the Economic Indicator
- **Created Date:** The Date and Time at which the Economic Indicator was created
- **Last Modified By:** The user who last modified the Economic Indicator Rule.
- **Last Modified Date:** The Date and Time when the Economic Indicator Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Economic Indicator Rule.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- View/Edit: Based on the user privilege assigned, you can either only view or edit existing Economic Indicator Rules. To edit a rule, you must have Read/Write privilege.
- Save As: You can reuse a Economic Indicator Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- Delete: You can delete Economic Indicator Rules that you no longer require. Note that only Economic Indicator Rule owners and those with Read/Write privileges can delete Economic Indicator Rules. A Economic Indicator Rule that has a dependency cannot be deleted.
- Dependency Check: You can perform a dependency check to know where a particular Economic Indicator Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Economic Indicator Rules that have dependencies. . A report of all rules that utilize the selected Economic Indicator Rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

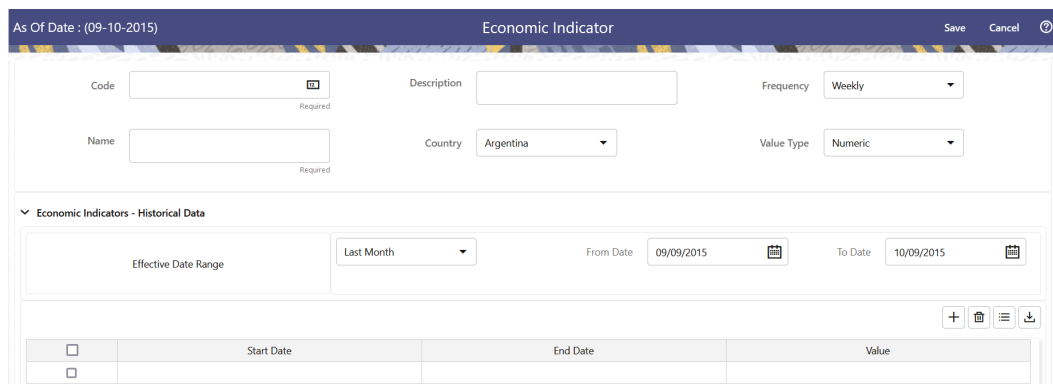
- [Add Economic Indicator Rule](#)

5.1.3.1 Add an Economic Indicator

To add an Economic Indicator, follow these steps:

1. Navigate to the **Economic Indicator Summary** Page.
2. Click **Add**.
The **Economic Indicator** Page is displayed.

Figure 5-7 Economic Indicator Details Page



| Start Date | End Date | Value |
|--------------------------|----------|-------|
| <input type="checkbox"/> | | |
| <input type="checkbox"/> | | |

3. Enter the following information in the **Economic Indicator Details** section as tabulated.

Table 5-5 Economic Indicator Window – Fields and Descriptions

| Fields | Description |
|-------------|---|
| Code | Enter the Code of Economic Indicator. You can click Generate Code Option in Code field to generate the code automatically. |
| Name | The name to your Economic Indicator is how you will subsequently refer to your rule within other the PBSM Services. You cannot rename existing Economic Indicators during Edit. |
| Description | Enter the Description of Economic Indicator. This field allows maximum 300 characters. Do not enter special characters ~, ', &, +, @. |
| Country | Select a country to which your Economic Indicator applies from the Country drop-down list. The value set of Countries is drawn from the seeded Country dimension. PBSM is seeded with over 70 country values, and you can add user-defined countries. |
| Frequency | The frequency of your Economic Indicator must match the frequency which with the indicator's data is made public. Unemployment statistics, for example, are generally released on a monthly frequency. Select a frequency from the Frequency drop-down list. Available frequencies are Weekly, Monthly, Quarterly, Semi-Annually, and Annually. |
| Value Type | Select a Value Type from the Value Type drop-down list. Available Value Types are Numeric, Percentage, and Amount. Numeric 0-999999 Percentage -100 to +100 Amount 0-999999 |

4. To build out your Historical Data, enter data within the **Economic Indicators – Historical Data** Section. The **Economic Indicators – Historical Data** Section displays a single blank row followed by the most recent period's data (if data has previously been stored in the database).
5. Enter the following information in the **Economic Indicators – Historical Data** Section as tabulated:

Table 5-6 Economic Indicator window – Fields and Descriptions

| Fields | Description |
|-----------------------------|--|
| Start Date and End Date | Select the Calendar icon immediately adjacent to the Start Date to choose a starting date for your Economic Indicator data point. The application will automatically populate the End Date based on the Economic Indicator's frequency. For example, if your Economic Indicator is an unemployment statistic that has a monthly frequency, select an start date that is the first day of the month that the unemployment rate describes. In this example, the application will automatically populate the End Date with the last day of the month you have selected. |
| Value | Enter the value for your Economic Indicator (such as the unemployment rate). |
| Adding a Data Points | Click Add to add a blank row into which you can enter additional Economic Indicator Data. |
| Adding Multiple Data Points | Click Add to add multiple blank rows into which you can enter additional Economic Indicator Data. |
| Deleting Data Points | Select one or more check boxes on the left-hand side of any row to enable the Delete icon. After clicking Delete, a confirmation message is displayed to delete the selected rows. |
| Download Excel | Excel export functionality is used to download the Economic Indicator information in xlsx format. Click Download Excel Option. After downloading, you can modify the value and paste back in the displayed data grid. Note: The date format in the Excel File should be same as provided in Global Preferences. For more information, see the Global Preference Section. |

5.1.4 Dimension Management

Dimension Management facilitates you to categorize data into a single object as a Member; define levels and aggregate data to form the Hierarchies, and distinguish each member by defining the required Attributes.

The roles mapped to Dimension Management are as follows:

- Dimension Advanced
- Dimension Authorization
- Dimension Read Only
- Dimension Write

5.1.4.1 Object Security

Object Security helps to secure data and also to decide what each user can access. You can apply Object Security to various object definitions like Hierarchy definitions, Filters, Expressions and Migration definitions.

You can assign specific user roles and functions to user groups, to implement Object Security. To assign user roles and functions, Seeded User Groups and Seeded User Roles are mapped to the User Groups. If you are using the Seeded User Groups, the security to access objects depends on the associated User Groups.

Map your User Group to the folder in case of public or shared folder, for creating/ editing/copying/removing an object in Dimension Management module. You should also be the owner of the folder in case of Private Folder. Additionally, the WRITE role should be mapped to your User Group.

To access the link and the Summary page, map your User Group to ACCESS role. You can view all objects created in Public Folders - Shared Folders to which you are mapped and Private Folders for which you are the owner.

5.1.4.2 Components of Dimension Management

You can create and manage the following Object Definitions using from Dimension Management:

- [Members](#)
- [Attributes](#)
- [Hierarchy](#)

5.1.4.3 Members

Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object such as Product, Organization, Time, and so on. Members are available within Dimension Management section.

5.1.4.3.1 Member Summary Page

The list of created member definitions are displayed in the Member Summary.

To access the Member Summary page, complete the following procedure.

1. From the left menu, click **Common Object Maintenance**.
2. Select Dimension Management and select **Member**.
The **Member Summary page** containing the following details is displayed.
 - **Alphanumeric Code**- The Alphanumeric Code assigned to a Member.
 - **Numeric Code**- The Numeric Code assigned to a Member.
 - **Name**- The Unique Member Name.
 - **Is Leaf**- The Leaf node status of the Member Definition.
 - **Yes**- The member is set as a Leaf node in any hierarchy and Child cannot be added to this node.
 - **No**- The member is a not a Leaf and can have Child nodes.
 - **Action**- Click to View, Edit, Copy or Delete a Member Definition.

5.1.4.3.2 Creating Member Definitions

You can add new Member Definitions from the Member Summary page.

To create a Member Definition in the Members page:

1. To create a Member definition, click the **Add** in the Member Summary page. The Add Member Definition page is displayed.
2. Enter the following **Member Details** as described in the following table:
 - **Dimension**- Select the Dimension to be associated with the new Member.
 - **Alphanumeric Code**- The Alphanumeric Code to be assigned to the new Member Definition.
You can enter up to 100 characters. We recommend using only Underscore (“_”) as a special character.
 - **Numeric Code**- The Numeric Code to be assigned to the new Member Definition.
You can enter the value between 0 and 999,999,999 manually or click **Generate**, to auto-generate a unique code.
If you enter the value manually, it is assigned after validation.
 - **Name**- The unique Member Definition Name.
You can enter up to 100 characters. All characters are allowed except " & ' and " ' " .
 - **Description**- A brief description about the Member Definition.
You can enter up to 100 characters. All characters are allowed except " & ' and " ' " .
 - **Is Leaf**- Check this option if the member is a Leaf of another member. By default, it is set to **Yes**.
 - **Yes**- The member can be used as a Leaf node in any hierarchy and Child cannot be added to this node.
 - **No**-The Member is not set as a Leaf and can have Child nodes.

 **Note:**

If a Member is set as a Non-Leaf and is associated with Child nodes, it cannot be set as a Leaf again.

- **Enabled**- This field is set to **Yes** by default and can be edited only after the Member is created. To edit a Member, refer [Editing Member Definition Details](#).

 **Note:**

You can change the option to **No** only when the particular member is not used in any hierarchy. The disabled members will not be displayed in Hierarchy Rules, or utilities which are based on Hierarchies, such as Hierarchy Filters and Hierarchical Assumption Browsers used in applications.

- **Copy Attribute Assignment**- Attach an existing attribute to this new Member Definition.

3. Click **Copy Attribute Assignment**, to access the **Attributes** page associated with the selected Dimension.

This is an optional field.

Click **Search** to locate a specific Member based on Alphanumeric Code, Numeric Code, Name, Description, Enabled status, Is Leaf status, Attribute Name, or Attribute Value. You can also enter any of these parameters as Keywords in the Search field and click **Search**.

4. Locate the Attribute to be copied and click **Move** and select **Copy**, located under **Actions**.
5. Click **Save**, to create the new Member definition and view it the Member Summary.

Click **Save and Add New**, to create the new member definition and proceed with adding another definition.

5.1.4.3.3 Managing Member Definitions

You can View, Edit, Copy, and Delete the existing Member Definitions from the Member Summary page.

In the Members Summary page, highlight a specific Member Definition and click the **Action**. The following Options are displayed:

- **View**- View the **Member Details** for a specific Member Definition.
- **Edit**- Edit the **Member Details** for a specific Member Definition.
- **Copy**- Copy the Member Definition Details and create another Member Definition by changing Alphanumeric Code, Numeric Code and Name.
- **Delete**- Delete the Member Definition Details.

5.1.4.3.3.1 Viewing Member Definition Details

You can view the details of an individual Member Definition, from Member Summary page.

To view a Member Definition, the Read Only Role should be mapped to your User Group.

You can view the details of an individual Member Definition, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **View** button.

The Member Definition page is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

5.1.4.3.3.2 Editing Member Definition Details

To edit the existing Member Definition details, the Write role should be mapped to your User Group.

You can edit individual Member Definition Details, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Edit** button.

The Member Definition page is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

Edit the required information and click **Save**.

5.1.4.3.3.3 Copying Member Definition Details

To copy the Member Definition Details, the Write role should be mapped to your User Group.

You can copy individual Member Definition Details, to recreate another new Member Definition, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Copy** button.

The **Member Definition Page** is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

Edit the unique information such as Name, Alphanumeric Code, Numeric Code and click **Save**.

5.1.4.3.3.4 Deleting Member Definition Details

To delete a Member Definition, the Write role should be mapped to your User Group.

You can delete individual Member Definition Details, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Delete** button.

The Member Definition is deleted after confirmation.

5.1.4.4 Attributes

Attributes refers to the distinguished properties or qualifiers that describes a Dimension Member. Attributes are applicable to key dimensions only.

5.1.4.4.1 Attribute Summary Page

The list of created Attribute Definitions are displayed in the Attribute Summary page.

To access the Attribute Summary page, complete the following procedure:

1. From the left menu, click **Common Object Maintenance**.
2. Select Dimension Management and select **Attribute**.

The **Attribute Summary page** containing the following details is displayed.

The Attribute Summary page provides the list of Member Definitions with the following details:

| Field | Description |
|-----------|--|
| Code | The Numeric Code assigned to the Attribute Definition. |
| Name | The unique Attribute Definition Name. |
| Data Type | The Data Type associated with the Attribute. The Data Type is set to Date, Dimension, Number or String. |

| Field | Description |
|----------|---|
| Required | <ul style="list-style-type: none"> • Yes – Attribute Value is mandatory for the Dimension Member. • No- The Attribute Value is optional for the Dimension Member. |
| Seeded | <ul style="list-style-type: none"> • Yes- This Attribute is seeded by the service. • No- The Attribute is created by the user. |
| Action | Click to View, Edit, Copy or Delete an Attribute Definition. |

5.1.4.4.1.1 Navigating Attribute Summary Page

To access records in a Summary page, you can search, sort and navigate to multiple pages.

5.1.4.4.2 Creating Attribute Definition

To create a new Attribute for a dimension, complete the following steps:

1. Click the **Add** in the Attribute Summary page.
The **Add Attribute Definition** page is displayed.
2. Enter the Attribute Details as described in the following table:

| Field | Description |
|--------------------------|--|
| Attribute Details | |
| Dimension | Select the Dimension for which the new Attribute is getting created. |
| Numeric Code | <p>The Numeric Code to be assigned to the new Attribute Definition.</p> <p>You can enter the value manually or click Generate, to auto-generate a unique code.</p> <p>If you enter the value manually, the system will verify if the value is unique and assigns it.</p> <p>You can enter any number between 0 and 999,999,999.</p> |
| Name | <p>The unique Attribute Definition Name.</p> <p>You can enter up to 100 characters. All characters are allowed except " & ' and " ' ' " .</p> |
| Alphanumeric Field Value | <p>The name of physical column name that will be used to store attribute value in the Report Dimension Table.</p> <p>You can enter up to 100 characters. We recommend using only Underscore (" _ ") as a special character.</p> |
| Description | <p>A brief description about the Attribute Definition.</p> <p>You can enter up to 100 characters. All characters are allowed except " & ' + @ and ~.</p> |

| Field | Description |
|-----------------------------|---|
| Attribute Properties | |
| Data Type | <p>Select the Data Type as Date, Dimension, Number, or String from the drop-down list.</p> <p>If Number is selected as the Data Type: Enter a Scale value ≥ 0. If it is left as 0, values for this attribute will be limited to Integers. If you wish to enable decimal entries for this attribute, the maximum Scale Value must be > 0 and \leq the scale defined for NUMBER in the dimension's underlying attribute table.</p> <p>The maximum value of the NUMBER is set to 22.</p> |
| Dimension | <p>Select the Dimension to be associated with the new Attribute Definition.</p> <p>This field is enabled only if the Data Type is set to Dimension.</p> |
| Default Value | <p>The Default Value is set based on the selected Data Type. The Default Value is mandatory if this attribute is set as a Required Attribute.</p> <ul style="list-style-type: none"> • If Dimension is set as the Data Type, select the Default Value from the drop-down list of members mapped to the selected Dimension. • If NUMBER is selected as the Data Type, enter a Numeric Value in the Default Value field, and it must be consistent with the Scale you have defined. • If DATE is selected as the Data Type: Click button to select a valid date as the Default Value from the calendar. • If STRING is selected as the Data Type: Enter the Alphanumeric Value in the Default Value field. <p>The Maximum characters allowed in Default Value field for String Data Type is 1000.</p> |
| Required Attribute | <ul style="list-style-type: none"> • Yes - This Attribute is mandatory for the associated Dimension Members. • No - This is an optional Attribute for the associated Dimension Members. <p>This field is disabled in Add and Edit Modes if any members already exist for the Dimension on which this attribute is defined.</p> |
| Seeded Value | <ul style="list-style-type: none"> • Yes – This is selected only when the attribute is seeded out of box by the Cloud Service. • No – Always select this when you are creating a new attribute. |

3. Click **Save**.

5.1.4.4.3 Managing Attribute Definitions

You can view, edit, copy and delete the existing Attribute Definitions from the Summary page.

In the Attribute Summary page, highlight a specific Attribute Definition and click the **Action**. The following Options are displayed:

| Field | Description |
|--------|---|
| View | View the details for a selected Attribute. |
| Edit | Edit the selected Attribute. |
| Copy | Copy the Attribute Definition Details and create another Attribute Definition by changing the unique values like Alphanumeric Field Value, Numeric Code and Name. |
| Delete | Delete the selected Attribute. |

5.1.4.4.3.1 Viewing Attribute Definition

You can view individual Attribute Definition Details at any given point. The Read Only role should be mapped to your User Group.

To view the existing Attribute Definition details in the Attribute page:

1. Highlight the Attribute Definition and click **Action**.
2. Click **View**.

The **Attribute Definition** Page is displayed with the details Code, Name, Data Type, Required and Seeded status.

5.1.4.4.3.2 Modifying Attribute Definition

Modify the Name, Description, or Default Value fields of an Attribute Definition. The Write role should be mapped to your User Group.

To modify an existing Attribute Definition in the Attributes summary:

1. Highlight the Attribute Definition and click **Action**.
2. Click **Edit**, to access the Attribute Definition page.

Edit the required information and click **Save**.

You can view the updates in the Attributes summary.

5.1.4.4.3.3 Copying Attribute Definition

The Copy Attribute Definition facilitates you to quickly create a new Attribute Definition based on the existing attributes or by updating the values of the required attributes.

To copy an existing Attribute Definition, the Write role should be mapped to your User Group.

Refer to the following steps, to copy an Attribute Definition.

1. Highlight the Attribute Definition and click **Action**.
2. Click **Copy**.

The Attribute Definition page is displayed with the details: Code, Name, Data Type, Required and Seeded status.

Edit the unique information such as Name, Alphanumeric Field Value, Numeric Code and click **Save**.

5.1.4.4.3.4 Deleting Attribute Definition

You can remove the Attribute Definitions which are not required in the system by deleting from the Attributes Summary.

To delete an attribute definition, the Write role should be mapped to your User Group.

1. Highlight the Attribute Definition and click the **Menu** button.
2. Click the **Delete** button.

The Attribute Definition is deleted after confirmation.

 **Note:**

You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

5.1.4.5 Hierarchy

Hierarchies refer to Dimension Members that are arranged in levels, with each level representing the aggregated total of the data from the level below. One dimension type can have multiple hierarchies associated with it. Hierarchies are available within the Dimension Management section.

A Default Hierarchy definition is required to support BI Users to perform multidimensional analysis, in the BI reporting. The hierarchy name of a default hierarchy definitions are suffixed with the term **System Hierarchy**. You can only view the details of the default hierarchy, from the Hierarchy Summary page. All orphan members under their corresponding default hierarchy, are automatically updated, when they are added/deleted to/from the system.

5.1.4.5.1 Hierarchy Summary Page


The list of created Hierarchy definitions are displayed in the Hierarchy Summary.

To access the Hierarchy Summary page, complete the following procedure:

1. From the left menu, click **Common Object Maintenance**.
2. Select Dimension Management and select **Hierarchy**.

The Hierarchy Summary page provides the list of Member Definitions with the following details:

| Field | Description |
|-------------|--|
| Name | The unique Hierarchy Name. |
| Description | The brief description about the Hierarchy. |
| Folder | The folder in which the Hierarchy is stored. |
| Dimension | The Dimension associated with the Hierarchy. |
| Tag | Tags are labels that help to simplify the data search and locate the required details. |
| Action | Click to View, Edit, Copy or Delete a Hierarchy Definition. |

 **Note:**

The name of a default hierarchy is always suffixed with the term **System Hierarchy**.

5.1.4.5.1.1 Navigating Hierarchy Summary Page

To access records in a Summary page, you can search, sort and navigate to multiple pages.

5.1.4.5.2 Creating Hierarchy Definitions

To create a Hierarchy Definition in the Hierarchy Summary page, complete the following steps:

1. To create a Hierarchy definition, click **Add** in the Hierarchy Summary page. The **Add Hierarchy Definition** page is displayed.

Enter the **Hierarchy Details** as described in the following table:


Table 5-7 Field Description

| Field | Description |
|----------------------|---------------------------------------|
| Basic Details | |
| Name | The unique Hierarchy Definition Name. |

 **Note:**

You can enter up to 100 characters. All characters are allowed except " & ' and " ' ".

Table 5-7 (Cont.) Field Description

| Field | Description |
|------------------------------------|--|
| Description | A brief description about the Hierarchy Definition. |
| | <div style="border: 1px solid #0070c0; padding: 10px; background-color: #e6f2ff;"> <p> Note:</p> <p>You can enter up to 100 characters. All characters are allowed except " & ' + @ and ~.</p> </div> |
| Hierarchy Sub Type | By default, the sub type is set to Member based and cannot be changed. |
| Folder | Select the Folder in which the Hierarchy is to be stored. |
| Based On Dimension | Select the Dimension to be associated with the new Hierarchy Definition. |
| Start Date | The date from which this Hierarchy will be activated. By default the Start Date is set to the current System Date. |
| Data Grid Hierarchy View | <p>The Members associated with the selected Dimension are displayed.</p> <p>You can sort this list in Ascending/Descending order, expand or collapse the list to view in details and search for a specific Member.</p> <p>You can focus on a Member to view the Member Properties.</p> <p>You can add a Child or add a Sibling to an existing Member in the Data Grid.</p> |
| Search Results | The search results based on the specific keyword entered to search a Member is populated. |

To Add a Child to the Hierarchy:

- a. Right-click in the **Hierarchy View** tab.
- b. Select **Add Child** option and the **Add Member Page** are displayed.
- c. Select the required Member and click **Move**, to move the Member to the Selected Members panel. To select multiple members, press CTRL and select the members. The selected members are added to the **Selected Members** pane.
 - Click **Move All** to move all Members listed in the Show Members pane, to the Selected Members pane. Click **Fetch from DB** to select all nodes/ members in the server.
 - Select a member and Click **Remove** to deselect a Member. To remove multiple members, press CTRL and select the members.
 - To remove all the members from the **Selected Members** pane, click **Remove all**.

- You can click **Search** button for the required member using Alphanumeric Code, Numeric Code, Name, Description, Attribute Name, or Attribute Value. Enter the search criteria and Click **Search**, in the Search Panel.
 - You can also click **Search** button to toggle the display of Numeric Code left, right, or name and click button to display Alphanumeric Code left, right, or name.
- d. Click **OK**. The selected Member is displayed as Child under **Data Grid** panel in the **Hierarchy View** tab.
2. **To add a Sibling to the Child in the Hierarchy Definition:**
 - a. Right-click on the Child and select the option **Add Sibling**. The **Add Sibling** Page is displayed.
 - b. Select the required Members and **Move**, to move the Member to the Selected Members panel. The Member is displayed in the **Selected Members** panel.
 - c. Click **OK**. The selected Member is added as **Sibling** below the **Parent** under Data Grid Panel in the **Hierarchy View** Tab.
 3. **To add a Leaf under a Parent/Child or Sibling:**
 - a. Right-click the Parent or Child and select **Add Leaf**. The Add Member Page is displayed.
 - b. Select the required Members and click **Move**, to move the Member to the Selected Members panel. The Member is displayed in the **Selected Members** panel.
 - c. Click **OK**. The selected Member is displayed as Leaf below the Parent or Sibling under **Show Hierarchy** Panel in the Hierarchy View Tab.
 4. **To define Level Properties:**
 - a. Right-click the Parent or Child and select **Level Properties**. The details are displayed in the Member Properties Panel.
 - b. Enter the valid **Name** and **Description** in the respective fields.
 - c. Click **OK** and the Levels defined are displayed in the drop-down in **Initial Level Display** field in **Data Grid** in **Hierarchy View** Tab.
 5. **To cut and paste Child or Sibling:**
 - a. Right-click on any node and select **Cut**.
 - b. Right-click on any node and **Paste as Child** or **Paste as Sibling**.
 6. **To Delete/Undelete**
 - a. Right-click on the node to be deleted and select **Delete Node**. The node deleted is struck out.
 - b. Right-click and select **UnDelete** to cancel deletion of the node.
 7. To view the Member Properties and Member Attributes of a node in the **Hierarchy View** Panel:
 - a. Click on a Member. The properties such as Alphanumeric Code, Numeric Code, Name, Description, Enabled, Is Leaf, Created By, Creation Date, Last Modified By, Last Modification Date, Attribute, and Value of the selected Member are displayed in the Member Properties and Member Attributes Grids.

In the Hierarchies page you can also:

- Click **Collapse** or Expand, to collapse or expand a branch .
 - Click **Focus** or **Unfocus**, to focus or unfocus a selected node except the Root Node.
 - Click **Sort** to sort the list in ascending or descending order.
8. Click **Save**.
The new Hierarchy Definition is created successfully.

5.1.4.5.2.1 Audit Info

The Audit Info section provides details such as Created By and Modified By Users, Creation and Modification Date, and Authorized By user Details. You can add additional information as comments and tags. Tags are labels that help to simplify the data search and locate the required details.

5.1.4.5.3 Managing Hierarchy Definitions

You can View, Edit, Copy, and Delete the existing Hierarchy Definitions from the Hierarchy Summary page.

In the Hierarchy Summary page, highlight a specific Hierarchy Definition and click **Action**. The following options are displayed:

| Field | Description |
|--------|---|
| View | View the Hierarchy Details for a specific Member Definition. |
| Edit | Edit the Hierarchy Details for a specific Member Definition. |
| Copy | Copy the Hierarchy Definition details and create another Hierarchy Definition by changing the unique values like Name, Description and so on. |
| Delete | Edit the Hierarchy Definition Details. |

5.1.4.5.3.1 Viewing Hierarchy Definition Details

You can view the details of an individual Hierarchy Definition, using the following procedure:

1. Highlight the Hierarchy Definition and click **Action (three dots)**.
2. Click **View**.

The Hierarchy Definition page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

5.1.4.5.3.2 Editing Hierarchy Definition Details

You can edit individual Hierarchy Definition Details at any given point.

To edit the existing Hierarchy Definition Details:

1. Highlight the Hierarchy Definition and click the **Action (three dots)**.
2. Click **Edit**.

The Hierarchy Definition Page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

Edit the required information and click **Save**.

5.1.4.5.3.3 Copying Hierarchy Definition Details

You can copy individual Hierarchy Definition Details, to recreate another new Member Definition. To copy the Member Definition Details:

1. Highlight the Hierarchy Definition and click **Action**.
2. Click **Copy**.

The Hierarchy Definition page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

Edit the unique information such as Name, Description, Folder, Dimension, Start Date and Hierarchy View details and click **Save**.

5.1.4.5.3.4 Deleting Hierarchy Definition Details

To delete a Hierarchy Definition:

1. Highlight the Hierarchy Definition and click **Action**.
2. Click **Delete**.

The Hierarchy Definition is deleted after confirmation.

 **Note:**

You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

5.1.4.6 Viewing Data in a Summary Page

A Summary page will contain a list of definitions associated with a specific Dimension Data, Filters, Batch or Schedules.

You can search, filter and customize the view to access the required data faster.

5.1.4.6.1 Searching Summary

Search for a specific Definition based on the following criteria. Select/Enter one or more unique values/tag or Leaf and Enabled status associated with the definition and click **Search**.

5.1.4.6.2 Sorting a Summary Page

Sort the list of definitions, to view a specific definition, in a definition Summary .

To sort the various Definitions list:

- **Sort By:** Group the based on the following fields:
 - **Member Summary** - Dimension, Name, Alphanumeric Code, Numeric Code, Enabled and Is Leaf Status, Attribute Name (if the selected Dimension has Dimension Type Attribute) and Attribute Value.

- **Attribute Summary** - Branch, Name, Code and Data Type.
- **Hierarchy Summary** - Dimension, Name, Tag and Folders.
- **Filter Summary** - Name, Folder and Filter Type.
- **Sort Order**: Sort the Complete list in Ascending/Descending order.

5.1.4.6.3 Setting Number of Records per Page

Customize the number of records per page, to access the required record easily.

At the bottom of the page, you can enter the number of entries that are available on a single page in the **Records** box. By default, this value is set to 8. You can increase or decrease the number of entries that are displayed using the up and down arrows.

To access a particular page, enter that page number in the Page Box located at the bottom of the page.

To navigate between pages:

- Use **First page** to view the entries in the first page.
- Use the **Previous page**, to view the entries in the previous page.
- Use the **Next page**, to view the entries in the next page.
- Use the **Last page**, to view the entries in the last page.

5.2 Common Rules

This section covers the following topics:

1. **Preferences**: This section covers the procedures to set the Global Preference Settings and User Preference Settings.
2. **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.
3. **Filters**: Filters allow you to select data using the defined expressions.

5.2.1 Setup Preferences

This section discusses the procedure to define and maintain the CFE Application, User, and Global Preference Settings.

Topics:

- [Select Preference For](#)
- [Configure Global Preference](#)
- [Configure Application Preference](#)
- [Configure User Preference](#)

5.2.1.1 Select Preferences For

To setup the Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.

Figure 5-8 Select Preferences For Section

A screenshot of a web interface showing a dropdown menu titled "Select Preferences For". The dropdown is currently open, showing a list of options, though the text of the options is not clearly legible.

2. Select the user from **Show Preferences For** drop-down list. This has following options:
 - **All User:** If you have Administrator Privileges, you can define preferences for the All User Group and their individual account, which may be the same or different from the All User settings. The Administrator can also designate the All User preferences as Editable or Non-editable on a row by row basis. If the individual preference is selected as is Editable, then End Users can update or override the Administrator's default value for their own individual account. If the Is Editable box is deselected, then End Users cannot change the default for their individual account.
 - **End-User:** If you do not have Administrator Privileges, then certain preference items are pre-set by the Administrator, and you may not be allowed to change the value. All Application Preference Settings are displayed, regardless of the access privilege.

5.2.1.2 Global Preference

Global Preferences options are used to configure your User Interface (UI).

To update the Global Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.
2. Select **Global Parameters**.

Figure 5-9 Global Preference

A screenshot of a web interface showing a table titled "Global Parameters". The table has three columns: "Property Name", "Property Value", and "Is Editable".

| Property Name | Property Value | Is Editable |
|-------------------------------|----------------|--------------------------|
| Date Format | MM-dd-yyyy | <input type="checkbox"/> |
| Pagination Count | 20 | <input type="checkbox"/> |
| Group Company Legal Hierarchy | | <input type="checkbox"/> |
| Currency Rate Provider | Default | <input type="checkbox"/> |
| Functional Currency | US Dollar | <input type="checkbox"/> |

3. Enter following values as described in Table:

| Fields | Description |
|-------------------------------|---|
| Date Format | Select one value from Date Format list. dd-MMM-yy yyyy/MM/dd MM/dd/yyyy dd.MM.yyyy MM-dd-yyyy yyyy.MM.dd yyyy/MMM/dd dd-MMM-yyyy dd/MMM/yyyy yyyy.MMM.dd dd/MM/yyyy MM.dd.yyyy dd-MM-yyyy yyyy-MM-dd dd.MMM.yyyy yyyy-MMM-dd |
| Pagination Count | Pagination Records determine how many rows are displayed on summary and other screens. If you select Pagination Records to be 25 records, then any screen displaying results in a tabular format displays a maximum of 25 records. |
| Group Company Legal Hierarchy | This displays list of Legal Entity Hierarchies that have been configured in Dimension Management. Select one hierarchy that must be used to identify internal (part of same financial group) customers of the institutions. |
| Currency Rate Provider | This displays list of providers of Currency Exchange Rate. Value "Default" is seeded and selected as default. If you load exchange rates from more than one source like Reuters and Bloomberg, then select one which you want the engine to use during processing. Members of Dimension Rate Data Source are displayed in the drop-down list. |
| Functional Currency | A common functional currency is required which can be set here. This is required to consolidate the accounts' balances or charges at multiple hierarchy levels. In Cash Flow Engine, this is used in Ledger Reconciliation module. |

4. **Is Editable status** cannot be turned on since individual users are not expected to modify these parameters.
5. Click **Save** to confirm the changes.

Reset to Default option enables the factory settings to default.

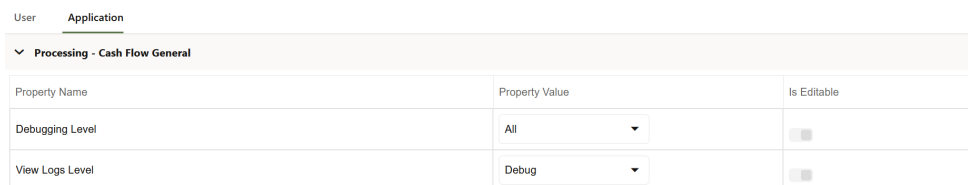
5.2.1.3 Application Preference

Application Preferences UI allow Administrators and End Users to establish default values, manage other Core Application Parameters that affect the way Business Rules are created and the way Cash Flow Processes are run.

To update the Cash Flow Engine Application Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.
2. Click **Application** tab.

Figure 5-10 Processing - Cash Flow General section of Application Preference



| Property Name | Property Value | Is Editable |
|-----------------|----------------|--------------------------|
| Debugging Level | All | <input type="checkbox"/> |
| View Logs Level | Debug | <input type="checkbox"/> |

3. Enter the following values in Application tab as described in Table:


| Fields | Description |
|-----------------|--|
| Debugging Level | <p>The debugging output level determines the amount of SQL that will be written to the processing log. There are eight levels available:</p> <ol style="list-style-type: none">Trace: Designates finer-grained informational events than the DEBUG.All: All levels including custom levels.Error: Designates error events that might still allow the application to continue running.Information: Designates informational messages that highlight the progress of the application at coarse-grained level.Debug: Designates fine-grained informational events that are most useful to debug an application.Fatal: Designates very severe error events that will presumably lead the application to abort.Warning: Designates informational messages that highlight the progress of the application at coarse-grained level.Off: The highest possible rank and is intended to turn off logging. |
| | <p> Note:</p> <p>A log request of level p in a logger with level q is enabled if $p \geq q$. This rule is at the heart of log4j. It assumes that levels are ordered. For the standard levels, we have ALL < DEBUG < INFO < WARN < ERROR < FATAL < OFF.</p> |
| View Logs Level | <p>This shows the severity of the information telling you how important a given log message is. This shows the View level of the Log. There are three levels available:</p> <ol style="list-style-type: none">Information: Designates informational messages that highlight the progress of the application at coarse-grained level.Debug: Designates fine-grained informational events that are most useful to debug an application.Off: The highest possible rank and is intended to turn off logging. |

Figure 5-11 Processing - Cash Flow Process section of Application Preference

| User Application | | |
|-------------------------------------|----------------|--------------------------|
| Processing - Cash Flow Process | | |
| Property Name | Property Value | Is Editable |
| Cash Flow Process Batch Size | 1000 | <input type="checkbox"/> |
| Cash Flow Process Parallel Requests | 2 | <input type="checkbox"/> |
| Cash Flow Process Parallel Threads | 5 | <input type="checkbox"/> |
| Cash Flow Process Flush Batch Size | 500 | <input type="checkbox"/> |

| Fields | Description |
|-------------------------------------|--|
| Cash Flow Process Batch Size | <p>Number of Account or Instruments that must be processed in a single batch. This is used by Cash Flow Engine for performance tuning.</p> <p>Default Value of 1000 is seeded by the service, and you can modify it as needed</p> |
| Cash Flow Process Parallel Requests | <p>Number of Parallel batches executed by each executor. This is a performance tuning parameter for Cash Flow Engine Cloud Service.</p> <p>Default Value of 2 is seeded by the service, and you can modify it as needed</p> |
| Cash Flow Process Parallel Threads | <p>Number of threads created by the executor for each batch. This is a performance tuning parameter for Cash Flow Engine Cloud Service. This defines how much memory can be used by the different components of the process such as the stack, data and text segments.</p> <p>Default Value of 5 is seeded by the service, and you can modify it as needed</p> |
| Cash Flow Process Flush Batch Size | <p>Number of records that gets saved or updated in a batch during Cash Flow Process execution. This is used by Cash Flow Engine for performance tuning.</p> <p>Default Value of 500 is seeded by the service, and you can modify it as needed</p> |

Figure 5-12 Processing - Cash Flow Edits section of Application Preference

| User Application | | |
|----------------------------------|----------------|--------------------------|
| Processing - Cash Flow Edits | | |
| Property Name | Property Value | Is Editable |
| Cash Flow Edits Batch Size | 1000 | <input type="checkbox"/> |
| Cash Flow Edits Flush Batch Size | 500 | <input type="checkbox"/> |

| Fields | Description |
|----------------------------------|---|
| Cash Flow Edits Batch Size | Number of Account or Instruments that must be processed in a single batch. This is used by Cash Flow Edits Engine for performance tuning. Default Value of 1000 is seeded by the service, and you can modify it as needed |
| Cash Flow Edits Flush Batch Size | Number of records that gets saved or updated in a batch during Cash Flow Process execution. This is used by Cash Flow Engine for performance tuning. Default Value of 500 is seeded by the service, and you can modify it as needed |

Figure 5-13 Processing - Cash Flow Exports section of Application Preference

Processing - Cash Flow Exports

| Property Name | Property Value | Is Editable |
|-----------------------|----------------|--------------------------|
| Export File Row Count | 10000 | <input type="checkbox"/> |

| Fields | Description |
|-----------------------|---|
| Export File Row Count | Number of records to be included in one file when cash flow output is exported from database to Object Storage. You must enter value greater than zero Default Value of 1000 is seeded by the service, and you can modify it as needed |

4. **Turn-on** the Is Editable status.
5. Click **Save** to confirm the changes.

5.2.1.4 User Preference

User Preferences items are used to configure the User Settings.

To update the Cash Flow Engine User Preferences, follow these steps:

1. Navigate to the **Maintenance** and select **Preferences**.
2. Click **User** tab.

Figure 5-14 User Preference Section

| Property Name | Property Value | Is Editable |
|---------------|----------------|--------------------------|
| As-Of-Date | 10/09/2015 | <input type="checkbox"/> |
| Legal Entity | Default Member | <input type="checkbox"/> |

| Property Name | Property Value | Is Editable |
|------------------|---|--------------------------|
| Default Folder | CFESEG | <input type="checkbox"/> |
| Access Type | <input type="radio"/> Read Only <input checked="" type="radio"/> Read/Write | <input type="checkbox"/> |
| Initial Currency | US Dollar | <input type="checkbox"/> |

| Property Name | Property Value | Is Editable |
|-----------------------------------|------------------|--------------------------|
| Product Dimension | Product | <input type="checkbox"/> |
| Default Product Hierarchy | Dim_product_hier | <input type="checkbox"/> |
| Hierarchy Members Navigation Size | 100 | <input type="checkbox"/> |

- Enter following values in as described in Table.

| Fields | Description |
|--------------------------------|--|
| Parameters – General | |
| As of Date | All processes reference this date at Runtime to determine the data to include in the process. The As-of-Date value you set in Application Preferences applies to interactive job execution (that is, when you choose to execute a rule directly from a Summary window). For batch processing, the As-of-Date is derived from the Information Date. As of Date is also referenced by some assumptions UI's to display relevant information therein. |
| Legal Entity | Similar to As-of-Date, all processes reference Legal Entity at Runtime to determine the data to include in the process. The value of the Legal Entity you set in Application Preferences applies to interactive job execution (that is, when you choose to execute a process directly from a Summary Window) and Batch Processing. NOTE: Legal Entity is designed to support implementations that require multi-entity or multi-tenant functionality. If your implementation does not require this functionality, you may utilize the Default Legal Entity in all your processes. Default implies -1 code. The default value for the Legal Entity Dimension Column in the instrument data is -1 |
| Assumption Management Defaults | |

| Fields | Description |
|-----------------------------------|--|
| Default Folder | This parameter allows you to define the default folder selection. The folder selection for all rule types is defaulted to this selection within the summary page search window and when creating a new rule. This selection acts as the starting value for convenience only and users can change to any other available value at their discretion. |
| Access Type | This parameter allows you to set the default access type. Selections include Read / Write and Read Only. This selection acts as the starting value for convenience only and users can change at their discretion. |
| Initial Currency | This parameter allows you to select the starting currency to be displayed within all Business Rules. This selection is made for convenience and can be changed within all business rules at the users' discretion. |
| Dimensions and Hierarchies | |
| Product Dimension | Oracle CFE requires users to declare one of the "Product Type" dimensions as the CFE Product Dimension. The model is seeded with the possible selections as follows: <ul style="list-style-type: none"> • Product • Common Chart of Accounts • General Ledger Account |
| Default Product Hierarchy | The list of values for Default Product Hierarchy is based on the Default Product Dimension Selection. The hierarchy selected here is a default hierarchy selection in all business rules that support node-level assumptions. This selection acts as the starting value for convenience only and users can change at their discretion within each business rule. |
| Hierarchy Members Navigation Size | This parameter allows you to specify the maximum number of members that a parent node within a Hierarchy or Assumption Browser can show at a given time. When you expand a branch in a Hierarchy or Assumption Browser and the number of members in that branch exceeds the specified Navigation Size, it provides "More" and "Previous" options to enable you to navigate through the member list. Recommended values for Navigation Size are 50 to 100. Higher value settings could impact screen refresh performance. The UI allows you to enter a value up to 10000. |

4. Click **Save** to confirm the changes.

5.2.2 Behavior Patterns

PBSM (Profitability and Balance Sheet Management) Cloud Service's User Defined Behavior Patterns allow you to define Principal Amortization Schedules for Non-Maturity Products in

your portfolio. You can utilize a Behavior Pattern to generate Cash Flows by entering the Amortization Type Code as “Behavior Pattern” along with the actual Behavior Pattern Code for the relevant Instrument Records.

Behavior Pattern Summary

This page is the gateway to all Behavior Patterns and related functionality. You can navigate to other pages relating to Behavior Patterns from this point.

Figure 5-15 Behavior Pattern Summary

| <input type="checkbox"/> | Code | Name | Behavior Type | Last Modified By | Last Modified Date | Action |
|--------------------------|-------|------------|---------------|------------------|---------------------|--------|
| <input type="checkbox"/> | 88855 | CASA BP 01 | Non Maturity | ALMQA | 07/11/2023 11:59:23 | ... |
| <input type="checkbox"/> | 88866 | CASA BP 02 | Non Maturity | ALMQA | 07/11/2023 11:59:25 | ... |
| <input type="checkbox"/> | 88877 | CASA BP 03 | Non Maturity | ALMQA | 07/11/2023 11:59:26 | ... |
| <input type="checkbox"/> | 88888 | CASA BP 04 | Non Maturity | ALMQA | 07/11/2023 11:59:27 | ... |

Search Behavior Pattern

Prerequisites: Predefined Behavior Pattern

To search for a Behavior Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Behavior Patterns that meet the search criteria.

Or

An alternative method to search a Behavior Pattern is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Behavior Pattern Summary. You can enter the **Code, Name, Description** or **Pattern Type** of the Behavior Pattern and click **Search**.

The Behavior Pattern Summary displays the following information:

Add: Click the Add icon on the page header to build a new Behavior Pattern.

- **Name:** The Behavior Pattern's short name.
- **Dimension:** The Dimension the Behavior Pattern belongs to.
- **Hierarchy:** Name of the Hierarchy that is used to define Behavior Pattern.
- **Folder:** The Folder name where the Behavior Pattern is saved.
- **Last Modified By:** The user who last modified the Behavior Pattern.
- **Last Modified Date:** The Date and Time when the Behavior Pattern was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Behavior Pattern.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- View/Edit: Based on the user privilege assigned, you can either only view or edit existing Behavior Patterns. To edit a rule, you must have Read/Write privilege.
- Save As: You can reuse a Behavior Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- Delete: You can delete Behavior Patterns that you no longer require. Note that only Behavior Pattern owners and those with Read/Write privileges can delete Behavior Patterns. A Behavior Pattern that has a dependency cannot be deleted.
- Dependency Check: You can perform a dependency check to know where a particular Behavior Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Behavior Patterns that have dependencies. . A report of all rules that utilize the selected Behavior Pattern is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Creating a Behavior Pattern](#)

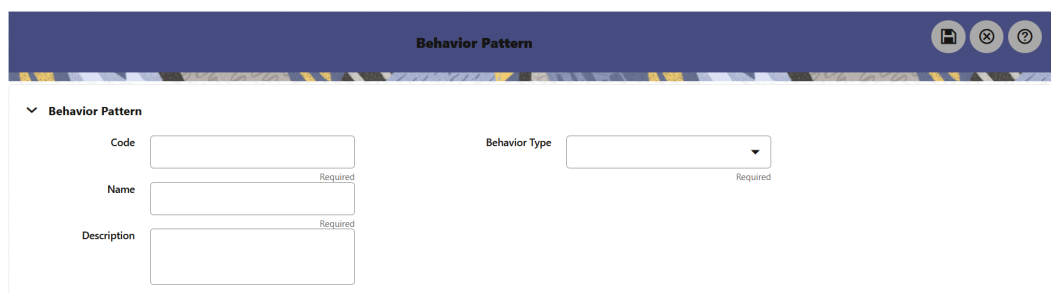
5.2.2.1 Creating Behavior Patterns

You create Behavior Patterns to capture the principal run-off behavior of product types that do not have contractual maturities.

To create a Behavior Pattern, perform the following:

1. Navigate to the **Behavior Pattern Summary** Page.
2. Click **Add** to display the Behavior Pattern Details Page.

Figure 5-16 Behavior Patterns Details Page



3. Enter a unique Numeric Code for the new Behavior Pattern. The code is must be mapped the appropriate instrument record's AMRT_TYPE_CD and BEHAVIOUR_PATTERN_CD to connect the instrument to the appropriate pattern.
4. Enter the **Name** and a **Description** for the pattern.
5. Select the Behavior Pattern Type from the following options:
 - Non Maturity

- Non-Performing
 - Devolvement and Recovery.
6. Define the Behavior Pattern Tenor Specifications for the Maturity Branches.
 7. The selection of the Behavior Pattern Type made in the previous step determines the information you must provide to successfully define that Pattern Type. For more information, see:
 - [Defining Non-Maturity Behavior Patterns](#)
 - [Defining Non-Performing Behavior Patterns](#)
 - [Defining Devolvement and Recovery Behavior Patterns](#)

**Note:**

The Behavior Pattern Details Page above displays the specifications associated with the Non Maturity Pattern Type. Should you change this value for one of the other two alternatives, Non Performing or Devolvement and Recovery, the payment specifications section corresponding to the new Pattern Type get refreshed. Although you can change your selection of the Pattern Type at any point in this procedure, sometimes this might result in loss of data related to any prior selection.

5.2.2.1.1 Defining Non-Maturity Behavior Patterns

Non-Maturity Behavior Patterns are commonly used for deposit products like Checking, Savings, and Money Market Accounts as well as for Credit Card Accounts. These account types are similar in that they do not have Contractual Cash Flows because Customers have the option to deposit or withdraw any amount at any time (up to any established limits).

When working with Non-Maturity Behavior Patterns, your percentage weights, assigned to maturity terms must add up to 100%.

To define a Non-Maturity Behavior Pattern, follow the Manual Method.

For Manual Model, you can perform the following steps:

1. In the Behavior Pattern Details Page, select Non Maturity as the Behavior Pattern Type.
2. Select Non-Maturity Products Profile Method as Manual.
3. Enter or select the following details:
 - Tenor: Used to specify the maturity term for the particular row. For example, if “1 Day” is defined, then the applicable percentage of the balance will runoff (mature) on the As-of-Date + 1 Day.
 - Multiplier: The unit of time applied to the tenor. The choices are as follows:
 - Days
 - Months
 - Years

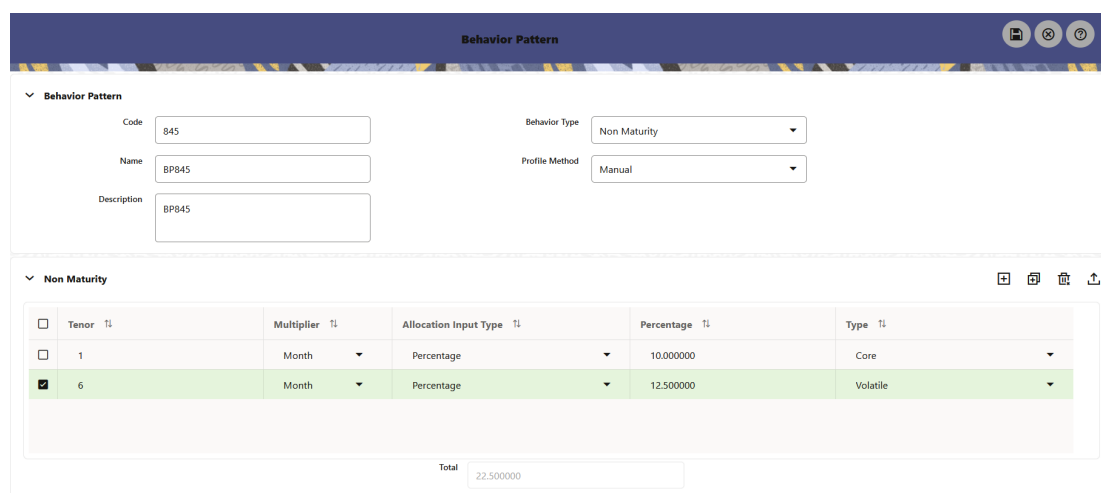
- Allocation Input Type: This field has a default value of Percentage for each maturity tier.
 - Percentage: The outstanding balance indicating how much of the outstanding balance will mature on the specified term. Enter a number 0 and 100.
 - Type: This allows you to classify the Runoff based on the appropriate type. If you select Percentage under 'Allocation Input Type', this allows you to select Core or Volatile.
4. Click the **Add** icon to add additional payment strips to the Pattern. After defining the initial strip as Volatile, subsequent strips are usually classified as Core with varying maturity terms assigned.

 **Note:**

There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

5. Click **Add Multiple Row** icon to open a window. Enter the number of rows you want to add and click Add Rows.
6. The **Upload Excel** icon helps you to upload the Behavior Pattern information to an Excel Sheet. This feature will be available in future.
7. To delete a row, select the check box corresponding to the row you want to remove and click the Delete icon.
8. Click **Save**.

Figure 5-17 Behavior Pattern Type as Non-Maturity



| Behavior Pattern | Code | Behavior Type | Name | Profile Method | Description |
|------------------|------|---------------|-------|----------------|-------------|
| | 845 | Non Maturity | BP845 | Manual | BP845 |

| Non Maturity | Tenor | Multiplier | Allocation Input Type | Percentage | Type |
|-------------------------------------|-------|------------|-----------------------|------------|----------|
| <input type="checkbox"/> | 1 | Month | Percentage | 10.000000 | Core |
| <input checked="" type="checkbox"/> | 6 | Month | Percentage | 12.500000 | Volatile |
| Total | | | | 22,500,000 | |

The Behavior Pattern is saved and the Behavior Pattern Summary Page is displayed.

5.2.2.1.2 Defining Non-Performing Behavior Patterns

Non-Performing Behavior Patterns are commonly used for balances that are classified as non-earning assets. These balances are typically sourced from the Management Ledger as

aggregate balances. Users can assign expected maturity profiles to these balances classifying them into appropriate categories of Sub Standard, Doubtful, or Loss.

To define the Non-Performing Behavior Patterns, perform the following steps:

1. In the Behavior Pattern Details Page, select **Non-Performing** as the **Behavior Pattern Type**.
2. Click the **Add** icon to open the **Non-Performing Behavior Patterns Summary** Page.

Figure 5-18 Behavior Pattern with Type as Non-Performing

Behavior Pattern

Code: 455 Behavior Type: Non Performing

Name: BH455

Description: BH455

Non Performing

| <input type="checkbox"/> | Tenor ↑↓ | Multiplier ↑↓ | Percentage ↑↓ | Type ↑↓ |
|--------------------------|----------|---------------|---------------|-------------|
| <input type="checkbox"/> | 1 | Days | 10.000000 | Substandard |
| <input type="checkbox"/> | 1 | Month | 5.000000 | Doubtful |
| <input type="checkbox"/> | 1 | Year | 2.000000 | Loss |

3. Enter or select the following details:
 - **Tenor:** Specify the maturity tenor for the first maturity strip. For example, if “1 Day” is defined, then the applicable percentage of the balance will runoff (mature) on the As-of-Date + 1 Day.
 - **Multiplier:** The unit of time applied to the Tenor. The choices are:
 - Days
 - Months
 - Years
 - **Percentage:** The relative amount of the Principal Balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts can exceed 100% for Non-Performing Patterns.
 - **Type:** This allows you to classify the Runoff based on the appropriate type. The options are:
 - Substandard
 - Doubtful
 - Loss

 **Note:**

There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

4. Click the **Add** icon to add additional payment strips to the Pattern and define appropriate assumptions for each strip.
5. To delete a row, select the check box corresponding to the row(s) you want to remove and click the **Delete** icon.
6. Click **Save**.

The Behavior Pattern is saved and the **Behavior Pattern Summary** Page is displayed.

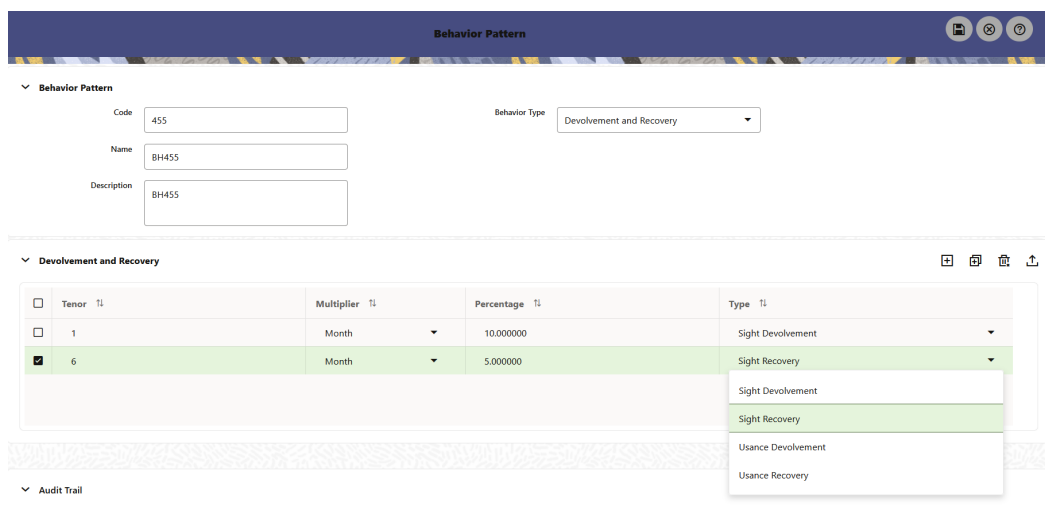
5.2.2.1.3 Defining Devolvement and Recovery Behavior Patterns

Devolvement and Recovery Behavior Patterns are commonly used for estimating Cash Flows associated with Letters of Credit and Guarantees. These product types are categorized as Off-Balance-Sheet Accounts. Users can assign expected maturity profiles to the related balances classifying them into appropriate categories of Sight Devolvement and Sight Recovery or Usance Devolvement and Usance Recovery. Sight Devolvement and Recovery are the most common types.

To define the Non-Performing Behavior Patterns, perform the following steps:

1. In the **Behavior Pattern Details** Page, select **Devolvement and Recovery** as the Behavior Pattern Type.
2. Click the **Add** icon to open the Non-Performing Behavior Patterns Summary Page.

Figure 5-19 Behavior Pattern with Type as Devolvement and Recovery



Behavior Pattern

Code: 455 Behavior Type: Devolvement and Recovery

Name: BH455

Description: BH455

Devolvement and Recovery

| <input type="checkbox"/> | Tenor ¹ | Multiplier ¹ | Percentage ¹ | Type ¹ |
|-------------------------------------|--------------------|-------------------------|-------------------------|-------------------|
| <input type="checkbox"/> | 1 | Month | 10.000000 | Sight Devolvement |
| <input checked="" type="checkbox"/> | 6 | Month | 5.000000 | Sight Recovery |

Audit Trail

3. Enter or select the following details:
 - **Tenor:** Specify the maturity tenor for the first maturity strip. For example, if “1 Day” is defined, then the applicable percentage of the balance will Runoff (mature) on the As-of-Date + 1 Day.

- **Multiplier:** The unit of time applied to the Tenor. The choices are:
 - Days
 - Months
 - Years
- **Percentage:** The relative amount of the Principal Balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts can exceed 100% for devolvement and recovery patterns.
- **Type:** This allows you to classify the Runoff based on the appropriate type. The options are:
 - **Sight Devolvement:** indicates the Beneficiary is paid as soon as the Paying Bank has determined that all necessary documents are in order. This is the preferred approach.
 - **Sight Recovery**
 - **Usance Devolvement:** Usance: is a period, which can be between 30 and 180 days after the bill of Lading Date.
 - Usance Recovery

 **Note:**

There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

4. Click the **Add** icon to add additional payment strips to the Pattern and define appropriate assumptions for each strip.
5. To delete a row, select the check box corresponding to the row(s) you want to remove and click the **Delete** icon.
6. Click **Save**.

The Behavior Pattern is saved and the Behavior Pattern Summary Page is displayed.

5.2.3 Payment Patterns

User defined payment patterns allow you to define custom repayment patterns for products in your portfolio. You can include a payment pattern while generating cash flows by entering the payment pattern code for the instrument.

This chapter describes the procedure for capturing instrument payment patterns that are too complex to be accommodated in the standard fields of Instrument tables.

The procedure for working with and managing Payment Patterns is, similar to that of other Oracle assumption rules.

Payment Pattern Summary

This page is the gateway to all Payment Patterns and related functionality. You can navigate to other pages relating to Payment Patterns from this point.

Figure 5-20 Payment Summary

| <input type="checkbox"/> | Name | Pattern type | Created By | Created Date | Last Modified By | Last Modified Date | Action |
|--------------------------|-------------------------|--------------|--------------|---------------------|------------------|---------------------|--------|
| <input type="checkbox"/> | Check | Absolute | CFETEST | 2022-09-15 11:16:00 | CFETEST | 2022-09-15 11:16:00 | ... |
| <input type="checkbox"/> | S17_Rel_LP_17004 | Relative | mbalakrishna | 2022-09-15 03:53:25 | mbalakrishna | 2022-09-15 03:53:25 | ... |
| <input type="checkbox"/> | S23_ABS_LP_23003 | Absolute | mbalakrishna | 2022-09-15 03:52:07 | mbalakrishna | 2022-09-15 03:52:07 | ... |
| <input type="checkbox"/> | S31_SPLIT_ABS_REL_31003 | Split | mbalakrishna | 2022-09-15 02:16:04 | mbalakrishna | 2022-09-15 02:18:40 | ... |

Search Payment Pattern

Prerequisites: Predefined Payment Pattern

To search for a Payment Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Payment Patterns that meet the search criteria.

Or

An alternative method to search a Payment Pattern is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Payment Pattern Summary. You can enter the **Code, Name, Description** or **Pattern Type** of the Payment Pattern and click **Search**.

The Payment Pattern Summary displays the following information:

Add: Click the Add icon on the page header to build a new Payment Pattern.

- **Name:** The Payment Pattern's short name.
- **Pattern Type:** The Payment Pattern Type, such as Absolute or Relative.
- **Created By:** The Name of the user who created the Payment Pattern.
- **Created Date:** The Date and Time at which the Payment Pattern was created.
- **Last Modified By:** The user who last modified the Payment Pattern.
- **Last Modified Date:** The Date and Time when the Payment Pattern was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Payment Pattern.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Payment Patterns. To edit a rule, you must have Read/Write privilege.
 - Save As: You can reuse a Payment Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - Delete: You can delete Payment Patterns that you no longer require. Note that only Payment Pattern owners and those with Read/Write privileges can delete Payment Patterns. A Payment Pattern that has a dependency cannot be deleted.

- **Dependency Check:** You can perform a dependency check to know where a particular Payment Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Payment Patterns that have dependencies. . A report of all rules that utilize the selected Payment Pattern is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Creating Payment Patterns](#)

5.2.3.1 Create Payment Patterns

You create payment patterns to capture the repayment behavior of instruments that are too complex to be accommodated through the use of the standard instrument table fields.

To create the payment pattern, do the following:

1. Navigate to the **Payment Pattern** summary page.
2. Click **Add** icon. The **Add Payment Pattern** page is displayed.
3. Enter a Code value for the new payment pattern. You can also click Generate Code Option in Code field to generate the code automatically.

 **Note:**

The code value you assign to the new pattern must be unique. Also, the code must be mapped to the appropriate instrument records (PMT_PATTERN_CD field) to connect the instrument to the appropriate pattern.

4. Enter the Name for pattern.
5. Enter a brief Description for the pattern.
6. Select the Pattern Type: Absolute, Relative, or Split.
7. Select the Payment Type: Conventional, Level Principal, or Non-amortizing.

 **Note:**

The Payment Type option is not available for Split Payment Pattern type.

The selection of the payment pattern type made in the previous step determines the information you must provide to successfully define that pattern type. See:

- [Defining Absolute Payment Patterns](#)
- [Defining Relative Payment Patterns](#)

- Defining Split Payment Patterns

8. Click **Save**.

5.2.3.1.1 Define Absolute Payment Patterns

Absolute payment patterns are commonly used for instruments that are on a seasonal schedule, such as agricultural or construction loans that require special payment handling based on months or seasons.

When working with absolute payment patterns, it is sufficient to define payments for one calendar year. Once the term exceeds a year, the payment schedule will loop until the instrument matures.

Prerequisites

Selecting Absolute as the pattern type.

Figure 5-21 Absolute Payment Patterns

As Of Date : 10/09/2015 Payment Pattern Save Cancel ?

Code: 333 Description: Pattern Type: Absolute

Name: New Payment Type: Conventional

▼ Absolute Pattern Definition

| <input type="checkbox"/> | Month | Day | Cash Flow Type | Payment Method | Value |
|--------------------------|-------|-----|------------------------|----------------|-------|
| <input type="checkbox"/> | | | Principal and Interest | | |

To define absolute payment pattern, do the following:

1. In the **Payment Patterns** page, select **Pattern Type** as **Absolute**.
2. Select the **Payment Type** from the drop-down list: **Conventional**, **Level Principal**, or **Non-Amortizing**. The **Payment Type** determines the type of information required to successfully define the **Payment Phase**.
3. Define the **Payment Phases**. A **Payment Phase** is a set of payment characteristics that defines the timeline of the instrument's amortization.
 - a. Define the following parameters:
 - **Month**: This drop-down list allows you to select the month of the payment phase being defined.
 - **Day**: Used to specify the day of the month the payment is due.
 - b. Select the **Cash Flow Type**. The available types depends on the **Payment Type**. This do not apply to the **Non-Amortizing Payment Type**.
Table: Relationship between Cash Flow Type and Payment Types

| | Level Principal | Non-Amortizing | Conventional |
|------------------------|-----------------|----------------|--------------|
| Principal and Interest | Yes | | Yes |
| Principal Only | Yes | | |
| Interest Only | Yes | Yes | |

- c. Select the **Payment Method**. The available Payment Methods depend on the Payment Type. For more information, see: Relation between Payment Method and Payment Types. Payment Methods do not apply to the Non-Amortizing Payment Type.
 - d. Enter the Value for the Payment Method you selected in the previous step for applicable Payment Types.
If you selected the Interest Only Payment Method in the previous step, the Value field does not apply.
4. Click the **Add** icon to add additional Payment Phases to the Pattern. Click Delete icon corresponding to the rows you want to delete.
 5. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
 6. The **Download Excel** icon helps you to export payment information, modify and paste back in the UI.

 **Note:**

A Payment Pattern must have at least one valid Payment Phase to be successfully defined. The system raises a warning if you try to save a Payment Pattern with an incomplete Payment Phase.

7. Click Apply and Save.

The Payment Pattern is saved and the Payment Pattern summary page is displayed.

The following table describes the relationship between Payment Phase properties and Payment Types.

Relationship between Payment Phase Properties and Payment Types

| | Level Principal | Non-Amortizing | Conventional |
|----------------|-----------------|----------------|--------------|
| Month | Yes | Yes | Yes |
| Day | Yes | Yes | Yes |
| Payment Method | Yes | | Yes |
| Value | Yes | | Yes |

The following table describes the relationship between Payment Method and Payment Types.

Relationship between Payment Methods and Payment Types

| Payment Method | Level Principal | Non-Amortizing | Conventional |
|--------------------------------|-----------------|----------------|--------------|
| Percentage of Original Balance | Yes | | |

| Payment Method | Level Principal | Non-Amortizing | Conventional |
|--------------------------------|-----------------|----------------|--------------|
| Percentage of Current Balance | Yes | | |
| Percentage of Original Payment | Yes | | Yes |
| Percentage of Current Payment | Yes | | Yes |
| Absolute Payment | Yes | | Yes |
| Interest Only | Yes | | Yes |

5.2.3.1.2 Define Relative Payment Patterns

You create Relative Payment patterns for instruments that have irregular scheduled payments.

Prerequisites

Selecting Relative as the pattern type.

Figure 5-22 Relative Payment Patterns

| Frequency | Multiplier | Repeat | Cash Flow Type | Payment Method | Value |
|-----------|------------|--------|------------------------|----------------|-------|
| | Days | | Principal and Interest | | |

To define a relative payment pattern, follow these steps:

1. In the **Payment Patterns** page, select **Pattern Type** as **Relative**.
2. Select the Payment Type from the drop-down list: **Conventional**, **Level Principal**, or **Non-Amortizing**. The Payment Type determines the type of information required to successfully define the Payment Phase. The payment type determines the available characteristics for defining the payment amount.
3. Define the **Payment Phase**. The payment type determines the type of information required to successfully define the payment phase. For more details, see: Relation between Payment Phase Attributes and Payment Types.
 - a. Enter the **Frequency** for each payment phase.
 - b. Select the appropriate Multiplier for each payment phase from the following options:
 - Days

- Months
 - Years
- c. Enter the number of times each Payment Phase should be repeated in the Repeat column.
 - d. Select the **Cash Flow Type**. The available types depend on the Payment Type. This do not apply to the Non-Amortizing Payment Type.

Table: Relationship between cash Flow Type and Payment Types

| | Level Principal | Non-Amortizing | Conventional |
|------------------------|-----------------|----------------|--------------|
| Principal and Interest | Yes | | Yes |
| Principal Only | Yes | | |
| Interest Only | Yes | Yes | |

- e. Select the **Payment Method**.
The available payment methods depend on the payment type. For more details, see Relation between Payment Method and Payment Types. Payment Methods do not apply to the Non-Amortizing Payment Type.
 - f. Type the Value for the Payment Method you selected in the previous step for applicable Payment Types.
4. Click the **Add** icon to add additional Payment Phases to the Pattern. Click Delete icon corresponding to the rows you want to delete.
 5. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
 6. The **Download Excel** icon helps you to export payment information, modify and paste back in the UI.

 **Note:**

A Payment Pattern must have at least one valid Payment Phase to be successfully defined. The system raises a warning if you try to save a Payment Pattern with an incomplete Payment Phase.

7. Click **Apply** and **Save**.
The payment pattern is saved and the Payment Pattern home page is displayed.

 **Note:**

It is not necessary to set up relative payment patterns for the complete term of an instrument. The payment pattern automatically repeats until the maturity date. Suppose a payment pattern is created to make monthly payments for the first year and quarterly payments for the next three years. If you apply this pattern to an instrument record with an original term of five years, the payment pattern wraps around and the fifth year is scheduled for monthly payments.

An easy way to set up payment patterns for instruments with varying original terms is to use the repeat value of 999 in the last row of the payment pattern. For example, a payment pattern that pays monthly for the first year and quarterly thereafter, can be set up with two rows. The first row shows 12 payments in one month. The second row shows 999 payments in three months. When this payment pattern is processed it repeats the three-month payment frequency until the maturity date is reached.

The following table describes the relationship between payment phase attributes and payment types.

Relationship between Payment Phases and Payment Types

| Payment Phase Attributes | Payment Types: Level Principal | Payment Types: Non-Amortizing | Payment Types: Conventional |
|---------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| Frequency | Yes | Yes | Yes |
| Multiplier | Yes | Yes | Yes |
| Repeat | Yes | Yes | Yes |
| Payment Method | Yes | | Yes |
| Value | Yes | | Yes |

5.2.3.1.3 Define Split Payment Patterns

You can use a Split payment pattern for financial instruments that make principal payments along with two concurrent amortization schedules. Split patterns may be a combination of Absolute and Relative Payment Patterns for example, and contain multiple sets of payment phases under a single amortization code. These patterns could further use a combination of Conventional, Level Principal, and Non-Amortizing Payment Types.

Figure 5-23 Split Payment Patterns

| Pattern Sub Type | Payment Type | Percent | Definition Status | |
|------------------|--------------|---------|-------------------|---------------|
| Absolute | Conventional | 100 | Undefined | Define Delete |

To define a split payment pattern, follow these steps:

1. In the Payment Patterns page, select Pattern Type as Split.
2. Define Split Pattern definition.
 - a. Select the required **Pattern Sub Type** for each leg.
 - Absolute
 - Relative
 - b. Select the Payment Type for each Payment Phase or Split.
 - c. Enter the Percent value to indicate the percentage weight of the timeline being defined for the individual payment phases (each row). The sum of the percentage weights must total 100%.

 **Note:**

The payment pattern term specifications for different payment phases or splits vary depending on whether you select the Absolute or Relative Pattern Type. You can define the term specifications for the splits following the steps described previously for defining payment phases for these patterns. See:

- [Define Absolute Payment Patterns](#)
- [Define Relative Payment Patterns](#)

3. Select one of the legs and then select **Define** button to enter pattern details for the leg.
4. Select one of the legs and then select **Delete** button to delete pattern details for the leg.
5. Click the **Add** icon to add additional Payment Phases to the Pattern.
6. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
7. Click **Apply** and **Save**.

The Split payment pattern is saved and the Payment Pattern summary page is displayed.

5.2.4 Repricing Patterns

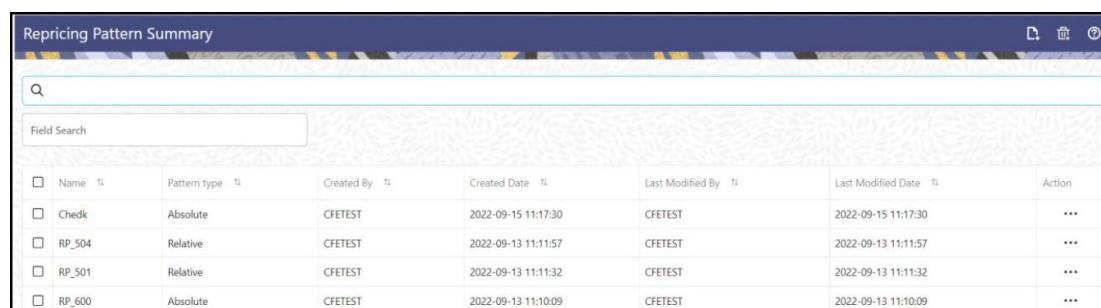
User Defined Repricing Patterns provide a mechanism to capture Instrument Repricing Patterns that are too complex to be accommodated through the use of the Standard Account Table Fields. You can utilize a Repricing Pattern to generating Cash Flows by entering the Adjustable Type Code as “Repricing Pattern” along with actual Repricing Pattern Code for the relevant Instrument Records.

The procedure for working with and managing Repricing Patterns is, similar to that of other Oracle Business Rules.

Repricing Pattern Summary

This page is the gateway to all Repricing Patterns and related functionality. You can navigate to other pages relating to Repricing Patterns from this point.

Figure 5-24 Repricing Summary



The screenshot shows the 'Repricing Pattern Summary' page. It features a search bar at the top with a magnifying glass icon and a 'Field Search' dropdown menu. Below the search bar is a table with the following columns: Name, Pattern type, Created By, Created Date, Last Modified By, Last Modified Date, and Action. The table contains five rows of data:

| <input type="checkbox"/> | Name | Pattern type | Created By | Created Date | Last Modified By | Last Modified Date | Action |
|--------------------------|--------|--------------|------------|---------------------|------------------|---------------------|--------|
| <input type="checkbox"/> | Check | Absolute | CFETEST | 2022-09-15 11:17:30 | CFETEST | 2022-09-15 11:17:30 | ... |
| <input type="checkbox"/> | RP_504 | Relative | CFETEST | 2022-09-13 11:11:57 | CFETEST | 2022-09-13 11:11:57 | ... |
| <input type="checkbox"/> | RP_501 | Relative | CFETEST | 2022-09-13 11:11:32 | CFETEST | 2022-09-13 11:11:32 | ... |
| <input type="checkbox"/> | RP_600 | Absolute | CFETEST | 2022-09-13 11:10:09 | CFETEST | 2022-09-13 11:10:09 | ... |

Search Repricing Pattern

Prerequisites: Predefined Repricing Pattern

To search for a Repricing Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Repricing Patterns that meet the search criteria.

Or

An alternative method to search a Repricing Pattern is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Repricing Pattern Summary. You can enter the **Code, Name, Description or Pattern Type** of the Repricing Pattern and click **Search**.

The Repricing Pattern Summary displays the following information:

Add: Click the Add icon on the page header to build a new Repricing Pattern.

- **Name:** The Repricing Pattern's short name.
- **Pattern Type:** The Repricing Pattern Type, such as Absolute or Relative.
- **Created By:** The Name of the user who created the Repricing Pattern.

- **Created Date:** The Date and Time at which the Repricing Pattern was created.
- **Last Modified By:** The user who last modified the Repricing Pattern.
- **Last Modified Date:** The Date and Time when the Repricing Pattern was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Repricing Pattern.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Repricing Patterns. To edit a rule, you must have Read/Write privilege.
 - Save As: You can reuse a Repricing Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - Delete: You can delete Repricing Patterns that you no longer require. Note that only Repricing Pattern owners and those with Read/Write privileges can delete Repricing Patterns. A Repricing Pattern that has a dependency cannot be deleted.
 - Dependency Check: You can perform a dependency check to know where a particular Repricing Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Repricing Patterns that have dependencies. . A report of all rules that utilize the selected Repricing Pattern is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Create a Repricing Pattern](#)

5.2.4.1 Create Repricing Patterns

You create Repricing patterns to capture the Repricing Behavior of instruments whose rates change according to complex schedules.

To create the Repricing Pattern, follow these steps:

1. Navigate to Repricing Pattern Summary Page.
2. Click **Add** icon.
The Add Repricing Pattern Page is displayed.
3. Enter a Numeric Code Value for the new Repricing Pattern. You can also click Generate Code Option in Code field to generate the code automatically.
4. Enter the name of the pattern.
5. Type a brief description for the pattern.
6. Select the Repricing Pattern Type: Absolute or Relative.

The selection of the Repricing Pattern type determines the fields that are displayed in the Repricing Events Table and the information you must provide to successfully define that pattern type. See:

- [Defining Absolute Repricing Patterns](#)
- [Defining Relative Repricing Patterns](#)

7. Click **Save**.

5.2.4.1.1 Define Absolute Repricing Patterns

The Absolute Repricing Pattern is used for instruments that are date dependent. Each specific date is a separate event. You need to enter the month and day for each event, except for the initial event.

Figure 5-25 Define Absolute Repricing Pattern

Prerequisites

Selecting Absolute as the pattern type.

Procedure

This table describes key terms used for this procedure.

Table 5-8 Key Terms used in Absolute Repricing Pattern

| Key Terms | Description |
|-------------------|--|
| Add Row | Allows you to add one or more Repricing Events. |
| Add Multiple Rows | Allows you to add more Repricing Events. |
| Define | Add detail for each Repricing Event. |
| Delete | Allows you to delete specific rows in the Repricing Events Table. |
| Month | In conjunction with the Day field, this drop-down menu, allows you to specify a unique month-day combination for a Repricing Event. |
| Day | In conjunction with the Month drop-down menu, this field allows you to specify a unique month-day combination for a Repricing Event. |

To define Absolute Repricing Pattern, perform the following:

1. Select Pattern Type as **Absolute**.
2. Specify the required month-day combination for the event. You cannot specify a month-day combination for the first event as this row is reserved for the initial period.
3. Select the Repricing Type: **Flat** or **Indexed**.
The default is flat. If you select Indexed, the system automatically changes the fields available for entry.

 **Note:**

You can change your selection of the Repricing Type at any point in this process. Sometimes it may cause a loss of data.

For more information on Flat Repricing Type, see [Repricing Event is Flat Repricing](#).

For more information on Index Repricing Type, see [Repricing Event is Index Repricing](#).

- Select Balance Tier option:
 - **None:** If selected, the Balance Tiered Pricing is not applied.
 - **Current Balance:** Users can define balance tiers and associate different rates with the corresponding balance tier level. Balance tier in this case is decided using the principal balance of instrument on As of Date. Thus, even when actual balance goes down due to repayment, the instrument continues to be in original balance tier.
 - **Reducing Balance:** If the Balance Type is selected as Reducing Balance, then the repricing rate will be calculated using principal balance as on Repricing Date. Thus, the balance tier applicable to instrument range over its life due to repayment.
- 4. Click **Define**.

Repricing Event is Flat Repricing

Flat Rate: A Flat Rate is a specific rate—it is directly input.

To define a Flat Rate Event, follow these steps:

1. Select the Flat option from Repricing Method drop-down list for the event you are going to define. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events Page:
2. Enter the Net Rate.
3. Enter the Gross Rate.
4. Enter the Transfer Rate.

 **Note:**

The Transfer Rate functionality will be released in future.
You must enter a valid value for at least one of these rate fields.

5. Click **Apply**.
The Event Summary Page is displayed. At this point, you have the option of defining additional events or saving. To add an additional event, repeat Click Add Row. You can edit the details of Defined Event.

Repricing Event is Indexed Repricing

An Indexed Rate is a set of parameters used to calculate a rate.

To define an Indexed Rate Event, follow these steps:

1. Select the Indexed option from Repricing Method drop-down list for the event you are going to define. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events Page:
2. Select the Interest Rate Curve.
3. Select the Transfer Price Curve.

 **Note:**

The Transfer Price Curve functionality will be released in the future.

4. Enter the Yield Curve Term and select the appropriate Multiplier.
5. Enter the Net Margin.
6. Enter the Gross Margin.
7. Enter the Transfer Price Margin.
8. Enter the Rate Cap Life.
9. Enter the Rate Floor Life.
10. Enter the Rate Set Lag and select the appropriate Multiplier.
11. Click **Apply**. The Event Summary Page is displayed.
12. At this point, you have the option of defining additional events or saving. To add an additional event, repeat Click **Add Row**.
13. Click **Save**.
The Repricing Pattern is saved and the Repricing Pattern Summary Page is displayed.

5.2.4.1.2 Define Relative Repricing Patterns

The Relative Repricing Pattern is used for instruments where the repricing is determined by the elapsed time since origination. Defining a Relative Repricing Pattern involves the definition of a series of repricing events applicable to a specific Repricing Pattern Code. You need to specify the length of each Repricing Period and the number of times that event should occur before calculating the next event in the pattern.

Figure 5-26 Define Relative Repricing Pattern

Prerequisites

Selecting Relative as the pattern type.

Procedure:

This table describes key terms used for this procedure.

Table: Key Terms used in Relative Repricing Pattern

| Key Terms | Description |
|-------------------|---|
| Add Row | This allows you to Add one or more Repricing Events. |
| Add Multiple Rows | Allows you to add more Repricing Events. |
| Delete | This allows you to delete specific rows in the Repricing Events Table. You need to specify the following parameters in the Repricing Events Table for a Relative Repricing Pattern: |
| Frequency | In conjunction with the Multiplier drop-down menu, this field allows you to specify how often Repricing occurs. |
| Multiplier | The unit of time applied to the frequency. The choices are: Days Months Years |
| Repeat | This allows you to specify the number of times a repricing event should be repeated. |
| Repricing Method | A drop-down list, it displays the Repricing Type, Flat Rate or Indexed Rate, associated with a particular event. |

The steps to create relative Repricing Patterns are similar to [Creating Absolute Repricing Patterns](#).

The only difference is that the fields in the Repricing Events Table are different.

Select Pattern Type as Relative and follow the steps mentioned in [Creating Absolute Repricing Patterns](#) section.

5.2.5 Holiday Calendars

This section discusses the procedure to create a Holiday Calendar and generate a list of the weekend and holiday dates. Individual Cloud Service may consume the Holiday Calendar events in different ways.

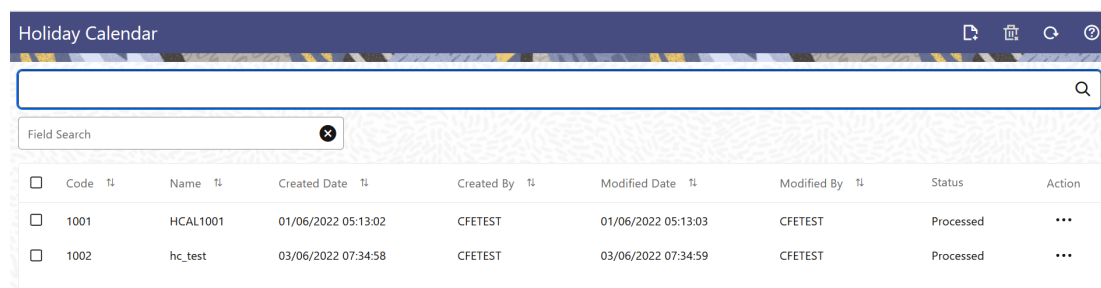
A Holiday is a day designated as having special significance for which individuals, a government, or some religious groups have deemed that observance is warranted and thus no business is carried on this day. The Holiday Calendar Code can range from 1 to 99999.

The **Generate Holiday Calendar** option on the **Holiday Calendar Definition** page allows you to generate the maximum 80 Holiday Calendar definitions at a time. Using the Scheduler Service, you can generate the Holiday Calendar definitions in bulk. For more information, see the Data Loader section.

Holiday Calendar Summary

This page is the gateway to all Holiday Calendars and related functionality. You can navigate to other pages relating to Holiday Calendars from this point.

Figure 5-27 Holiday Calendar Summary



| <input type="checkbox"/> | Code | Name | Created Date | Created By | Modified Date | Modified By | Status | Action |
|--------------------------|------|----------|---------------------|------------|---------------------|-------------|-----------|--------|
| <input type="checkbox"/> | 1001 | HCAL1001 | 01/06/2022 05:13:02 | CFETEST | 01/06/2022 05:13:03 | CFETEST | Processed | ... |
| <input type="checkbox"/> | 1002 | hc_test | 03/06/2022 07:34:58 | CFETEST | 03/06/2022 07:34:59 | CFETEST | Processed | ... |

Search Holiday Calendar Rule

Prerequisites: Predefined Holiday Calendar

To search for a Holiday Calendar:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Holiday Calendars that meet the search criteria.

Or

An alternative method to search a Holiday Calendar rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Holiday Calendar Summary. You can enter the **Code**, **Name**, and **Description** of the Holiday Calendar and click **Search**.

The Holiday Calendar rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Holiday Calendar rule.

- **Code:** The code of Holiday Calendar

- **Name:** The Holiday Calendar's short name.
- **Created Date:** The Date when Holiday Calendar was created.
- **Created By:** The Name of the user who created the Holiday Calendar
- **Last Modified By:** The user who last modified the Holiday Calendar rule.
- **Last Modified Date:** The Date and Time when the Holiday Calendar rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Holiday Calendar rule.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Holiday Calendar rules. To edit a rule, you must have Read/Write privilege.
 - Save As: You can reuse a Holiday Calendar rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - Delete: You can delete Holiday Calendar rules that you no longer require. Note that only Holiday Calendar rule owners and those with Read/Write privileges can delete Holiday Calendar rules. A Holiday Calendar rule that has a dependency cannot be deleted.
 - Dependency Check: You can perform a dependency check to know where a particular Holiday Calendar rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Holiday Calendar rules that have dependencies. . A report of all rules that utilize the selected Holiday Calendar rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Create Holiday Calendar](#)

5.2.5.1 Create 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.

To create a new Holiday Calendar Rule, follow these steps:

1. Navigate to the Holiday Calendar Summary Page.
2. Click Add icon. The Holiday Calendar Details Page is displayed. This page is divided into following sections:
 - Holiday Calendar
 - Holiday Details

- Generate Holidays And Exceptions

Figure 5-28 Holiday Calander Details Page

3. Enter details in above sections and Click **Save**.

Holiday Calendar section

1. Navigate to Holiday Calendar section.
2. Enter the following details:
 - **Holiday Code:** Enter a code value for the new Holiday Calendar. 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.
 - **Name:** Enter the name and a brief description for the Holiday Calendar. The name you assign to the Holiday Calendar must be unique. The name can hold a maximum of 30 characters.
 - **Description:** Enter the description of Holiday Calendar Rule.
 - **Weekend Days:** In the Holiday Weekend Days checkboxes, select not more than two weekend days.
3. Click **Next** to navigate to **Holiday Details** section.

Holiday Details section

1. Enter the following details in Holiday Details Section:
2. Click **Add** icon. Define the Holiday details for any period within the Holiday range. Enter the following details in Holiday Calendar Grid:

- **Name:** Name of Holiday
- **Date:** The date of Holiday
- **Holiday Type:** Type of Holiday. Two types of holidays can be defined: Fixed and Moving.
A Fixed Holiday 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). A HOLIDAY_TYPE code = 0 is a Fixed type holiday, code = 1 is a Moving type Holiday, and code = 2 is a weekend. 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. The PREVIOUS_WORKINGDAY and NEXT_WORKINGDAY fields designate the valid prior and following working days, respectively.

A Moving Holiday 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

10th April 2020 is a Moving Holiday for Good Friday.

- You can add more Holiday Periods using **Add** icon. Add Multiple icon allows you to add multiple Holiday Periods.
- Click **Next** to navigate to **Generate Holidays And Exceptions** section.

Generate Holidays And Exceptions Section

This section is used to execute a Holiday Calendar Definition to generate the Calendar Dates listing the various types of holidays for a given Holiday Period.

1. Enter the following details in Generate Holidays And Exceptions Section:
 - **Generate Holidays:** Enter the Holiday Period in Generate Holidays Section. 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.
2. Holiday List for Holiday ID #1 generated successfully message appears (where #1 is the Holiday Calendar Code).
3. The status of a Holiday Calendar where Holiday Dates have been generated displays as Processed in the Status column in the Summary Page.

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 button to execute the selected Holiday Calendar.

The generated holiday list is no longer valid if:

- There is a change in the definition of the Holiday Calendar.
- There is any update or modification to the Holiday Exceptions defined for that Holiday Calendar.

In such a case, you 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 the new definition.

5.2.5.2 Holiday Exceptions

You can specify exceptions to Holidays. As a prerequisite, a Holiday Calendar should have been properly defined and the status of the Holiday Calendar on 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 Exceptions button is enabled. Any changes in the Holiday Definition will disable the Exceptions Button. You must generate the Holiday List again to define or view the exceptions.

1. Click **Exceptions** in the **Generate Holidays And Exceptions** section. The **Holiday Exceptions** window opens.

Figure 5-29 Holiday Exceptions Page

The screenshot shows the 'Holiday Exceptions' window with a search section and a table of exceptions. The search section includes radio buttons for 'Fixed Holidays', 'Moving Holidays', and 'All Exceptions', along with dropdowns for 'From Years' (2020) and 'To Year' (2024). There is also a checkbox for 'Include Weekends' and a 'Holiday Date' field with a calendar icon. The table below has columns for 'Holiday Name', 'Holiday Type', 'Holiday Date', 'Exception Type', 'Shift To', and 'Notes'.

| Holiday Name | Holiday Type | Holiday Date | Exception Type | Shift To | Notes |
|--------------|--------------|--------------|----------------|----------|-------|
| HCAL | Fixed | 18-06-2020 | | | |
| HCAL | Fixed | 18-06-2021 | | | |

2. The search section in the **Holiday Exceptions** window has the following fields:
 - **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.
 - **Fixed Holidays:** You can filter the list of holidays by the type of Fixed Holidays.
 - **Moving Holidays:** You can filter the list of holidays by the type of Moving Holidays.
 - **Holiday Date:** For a particular known Holiday Date, exceptions can be defined.
 - **All Exceptions:** This check box when selected lists all the exceptions, if already defined, for the holidays within the From, To Date Range.

3. The search result gives the list of all holidays based on the selection of the above search criteria fields.
 - In the **Holiday Exceptions** section, 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 you select **Not a Holiday** from the **Exception Type** drop-down, then the Shift to date field is disabled.
 - Spring earlier considered as a Holiday in the Holiday Calendar can be marked as Not a Holiday in the Holiday Exceptions Window. You can write your comments or remarks in the Notes next to the **Exception Type** drop-down list.
 - Any Holiday can be shifted to another day, in which case the earlier declared Holiday is removed from the Holiday List, while the shifted today is included as a Holiday.
 - Once the Holiday Calendar Definition is saved, its status in the Holiday Calendar Summary Page is marked as Defined.

5.2.6 Filters

Filters allow you to view and select data using the defined expressions.

5.2.6.1 Filter Definition Types

Filter definitions are created based on the different object types.

The following filter definition types are supported:

- **Attribute Filter** - filters based on one or more Dimension Type Attributes. For each attribute, you can select one or more values.
- **Data element filter** - filters the columns based on specific data constraint. These filters are used within other rule types such as Allocation Rules, Transfer Pricing Rules, Asset and Liability Management Rules.
- **Group filter** - combined filter containing multiple Data element filters logically connected using the **AND** operator.
- **Hierarchy filter** - filters using Rollup Nodes within a Hierarchy and exclude or include data within an OFSAA Rule.

5.2.6.2 Accessing Filter Feature

The **Filters Summary Page** shows the list of available filters.

- To access the Filter Summary page, click **Maintenance** and select **Filter**.

The Filter Summary Page provides the list of already created Filter definitions with the following details.

- **Name** - The unique Filter Name. You can mouse-over the filter name to view more details such as the description of the filter.
- **Folder** - The folder in which the Filter Definition is stored.

- **Filter Type** - One of the following Filter Types associated with the Filter Definition. The filter type is selected based on the type of the object that needs to be filtered.
 - [Attribute Filter](#)
 - [Data element filter](#)
 - [Group filter](#)
 - [Hierarchy filter](#)
- **Modified By** - The login name of the User who has modified the Filter Definition.
- **Modification Date** - The date of modification.
- **Action** - Using **Action (three dots)**, you can perform the following tasks on a selected filter definition.
 - [View](#) - View the details of selected filter definition.
 - [Edit](#) - Edit a filter definition.
 - [Copy](#) - Copy a filter definition.
 - [Delete](#) - Delete a filter definition.
 - [View SQL](#) - View the SQL statement for a filter definition.
 - [Check Dependency](#) - Check the dependent objects associated with the filter definition.

5.2.6.2.1 Searching Summary

You can search for a specific Definition based on the following criteria. Select/Enter one or more unique values/tag associated with the definition and click **Search**.

- **Name** - Enter unique filter name, to search for a specific definition based on the entered name,
- **Folder** - Select a specific folder to view the definitions stored in that folder.
- **Filter Type** - Select the Filter type, to view all the definitions associated with it.
- **Description** - Enter one or more keywords, to view the definitions containing those keywords.

5.2.6.2.2 Sorting a Summary Page

Sorting helps to view/group the filter definitions sequentially based on the selected criteria

You can sort/group the Definitions based on the following parameters:

- Filter Type
- Folder
- Name

5.2.6.3 Creating Filter Definitions

To create a Filter definition, complete the following steps:

1. To create a Filter Definition, click the **Add** in the Filter Summary. The **Add Filter Definition** Page with the following details is displayed.

- **Name** - The unique Filter Definition Name.

 **Note:**

You can enter up to 120 characters. All allowed characters are **blank space ()** , **Underscore (_)**, **comma (,)**, **dot (.)** and **hyphen (-)** .

- **Folder** - Select the Folder, to save the Filter definition.
- **Description** - A brief description about the Filter Definition.

 **Note:**

You can enter up to 250 characters. All characters are allowed except **" & "**, **" + "**, **" @ "** and **" ~ "**.

- **Read-Only** - Select this option to give other users the access to only view the Filter Definition.
 - **Filter Type** - Select one of the following filter types, based on the type of the object that needs to filtered. For more information about creating a filter based on the filter type refer, to the respective sections.
 - [Attribute Filter](#)
 - [Data Element filter](#)
 - [Group filter](#)
 - [Hierarchy filter](#)
2. After including all the filters, Click **Save**.

The new Filter Definition is created successfully and added to the Filter Summary.

5.2.6.3.1 Defining an Attribute Filter

Attribute Filters are created using defined Attributes. Attribute filters facilitates you to filter on one or more Dimension Type Attributes.

For each attribute, you can select one or more values.

1. Select the Filter Type as **Attribute**.
2. Select the required **Dimension** from the drop-down list.
3. Select the associated **Attribute** from the drop-down list.

Only those attributes associated with the selected Dimension are displayed.
4. In the **Attributes Value** pane, click **Search**. The list of attribute values associated with the selected Attribute are displayed.
5. Click the **Action** adjacent to the attribute to be added and click **Copy**.

The selected Attribute value is added the **Attribute Values** pane.
6. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

The filter definition is added and a confirmation message is displayed.

To Delete a Filter, highlight the filter and click **Delete**.

To view the SQL Query for a filter, highlight the filter and click **View SQL**.

5.2.6.3.2 Defining a Data Element Filter

Data Element Filter is a stored rule that expresses a set of constraints.

Data Element Filters can access most instrument columns and most columns in the Management Ledger. Data Element Filters are used within other rule types such as Allocation Rules, Transfer Pricing Rules, Asset and Liability Management Rules.

Only columns that match the data type of your Data Element selection are displayed in the drop-down list. For example, Balances between 10,000 and 20,000 Accounts opened in the current month Loans with amortization terms greater than 20 years.

Refer to the following steps, to create a Data Element filter:

1. Select the required database table from the **Table Name** drop-down list.
2. Select one or more columns from the **Column Name** to be included in the filter for viewing specific values.

The columns that are present in the selected Database table are only listed.

3. Select the **Data Element** from the drop-down list.

The Data elements are listed as a combination of the selected Database table and the selected column

4. Select one of the following Filter Methods to be applied to each data element, add the filter conditions based on the selected method.
 - [Specific Values Filter](#)
 - [Ranges Filter](#)
 - [Another Element Filter](#)
 - [Expressions Filter](#)

5. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

The filter definition is added and a confirmation message is displayed.

To Delete a Filter, highlight the filter and click **Delete**.

To view the SQL Query for a filter, highlight the filter and click **View SQL**.

5.2.6.3.2.1 Specific Values Filter

You can match a selected database column to a specified value or values, using the Specific Value filter.

You may either include or exclude Specific Values, to view the data.

To create a specific value filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Specific Values** in the Filter Methods.
2. Enter the required filter value in the **Values** column.
 - When comparing Specific Values for a date type column, select the date using the Calendar control.

- When comparing Specific Values for a character type column, enter only Character strings.
3. To add another row click **Add** (Plus sign) on the right hand side corner of the **Specific Values** pane. Repeat the previous step, to enter multiple values.
 4. To include or exclude the specific values, in the results:
 - To view the results containing the entered specific value, select the value and select **Include**. Click **Add** to add the expression to the filter condition.
 - To view the results without the entered specific value, select the value and select **Exclude**. Click **Add** to add the expression to the filter condition.
 5. To delete a value, select the value by clicking the check-box adjacent to the value. Click **Delete**.
 6. To view the SQL statement for the specific value, select the value and click **View SQL**.

5.2.6.3.2.2 Ranges Filter

You can match a selected database column to a specified range/ranges of values or to ranges of values.

You may either include or exclude Specific Values, to view the data.

To create a Ranges filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Ranges** in the Filter Methods.
2. Refer to the following steps, and create a range or multiple ranges, view require data.

You can use Ranges for data types - Term, Frequency, Leaf, Code, Identity, Date, Numeric and Varchar.

- a. Select the **From Operator** (> or >=), to include the lower limit of the range.
 - b. Enter the **Value From** which the Range begins.
 - c. Select the **To Operator** (< or <=), to indicate whether to include the specified value in the higher limit of the range.
 - d. Enter the **Value To** , to include the higher limit of that range.
3. To include or exclude the specific range, in the results:
 - To view the results containing the entered specific range, select the range and select **Include**. Click **Add** to add the range to the filter condition.
 - To view the results without the entered specific range, select the range and select **Exclude**. Click **Add** to add the range to the filter condition.
 4. To delete a range, select the range by clicking the check-box adjacent to the value. Click **Delete**.
 5. To view the SQL statement for the specific range, select the range and click **View SQL**.

5.2.6.3.2.3 Creating Another Element Filter

You can match a selected database column to another database column.

When creating an Another Data Element Filter Method, you may only compare a column to other columns that you have already selected (the Data Element drop-down list box will only contain columns that you have already selected).

To create an Another Element filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Another Element** in the Filter Methods.
2. Select a **Table Column**, that needs to be compared with the Data Element Column.
3. Select one of the following mathematical operators for comparison.
 - = - Equal to
 - <> = Not equal to
 - < - Lesser than
 - > - Greater than
 - <= - Lesser than or equal to
 - >= - Greater than or equal to
4. Select a **Data Element**, that needs to be compared with the Table Column.
5. Click **Add** to add the expression to the filter condition.

To edit an existing Another Element Filter entry, select the entry listed in the **Filter Condition** pane. Modify the expression in the Another Element Pane and click **Update**.

5.2.6.3.2.4 Expressions Filter

Expressions filters help to include calculated conditions in filters.

To create an Expression filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

Refer to the following steps, to create a Expressions filter:

1. Select **Expressions** in the Filter Methods.
2. Refer to the following steps, to include an expression and filter the data based on the calculated output.
 - a. Select one of the **Operator** (> or >=), to process the data in the specific column.
 - = - Equal to
 - <> - Not equal to
 - < - Lesser than
 - > - Greater than
 - <= - Lesser than or equal to
 - >= - Greater than or equal to
 - b. Select the **Expression** for comparing the data in the selected table column.

3. Click **Add** to add the expression to the filter condition.
To edit an existing Expression Filter entry, select the entry listed in the **Filter Condition** pane. Modify the expression in the Expressions pane and click **Update**.
4. To delete a range, select the range by clicking the check-box adjacent to the value. Click **Delete**.
5. To view the SQL statement for the specific range, select the range and click **View SQL**.

5.2.6.3.3 Defining Group Filter

Group Filters can be used to combine multiple Data Element Filters with a logical "AND".

For each attribute, you can select one or more values.

1. Select the Filter Type as **Group**.
2. Select the checkbox(s) adjacent to the required Data Element Filters in the **Available Filters** pane, and click **Move Selected Available Filters to Selected Filters**, to move them to **Selected Filters** pane.

To select all the filters, click **Select All**.

To search for a specific filter, enter the few letters from the filter name, and click the **Search**

3. To remove a filter from the **Selected Filters** pane, select the filter and click **Move Selected Filters to Available Filters**. Click **Select All** to move all the selected filters.
4. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

The filter definition is added and a confirmation message is displayed.

5.2.6.3.4 Defining Hierarchy Filter

Hierarchy Filter allows you to utilize Rollup Nodes within a Hierarchy to help you exclude (filter out) or include data within an OFSAA Rule.

For each attribute, you can select one or more values.

1. Select the Filter Type as **Hierarchy**.
2. Select the required **Dimension** from the drop-down list.
3. Select the required **Folder** from which you want to select the Hierarchy.
4. Select the **Hierarchy** from the list of Hierarchies displayed based on the selected Folder.
5. Click **Launch Hierarchy Browser**, access the Hierarchy Browser and select/unselect the Child/Sibling Members to be included in the Filter.

For more information about Hierarchy browser, refer [Hierarchy Browser](#) .

6. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

The filter definition is added and a confirmation message is displayed.

5.2.6.3.4.1 Hierarchy Browser

The Hierarchy Browser contains the list of available Members associated with the selected Hierarchy.

You can view the list of available members and the child nodes associated with the members, in the **Show Hierarchy** tab.

- To select a Member, click the check-box adjacent to the member.

 **Note:**

When a Member is selected, all the associated child members are also included in the Hierarchy filter. To include only a specific child member, expand the node and selected the required child member.

- To search for a specific member, click **Search**. Enter the keyword in the **Search Value** and click **Search** adjacent to the Search box. The searched members are displayed in the **Search Results** tab.
- You can view a selected tree member in a flat list, in the **Show Members** tab.
- To navigate through the list of available members.
 - Click **Expand/Collapse** to expand/collapse all the nodes. You can also click **Node** next to a member, to expand or collapse a Member node.
 - Click **Sort Ascending/Descending**, to view the list Members in alphabetical order.
 - In Search Results tab, click **Focus/Unfocus**, to select/deselect any specific node.

5.2.6.4 Managing Filter Definitions

You can view, edit, copy, delete and view SQL for the existing Filter Definitions from the Filter Summary.

In the Filter Summary Page, highlight a specific Filter Definition and click the **Action** (three dots). The following Options are displayed.

- [View](#) - View the details of selected filter definition.
- [Edit](#) - Edit a filter definition.
- [Copy](#) - Copy a filter definition
- [Delete](#) - Delete a filter definition.
- [View SQL](#) - View the SQL statement for a filter definition.
- [Check Dependency](#) - Check the dependent objects associated with the filter definition.

5.2.6.4.1 Viewing Filter Definition Details

You can view the details of an individual Filter Definition, using the following procedure:

1. Highlight the Filter Definition and click **Action** (three dots).
2. Click **View** .

The Filter Definition page is displayed with the details such as Name, Description, Folder, Filter Type, Filter Conditions and Audit Info.

5.2.6.4.2 Editing Filter Definition Details

You can edit individual Filter Definition details at any given point. To edit the existing Filter Definition details:

1. Highlight the Filter Definition and click **Action** (three dots).
2. Click **Edit**.

The Filter Definition Page is displayed with the details: Name, Description, Folder, Filter Type, Filter Conditions and Audit Info. Edit the required information and click **Save**.

5.2.6.4.3 Copying Filter Definition Details

You can copy individual Filter Definition Details, to recreate another new Member Definition. To copy the Member Definition Details as follows:

1. Highlight the Filter Definition and click **Action** (three dots).
2. Click **Copy** button.

The Filter Definition Page is displayed with the details Name, Description, Folder, Filter Type and Filter Conditions.

Edit the unique information such as Name, Description, Folder, Filter Type and Filter Conditions, and click **Save**.

5.2.6.4.4 Deleting Filter Details

To delete a Filter Definition:

1. Highlight the Filter Definition and click **Action** (three dots).
2. Click **Delete** .

The Filter Definition is deleted after confirmation.

Note:

You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

5.2.6.4.5 Checking Dependencies

To check the dependencies of a Filter Definition from the Filters Summary:

1. Click **Action** adjacent to the filter definition.
2. Click the **Check Dependency** .

The list of Dependent Objects is displayed with Object ID, Name, and ID Type of the dependent Objects.

5.2.6.4.6 View SQL

To view SQL of a Filter Definition, perform the following steps:

1. Highlight the Filter Definition and click **Action**.
2. Click the **View SQL** button.

The SQL statement of Filter Definition is displayed.

5.2.7 Management Ledger Configuration

This screen enables you to define the Functional Currency and the Fiscal Year Start Month for each registered Management Ledger Table.

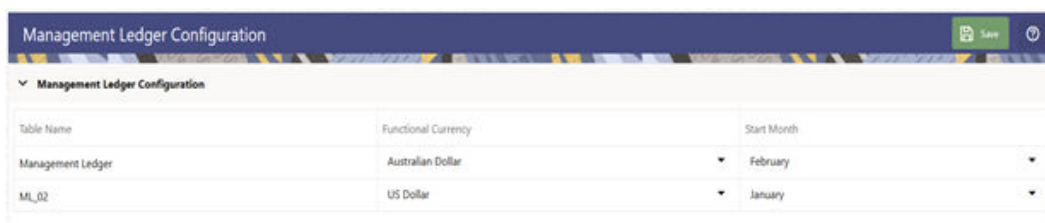
To configure the Management Ledger:

1. From the LHS menu, select **Maintenance**, and then select **Management Ledger Configuration**.

This UI displays the details for each registered Management Ledger. You can modify the Functional Currency and the Start Month Information for each registered Management Ledger Table, but cannot delete the details for an activated Management Ledger Table.

By default, the UI displays a single row corresponding to the OOTB Regular Management Ledger Table (FSI_D_MANAGEMENT_LEDGER). As and when any Placeholder Management Ledger Table is registered, the UI displays an additional row corresponding to the Registered Management Ledger. On registering and activating of all the Management Ledger Tables, the UI displays six rows pertaining to – one row for the OOTB Management Ledger Table and five rows for the registered five placeholder Management Ledger Tables.

Figure 5-30 Management Ledger Configuration



| Table Name | Functional Currency | Start Month |
|-------------------|---------------------|-------------|
| Management Ledger | Australian Dollar | February |
| ML_02 | US Dollar | January |

2. Select the following details:
 - **Functional Currency:** This field allows to select the functional currency that is applicable to the ledger table. Accounts and Instruments can be defined across various currencies, but to consolidate the accounts at multiple hierarchy Levels, across units, a common currency is required which you can set here. This currency can be the currency used in the primary economic environment where an entity operates, or in other words, the main currency used by a business unit.
The default value of Functional Currency for any Management Ledger table is set as 'US Dollar'.
 - **Start Month:** The field is used to select the start month of the fiscal year. The default value of Start Month for any Management Ledger table is set as 'January'.

- **Table Name:** This field displays the logical name of the Management Ledger table for which you want to input the details. The physical name of the Management Ledger table is displayed in a toolkit on mouse-hover over the logical name of the table.
3. Click **Save**.

5.3 Application Specific Rules

This section explains about the Cash Flow Engine Cloud Service specific modules. This section covers the following topics:

1. **Prepayment Rules:** A Prepayment Rule contains methodologies to model the prepayment behavior of various amortizing instruments and quantify the associated Prepayment Risk.
2. **Prepayment Models:** Prepayment Models can be referenced by a Prepayment Rule to Model Prepayment Behavior of instruments based on a range of instrument level attributes.
3. **Behavior Pattern Rules:** The Behavior Pattern Rule UI allows you to group Behavior Pattern codes (behavioral assumptions) together in a set at the Product/Currency level which then can be rotated to select a value on a combination.
4. **Forecast Rates:** Forecast Rate scenario assumptions allow you to define future interest rates, future economic indicators, and future currency exchange rates. Use interest rate forecasts to project cash flows, including pricing new business, re-pricing existing business, calculating prepayments, and determining discount methods. Use Economic Indicator forecasts to include in behavioral modeling and scenario/stress analysis. Use currency exchange rate forecasts to account for the effects of currency fluctuations on income.
5. **Discount Methods:** This module describes the procedure for working with and managing Discount Method Rules. Discount Method Rules allow users to define the method for discounting projected Cash Flows for market value and duration calculation purposes.
6. **Cash Flow Process:** This module discusses the procedure for creating and executing the Cash Flow Process. When all the required assumptions are defined, CFE Processing performs the calculation and generates a result set.

5.3.1 Prepayment Rules

One of the major business risks faced by financial institutions engaged in the business of lending and borrowing is prepayment and early redemption risk. Prepayment risk is the possibility that borrowers might choose to repay part or all their loan obligations before the scheduled due dates. Prepayments can be made by either accelerating principal payments or refinancing. Prepayments cause the actual cash flows from a loan to a financial institution to be different from the cash flow schedule drawn at the time of loan origination. A prepayment rule contains methodologies to model the prepayment behavior of various amortizing instruments and quantifies the associated prepayment risk.

Search Prepayment Rule

Prerequisites: Predefined Prepayment Rule

To search for a Prepayment Rule:

On the Prepayment Summary, enter your search criteria in the search box and click **Search**. The Prepayment Rules meeting your search criteria are displayed.

Or

An alternative method to search a Prepayment Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Prepayment rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Prepayment Rule, partially or fully, and click **Search**.

Prepayment Rule Summary

Prepayment Rules allow you to specify methodologies to model the loan prepayment and deposit, early redemption behavior of products in your portfolio, and quantify the associated prepayment risk in monetary terms.

For more information, see [Defining Prepayment Methodologies](#) section.

Figure 5-31 Prepayment Rule Summary

| <input type="checkbox"/> | Name | Dimension | Hierarchy | Folder | Last Modified Date | Last Modified By | Access Type | Action |
|--------------------------|------------------------|-----------|------------------|---------|---------------------|------------------|-------------|--------|
| <input type="checkbox"/> | Check | Product | Dim_product_hier | CFSESEG | 15/09/2022 10:54:52 | CFETEST | Read/Write | ... |
| <input type="checkbox"/> | PPM-Set4-PSA | Product | Dim_product_hier | CFSESEG | 13/09/2022 07:35:36 | CFETEST | Read/Write | ... |
| <input type="checkbox"/> | CFE_QA_Set3-Arctangent | Product | Dim_product_hier | CFSESEG | 13/09/2022 07:35:28 | CFETEST | Read/Write | ... |

The Prepayment Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new prepayment rule.

Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- **Name:** The Prepayment Rule's short name.
- **Dimension:** The Dimension to which the Prepayment Rule belongs.
- **Hierarchy:** Name of the hierarchy that is used to define the prepayment rule.
- **Folder:** The folder where the prepayment rule is saved.
- **Last Modified By:** The user who last modified the prepayment rule.
- **Last Modified Date:** The Date and Time when the prepayment rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the prepayment rule.
 - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing prepayment rules. To edit a rule, you must have Read/Write privilege.

- **Save As:** You can reuse a prepayment rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- **Delete:** You can delete prepayment rules that you no longer require. Note that only prepayment rule owners and those with Read/Write privileges can delete prepayment rules. A Prepayment Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
- **Dependency Check:** You can perform a dependency check to know where a particular prepayment rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting prepayment rules that have dependencies. A report of all rules that utilize the selected prepayment rule is generated.

 **Note:**

This is functionality will intended for a future release.

You can totally or selectively copy product assumptions within a prepayment rule from one currency to another currency or a set of currencies, or from one product to another product or a set of products.

Also See:

- [Create Prepayment Rules](#)
- [Defining Prepayment Methodologies](#)
 - [Defining the Constant Prepayment Method](#)
 - [Defining the Prepayment Model Method](#)
 - [Defining the PSA Prepayment Method](#)
 - [Defining the Arctangent Calculation Method](#)

5.3.1.1 Create Prepayment Rules

You create a Prepayment Rule to define prepayment assumptions for new products.

To create a new Prepayment Rule, follow these steps:

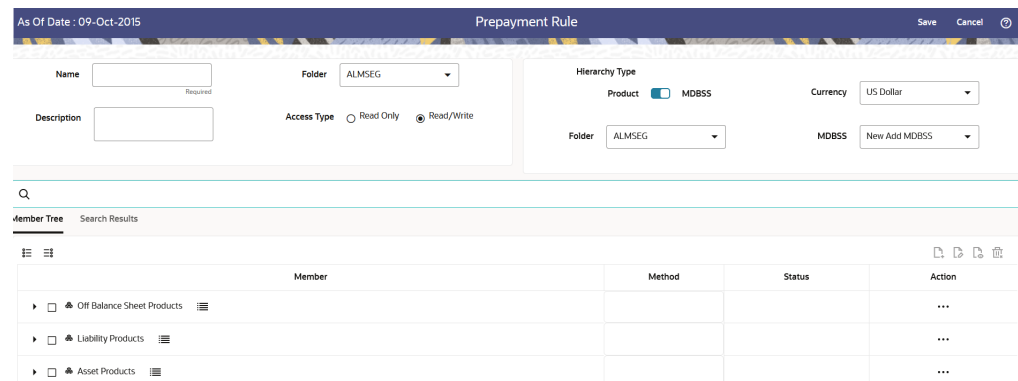
- Click **Add** icon from the top of the **Prepayment Rule Summary** Page.
- Enter the following Details.
 - **Name:** Enter the name of the Prepayment Rule.
 - **Description (optional):** Enter the description of the Prepayment Rule.
 - **Folder:** Select the Folder where the Prepayment Rule needs to be saved.
 - **Access Type:** Select the Access Type as Read-Only or Read/Write.
- Select the Hierarchy Type as **Product** or **MDBSS**

 **Note:**

MDBSS is enabled only in ALM Cloud Service.
If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.

- If you select Hierarchy Type as MDBSS, then following options are available:

Figure 5-32 Hierarchy Type as MDBSS



| Member | Method | Status | Action |
|----------------------------|--------|--------|--------|
| Off Balance Sheet Products | | | ... |
| Liability Products | | | ... |
| Asset Products | | | ... |

1. Select a **Currency**.
2. Select a **MDBSS Folder** and **MDBSS**.
3. Select **MDBSS Node(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - * Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-33 Member Tree

- Expand self, child and descendants
- Expand selected member/branch
- Select Undefined self, child
- Select Undefined self, child and descendants
- Select Defined self, child
- Select Defined self, child and descendants
- Unselect self, child and descendants

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

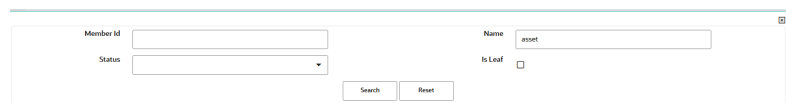
Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

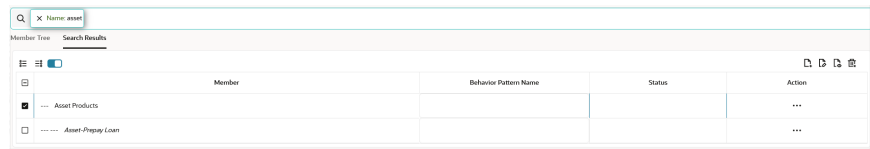
- * Add
- * Edit
- * View
- * Delete
- * Copy
- * Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:
 - a. Navigate to **Assumption Browser** section of the Rule Definition page.
 - b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-34 Search Criteria



- c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-35 Searching Members



Here, you can perform the following tasks on the searched node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

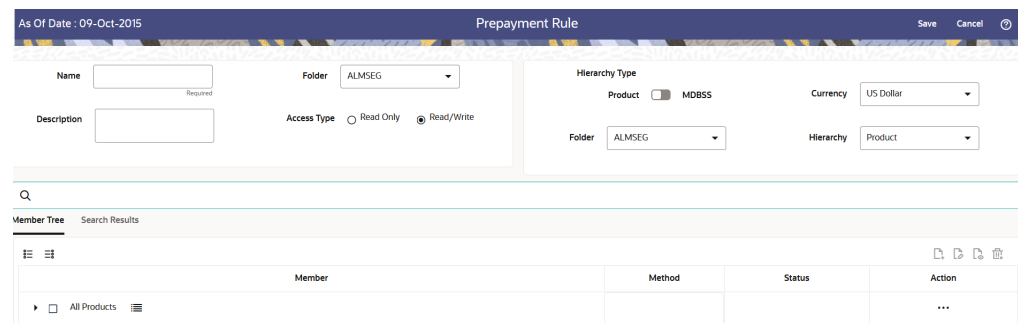
Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

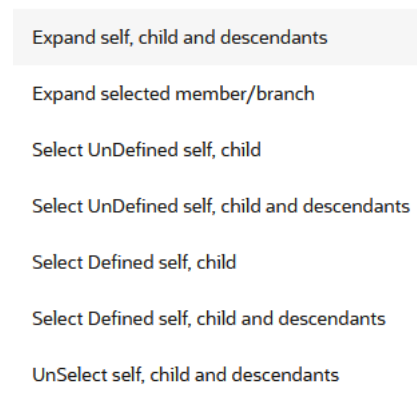
Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

- If you select Hierarchy Type as Product, then following options are available:

Figure 5-36 Hierarchy Type as Product



1. Select a **Currency**.
2. Select a **Product Folder** and **Product Hierarchy**.
3. Select **Product** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - * Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-37 Member Tree

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

- * Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:
 - a. Navigate to **Assumption Browser** section of the Rule Definition page.
 - b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-38 Search Criteria

- c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-39 Searching Members

| Member | Behavior Pattern Name | Status | Action |
|-------------------|-----------------------|--------|--------|
| Asset Products | | | ... |
| Asset-Prepay Loan | | | ... |

Here, you can perform the following tasks on the searched node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

- Click **Add** from **Assumption Browser** Section. For more information, see the Defining Prepayment Methodologies.
- Click Save.

5.3.1.2 Defining Prepayment Methodologies

The assignment of prepayment assumptions is part of the Create or Edit Prepayment Rule Process where assumptions about loan prepayments or deposit early redemptions are made for product-currency combinations. When you click Save in the Create Prepayment Rules Process, the Rule is saved and the Prepayment Rule Summary Page is displayed. However,

prepayment assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your prepayment assumptions for product-currency combinations before clicking Save.

The Prepayment Rule supports the definition of prepayment assumptions for combinations of two dimensions: Product and Currency.

Once you have created a Prepayment Rule, you can assign prepayment methodologies to product-currency combinations using Node Level Assumption. For more information, see [Defining Prepayments Using Node Level Assumptions](#) section.

5.3.1.2.1 Defining Prepayments Using Node Level Assumptions

Node Level Assumptions allow you to define assumptions at any level of the Product Dimension Hierarchy. The Product Dimension supports a hierarchical representation of your chart of accounts, so you can take advantage of the parent-child relationships defined for the various nodes of your product hierarchies while defining Rules. Children of Parent nodes on a hierarchy automatically inherit the assumptions defined for the Parent nodes. However, assumptions directly defined for a Child take precedence over those at the Parent level.

Prerequisites

Performing basic steps for creating or editing a Prepayment Rule.

Procedure

This table describes key terms used for this procedure.

Table 5-9 Key Terms used for Prepayment Rules

| Terms | Description |
|---------------------|--|
| Calculation Method | The method used to model prepayment behavior of instruments. You can choose from four prepayment calculation methods: Constant, Prepayment Model, PSA, and Arctangent. |
| Cash Flow Treatment | Allows you to specify one of the following two ways in which prepayments are made. <ul style="list-style-type: none"> • Refinance: This is the most used option. Select refinance to keep payment amounts after prepayment consistent with a portfolio-based assumption. This reduces the scheduled payment amount on each loan and maintains the same maturity term. • Curtailement: Select curtailement to change the periodic payment amounts due. The prepayments are treated as accelerated payments, with a payoff earlier than the originally scheduled term. |
| Prepayment Date | You can select when to calculate prepayment, either on normal payment dates or user-defined tenor. |

Table 5-9 (Cont.) Key Terms used for Prepayment Rules

| Terms | Description |
|----------------------------|---|
| Payment Event Type | When prepayment is calculated on payment dates then this option allows you to specify type of event when prepayment occurs. By default, "Principal and Interest" is selected. |
| Market Rate | The market rate is defined as the sum of the Index (the Yield Curve Rate as described by the Interest Rate Code) and the Spread (the difference between the customer rate and market rate). |
| Associated Term | Allows you to define the term for the point on the yield curve selected in the Market Rate Definition that will be used in obtaining the market rate. <ul style="list-style-type: none"> • Remaining Term: The number of months remaining until the instrument matures. • Reprice Frequency: The frequency with which the instrument reprices. This defaults to the original term for a fixed-rate instrument. • Original Term: The number of months that was the originally scheduled life of the instrument. |
| Prepayment Rate Definition | This table allows you to specify the constant annual prepayment rate, or the associated factors, that you want to apply to the instruments having origination dates in a particular date range. |
| Seasonality | This table allows you to specify seasonality adjustments. Seasonality refers to changes in prepayments that occur predictably at given times of the year. <p>Seasonality adjustments are based on financial histories and experiences and should be modeled when you expect the amount of prepayments made for certain types of instruments to increase or decrease in certain months.</p> <p>The default value for seasonality factors is 1, which indicates that no seasonality adjustment is made for a month. Changing the seasonality factors is optional. You can change the seasonality factors for none, one, or multiple months.</p> <p>To make seasonality adjustments, you need to enter a value between 0.00 and 99.9999 for the seasonality factors associated with each month. Seasonality factors less than 1 mean that prepayments are decreased for a particular month. Seasonality factors greater than 1 indicate that prepayments are increased for a particular month.</p> |

1. Navigate to the Prepayment Assumption Details Page after selecting a Currency and one or more products from the hierarchy.
2. Select a **Cash Flow Treatment type, Refinance** or **Curtailment**.
3. Refinance is the most used method.
4. Select a **Calculation Method** as Constant, Prepayment Model, PSA, or Arctangent.

 **Note:**

The default value for the Calculation Method drop-down list is Constant. If you select "Do not calculate" as the calculation method, no prepayment assumptions will be assigned to the particular product-currency combination. This is a particularly useful option when using node-level assumptions because it allows you to exclude a particular Child from inheriting a Parent assumption.

5. Define the parameters and annual prepayment rates for the selected Calculation Method as Constant, Prepayment Model, PSA or Arctangent.

 **Note:**

The parameters displayed on the Prepayment Methodology page vary depending on the Calculation Method (Constant, Prepayment Model, PSA, or Arctangent) that you have selected. For more information, see:

- [Defining the Constant Prepayment Method](#)
- [Defining the Prepayment Model Method](#)
- [Defining the PSA Prepayment Method](#)
- [Defining the Arctangent Calculation Method](#)

6. Click **Apply**.
The **Assumption Browser Definition** Page is displayed.

At this point you can:

- Continue defining additional methodologies for other product-currency combinations by repeating the above procedure.
- Complete the process by clicking **Save**.

When you click Save, the prepayment assumptions are saved and the **Prepayment Rule Summary** Page is displayed.

5.3.1.2.1.1 Defining Constant Prepayment Method

Use this procedure to define prepayment assumptions using the Constant Prepayment Method. The Constant Prepayment Method calculates the prepayment amount as a flat percentage of the current balance. You can create your own origination date ranges and assign a particular prepayment rate to all the instruments with origination dates within a particular Origination Date range.

Figure 5-40 Constant Prepayment Method

Prepayment Specification : Constant

Formula: Base Annual PP rate = Constant rate

Prepayment Date: Use Payment Dates Payment Event Type: Principal and Interest

| | Start Origination Date | End Origination Date | Percent |
|--------------------------|------------------------|----------------------|---------|
| <input type="checkbox"/> | 01-01-1900 | 31-12-2499 | 0 |

> Seasonality

Apply Cancel

Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Users also have two options for determining the timing of the Constant Prepayment assumption. The options include:

- **Use Payment Dates:** This is the default option. If this option is selected, then Constant Prepayment Runoff will occur on scheduled payment dates only.
- **User Defined Prepayment Tenors:** If this option is selected, users can specify any runoff timing. For example, users might choose to define the prepayment to the Runoff on the first day of the forecast.

The above options will be available only for Asset Instrument types.

To define constant prepayment within the Prepayment Rule, follow the steps given in below sections:

- [Use Payment Dates](#)
- [User Defined Prepayment Tenors](#)

Use Payment Dates

1. Select the **Use Payment Dates** Option.
2. Select the **Payment Event Type** Option.
3. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
The first cell in the Start Origination Date Column and all the cells in the End Origination Date Column are read-only. This ensures that all possible origination dates must support reference values when Prepayment assumption lookups occur.

Each row in the End Origination Date Column is filled in by the system when you click **Add Row** or save the Rule.

The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date Field.

4. Enter the Annual Prepayment Rate Percent that you want to apply to the instruments having origination dates in a particular Start Origination-End Origination Date range.

5. The **Percent** column represents the actual annualized prepayment percentage that the system uses to generate the principal runoff during the Cash Flow calculations.
6. Click **Add Row** to add additional rows and click the corresponding **Delete** button to delete a row.
7. You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
8. You can also use the **Download Excel** feature to export the Prepayment rate information that is displayed on screen, modify, and copy-paste it back in the grid.
9. Define Seasonality assumptions if required to model date-specific adjustments to the annual prepayment rate. Inputs act as a multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

User Defined Prepayment Tenors

1. Select the **User Defined Prepayment Tenors** Option. This option allows you to specify the term and multiplier to the Prepayment Date for the row. The term is used to derive Prepayment Dates with reference to As of Date.
2. You can calculate the prepayment rate based on Current/Reducing Balance and Annual/De-annual Prepayment Rate.
3. Select the **Balance Type** as **Current Balance** or **Reducing Balance**.
 - If the Balance Type is selected as Current Balance, then the prepayment amount will be calculated using Principal Balance on As of Date. That is, without reducing the balance by any payment/prepayment that may have occurred between as of the date and prepayment date.
 - If the Balance Type is selected as Reducing Balance, then the prepayment amount will be calculated using balance as on Prepayment Date. That is, after reducing the Principal Balance by any payment/prepayment that may have occurred between as of date and prepayment date.
4. Select the Prepayment Rate Type as Annual Prepayment Rate or De-annual Prepayment Rate.

When the Annual Prepayment Rate is selected then the prepayment rate entered in the screen is directly used.

In the other case, the rate entered in the screen is de-annualized before calculating the prepayment amount.
5. Enter the **Start Origination Date** and **End Origination Date** ranges, add additional ranges as required using the Add Row button.
6. Enter the term to Runoff Tenor and Multiplier for each of the date ranges.
7. Enter the **Annual Prepayment Rate Percent** for each of the date ranges.
8. Enter 'Repeat' if you want the same prepayment to occur multiple times. By default, it is set to 1.
9. Click **Add Row** to add additional runoff % rows and click the corresponding **Delete** button to delete a row.

You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
10. Define Seasonality assumptions as required to model date specific adjustments to the annual Prepayment Rate. Inputs act as a multiplier, for example, an input of 2 will double the Prepayment Rate in the indicated month.

5.3.1.2.1.2 Defining Prepayment Model Method

Use this procedure to define prepayment assumptions using the Prepayment Model Calculation method. The Prepayment Model Method allows you to define more complex prepayment assumptions compared to the other Prepayment Methods. Under this method, prepayment assumptions are assigned using a custom Prepayment Model. You can build a Prepayment model using a combination of up to three Prepayment Drivers and define Prepayment Rates for various values of these drivers. Each driver maps to an attribute of the underlying transaction (age/term or rate) so that the Cash Flow Engine can apply a different Prepayment Rate based on the specific characteristics of the record. Note: All Prepayment Rates should be input as annual rate.

Figure 5-41 Prepayment Model Method

Prepayment Specification : Prepayment Model

Formula: Base Annual PP rate = PP table factor * PP table LOOKUP(dimension x, dimension y, dimension z)

Prepayment Date: Use Payment Dates Payment Event Type: Principal and Interest

| | Start Origination Date | End Origination Date | Coefficient | Prepayment Model |
|--------------------------|------------------------|----------------------|-------------|------------------|
| <input type="checkbox"/> | 01-01-1900 | 31-12-2499 | 1 | |

> Market Rate Definition

> Seasonality

Apply Cancel

Prerequisites

- Prepayment Model must be created.
- Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Users also have two options for determining the timing of the Prepayment Model assumption. The options include:

- **Use Payment Dates:** This is the default option. If this option is selected, then Prepayment Model Runoff will occur on scheduled payment dates only.
- **User Defined Prepayment Tenors:** If this option is selected, users can specify any runoff timing. For example, users might choose to define the Prepayment to the Runoff on the first day of the forecast.

The above options will be available only for Asset Instrument Types.

To define Prepayment Model within the Prepayment Rule, follow the steps given in below sections:

- [Use Payment Dates](#)
- [User Defined Prepayment Tenors](#)

Use Payment Dates

1. Select the **Use Payment Dates** Option.
2. Select the **Payment Event Type** Option.
3. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
The first cell in the Start Origination Date Column and all the cells in the End Origination Date Column are read-only. This ensures that all possible origination dates must support reference values when Prepayment assumption lookups occur.

Each row in the End Origination Date Column is filled in by the system when you click Add Row or save the Rule.

The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date field.
4. Enter the Coefficient (if needed) by which the Prepayment Rate should be multiplied and select a predefined prepayment model that you want to apply to the instruments having origination dates in a particular Start Origination-End Origination Date range
5. Click **Add Row** to add additional rows and click the corresponding **Delete** Button to delete a row.
6. You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
7. You can also use the **Download Excel** feature to export the Prepayment rate information that is displayed on screen, modify, and copy-paste it back in the grid.
8. Define Market Rate Definition.
9. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
10. Enter the Spread. The spread is added to the rate from the underlying interest rate curve to determine the market rate.
11. Select an **Associated Term** as Remaining Term, Reprice Frequency, or Original Term.
12. Define Seasonality assumptions if required to model date-specific adjustments to the annual prepayment rate. Inputs act as a multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

User Defined Prepayment Tenors

1. Select the **User Defined Prepayment Tenors** Option. This option allows you to specify the term and multiplier to the prepayment date for the row.
2. You can calculate the Prepayment Rate based on Current/Reducing Balance and Annual/De-annual Prepayment Rate.
3. Select the **Balance Type** as **Current Balance** or **Reducing Balance**.
 - If the Balance Type is selected as Current Balance, then the Prepayment Amount will be calculated using CUR_PAR_BAL on As of Date. That is, without reducing the balance by any payment/prepayment that may have occurred between as of the date and prepayment date.
 - If the Balance Type is selected as Reducing Balance, then the prepayment amount will be calculated using balance as on Prepayment Date. That is, after

reducing the CUR_PAR_BAL by any payment/prepayment that may have occurred between As of Date and Prepayment Date.

4. Select the **Prepayment Rate Type** as **Annual Prepayment Rate** or **De-annual Prepayment Rate**.
When the Annual Prepayment Rate is selected then the prepayment rate entered in the screen is directly used.

In the other case, the rate entered in the screen is de-annualized before calculating the Prepayment Amount.
5. Specify the Prepayment Model Parameters.
6. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
7. Enter the Coefficient (if needed) by which the Prepayment Rate should be multiplied. This multiple is applied to the instruments for which the Origination Date lies in the range defined in the Start Origination Date-End Origination Date fields.
8. Select a predefined prepayment model from the Prepayment model Rule list of values. Click the **View Prepayment Model** icon to preview the selected Prepayment Model. The system uses the Prepayment Model assumptions to calculate the Prepayment Amounts for each period. You need to associate a prepayment model for every Start Origination-End Origination Date range.
9. Click **Add Another Row** to add additional rows and click the corresponding **Delete** button to delete a row.
10. You can add as many rows in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
11. You can also use the **Download Excel** feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.
12. Enter the term to runoff tenor and multiplier for each of the date ranges.
13. Enter 'Repeat' if you want the same prepayment to occurs multiple times. By default, it is set to 1.
14. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
15. Enter the Spread. The spread is added to the rate from the underlying Interest Rate Curve to determine the Market Rate.
16. Select an **Associated Term** as Remaining Term, Reprice Frequency, or Original Term.
17. Define Seasonality assumptions as required to model date specific adjustments to the annual Prepayment Rate. Inputs act as a multiplier, for example, an input of 2 will double the Prepayment Rate in the indicated month.

5.3.1.2.1.3 Defining PSA Prepayment Method

Use this procedure to define Prepayment Assumptions using the PSA Prepayment Method. The PSA Prepayment method (Public Securities Association Standard Prepayment Model) is a Standardized Prepayment Model that is built on a single dimension, expired term. The PSA Curve is a schedule of prepayments which assumes that prepayments will occur at a rate of 0.2 percent CPR in the first month and will increase an additional 0.2 percent CPR each month until the 30th month and will prepay at a rate of 6 percent CPR thereafter ("100 percent PSA"). PSA Prepayment Speeds are expressed as a multiple of this base scenario. For example, 200 percent PSA assumes Annual Prepayment Rates will be twice as fast in each of these periods - 0.4 percent in the first month, 0.8 percent in the second month,

reaching 12 percent in month 30 and remaining at 12 percent after that. A zero percent PSA assumes no prepayments. You can create your own Origination Date ranges and assign a particular PSA Speed to all the instruments with origination dates within a particular Origination Date range. PSA Speed inputs can be between 0 and 1667.

Figure 5-42 PSA Prepayment Method

Prepayment Specification : PSA

Formula: Base annual PP rate = (PSA Speed/100) * PP table LOOKUP(Expired Term)

Prepayment Date: Use Payment Dates | Payment Event Type: Principal and Interest

| | Start Origination Date | End Origination Date | PSA Speed | Prepayment Model |
|--------------------------|------------------------|----------------------|-----------|------------------|
| <input type="checkbox"/> | 01-01-1900 | 31-12-2499 | 100 | PSA MODEL |

> Seasonality

Apply Cancel

Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Prepayment under this method occurs on Payment Dates only.

1. Select the **Payment Event Type** option.
2. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
The first cell in the **Start Origination Date** Column and all the cells in the **End Origination Date** Column are Read-Only. This ensures that all possible Origination Dates have supporting reference values when Prepayment Assumption Lookups occur. Each row in the End Origination Date Column is filled in by the system when you click Add Row or save the Rule.
The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date Field.
3. Enter the PSA Speed that you want to apply to the instruments having Origination Dates in a particular Start Origination-End Origination Date range. The PSA Method is based on a standard PSA curve. You can view the seeded model by selecting the View Prepayment Model icon.
The default value is 100 PSA and inputs can range from 0 to 1667.
4. Click **Add Row** to add additional rows and click the corresponding **Delete** Option to delete a row.
You can add as many rows as possible in this table using Add Multiple Row Option. However, you need to enter relevant parameters for each new row.
5. You can also use the **Download Excel** Feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.
6. Define Seasonality Assumptions as required to Model Date specific adjustments to the Annual Prepayment Rate. Inputs act as a multiplier, For example, an input of 2 will double the Prepayment Rate in the indicated month.

5.3.1.2.1.4 Defining the Arctangent Calculation Method

The Arctangent Calculation Method uses the Arctangent Mathematical Function to describe the relationship between Prepayment Rates and spreads (coupon rate less Market Rate). Use this procedure to define Prepayment Assumptions using the Arctangent Calculation Method.

Figure 5-43 Arctangent Calculation Method

Prepayment Specification : Arctangent

Formula: Base Annual PP rate = $k_1 - (k_2 * \text{ATAN} (k_3 * (-C/M + k_4)))$

Prepayment Date: Use Payment Dates | Payment Event Type: Principal and Interest

| <input type="checkbox"/> | Start Origination Date | End Origination Date | Coefficient K1 | Coefficient K2 | Coefficient K3 | Coefficient K4 |
|--------------------------|------------------------|----------------------|----------------|----------------|----------------|----------------|
| <input type="checkbox"/> | 01-01-1900 | 31-12-2499 | 0 | 0 | 0 | 0 |

> Market Rate Definition

> Seasonality

Apply Cancel

Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Prepayment under this method occurs on Payment Dates only.

1. Select the **Payment Event Type** Option.
2. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
3. Enter the values for the Arctangent Parameters (columns K1 through K4) for each Start Origination Date in the table. The valid range for each parameter is -99.9999 to 99.9999.
4. Click **Add Another Row**.
You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
5. You can also use the **Download Excel** Feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.
6. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
7. Enter the Spread.
The spread is added to the rate from the underlying Interest Rate Curve to determine the Market Rate.
8. Select an **Associated Term** as Original Term, Reprice Frequency, or Remaining Term.
9. Define the Seasonality Assumptions as required to model date specific adjustments to the Annual Prepayment Rate. Inputs act as a multiplier, For example, an input of 2 will double the prepayment rate in the indicated month.

5.3.2 Prepayment Models

This module describes the procedure to build Prepayment Models. These Prepayment Models can be referenced by a Prepayment Model rule to Model Prepayment Behavior of instruments based on a range of instrument level attributes.

The Prepayment Model consists of the Prepayment Dimensions and the Bucket Values for these Dimensions. To define the Prepayment Model Structure, you can select a maximum of three prepayment dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

Prepayment Model Rule Summary

This page is the gateway to all Prepayment Model Rules and related functionality. You can navigate to other pages relating to Prepayment Model Rules from this point.

Figure 5-44 Prepayment Model Summary

| <input type="checkbox"/> | Name | Rate Calculation Type | Folder | Last Modified By | Last Modified Date | AccessType | Action |
|--------------------------|----------------|-----------------------|--------|------------------|---------------------|------------|--------|
| <input type="checkbox"/> | RT2-Prepayment | Manual | CFSEEG | CFETEST | 13/09/2022 09:44:10 | Read/Write | ... |

Search Prepayment Model Rule

Prerequisites: Predefined Prepayment Model Rule

To search for a Prepayment Model Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Prepayment Model Rules that meet the search criteria.

Or

An alternative method to search a Prepayment Model Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Prepayment Model rule Summary. Enter the **Code, Name, Description, ,** and **currency** of the Prepayment Model Rule and click **Search** .

The Prepayment Model rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Prepayment Model rule.

- **Name:** The Prepayment Model Rule's short name.
- **Rate Calculation Type:** The Prepayment Model type, such as Manual .
- **Folder:** The Folder where the Prepayment Model Rule is saved.
- **Last Modified By:** The user who last modified the Prepayment Model rule.
- **Last Modified Date:** The Date and Time when the Prepayment Model rule was last modified.

- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Prepayment Model rule.
 - **Multiple Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
 - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Prepayment Model rules. To edit a rule, you must have Read/Write privilege.
 - **Save As:** You can reuse a Prepayment Model rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - **Delete:** You can delete Prepayment Model rules that you no longer require. Note that only Prepayment Model rule owners and those with Read/Write privileges can delete Prepayment Model rules. A Prepayment Model rule that has a dependency cannot be deleted.
 - **Dependency Check:** You can perform a dependency check to know where a particular Prepayment Model rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Prepayment Model rules that have dependencies. A report of all rules that utilize the selected Prepayment Model rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Create Prepayment Models](#)

5.3.2.1 Create Prepayment Models

Creating a Prepayment Model comprises the following sub procedures:

1. Creating Prepayment Models
2. Defining the structure of the Prepayment Model.
3. Assigning Node Values

You can create Prepayment Models with following Rate Calculation options:

- [Creating Prepayment Model with Rate Calculation as Manual](#)
- [Creating Prepayment Model with Rate Calculation as External Model](#)

5.3.2.1.1 Creating Prepayment Model with Rate Calculation as Manual

To create a Prepayment Model Rule, follow these steps:

1. Navigate to the **Prepayment Model Summary** Page.
2. Click **Add**. The **Prepayment Model Details** Page is displayed.

Figure 5-45 Prepayment Model

As Of Date : (10/09/2015) Prepayment Model Save Cancel

Name: new1 Rate Calculation: Manual Folder: CFESEG

Description: Access Type: Read Only Read/Write

1 Dimensions 2 Bucket Definition 3 Matrix Definition

Dimensions

| Dimensions | Position | Lookup Method | Bucket |
|------------|----------|---------------|--------|
| | Row | | |
| | Column | | |
| | Page | | |

Apply Cancel

> Audit Trail

> User Comments

3. Enter the following details:
 - **Name:** Enter the name and a brief description for the Prepayment Model. The name you assign to the Prepayment Model must be unique. The name can hold a maximum of 30 characters.
 - **Rate Calculation:** Select the Prepayment Model Rate Calculation Method as Manual. Using Manual Method, you can select maximum of three Prepayment Dimension and assign prepayment rates manually to selected dimension.
 - **Folder:** Select the Folder
 - **Description:** Enter the description of Prepayment Model Rule.
 - Select **Access Type**.
4. Follow below steps:
 - [Defining the Structure of the Prepayment Model Using Dimensions section](#)
 - [Modifying the Table Structure Using Bucket Definition section](#)
 - [Prepayment Rates Using Matrix Definition](#)

5.3.2.1.1.1 Defining the Structure of the Prepayment Model Using Dimensions section

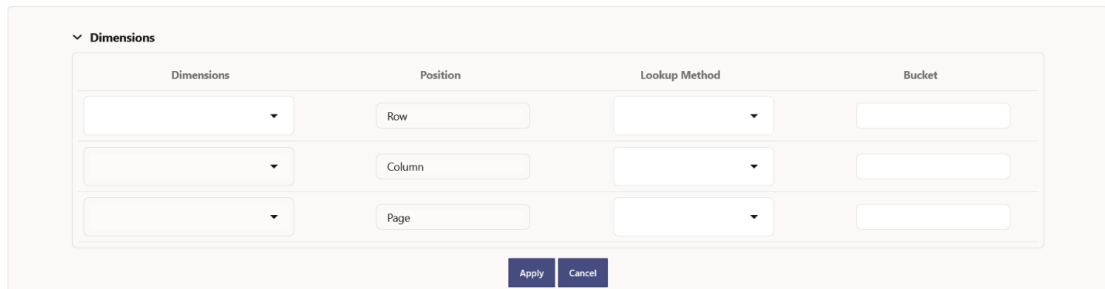
This page consists of the Prepayment Dimensions and the Bucket Values for these Dimensions which you select on this page. To define the Prepayment Model Structure, you can select a maximum of three Prepayment Dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

 **Note:**

You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).

The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 5-46 Dimensions section



| Dimensions | Position | Lookup Method | Bucket |
|----------------------|----------|----------------------|----------------------|
| <input type="text"/> | Row | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | Column | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | Page | <input type="text"/> | <input type="text"/> |

1. Enter the following details in Dimension section:

- **Dimensions:** Select the Dimension, such as Repricing Term, Rate Ratio, and others. The Dimension Section Influences the Prepayment Behavior of an instrument. You can build a Prepayment Model using up to three Prepayment Dimensions. Each dimension maps to an attribute of the underlying transaction (For example, age/term or rate and so on) so the Cash Flow Engine can apply a different Prepayment Rate based on the specific characteristics of the instrument.
- **Position:** Shows the position of dimension as Row, Column or Page.
- **Lookup Method:** Select the Lookup Method for selected Dimension. It is used to calculate Prepayment Rates for the Prepayment Dimension Values that do not fall exactly on the defined Prepayment Dimension Nodes. Oracle Asset Liability Management offers the following Lookup Methods:
 - **Interpolation:** Under this method, the Prepayment Rates are determined by calculating an exact value on an axis. This method assumes that Prepayment Speeds change on a straight-line basis between the two nodes and calculates accordingly.
 - **Range:** Under this method, the prepayment rates are determined by calculating a range of values on an axis. This method assumes that the Prepayment Speed will remain the same for the entire range. The following example explains the differences between these two Lookup Methods. The following lists show the age and corresponding Prepayment Rates of instruments.

Age

12

24

36

60

Prepayment Rates

5

10

15

20

Under the Interpolation method, the Prepayment Speeds increase gradually. In this example, the Interpolated Prepayment Rate of an instrument aged 30 months is 12.5%.

This is exactly halfway between the 10% and 15% rate. However, the Range Method, the Prepayment Speeds increase in steps. Using the Range method, the Prepayment Rate is 10%, as this rate percentage would apply to the range from 24 months to 35.9999 months.

- Bucket: Enter the number of Buckets for the Dimension. This number may vary from dimension to dimension. Exact points for each dimension where attribute information has been defined.
2. If required, repeat the previous three steps for up to two additional Dimensions.

 **Note:**

There are certain restrictions while defining Dimensions:

- You must select the Dimension type for a row and define the values for that dimension.
- You cannot define the second (row) dimension until you have defined the first (row) dimension. Similarly, the third dimension cannot be defined until you have defined the first two dimensions.

The Define Dimensions Page is refreshed. You can now assign the Bucket Values for each dimension. At this point, you can also modify the structure of the table, if required.

5.3.2.1.1.2 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition section is used to perform following tasks:

- To add more buckets to a particular Dimension, update the number of buckets for the Dimension and click **Apply**.
- To delete buckets from a particular Dimension, reduce the number of buckets to the desired value and click **Apply**.

To change the Lookup Method of a particular Dimension, select the required method from the corresponding list of methods from the Dimensions Tab.

Figure 5-47 Bucket Definition Section

▼ Bucket Definition

Repricing Term (in months)

Apply Cancel

1. Assign values for each of the buckets.
2. Click **Apply**. The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

5.3.2.1.1.3 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

Bucket Values for the row and column dimensions are displayed as a table, while the bucket values for the page dimensions (if selected) are shown in the drop down list.

Figure 5-48 Matrix Definition Section

▼ Matrix Definition

▼ Matrix

| Repricing Term (in months) | |
|----------------------------|--------|
| 10 | 0.0000 |
| 20 | 0.0000 |
| 30 | 0.0000 |

Note: Please click apply on every page to save the Rates.

Apply Reset Cancel

5.3.2.1.2 Creating Prepayment Model with Rate Calculation as External Model

To create a Prepayment Model Rule, follow these steps:

1. Navigate to the **Prepayment Model Summary** Page.
2. Click **Add**. The **Prepayment Model Details** Page is displayed.

Figure 5-49 Prepayment Model

As Of Date : 09-Oct-2015 Prepayment Model Save Cancel

Name: Rate Calculation: Folder:

Description:

Access Type: Read Only Read/Write

Progress: Dimensions (1) Define Equation (2) Bucket Definition (3) Matrix Definition (4)

Dimensions

| Dimensions | Position | Lookup Method | Bucket |
|----------------------|-------------------------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text" value="Row"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text" value="Column"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text" value="Page"/> | <input type="text"/> | <input type="text"/> |

Apply Cancel

> Audit Info

3. Enter the following details:

- **Name:** Enter the name and a brief description for the Prepayment Model. The name you assign to the Prepayment Model must be unique. The name can hold a maximum of 30 characters.
- **Rate Calculation:** Select the Prepayment Model Rate Calculation Method as External Model. When you select External Model, Define Equation button will get activated to use External Prepayment Model. This is useful, when you want to do Prepayment Modeling outside PBSM and use the model equation to calculate Prepayment Rates.
- **Folder:** Select the Folder
- **Description:** Enter the description of Prepayment Model Rule.
- Select **Access Type**.

4. Follow below steps:

[Defining the Structure of the Prepayment Model Using Dimensions section](#)

[Defining Equation using Define Equation section](#)

[Modifying the Table Structure Using Bucket Definition section](#)

[Prepayment Rates Using Matrix Definition](#)

5.3.2.1.2.1 Defining the Structure of the Prepayment Model Using Dimensions section

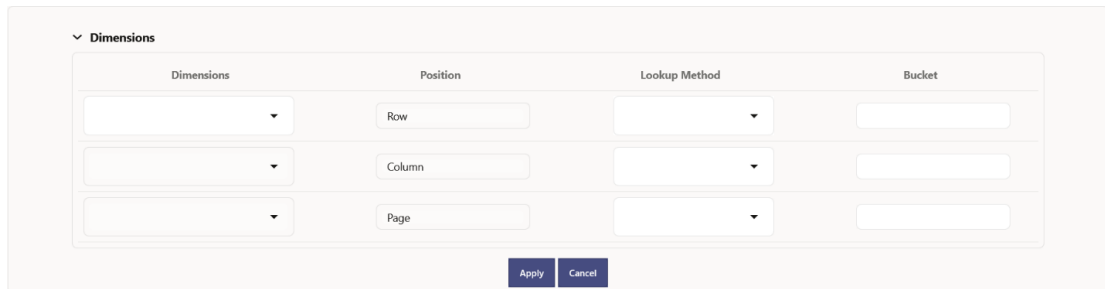
This page consists of the Prepayment Dimensions and the Bucket Values for these Dimensions which you select on this page. To define the Prepayment Model Structure, you can select a maximum of three Prepayment Dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

 **Note:**

You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).

The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 5-50 Dimensions section



| Dimensions | Position | Lookup Method | Bucket |
|----------------------|----------|----------------------|----------------------|
| <input type="text"/> | Row | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | Column | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | Page | <input type="text"/> | <input type="text"/> |

1. Enter the following details in Dimension section:

- **Dimensions:** Select the Dimension, such as Repricing Term, Rate Ratio, and others. The Dimension Section Influences the Prepayment Behavior of an instrument. You can build a Prepayment Model using up to three Prepayment Dimensions. Each dimension maps to an attribute of the underlying transaction (For example, age/term or rate and so on) so the Cash Flow Engine can apply a different Prepayment Rate based on the specific characteristics of the instrument.
- **Position:** Shows the position of dimension as Row, Column or Page.
- **Lookup Method:** Select the Lookup Method for selected Dimension. It is used to calculate Prepayment Rates for the Prepayment Dimension Values that do not fall exactly on the defined Prepayment Dimension Nodes. Oracle Asset Liability Management offers the following Lookup Methods:
 - **Interpolation:** Under this method, the Prepayment Rates are determined by calculating an exact value on an axis. This method assumes that Prepayment Speeds change on a straight-line basis between the two nodes and calculates accordingly.
 - **Range:** Under this method, the prepayment rates are determined by calculating a range of values on an axis. This method assumes that the Prepayment Speed will remain the same for the entire range. The following example explains the differences between these two Lookup Methods. The following lists show the age and corresponding Prepayment Rates of instruments.

Age

12

24

36

60

Prepayment Rates

5

10

15

20

Under the Interpolation method, the Prepayment Speeds increase gradually. In this example, the Interpolated Prepayment Rate of an instrument aged 30 months is 12.5%.

This is exactly halfway between the 10% and 15% rate. However, the Range Method, the Prepayment Speeds increase in steps. Using the Range method, the Prepayment Rate is 10%, as this rate percentage would apply to the range from 24 months to 35.9999 months.

- Bucket: Enter the number of Buckets for the Dimension. This number may vary from dimension to dimension. Exact points for each dimension where attribute information has been defined.
2. If required, repeat the previous three steps for up to two additional Dimensions.

 **Note:**

There are certain restrictions while defining Dimensions:

- You must select the Dimension type for a row and define the values for that dimension.
- You cannot define the second (row) dimension until you have defined the first (row) dimension. Similarly, the third dimension cannot be defined until you have defined the first two dimensions.

The Define Dimensions Page is refreshed. You can now assign the Bucket Values for each dimension. At this point, you can also modify the structure of the table, if required.

5.3.2.1.2.2 Defining Equation using Define Equation section

 **Note:**

This section is not applicable to Manual Models. This section appears when you select External Model from Rate Calculation drop-down list.

Figure 5-51 Define Equation Section

| <input type="checkbox"/> | Operator | Coefficient | Dimension | Power |
|--------------------------|----------|-------------|-----------|-------|
| <input type="checkbox"/> | + | | Intercept | |

To define Equation, perform the following steps:

1. Click **Define Equation**. Enter following details:
 - **Operator:** Select operator as +, -, *, or /
 - **Coefficient:** Enter the value of Coefficient
 - **Dimension:** Select the Dimension
 - **Power:** Enter the power for selected Dimension.

For Example:

Equation becomes:

$$2 + 1.5 * \text{original Term} ^ 2 + 3 * \text{Rate Diff} ^ 2$$

Note:

Before defining equation, you must select dimensions and accordingly dimensions drop-down will display values along with Intercept. For example, if you have already chosen Original term and Rate Difference as dimensions, then Dimension drop-down list would displays the following three values:

- Intercept
- Original Term
- Rate Difference

After defining all coefficients, Power, operators, click Equation to get the model equation.

A confirmation message is displayed.

2. Click **Ok** to use the same for Prepayment Rate Calculations.
3. You can add new row for each term using **Add Row**. Multiple rows can be added using **Add Multiple Rows**.
4. Click **Apply**.

5.3.2.1.2.3 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition section is used to perform following tasks:

- To add more buckets to a particular Dimension, update the number of buckets for the Dimension and click **Apply**.
- To delete buckets from a particular Dimension, reduce the number of buckets to the desired value and click **Apply**.

To change the Lookup Method of a particular Dimension, select the required method from the corresponding list of methods from the Dimensions Tab.

Figure 5-52 Bucket Definition Section

1. Assign values for each of the buckets.
2. Click **Apply**. The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

5.3.2.1.2.4 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

Bucket Values for the row and column dimensions are displayed as a table, while the bucket values for the page dimensions (if selected) are shown in the drop down list.

Figure 5-53 Matrix Definition Section

| Repricing Term (in months) | |
|----------------------------|--------|
| 10 | 0.0000 |
| 20 | 0.0000 |
| 30 | 0.0000 |

5.3.3 Forecast Rates

Forecast Rate Scenario Assumptions allow you to define future interest rates, future economic indicators, future currency exchange rates, future interest rate volatility, and select Forecast Rate rule for cash flow calculation. Interest rate forecasts are used to project cash flows, including pricing new business, repricing existing business, calculating prepayments, and determining discount methods. Interest rate volatility forecast are used for option valuation. Economic Indicator forecasts are used to

calculate cash flow for inflation-indexed instruments, included in Behavioral Modeling and scenario or stress analysis. Currency Exchange Rate Forecasts are used to account for the effects of currency fluctuations on income.

The Forecast Rate Assumptions use interest rate curve, volatility surface, economic indicator, active and reporting currencies, and Forecast Rate rule.

This module describes how to create a Forecast Rates Assumption Rule to forecast Cash Flows and, if you work with multiple currencies, to model relationships between Interest Rates and Exchange Rates.

Forecast Rate Rule Summary

This page is the gateway to all Forecast Rate Rules and related functionality. You can navigate to other pages relating to Forecast Rate Rules from this point.

Figure 5-54 Forecast Rate Summary

| <input type="checkbox"/> | Code | Name | Reporting Currency | IRRBB Shock | No Of Scenarios | Folder | Last Modified By | Last Modified Date | Access Type | Action |
|--------------------------|---------------|----------|--------------------|-------------|-----------------|--------|------------------|---------------------|-------------|--------|
| <input type="checkbox"/> | 1652098876066 | FCAST101 | US Dollar | NO | 1 | CFESEG | CFETEST | 12/05/2022 09:03:25 | Read/Write | ... |
| <input type="checkbox"/> | 1653910996271 | Test | US Dollar | NO | 1 | CFESEG | CFETEST | 30/05/2022 11:43:16 | Read/Write | ... |
| <input type="checkbox"/> | 1652359692629 | test123 | US Dollar | NO | 1 | CFESEG | CFETEST | 12/05/2022 12:48:12 | Read/Write | ... |

Search Forecast Rate Rule

Prerequisites: Predefined Forecast Rate Rule

To search for a Forecast Rate Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Forecast Rate Rules that meet the search criteria.

Or

An alternative method to search a Forecast Rate Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Forecast Rate Rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Forecast Rate Rule and click **Search**.

The Forecast Rate Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Forecast Rate Rule.

- **Code:** The System ID of Forecast Rate Rule.
- **Name:** The Forecast Rate Rule's short name.
- **Reporting Currency:** The Reporting Currency selected in the Forecast Rates Rule.
- **IRRBB Shock:** Displays Yes if IRRBB (Interest Rate Risk in Banking Book) scenario type is defined in the Forecast Rates Rule, Otherwise No is displayed.

- **No. of Scenarios:** The number of scenarios defined in the Forecast Rates Rule
- **Folder:** The Folder name where the Forecast Rate Rule is saved.
- **Last Modified By:** The user who last modified the Forecast Rate Rule.
- **Last Modified Date:** The Date and Time when the Forecast Rate Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Forecast Rate Rule.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Forecast Rate Rules. To edit a rule, you must have Read/Write privilege.
 - Save As: You can reuse a Forecast Rate Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - Delete: You can delete Forecast Rate Rules that you no longer require. Note that only Forecast Rate Rule owners and those with Read/Write privileges can delete Forecast Rate Rules. A Forecast Rate Rule that has a dependency cannot be deleted.
 - Dependency Check: You can perform a dependency check to know where a particular Forecast Rate Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Forecast Rate Rules that have dependencies. . A report of all rules that utilize the selected Forecast Rate Rule is generated.

 **Note:**

This is functionality will intended for a future release.

Also See:

- [Create Forecast Rate Rule](#)

5.3.3.1 Create Forecast Rate Rule

To create a new Forecast Rate Rule, follow these steps:

1. Navigate to **Forecast Rates Summary** Page.
2. Click **Add** icon. The **Forecast Rates Details** Page is displayed.
3. Enter the following Details

Table 5-10 Forecast Rate Rule – Fields and Descriptions

| Field | Description |
|-------|---|
| Name | Enter the name of the Forecast Rate Rule. |

Table 5-10 (Cont.) Forecast Rate Rule – Fields and Descriptions

| Field | Description |
|--------------------|--|
| Description | Enter the description of the Forecast Rate Rule. This is an optional field. |
| Folder | Select the Folder where the Forecast Rate Rule needs to be saved. |
| Access Type | Select the Access Type as Read-Only or Read/Write. |
| IRRBB Shock | Select this checkbox if you want to define IRRBB Scenario. This option is available only in Asset Liability Management Cloud Service. If selected, IRRBB standardized and enhanced approach scenario types can be created. |
| Reporting Currency | Currencies that were marked as 'Reporting Currency' in Rate Management appear for selection here. Select one Reporting Currency. |

- Scenario 1 is selected by default. You can change the name of scenario. Click + to add more scenario, if needed. More than one scenario can be created only in Asset Liability Management Cloud Service.
- Scenario Type is 'None' by default. When IRRBB Shock is enabled then you can select one of the available values from second scenario onwards.
- Click **Save**, if you want to save the Forecast Rate Rule and update it later.

5.3.3.1.1 Interest Rate Forecast Methods

The IRCs for all active currencies are listed under Interest Rate Curve Section. The options under Interest Rate Curve Forecast Method provide multiple ways to model the effects on portfolio Cash Flows due to Interest Rate changes.

Figure 5-55 Interest Rate Curve Forecast Rates

You can define Interest Rate Forecast for the following methods:

Table 5-11 Forecast Rate rule – Methods and Descriptions

| Method | Description |
|------------------------------------|--|
| Flat | Forecast no change in the Interest Rate for all dates beginning with the As-of Date. |
| Direct Input | Type Interest Rates directly for any modeling period or Interest Rate term. |
| Structured Change | Forecast exchange rates as an incremental change from the previous period. Forecast rate changes in terms of absolute or percent change, for any modeling period or interest rate term, such as: +100 basis points on Day 1 -200 basis points over the first 6 months Yield curve rotation (short point decreasing, long point increasing). This option is available only in Asset Liability Management Cloud Service. |
| Implied Forward | Forecast interest rates based on the yield-curve interest rates in effect at the as-of date and consistent with the modeling bucket definitions. This option is available only in Asset Liability Management Cloud Service. |
| Yield Curve Twist | Flatten or steepen the yield curve around a specific point on the curve. This option is available only in Asset Liability Management Cloud Service. |
| Change from Base | Make incremental changes to an existing forecast scenario. This option is available only in Asset Liability Management Cloud Service. |
| IRRBB Standardized Approach Shocks | Forecast an interest rate shock according to one of the BCBS IRRBB Standardized Approach shock specifications (Scenario-level specification). This option is available only in Asset Liability Management Cloud Service |
| IRRBB Enhanced Approach Shocks | Forecast an interest rate shock according to user specifications that will flow into IRRBB Table B reporting. This option is available only in Asset Liability Management Cloud Service. |

For more information, see the [Cash Flow Engine Reference Guide](#).

The following Interpolation Methods are available.

Table 5-12 Forecast Rate Rule – Interpolation Methods and Descriptions

| Method | Description |
|------------------------|---|
| Linear Interpolation | Linear interpolation uses Linear Yield Curve smoothing. Linear Yield Curves are continuous but not smooth; at each knot point, there is a kink in the yield curve. You may not want to use a Linear Yield Curve with a model that assumes the existence of a continuous Forward Rate Curve, due to the nonlinear and discontinuous knot points of a Linear Yield Curve. |
| Cubic Spline of Yields | <p>A cubic spline is a series of third-degree polynomials that have the form:</p> $y = a + bx + cx^2 + dx^3$ <p>These polynomials are used to connect the dots formed by observable data. The polynomials are constrained so they fit together smoothly at each knot point (the observable data point.) This means that the slope and the rate of change in the slope with respect to time to maturity have to be equal for each polynomial at the knot point where they join. If this is not true, there is a kink in the yield curve and they are continuous but not differentiable.</p> <p>Two more constraints make the Cubic Spline Curve unique. The first restricts the zero-maturity yield to equal the 1-day interest rate. The second restricts the yield curve at the longest maturity to be either straight ($y''=0$) or flat ($y'=0$).</p> |
| Quartic Spline | <p>Quartic interpolation requires a minimum of 4 knot points. The quartic interpolation equation can be represented as:</p> $Y = a + bX + cX^2 + dX^3 + eX^4$ <p>The end knot points satisfy equations for one curve and all intermediate points satisfy two curves. Therefore, in a scenario with a minimum number of knot points, there are 6 equations. For n number of knot points, the number of equations is $2n-2$. If n is the number of points to be interpolated, the order of the matrix to be formed is $5*(n-1) \times 5*(n-1)$. The matrix is formed according to the following logic:</p> <p>The second derivative at the endpoints and the first derivative of the last point is Zero. At the points other than the endpoints, the value of the first derivatives, second derivatives, and the third derivatives of the function are equal.</p> |

In looking up the Forecast Rates, the Cash Flow Engine (where necessary) performs an interpolation between yield curve term points. For example, in determining a three-month rate from a yield curve that contains only a one-month rate and a six-month rate, the Cash Flow Engine performs an interpolation to determine the implied three-month rate. The Interpolation method used is defined by the selected interpolation method for the Interest Rate Curve.

Forecast rates for 360 calendar months starting from As-of-Date are generated.

Following options are available for Interest Rate Curve Forecast Rule:

- [Define](#)
- [Copy Across](#)
- [Restore Default](#)
- [View](#)

Define

- **Flat Method**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Select the Interpolation method.
 3. Input Minimum Rate, if required.
 4. Click **Define**.
The status of the Interest Rate Curve is changed to **Defined**.
- **Direct Input**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input**.
 2. Select the **Interpolation Method**.
 3. Input Minimum Rate, if required.
 4. Click **Define**.
The **Direct Input** window is displayed:

Figure 5-56 Direct Input

| Forecast Period | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y | 7Y | 10Y | 20Y |
|-----------------|-------|--------|--------|-------|------|--------|--------|--------|-------|--------|--------|
| 0 | 1.136 | 2.0544 | 2.8712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 | 5.168 | 5.5168 | 6.0344 |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |

5. Enter data and click **Apply**. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid.
 6. The status of the Interest Rate Curve is changed to **Defined**.
- **Structured Change**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Structured Change**.
 2. Select the **Interpolation Method**.
 3. Input Minimum Rate, if required.
 4. Click **Define**.
The **Structured Change** window is displayed:

Figure 5-57 Structured Change

The screenshot shows a window titled 'Forecast Rate' with a sub-header 'IF-IRC-101: Structured Change'. It features a 'Shock Type' section with radio buttons for 'Rate' (selected) and 'Percent'. Below is a data grid with columns for 'Start Period', 'End Period', 'From Date', 'To Date', and interest rate terms: 1M, 2M, 3M, 6M, 1Y, 2Y, 3Y, 5Y. The first row shows values: Start Period 0, End Period 0, From Date 0, To Date 0, 1M 1.136, 2M 2.0544, 3M 2.8712, 6M 3.264, 1Y 4.04, 2Y 4.1704, 3Y 4.2808, 5Y 4.9768. A second row has '1' in the Start and End Period columns and '10-10-2015' and '11-09-2015' in the From and To Date columns. 'Apply' and 'Cancel' buttons are at the bottom.

| Start Period | End Period | From Date | To Date | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y |
|--------------|------------|------------|------------|-------|--------|--------|-------|------|--------|--------|--------|
| 0 | 0 | 0 | 0 | 1.136 | 2.0544 | 2.8712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 |
| 1 | 1 | 10-10-2015 | 11-09-2015 | | | | | | | | |

5. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
 6. Enter a shock amount to apply to the IRC in absolute rate or percentage change. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the IRC. Right click on data grid to all more rows or delete rows. Use the Excel Import or Export feature to add the interest rate changes.
 7. Click **Apply** to save.
 8. The status of the Interest Rate Curve is changed to **Defined**.
- **Implied Forward**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Implied Forward.
 2. Select the **Interpolation** Method.
 3. Input Minimum Rate, if required.
 4. Click **Define**.
The Implied Forward window is displayed:

Figure 5-58 Implied Forward

The screenshot shows a window titled 'Forecast Rate' with a sub-header 'IF-IRC-101: Implied Forward'. It features a 'Shock Type' section with radio buttons for 'Rate' (selected) and 'Percent'. Below is a data grid with columns for 'Base Rate', 'Shock Rate', and interest rate terms: 1M, 2M, 3M, 6M, 1Y, 2Y, 3Y, 5Y, 7Y, 10Y, 20Y. The 'Base Rate' row shows values: 1.136, 2.0544, 2.8712, 3.264, 4.04, 4.1704, 4.2808, 4.9768, 5.168, 5.5168, 6.0344. The 'Shock Rate' row is empty. 'Apply' and 'Cancel' buttons are at the bottom.

| | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y | 7Y | 10Y | 20Y |
|------------|-------|--------|--------|-------|------|--------|--------|--------|-------|--------|--------|
| Base Rate | 1.136 | 2.0544 | 2.8712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 | 5.168 | 5.5168 | 6.0344 |
| Shock Rate | | | | | | | | | | | |

5. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
 6. Enter a shock amount to apply to the IRC in absolute rate or percentage change. If no change is required to the base curve, leave at 0.0, and click **Apply**.
 7. The status of the Interest Rate Curve is changed to Defined.
- **Yield Curve Twist**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Yield Curve Twist.
 2. Select the **Interpolation** Method.
 3. Input Minimum Rate, if required.
 4. Click **Define**.
The Yield Curve Twist window is displayed:

Figure 5-59 Yield Curve Twist

| Forecast Period | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y | 7Y | 10Y | 20Y |
|-----------------|-------|--------|--------|-------|------|--------|--------|--------|-------|--------|--------|
| 0 | 1.136 | 2.0544 | 2.8712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 | 5.168 | 5.5168 | 6.0344 |

5. Select Start and End Period. Start Period must 1 or higher while highest End Period can be 360.
 6. Select the tenors using the Short Point, Mid Point, and Long Point.
 7. Add the required shock amounts for each tenor. At runtime and display time, the rate changes are added to the As-of-Date rates to create a future scenario.
 8. Click **Apply**.
The status of the Interest Rate Curve is changed to Defined.
- **Change From Base**

Note:

This method is available from second scenario onwards.

1. Select Scenario 2 or higher as Scenario.

Figure 5-60 Change From Base

| Code | Name | Currency | Curve Type | Forecast Method | Interpolation Method | Minimum Rate | Definition Status | |
|-------------------------------------|------|---------------|------------|-----------------|----------------------|----------------------|-------------------|-----------|
| <input type="checkbox"/> | 101 | RT-IRC-101 | USD | Standard | Change From Ba... | Linear Interpolation | 0.0000 | Defined |
| <input checked="" type="checkbox"/> | 102 | SaveAsAPI_102 | USD | Standard | Change From Ba... | Linear Interpolation | 0 | Undefined |

2. Select Interest Rate Code using corresponding checkbox and select Forecast Method as Change from Base.
3. Select the Interpolation Method.
4. Input Minimum Rate, if required.
5. Click Define. The Change From Base window is displayed.

Figure 5-61 Change From Base

| Forecast Period | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y | 7Y | 10Y | 20Y |
|-----------------|-------|--------|--------|-------|------|--------|--------|--------|-------|--------|--------|
| 0 | 1.136 | 2.0544 | 2.8712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 | 5.168 | 5.5168 | 6.0344 |
| 1 | | | | | | | | | | | |

6. Scenario 1 is used as base scenario.
 7. Enter the Forecast Period from 1 to 360 months and the corresponding change amount to apply to the base forecasts IRC. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes.
 8. The status of the Interest Rate Curve is changed to Defined.
- **Standardized Approach Shocks**

Standardized Approach shocks are different than other Interest Rate Rules as these are applied at the scenario level instead of at the IRC level. When you create a new Forecast Rates rule, the default Scenario 1 is always the base scenario for Standardized Approach purposes and cannot have a Standardized Approach shock definition.

 1. In Forecast Rates window, select the IRRBB Shocks. This allows you to define either Standardized or Enhanced Approach Scenarios, or both for a single Forecast Rates Rule. Once a forecast rates rule is designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach scenario type.
 2. To apply a Standardized Approach scenario, click the Add Scenario.
 3. In the Add Forecast Rates Scenario section, select the Scenario Type to apply the scenario. The following are the shock scenarios:
 - Standardized Approach Shock - Parallel UP
 - Standardized Approach Shock - Parallel DOWN
 - Standardized Approach Shock - Short UP
 - Standardized Approach Shock - Short DOWN
 - Standardized Approach Shock - Flattener
 - Standardized Approach Shock - Steppener
 4. Only one Standardized Approach shock can be applied to a single scenario, and no two SA shocks of the same type may be applied to the same Forecast Rates rule. All qualifying IRCs will inherit this SA shock and cannot be changed except for their interpolation method and minimum rate.
 5. Click Apply to make scenario as Standardized Approach shock.
 - **Enhanced Approach Shocks**

Like Standardized Approach shocks, Enhanced Approach shocks are scenario-level rules, and Scenario 1 is always referred to as the Base scenario for reporting purposes. However, unlike Standardized Approach shocks, the Forecast method for each IRC is not pre-established. This means that users must define the Forecast method, interpolation method and minimum rate for all Interest Rates in each scenario. Once defined and processed, the results will flow through into the Table B reporting.

 1. In the Forecast Rates window, select the IRRBB Shocks. This allows you to define either Standardized or Enhanced Approach scenarios, or both for a single Forecast Rate rule. After a Forecast Rate rule is designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach Scenario Type.
 2. To apply an Enhanced Approach scenario, click the Add Scenario. The following are the shock scenarios:
 - a. Enhanced Approach Shock - Parallel UP
 - b. Enhanced Approach Shock - Parallel DOWN

- c. Enhanced Approach Shock - Short UP
 - d. Enhanced Approach Shock - Short DOWN
 - e. Enhanced Approach Shock - Flattener
 - f. Enhanced Approach Shock - Steppener
3. Only one Enhanced Approach shock can be applied to a single scenario, and no two EA shocks of the same type can be applied to the same Forecast Rates rule. All IRCs in this scenario remain fully editable for the Forecast method, Interpolation method, and Minimum Rate.
 4. Click Apply to make the scenario as Enhanced Approach shock.

Copy Across

This allows you to copy Forecast Method and related details from one IRC to another.

For example, if you have 10 IRCs enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled IRCs, instead of having to input 10 full sets, thereby saving a significant amount of input time.



Note:

You must select a defined IRC to Copy Across. For more information, see the [Define](#) section of Interest Rate Curve.

- **Flat Method**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
 1. Select Interest Rate Curve using the corresponding checkbox and select **Forecast Method** as **Structured Change**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Implied Forward**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Implied Forward.
 2. Click Copy Across.
 3. Click Apply Copy Across.
 4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Change From Base**

1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Change From Base.
2. Click Copy Across.
3. Click Apply Copy Across.
4. You can click Cancel Copy Across to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to **Undefined**.
- **Direct Input**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input**.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to **Undefined**.
- **Structured Change**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Structured Change.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to Undefined.
- **Implied Forward**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Implied Forward.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to Undefined.
- **Yield Curve Twist**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Yield Curve Twist.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to Undefined.
- **Change From Base**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Change From Base.
 2. Click **Restore Default**.
 3. The status of the Interest Rate Curve is changed to Undefined.

View

After defining Forecast Method and other parameters for an IRC you can view the forecasted interest rates by clicking this button.

- **Flat Method**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Click **View** to see the output table.
- **Direct Input**
 1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input**.
 2. Click **View** to see the Output Table.
- **Structured Change**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Click **View** to see the Output Table.
- **Yield Curve Twist**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Yield Curve Twist**.
 2. Click **View** to see the Output Table.
- **Implied Forward**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Implied Forward**.
 2. Click **View** to see the Output Table.
- **Change From Base**
 1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Change From Base**.
 2. Click **View** to see the Output Table.

5.3.3.1.2 Define Currency Forecast Methods

The following Currency Forecast methods are available when you select a currency (other than the reporting currency) from the **Currency Codes** list. Currency forecast methods is available in Asset Liability Management Cloud Service only.

Figure 5-62 Currency Forecast Methods

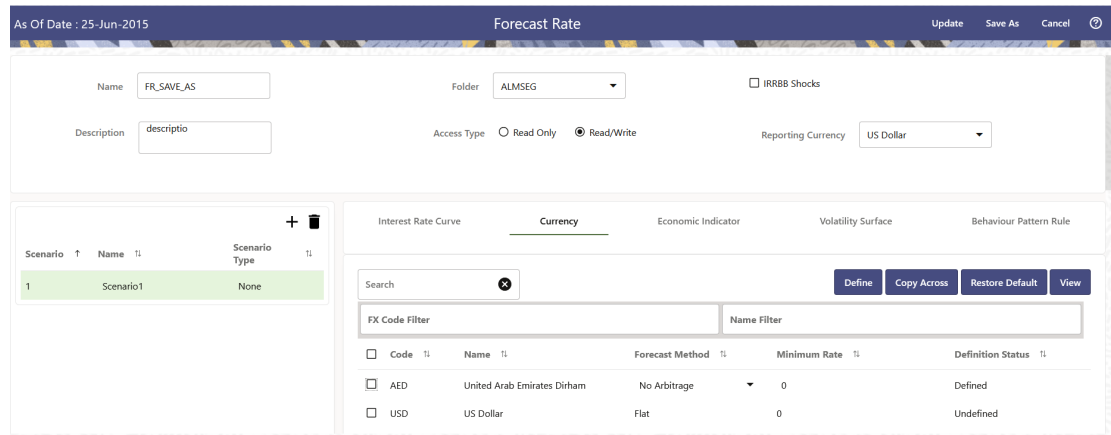


Table 5-13 Currency Forecast Methods

| Method | Description |
|-------------------|--|
| Flat | Forecast no change in the exchange rate for all dates beginning with the as-of date. |
| Structured Change | Forecast exchange rates as an incremental change from the previous period. |
| Direct Input | Type exchange rates to use in forecasting. |
| Parity | Forecast the exchange rate between two currencies based on forecasted interest rate associated with the currencies. The parity method can be used only if both the reporting currency and the selected currency have a Reference IRC. If reference IRC is not available for both or any one currency then flat method is used. |
| No Arbitrage | Forecast the exchange rate required to maintain a no-arbitrage condition between two currencies. The No Arbitrage method can be used only if both the reporting currency and the selected currency have a Reference IRC. If reference IRC is not available for both or any one currency then flat method is used. |

Following options are available for Currency Forecast Rule:

- [Define](#)
- [Copy Across](#)
- [Restore Default](#)
- [View](#)

Define

- **Flat Method**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
 2. Input Minimum Rate, if required.

3. Click **Define**.
 4. The status of the Currency Code is changed to **Defined**.
- **Direct Input**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
 2. Input Minimum Rate, if required.
 3. Click **Define**. The **Direct Input** window is displayed:

Figure 5-63 Direct Input window

| Forecast Period | Rate Value |
|-----------------|------------|
| 1 | 0 |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |

4. Right click on data grid and select 'Export to excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click **Apply**.
 5. The status of the Currency Code is changed to **Defined**.
- **Structured Change**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Input Minimum Rate, if required.
 3. Click **Define**. The **Structured Change** window is displayed:

Figure 5-64 Structured Change window

| Start Period | End Period | From Date | To Date | 1M | 2M | 3M | 6M | 1Y | 2Y | 3Y | 5Y |
|--------------|------------|------------|------------|-------|--------|--------|-------|------|--------|--------|--------|
| 0 | 0 | 0 | 0 | 1.136 | 2.0544 | 2.6712 | 3.264 | 4.04 | 4.1704 | 4.2808 | 4.9768 |
| 1 | 1 | 10-10-2015 | 11-09-2015 | | | | | | | | |

4. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
5. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the Currency. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes. Click **Apply**.
6. The status of the Currency Code is changed to **Defined**.

- **Parity**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
 2. Input Minimum Rate, if required.
 3. Click **Define**.
 4. The status of the Currency Code is changed to **Defined**.
- **No Arbitrage**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
 2. Input Minimum Rate, if required.
 3. Click **Define**.
 4. The status of the Currency Code is changed to **Defined**.

Copy Across

This allows you to copy Forecast Method and related details from one Currency to another.

For example, if you have 10 Currency codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Currency codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

You must select a defined Currency to use Copy Across. For more information, see the [Define](#) section of Currency.

- **Flat Method**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Parity**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **No Arbitrage**

1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
2. Click **Copy Across**.
3. Click **Apply Copy Across**.
4. You can click **Cancel Copy Across** to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
 2. Click **Restore Default**.
 3. The status of the Currency Code is changed to **Undefined**.
- **Direct Input**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
 2. Click **Restore Default**.
 3. The status of the Currency Code is changed to **Undefined**.
- **Structured Change**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Click **Restore Default**.
 3. The status of the Currency Code is changed to **Undefined**.
- **Parity**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
 2. Click **Restore Default**.
 3. The status of the Currency Code is changed to **Undefined**.
- **No Arbitrage**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
 2. Click **Restore Default**.
 3. The status of the Currency Code is changed to **Undefined**.

View

After defining Forecast Method and other parameters for a Currency you can view the forecasted Currency by clicking this button.

- **Flat Method**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
 2. Click **View** to see the output table.

- **Direct Input**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
 2. Click **View** to see the Output Table.
- **Structured Change**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Click **View** to see the Output Table.
- **Parity**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
 2. Click **View** to see the Output Table.
- **No Arbitrage**
 1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
 2. Click **View** to see the Output Table.

5.3.3.1.3 Define Economic Indicator Forecast Rule

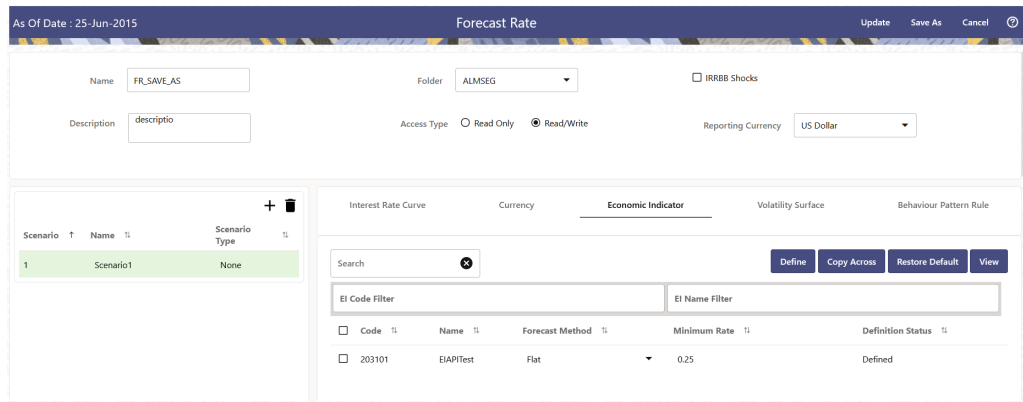
The Economic Indicators (EI) defined previously are listed under EI Section. The options under EI Forecast Method provide multiple ways to model the effects on Portfolio Cash Flows due to changes in inflation index and other micro or macro-economic parameters.

The following Economic Indicator Methods are available.

Table 5-14 Forecast Rate Rule – Economic Indicator Methods and Descriptions

| Method | Description |
|-------------------|---|
| Flat | Forecast no change in the EI rate for all dates beginning with the As-of Date. |
| Direct Input | Type-specific Economic Index Rates to use in forecasting. |
| Structured Change | Forecast the economic index as an incremental change from the previous period. This option is available only in Asset Liability Management Cloud Service. |

Figure 5-65 Economic Indicator Forecast Rates



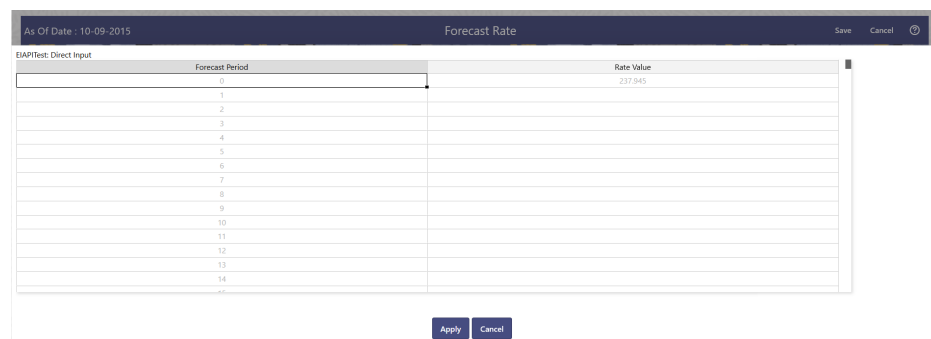
Following options are available for Economic Indicator Forecast Rule:

- Define
- Copy Across
- Restore Default
- View

Define

- **Flat Method**
 1. Select Economic Indicator Code using corresponding checkbox, select **Forecast Method** as **Flat** and enter minimum rate.
 2. Click **Define**. The status of Economic Indicator Code is changed to **Defined**.
- **Direct Input**
 1. Select Economic Indicator Code using corresponding checkbox, select Forecast Method as **Direct Input** and enter minimum rate.
 2. Click **Define**. The **Direct Input** window is displayed:

Figure 5-66 Direct Input window



3. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click **Apply**.

4. The status of Economic Indicator Code is changed to **Defined**.
- **Structured Change**
 - 1.
 2. Select Economic Indicator Code using corresponding checkbox, select Forecast Method as **Structured Change** and enter minimum rate.
 3. Click **Define**. The **Structured Change** window is displayed:

Figure 5-67 Structured Change window

| Start Period | End Period | From Date | To Date | Total Rate Change |
|--------------|------------|------------|------------|-------------------|
| 0 | 0 | | | |
| 1 | 1 | 10-10-2015 | 11-09-2015 | 237.945 |

4. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the Currency. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes. Enter data and click Apply.
5. The status of Economic Indicator Code is changed to Defined.

Copy Across

This allows you to copy Forecast Method and related details from one Economic Indicator Code to another.

For example, if you have 10 Economic Indicator Codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Economic Indicator Codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

Note:

You must select a defined Economic Indicator Code to use Copy Across. For more information, see the [Define](#) section of Economic Indicator.

- **Flat Method**
 1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as Flat.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Direct Input**
 1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as Direct Input.
 2. Click **Copy Across**.

3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
 1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as **Structured Change**.
 2. Click **Copy Across**.
 3. Click **Apply Copy Across**.
 4. You can click **Cancel Copy Across** to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
 1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Click **Restore Default**.
 3. The status of the Economic Indicator Code is changed to **Undefined**.
- **Direct Input**
 1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Direct Input**.
 2. Click **Restore Default**.
 3. The status of the Economic Indicator Code is changed to **Undefined**.
- **Structured Change**
 1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Structured Change**.
 2. Click **Restore Default**.
 3. The status of the Economic Indicator Code is changed to **Undefined**.

View

After defining forecast method and other parameters for an Economic Indicator Code you can view the forecasted interest rates by clicking this button.

- **Flat Method**
 1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Flat**.
 2. Click **View** to see the output table.
- **Direct Input**
 1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Direct Input**.
 2. Click **View** to see the output table.
- **Structured Change**
 1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Structured Change**.

2. Click **View** to see the output table.

5.3.3.1.4 Define Volatility Surface Forecast Methods

The following Volatility Surface Forecast methods are available when you select a Volatility Surface from the **Volatility Surface Codes** list. Volatility Surface forecast method is available in Asset Liability Management Cloud Service only.

Figure 5-68 Volatility Surface Forecast Methods

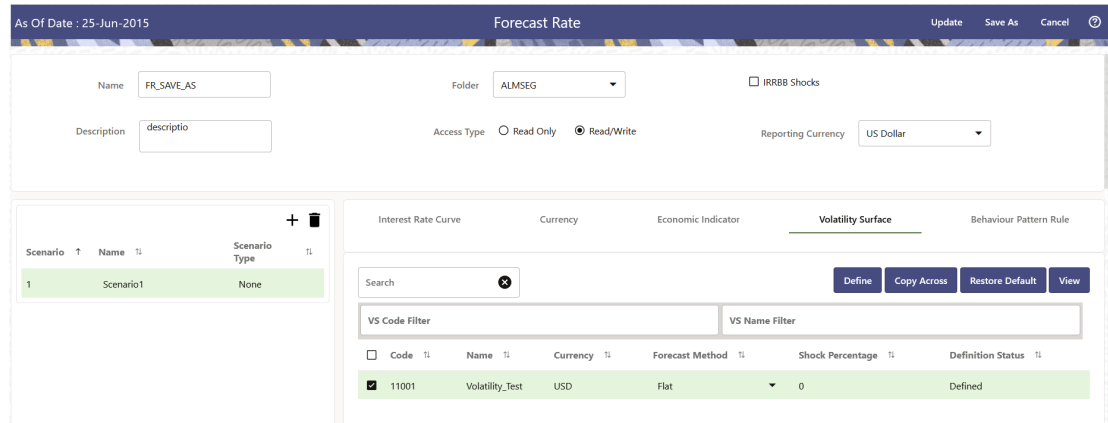


Table 5-15 Volatility Surface Forecast Methods

| Method | Description |
|--------------|--|
| Flat | Forecast no change in the exchange rate for all dates beginning with the as-of date. |
| Global Shock | Single shock rate is defined and applied to base volatility matrix |
| Detail Shock | Shock rate is defined for every intersection of Strike & Expiry Date |
| Direct Input | Implied volatility is given as input for every intersection of Strike & Expiry Date |

Following options are available for Volatility Surface Forecast Rule:

- [Define](#)
- [Copy Across](#)
- [Restore Default](#)
- [View](#)

Define

- **Flat Method**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
 2. Click Define.
 3. The status of the Volatility Surface Code is changed to Defined.

- **Global Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
 2. Input Shock Percentage, if required.
 3. Click Define.
 4. The status of the Volatility Surface Code is changed to Defined.
- **Detail Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
 2. Click Define. The Detail Shock window is displayed:

Figure 5-69 Detail Shock window

| Strike Rate | 23-Oct-2015 | 30-Nov-2015 |
|-------------|-------------|-------------|
| 4 | | |
| 5 | | |
| 6 | | |

3. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click Apply.
 4. The status of the Volatility Surface Code is changed to Defined.
- **Direct Input**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
 2. Click Define. The Direct Input window is displayed:

Figure 5-70 Direct Input window

| Strike Rate | 23-Oct-2015 | 30-Nov-2015 |
|-------------|-------------|-------------|
| 4 | | |
| 5 | | |
| 6 | | |

3. Enter a shock amount to apply to the Volatility Surface. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid.
4. Click Apply.
5. The status of the Volatility Surface Code is changed to Defined.

Copy Across

This allows you to copy Forecast Method and related details from one Volatility Surface to another.

For example, if you have 10 Volatility Surface codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Volatility Surface codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

You must select a defined Volatility Surface to use Copy Across. For more information, see the [Define](#) section of Volatility Surface.

- **Flat Method**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
 2. Click Copy Across.
 3. Click Apply Copy Across.
 4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Global Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
 2. Click Copy Across.
 3. Click Apply Copy Across.
 4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Detail Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
 2. Click Copy Across.
 3. Click Apply Copy Across.
 4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Direct Input**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
 2. Click Copy Across.
 3. Click Apply Copy Across.
 4. You can click Cancel Copy Across to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
 2. Click Restore Default.
 3. The status of the Volatility Surface Code is changed to Undefined.
- **Global Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
 2. Click Restore Default.
 3. The status of the Volatility Surface Code is changed to Undefined.
- **Detail Shock**

1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
 2. Click Restore Default.
 3. The status of the Volatility Surface Code is changed to Undefined.
- **Direct Input**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
 2. Click Restore Default.
 3. The status of the Volatility Surface Code is changed to Undefined.

View

After defining Forecast Method and other parameters for a Volatility Surface you can view the forecasted Volatility Surface by clicking this button.

- **Flat Method**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
 2. Click View to see the output table.
- **Global Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
 2. Click View to see the Output Table.
- **Detail Shock**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
 2. Click View to see the Output Table.
- **Direct Input**
 1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
 2. Click View to see the Output Table.

5.3.3.1.5 Map Behavior Pattern Rule

The Behavior Pattern Rule section allows you to map an existing Behavior Pattern Rule to current forecast scenario.

The BP Rule drop-down list shows the list of existing Behavior Pattern Rule. Select any behavior pattern rule to map with the current forecast scenario. To map a Behavior pattern to all the forecast scenarios, use the Apply to All Scenarios check box (applicable only to Asset Liability Management Cloud Service). For more information about the Behavior Pattern Rule, see the Behavior Pattern Rule section.

To map Behavior Pattern Rule with Forecast Scenario, follow these steps:

1. Navigate to **Forecast Rate Summary** Page.
2. Navigate to the Behavior Pattern Rule section.

3. Select Behavior Pattern Rule from **BP Rule To Be Applied To Current Scenario** drop-down list. Enable **Apply to All Scenarios** check box if you want to apply the selected Behavior Pattern Rule to all scenarios.

Figure 5-71 Map Behavior Pattern Rule

The screenshot shows the 'Forecast Rate' configuration interface. At the top, it displays 'As Of Date : 25-Jun-2015' and 'Forecast Rate' with 'Update', 'Save As', and 'Cancel' buttons. The main form includes fields for 'Name' (FR_SAVE_AS), 'Folder' (ALMSEG), 'Description' (descriptio), 'Access Type' (Read/Write), and 'Reporting Currency' (US Dollar). Below these is a table for 'Behaviour Pattern Rule' with columns for Scenario, Name, and Scenario Type. The table contains one row: Scenario 1, Scenario1, None. To the right of the table, there is a dropdown menu for 'BP Rule To Be Applied To Current Scenario' (set to Scenario1) and a checked 'Apply to All Scenarios' checkbox. An 'Apply' button is located below the dropdown.

4. Click **Apply**.

5.3.4 Behavior Pattern Rules

The Behavior Pattern (BP) functionality works similarly to amortization types. The Behavior Pattern code is assigned at the detail instrument level, and these designations are evaluated by the cash flow engine (CFE) for calculations. However, Behavior Patterns are portfolio level property rather than instrument level. Generally, a bank processes aggregated data for non-maturing products. In this case, the Behavior Pattern is assigned effectively at the portfolio level. If you are using CFE with any other service, then data is required at the instrument level and BP is also assigned accordingly.

In this case, you must track the changes to Behavior Patterns and assign appropriate codes to affected instruments. Due to this, only one BP can be used by the CFE in the CFE processes for current business. If you want to model multiple types of BP under varying scenarios, then you can use a Behavior Pattern Rule.

The Behavior Pattern Rule UI allows you to group Behavior Pattern codes (behavioral assumptions) together in a set at the Product/Currency level which then can be rotated to select a value on a combination. You can select which behavior assumption pattern to use and the underlying Behavior Pattern in that set will affect the data on processing

Behavior Pattern Rule Summary

This page is the gateway to all Behavior Pattern Rules and related functionality. You can navigate to other pages relating to Behavior Pattern Rules from this point.

Figure 5-72 Behavior Pattern Rule Summary

The screenshot shows the 'Behavior Pattern Rule Summary' page. At the top, it has a search bar with 'Folder: CFSESEG' and a 'Field Search' input. Below the search bar is a table with columns: Name, Dimension, Hierarchy, Folder, Last Modified Date, Last Modified By, Access Type, and Action. The table is currently empty with the message 'No data to display.'

Search Behavior Pattern Rule

Prerequisites: Predefined Behavior Pattern Rule

To search for a Behavior Pattern Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Behavior Pattern Rules that meet the search criteria.

Or

An alternative method to search a Behavior Pattern rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Behavior Pattern rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy, and Folder** of the Behavior Pattern Rule and click **Search**.

The Behavior Pattern rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Behavior Pattern rule.

- **Name:** Displays the Behavior Pattern Rule's short name.
- **Dimension:** Displays the Dimension the Behavior Pattern Rule belongs to.
- **Hierarchy:** Name of Hierarchy that is used to define Behavior Pattern Rule.
- **Folder:** Displays the Folder name where the Behavior Pattern Rule is saved.
- **Last Modified By:** Displays the Name of the user who last modified the Behavior Pattern Rule.
- **Last Modified Date:** Displays the Date and Time when Behavior Pattern Rule was modified last.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Behavior Pattern rule.
 - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
 - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Behavior Pattern rules. To edit a rule, you must have Read/Write privilege.
 - Save As: You can reuse a Behavior Pattern rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - Delete: You can delete Behavior Pattern rules that you no longer require. Note that only Behavior Pattern rule owners and those with Read/Write privileges can delete Behavior Pattern rules. A Behavior Pattern rule that has a dependency cannot be deleted.
 - Dependency Check: You can perform a dependency check to know where a particular Behavior Pattern rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Behavior Pattern rules that have dependencies. . A report of all rules that utilize the selected Behavior Pattern rule is generated.

 **Note:**

This is functionality will intended for a future release.

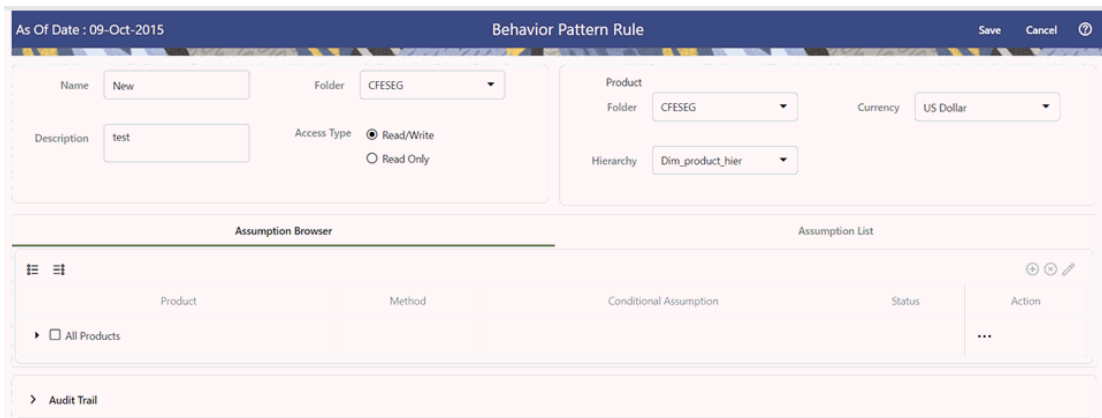
Also See:

- [Create Behavior Pattern Rule](#)
- [Defining Behavior Pattern Rule](#)

5.3.4.1 Create Behavior Pattern Rules

You create behavior pattern rules to capture the principal run-off behavior of product types that do not have contractual maturities.

Figure 5-73 Behavior Pattern Rule Page



To create a Behavior Pattern rule, follow these steps:

1. Click **Add** icon from the top of the **Behavior Pattern Rule Summary Page**.
2. Enter the following Details.

Table 5-16 Create Behavior Pattern Rule

| Fields | Description |
|-------------|--|
| Name | Enter the name of the Behavior Pattern Rule. |
| Description | Enter the description of the Behavior Pattern Rule. This is an optional field. |
| Folder | Select the Folder where the Behavior Pattern Rule needs to be saved. |
| Access Type | Select the Access Type as Read-Only or Read/Write. |

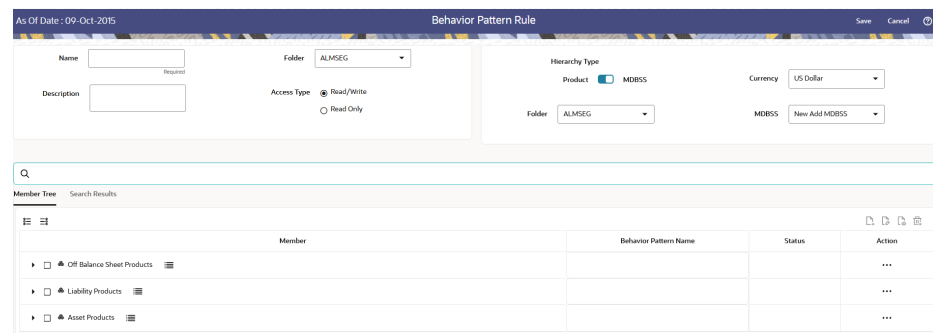
3. Select the Hierarchy Type as **Product** or **MDBSS**

 **Note:**

MDBSS is enabled only in ALM Cloud Service.
If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.

- If you select Hierarchy Type as MDBSS, then following options are available:

Figure 5-74 Hierarchy Type as MDBSS



- Select a **Currency**.
- Select a **MDBSS Folder**. and **MDBSS**.
- Select **MDBSS Node(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-75 Member Tree

- Expand self, child and descendants
- Expand selected member/branch
- Select UnDefined self, child
- Select UnDefined self, child and descendants
- Select Defined self, child
- Select Defined self, child and descendants
- UnSelect self, child and descendants

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

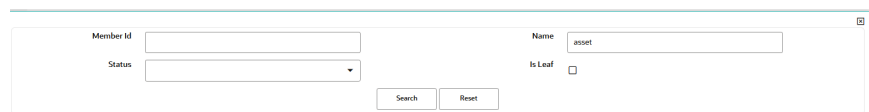
Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

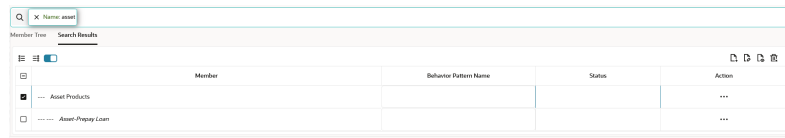
- * Add
 - * Edit
 - * View
 - * Delete
 - * Copy
- Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:
- i. Navigate to **Assumption Browser** section of the Rule Definition page.
 - ii. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-76 Search Criteria



- iii. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-77 Searching Members



Here, you can perform the following tasks on the searched node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

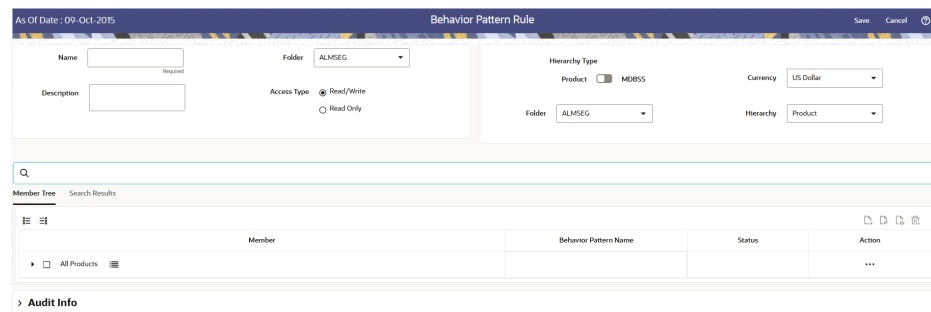
Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

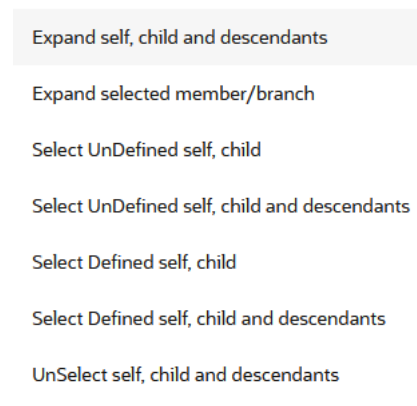
Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

- If you select Hierarchy Type as Product, then following options are available:

Figure 5-78 Hierarchy Type as Product



- a. Select a **Currency**.
- b. Select a **Product Folder** and **Product Hierarchy**.
- c. Select **Product** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-79 Member Tree

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- * Add
 - * Edit
 - * View
 - * Delete
 - * Copy
- Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:

- i. Navigate to **Assumption Browser** section of the Rule Definition page.
- ii. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-80 Search Criteria

- iii. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-81 Searching Members

| Member | Behavior Pattern Name | Status | Action |
|------------------|-----------------------|--------|--------|
| Asset Products | | | ... |
| Asset-Popay Loan | | | ... |

Here, you can perform the following tasks on the searched node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

4. Click **Add** from Assumption Browser section.
5. Click Save.

5.3.4.2 Defining Behavior Pattern Rule

The definition of a Behavior Pattern rule is part of the Create or Edit Behavior Pattern rule process. When you click **Save** in the Create Behavior Pattern Rule process, the rule is saved and the **Behavior Pattern Rule Summary** page is displayed.

However, Behavior Pattern assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your Behavior Pattern assumptions for product-currency combinations before clicking Save.

5.3.4.2.1 Defining Behavior Pattern Rule Using Node Level Assumptions

Node Level Assumptions allow you to define assumptions at any level of the Product dimension Hierarchy. The Product dimension supports a hierarchical representation of your chart of accounts, so you can take advantage of the parent-child relationships defined for the various nodes of your product hierarchies while defining rules. Children of parent nodes on a hierarchy automatically inherit the assumptions defined for the parent nodes. However, assumptions explicitly defined for a child take precedence over those at the parent level.

Note:

Using the default currency to setup assumptions can save data input time. At run time, the calculation engine uses assumptions explicitly defined for a product currency combination. If assumptions are not defined for a currency, the engine uses the assumptions defined for the product and the default currency. If the assumptions are the same across some or all currencies for a specific product, you can input assumptions for the default currency. Be careful using this option on screens where an Interest Rate.

Prerequisites

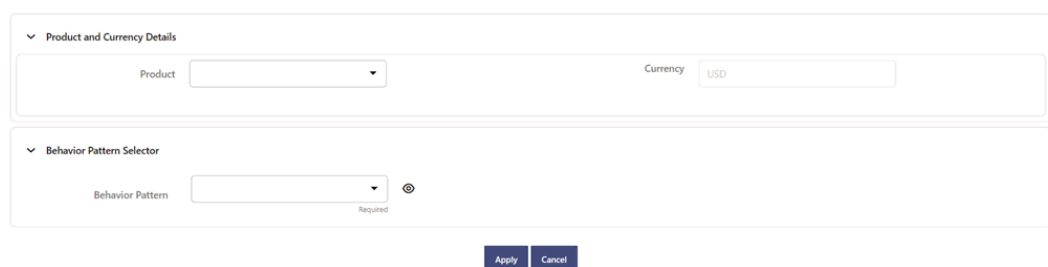
Performing basic steps for creating or editing a Behavior Pattern rule.

Procedure

To define Behavior Pattern Rule using Node Level Assumptions, follow these steps:

1. Navigate to the Behavior Pattern Rule Assumption Details Page after selecting a Currency and one or more products from the hierarchy.

Figure 5-82 Behavior Pattern Rule Assumption Details



2. Select a Product.
3. Select the Behavior Pattern from Behavior Pattern drop-down list. Here, the Behavior Pattern drop-down list shows the list of existing Behavior Patterns. Click below icon to view the details of selected Behavior Pattern.

Figure 5-83 View Behavior Pattern



You can select only one Behavior Pattern at a time.

4. Click Apply.
The Assumption Browser Definition Page is displayed.

At this point you can:

- Continue selecting BP for other product-currency combinations by repeating the above procedure.
- Complete the process by clicking Save.

When you click Save, the Behavior Pattern Rule assumptions are saved and the Behavior Pattern Rule Summary Page is displayed.

5.3.5 Discount Methods

This module describes the procedure for working with and managing Discount Method Rules. Discount Method Rules allow users to define the method for discounting projected Cash Flows for market value and duration calculation purposes. For each combination of product and currency, you can choose one of the following discount methods:

- Spot Input
- Spot Interest Rate Code
- Forecast (Original Term)
- Forecast (Remaining Term)

The following table describes the methods and rate choices:

Table 5-17 List of Discount Methods

| Method | Single Rate | Yield Curve |
|--------------------------|--|---|
| Spot Input | Discounts all cash flows by the Input Rate | Not applicable |
| Spot Interest Rate Code | Not applicable | Discounts each Cash Flow period by the equivalent term rate on the base Yield Curve chosen (the Yield Curve as of the start date). The term is defined by the remaining term of the cash flow. Refer Note |
| Forecast (Original Term) | Not applicable | Discounts each Cash Flow period by the Forecasted Value of the point on the yield curve corresponding to each transaction record's original term (fixed rate instrument) or repricing term (variable rate instrument). Refer Note |

Table 5-17 (Cont.) List of Discount Methods

| Method | Single Rate | Yield Curve |
|---------------------------|--|---|
| Forecast (Remaining Term) | Not applicable | Discounts each Cash Flow period by the Forecasted Value of the point on the Yield Curve corresponding to the remaining term until each cash flow. Refer Note |
| Effective Interest Rate | Effective Interest Rate (EIR) of account is used as discount rate. | Not applicable |

 **Note:**

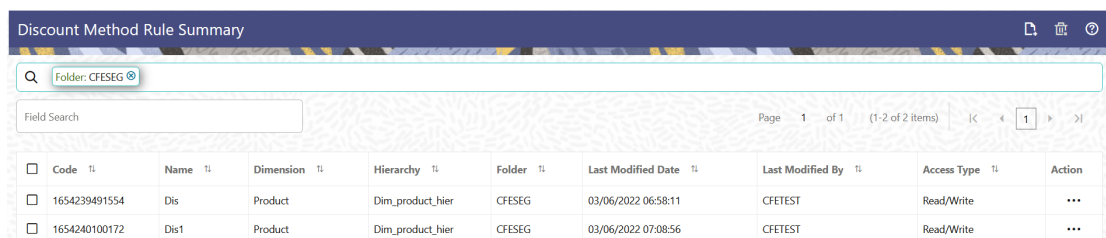
In the case of Spot Interest Rate Code, if term point is not available, engine will use linear interpolation to determine the interest rate to discount cashflows.

When Discounting method of Forecast (Original Term) and Forecast (Remaining Term) is used, if term point is not available, engine will use Interpolation method defined for Interest rate code within Forecast Rate Rule. If Interpolation method defined in Forecast rate rule is Linear, engine will use Linear Interpolation. If Interpolation Method is cubic, engine will use Cubic Interpolation to determine interest rate to discount Cash Flows.

Discount Method Rule Summary

This page is the gateway to all Discount Method Rules and related functionality. You can navigate to other pages relating to Discount Method Rules from this point.

Figure 5-84 Discount Method Rule Summary



| Code | Name | Dimension | Hierarchy | Folder | Last Modified Date | Last Modified By | Access Type | Action |
|---------------|------|-----------|------------------|---------|---------------------|------------------|-------------|--------|
| 1654239491554 | Dis | Product | Dim_product_hier | CFSESEG | 03/06/2022 06:58:11 | CFETEST | Read/Write | ... |
| 1654240100172 | Dis1 | Product | Dim_product_hier | CFSESEG | 03/06/2022 07:08:56 | CFETEST | Read/Write | ... |

Search Discount Method Rule

Prerequisites: Predefined Discount Method Rule

To search for a Discount Method Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Discount Method Rules that meet the search criteria.

Or

An alternative method to search a Discount Method rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Discount Method Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Discount Method Rule and click **Search**.

The Discount Method rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Discount Method rule.

- **Code:** The Code of Discount Method Rule.
- **Name:** The Discount Method Rule's short name.
- **Dimension:** The Dimension the Discount Method Rule belongs to.
- **Hierarchy:** Name of Hierarchy that is used to define Discount Method Rule.
- **Folder:** The Folder where the Discount Method Rule is saved.
- **Last Modified By:** The user who last modified the Discount Method Rule.
- **Last Modified Date:** The Date and Time when the Discount Method Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Discount Method rule.
 - **Multiple Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
 - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Discount Method rules. To edit a rule, you must have Read/Write privilege.
 - **Save As:** You can reuse a Discount Method rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
 - **Delete:** You can delete Discount Method rules that you no longer require. Note that only Discount Method rule owners and those with Read/Write privileges can delete Discount Method rules. A Discount Method rule that has a dependency cannot be deleted.
 - **Dependency Check:** You can perform a dependency check to know where a particular Discount Method rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Discount Method rules that have dependencies. A report of all rules that utilize the selected Discount Method rule is generated.

 **Note:**

This is functionality will intended for a future release.

You can copy, in total or selectively, the product assumptions contained within the Discount Method Rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

Also See:

- [Create Discount Method Rule](#)

5.3.5.1 Create Discount Method Rule

You create a Discount Methods rule to assign Discounting Methods to your products. To create a Discount Method Rule, follow these steps:

1. Navigate to the **Discount Methods Rule** Summary page.
2. Click **Add**. The **Discount Method Rule** page is displayed.
3. Enter the following details:

Table 5-18 Discount Method Details

| Fields | Description |
|-------------|---|
| Name | Enter the name of the Discount Method Rule. |
| Description | Enter the description of the Discount Method Rule. This is an optional field. |
| Folder | Select the Folder where the Discount Method Rule needs to be saved. |
| Access Type | Select the Access Type as Read-Only or Read/Write. |

4. Select a **Product Hierarchy**. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from Parent Nodes to Child Nodes. Enter the following details for **Product Hierarchy** selection:

Table 5-19 Product Hierarchy Details section

| Fields | Description |
|-----------|---|
| Folder | Select the Folder where Product Hierarchy is previously created |
| Hierarchy | Select the Hierarchy of the product |
| Currency | Select the Currency. |

5. Select the Hierarchy Type as **Product** or **MDBSS**

 **Note:**

MDBSS is enabled only in ALM Cloud Service.
If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.

- If you select Hierarchy Type as MDBSS, then following options are available:

Figure 5-85 Hierarchy Type as MDBSS

| Member | Method | Status | Action |
|----------------------------|--------|--------|--------|
| Off Balance Sheet Products | | | ... |
| Liability Products | | | ... |
| Asset Products | | | ... |

- a. Select a **Currency**.
- b. Select a **MDBSS Folder** and **MDBSS**.
- c. Select **MDBSS Node(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-86 Member Tree

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child

- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- * Add
 - * Edit
 - * View
 - * Delete
 - * Copy
- Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:
- i. Navigate to **Assumption Browser** section of the Rule Definition page.
 - ii. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-87 Search Criteria

- iii. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-88 Searching Members

| Member | Behavior Pattern Name | Status | Action |
|-------------------|-----------------------|--------|--------|
| Asset Products | | | ... |
| Asset-Prepay Loan | | | ... |

Here, you can perform the following tasks on the searched node(s):

- * Add

- * Edit
- * View
- * Delete
- * Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

- If you select Hierarchy Type as Product, then following options are available:

Figure 5-89 Hierarchy Type as Product

- a. Select a **Currency**.
- b. Select a **Product Folder** and **Product Hierarchy**.
- c. Select **Product** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
 - Member Tree: Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 5-90 Member Tree

Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- * **Expand selected member/branch:** Allows to expand the selected node
- * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- * **Select Defined self, child:** Allows to select the selected node itself along with its child.
- * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

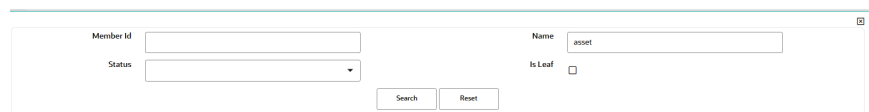
Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- * Add
 - * Edit
 - * View
 - * Delete
 - * Copy
- Search Results: You can also search the members based on the filters. This section shows the searched node(s). To search a member , follow these steps:
- i. Navigate to **Assumption Browser** section of the Rule Definition page.
 - ii. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 5-91 Search Criteria

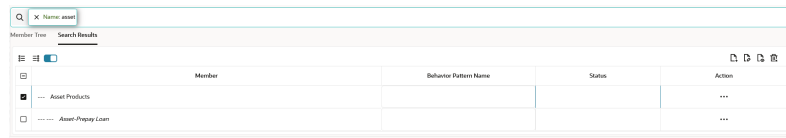


The screenshot shows a search criteria form with the following fields and controls:

- Member Id:** A text input field.
- Name:** A text input field containing the value "asset".
- Status:** A dropdown menu.
- Is Leaf:** A checkbox.
- Search:** A button.
- Reset:** A button.

- iii. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 5-92 Searching Members



Here, you can perform the following tasks on the searched node(s):

- * Add
- * Edit
- * View
- * Delete
- * Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

6. Click **Add** from Assumption Browser section.
7. Click Save.
8. Navigate to **Discount Method** section.

Figure 5-93 Discount Method Section

9. Enter the following details:

Table 5-20 Discount Method Section

| Fields | Description |
|-----------------|---|
| Discount Method | Select the Discount Method from Discount Method List. |

Table 5-20 (Cont.) Discount Method Section

| Fields | Description |
|---------------------|---|
| Discount Rate | Enter Discount Rate if Spot Input Method is selected. |
| Interest Rate Curve | From Interest Rate Code List, select an appropriate Interest Rate Code. The list of Interest Rate Codes depends on the selected currency. If the selected currency is the default currency, all Interest Rate Codes appear. For other currency selections, the list of interest rate codes includes only interest rate codes whose reference currency is the same as the selected currency. |
| Spread Source | You can optionally choose to add a spread of margin over the Interest Rate derived from IRC. Spread can be defined in the Discount Method Rule or it can be given along with Instrument record. You can select source of the spread as Discount Rule or Account Data is method is Spot IRC, Forecast (Original Term) and Forecast (Remaining Term). |
| Spread | When Discount Rule is selected as Spread Source then you can specify the amount of spread/margin here. Type the percentage difference (+ or -) between the selected rate index and the value you want to use for the discount rate(s) within market value calculations. Input a Rate Spread, type 1.0000. A spread of 1% returns a discount rate of 1.00% above the reference interest rate. Type a negative number for a spread below the reference interest rate. |

 **Note:**

You can use negative product IDs when defining the Discount Method Rule.

10. Navigate to **Cash Flow Details** section. The **Cash Flow Definition Details** section is used in unique instances to specify the portion of the Cash Flow that is used to calculate a Market Value.
11. Enter the following details:

Table 5-21 Cash Flow Details Section

| Fields | Description |
|---|---|
| Cash Flow Type | <p>a. Interest Only : ignores all principal runoff for market value purposes. Use this option for Off-balance sheet items where principal is equal to Notional Principal and is therefore not a true Cash Flow.</p> <p>b. Principal & Interest : calculates principal and interest both for Market Value purposes.</p> <p>c. Principal Only : ignores all interest rate Runoff for market value purposes.</p> |
| Interest Type | <p>The Cash Flow Interest Type determines which interest component is included in the cash flow definition. The Cash Flow Interest Type can be one of three values:</p> <ul style="list-style-type: none"> • Net Rate • Gross Rate <p>For typical processing, you will use the Net Rate for the interest component of the cash flow. Special processing objectives, such as valuation of the funding center, may require you to use the other cash flow interest types.</p> |
| Mature at Repricing | <p>Calculates a market value and YTM for a given transaction up to the repricing date. For market value and YTM purposes the transaction is assumed to mature on the repricing date. Duration is always calculated to the next reprice date, not to maturity, regardless of the mature at repricing selection.</p> |
| Ignore Origination Cash Flows for Forward-Starting Instruments | <p>This feature allows the cash flow engine to ignore the origination Principal Cash Flows of any forward-starting instrument. The corresponding market value, duration, convexity and yield calculations will not reflect the Origination Amount. Origination principal Cash Flow will still be reported.</p> |
| Use Principal in Market Value Calculations (Off-Balance Sheet Only) | <p>This feature allows the Cash Flow Engine to consider principal in the calculation of market value, duration, convexity and yield calculations, even if principal is not actually exchanged.</p> |

12. Click **Apply**.

13. Click **Save**.

5.3.5.2 Discount Method Examples

The following examples assume the Interest Rate has a format of zero-coupon yield with annual compounding. The instrument used in each example is an annual-pay, 2-year instrument originated on the As_of_Date. See the Oracle Financial Services Cash

Flow Engine Reference Guide for details on discount factor derivation used in Cash Flow Calculations.

- [Spot Input](#)
- [Spot Interest Rate Code](#)
- [Forecast Remaining Term](#)
- [Forecast Original Term](#)

5.3.5.2.1 Spot Input

In the Spot Input Method, the discount factor does not vary with Forecast Rate - interest rate scenarios. The discount factor calculations assume the input interest rate to reflect a format of zero coupon yield, annual compounding, and actual/actual accrual basis.

Spot Input Rate = 6.00%

The formula for the market value of the account, for any rate scenario, is:

Market Value = Cash Flow1/ (1 + 0.06) + Cash Flow 2 / ((1 + 0.06)^2)

Cash Flow1 is the cash flow at the end of year 1. Cash Flow2 is the Cash Flow at the end of year 2.

5.3.5.2.2 Spot Interest Rate Code

(Required) <Enter a short description here.>

In the Spot Interest Rate Code Method, the discount factor depends on the term of the Cash Flow, but does not vary with interest rate scenario.

Interest Rate Code = Treasury Yield Curve

The formula for the Market Value of the account, for any rate scenario, is:

Market Value = Cash Flow1/ (1 + 1 Year Treasury) + Cash Flow2/ ((1 + 2 Year Treasury)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the Cash Flow at the end of year 2. The values for 1 Year Treasury and 2 Year Treasury reflect the values from the Historical Interest Rate Data, beginning with the As_of_Date.

5.3.5.2.3 Forecast Original Term

The Forecast Original Term Method uses the forecasted Interest Rate Data to determine the discount factor.

Interest Rate Code = Treasury Yield Curve

The formula for the market value of the account is:

Market Value = Cash Flow1/ (1+ 2 Year Treasury Rate at the 1 year point in the forecast) + Cash Flow2/ ((1+ 2 Year Treasury Rate at the 2 year point in the forecast)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the cash flow at the end of year 2. Note that Cash Flow1 is discounted at the 2 year Treasury rate. The 2 Year rate is used with this method, because the Forecast Original Term method always uses the term equivalent to the original term of the instrument.

5.3.5.2.4 Forecast Remaining Term

The Forecast Remaining Term Method uses forecasted Interest Rate Data to determine the discount factor.

Interest Rate Code = Treasury Yield Curve

The formula for the market value of this account is:

Market Value = Cash Flow1/ (1+ 1Year Treasury Rate at the 1 year point in the forecast) + Cash Flow2/ ((1+ 2 Year Treasury Rate at the 2 year point in the forecast)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the cash flow at the end of year 2. The values for 1 Year Treasury and 2 Year Treasury reflect the scenario specific values from the forecast rates - interest rate data. Cash Flow1 is discounted at the 1 year Treasury rate, from the 1 year point of the forecast and Cash Flow2 is discounted at the 2 year Treasury rate, from the 2 year point of the forecast.

5.3.6 Cash Flow Process

This module discusses the procedure for creating and executing the Cash Flow Process. When all the required assumptions are defined, CFE Processing performs the calculation and generates a result set. The Cash Flow Process allows you to perform the following tasks:

- Determine the data that you want to process.
- Submit to the CFE processing engine the modeling horizon for which you want to calculate cash flows.
- Specify the prepayment , forecast rate, and other assumptions to be used in the process.
- Define the output preferences.
- Execute the Cash Flow process and generate results.

Cash Flow Process Summary

This page is the gateway to all Cash Flow Process Rules and related functionality. You can navigate to other pages relating to Cash Flow Process Rules from this point.

Figure 5-94 Cash Flow Process Summary Page

The screenshot shows a web interface titled "Cash Flow Process Summary". It features a search bar at the top with "Folder: CFESEG" selected. Below the search bar is a "Field Search" input field and a toolbar with "Process Id", "Up", "Down", "List", and "Grid" icons. The main content is a table with the following data:

| Process Id | Name | Calculation Date Range | Folder | Access Type | Last Run By | Last Run Date | Status | Action |
|---------------|-------------|-----------------------------|--------|-------------|-------------|---------------------|---------|--------|
| 1652091304569 | CFE_process | As of Date to Maturity Date | CFESEG | Read/Write | cfuser1 | 13-05-2022 06:28:16 | FAILURE | ... |
| 1652101025349 | CFE_PPMTB | As of Date to Maturity Date | CFESEG | Read/Write | CFETEST | 31-05-2022 08:36:18 | SUCCESS | ... |
| 1652104067313 | Test | As of Date to Maturity Date | CFESEG | Read/Write | cfuser1 | 13-05-2022 06:36:24 | FAILURE | ... |
| 1652170926083 | Schedule | As of Date to Maturity Date | CFESEG | Read/Write | CFETEST | 13-05-2022 08:21:14 | FAILURE | ... |
| 1652172602006 | Tierdata | As of Date to Maturity Date | CFESEG | Read/Write | | | | ... |

Search Cash Flow Process

Prerequisites: Predefined Cash Flow Process

To search for a Cash Flow Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Process Rules that meet the search criteria.

Or

The other method to search a Cash Flow Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Id, Name, Group, Condition Column, or Is User Defined** status of the Cash Flow Process and click **Search**.

The Cash Flow Process summary table displays the following columns:

- **Process ID:** Displays the Process ID of Cash Flow Process .
- **Name:** Displays the Cash Flow Process's short name.
- **Calculation Date Range:** Displays the calculation date range for which process is defined.
- **Folder:** Displays the Folder name where the Cash Flow Process is saved.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Last Run By:** Displays the Name of the user who last runs the Cash Flow Process .
- **Last Run Date:** Displays the Date and Time when Cash Flow Process was run last.
- **Status:** Displays the status of the Cash Flow Process.
- **Action:** Displays the following list of actions that can be performed on the selected Cash Flow Process.
 - **Add:** Click **Add** icon at the top right of the summary page to build a new Cash Flow Process.
 - **Multiple Delete:** Select one or more Rules in the table and then click the **Multiple Delete** icon at the top right of the Summary Page to delete more than one Rule at the same time.
 - **View/Edit:** You can view existing Cash Flow Process, and you can edit existing Cash Flow Process Rules, provided you have read/write privileges. View/Edit to view or edit the contents of a Cash Flow Process in Read/Write format. Depending on user privileges the Rule will open in either View or Edit mode.
 - **Save As:** You can copy Cash Flow Process Rules to avoid having to enter data multiple times. This saves time and effort and reduces mistakes. Click on the **Action** icon against the Cash Flow Process Name and select **Save As** to create a copy of an existing Cash Flow Process.
 - **Delete:** You can delete Cash Flow Process Rules that are no longer required. Click on the **Action** icon against the Cash Flow Process Name and select **Delete** to delete an existing Cash Flow Process.

 **Note:**

A Cash Flow Process cannot be retrieved after deletion. Restrictions on deleting Cash Flow Process Rules are:

- * You cannot delete Cash Flow Process Rules if you have only Read privileges. Only users with Read/Write privileges and Cash Flow Process owners can delete Cash Flow Process Rules.
- * You cannot delete a Cash Flow Process that has a dependency.

- **Dependency Check:** You can check dependencies for rules to know where a particular Cash Flow Process has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Cash Flow Process Name and select Dependency Check to generate a report on all Rules that utilize your selected Cash Flow Process.

 **Note:**

This is functionality will be released in future.

- **Execute:** Select Execute to execute an existing Cash Flow Process . After clicking Execute, the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run.
- **Execute Details:** Select Execute Details to view execution details of the Cash Flow Process .

Also See:

- [Create Cash Flow Process](#)
- [Execute Cash Flow Process](#)
- [View Cash Flow Process log](#)

5.3.6.1 Create Cash Flow Process

To create a new Cash Flow process, perform the following steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Click **Add** . The Create Cash Flow Process page is displayed.
3. Enter the details in the **Process Details** section.

Figure 5-95 Process Details

Table 5-22 List of process details used for Creating Cash Flow Process

| Parameter | Description |
|-------------|--|
| Name | Enter the name of the Cash Flow Process . |
| Description | Enter the description of the Cash Flow Process . |
| Folder | Select the Folder where the Cash Flow Process needs to be saved. |
| Access Type | Select the Access Type as Read-Only or Read/Write. |

- Click **Apply** to navigate to the **Source Data** section.

Figure 5-96 Source Data

- Enter the Source Data details shown in the following table:

Table 5-23 List of Source Data details used for Creating Cash Flow Process

| Parameter | Description |
|-------------|---|
| Data Source | This field allows you to select the Instrument tables that must be included in a Cash Flow process. |

Table 5-23 (Cont.) List of Source Data details used for Creating Cash Flow Process

| Parameter | Description |
|--------------------|--|
| Data Filter Folder | Select the Folder from which you want to apply Data Filter. |
| Data Filter | This field allows you to select a subset of data for processing by selecting a filter that was previously created. |

- Click **Apply** to navigate to the **Calculation Elements** section.

Figure 5-97 Calculation Elements

- Enter the Calculation Elements shown in the following table:

Table 5-24 List of Calculation Elements details used for Creating Cash Flow Process

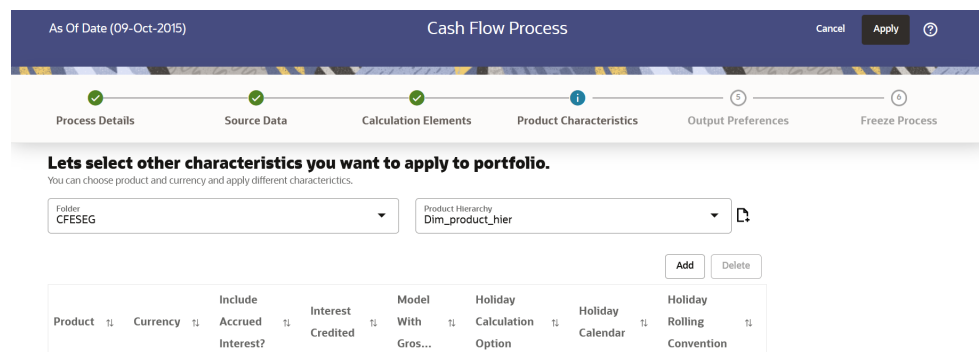
| Parameter | Description |
|------------------------|---|
| Calculation Date Range | <p>Select the time horizon for which you want to perform the cash flow calculation. This has the following options:</p> <ul style="list-style-type: none"> • As of Date to Maturity Date: Calculation is performed between As of Date and Maturity Date of the instrument. • As of Date to Next Reprice Date: Calculation is performed between As of Date and Next Repricing Date of the instrument. • Origination Date to Maturity Date: Calculation is performed between Origination Date to Maturity Date of the instrument. • Last Reprice Date to Next Reprice Date: Calculation is performed between Last Reprice Date to Next Reprice Date of the instrument. • As of Date to Future Specified Date: Calculation is performed for the specified tenor starting from As of Date. |
| Prepayment | <p>Select the Folder and Prepayment you want to be applied during cash flow calculation. See Prepayment, to set up prepayment methods. This is an optional step.</p> |
| Forecast Rate Scenario | <p>Select the Folder and Forecast Rates you want to be applied to the process. See Forecast Rate Scenarios to set up rate scenarios. This is an optional step and enabled only when the calculation data range is 'As of Date to Maturity Date'.</p> |
| Market Valuation | <p>Select the measures you want to calculate:</p> <p>Market Value: Select this to calculate Present Value of principal and interest cash flows.</p> <p>Duration: Select this to calculate Macaulay Duration of cash flows</p> <p>YTM, Modified Duration, DV01, Convexity: Select this option if you want to measure the price sensitivity for small changes in the underlying interest rate curves (DV01/PV01).</p> <p>EIR: Select this option to calculate Effective Interest Rate of instrument</p> |
| Discount Method | <p>Select the Folder and Discount Method you want to be applied to the process. See Discount Method to set up Discount Methods. This is an optional step.</p> |

Table 5-24 (Cont.) List of Calculation Elements details used for Creating Cash Flow Process

| Parameter | Description |
|--|---|
| Holiday Calendar | Select checkbox to apply Holiday Calendar during cash flow calculation. If selected cash flow dates falling on a holiday get adjusted as per defined conventions. You can also select the holiday calculation option, calendar, and business day convention at the product-currency level. |
| Amortization of Premiums and Discounts | <p>Determines the method used for amortizing the premiums and discounts. This has the following options:</p> <ul style="list-style-type: none"> Do not Calculate: The default value for the Calculation Method drop-down list is Do not calculate. In this case, cash flow for premium/discount does not get calculated even when Deferred Balance is given with instrument data. Amortize on Payment Dates: Select this option if you want to calculate premiums and discounts on Payment Dates. Amortize on User Defined Dates: Select this option if you want to calculate premiums and discounts on user-defined dates instead of payment dates. After selecting this option, perform these steps: <ul style="list-style-type: none"> a. Click Add next to Selected Dates field. b. Add one or more dates on which you want to amortize premium/discount using Calendar and click Add to Selection. |

- Click **Apply** to navigate to the **Product Characteristics** section.

Figure 5-98 Product Characteristics



- Enter the Product Characteristics shown in the following table:

Table 5-25 List of Product Characteristics details used for Creating Cash Flow Process

| Parameter | Description |
|--------------------------|--|
| Product Hierarchy Folder | You can specify some processing parameters at product-currency combination. Select the Folder from the Product Hierarchy Folder list. |
| Product Hierarchy | Select the Product Hierarchy on which you want to specify parameters. To add a Product Hierarchy, follow these steps: <ul style="list-style-type: none"> a. Click Add button next to the Product Hierarchy field. b. Select one or more products using the corresponding check-box and click Done. |

10. After clicking Add, the list of product is displayed with the following details:

Table 5-26 Product Selection Details

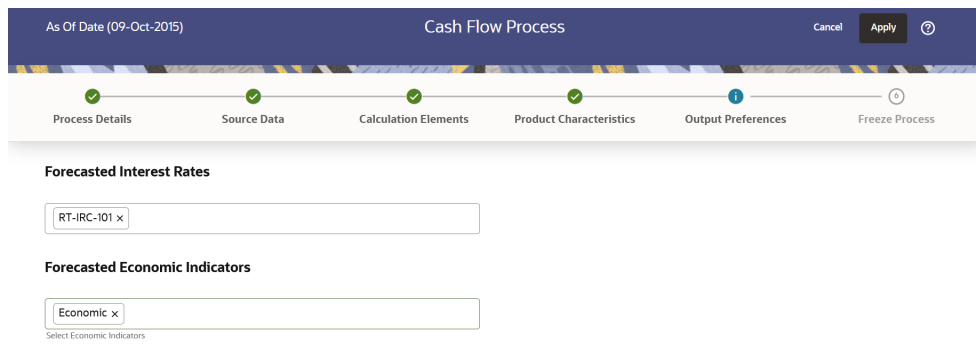
| Parameter | Description |
|----------------------------|---|
| Product | Shows the selected product details. |
| Currency | Shows the currency of the selected product. |
| Include Accrued Interest | Yes or No status of Include Accrued Interest. The basis on which the interest accrual on an account is calculated. |
| Interest Credited | Yes or No status of Interest Credited. This option shows the interest payments to be capitalized as principal on simple or non-amortizing instruments. |
| Model With Gross Rates | If the institution has outsourced loan serving rights for some of the assets (most typically mortgages), the rates paid by customers on those assets (gross rates) are greater than the rates received by the bank (net rates). For these instruments, both a net and gross rate is calculated within the cash flow engine and both gross and net rate financial elements are the output. The gross rate is used for prepayment and amortization calculations. The net rate is used for income simulation and the calculation of retained earnings in the auto-balancing process. |
| Holiday Calculation option | Shows the list of calculation options Shift dates Only and Recalculate Payment. |
| Holiday Calendar | Shows the list of holiday calendar. You can select one. |

Table 5-26 (Cont.) Product Selection Details

| Parameter | Description |
|----------------------------|--|
| Holiday Rolling Convention | <p>The default value is Unadjusted and is enabled, only when Holiday Calendar is selected. This can have the following values:</p> <ul style="list-style-type: none"> • Actual/Un-adjusted: Payment on an actual day, even if it is a non-business day. • Following Business Day: The payment date is rolled to the next business day. • Modified following business day*: The payment date is rolled to the next business day unless doing so would cause the payment to be in the next calendar month, in which case the payment date is rolled to the previous business day. • Previous business day: The payment date is rolled to the previous business day. • Modified previous business day*: The payment date is rolled to the previous business day unless doing so would cause the payment to be in the previous calendar month, in which case the payment date is rolled to the next business day <p>Many institutions have month-end accounting procedures to use this.</p> |

11. Click **Apply** to navigate to the **Output Preferences** section.

Figure 5-99 Output Preferences



12. Enter the Output Preferences details shown in the following table

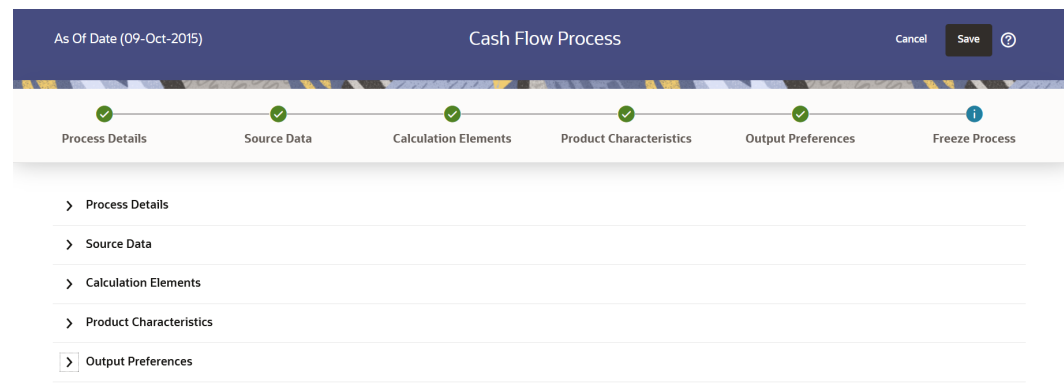
Table 5-27 List of Output Preferences details used for Creating Cash Flow Process

| Parameter | Description |
|-------------------------|--|
| Forecast Interest Rates | Select the Interest Rate Curves for which you want the engine to write forecasted interest rates in the database table |

Table 5-27 (Cont.) List of Output Preferences details used for Creating Cash Flow Process

| Parameter | Description |
|------------------------------|---|
| Forecast Economic Indicators | Select the Economic Indicators for which you want the engine to write forecasted interest rates in the database table |

13. Click **Apply** to navigate to the **Freeze Process** section.

Figure 5-100 Freeze Process

14. Verify the changes and click **Save**.

5.3.6.2 Executing Cash Flow Process

You can execute Cash Flow process using following methods:

- [Cash Flow Process UI](#)
- [Scheduler Service](#)

5.3.6.2.1 Using Cash Flow Process UI

To execute the cash flow process, follow these steps:

- Navigate to the **Cash Flow Process Summary** page.
- Search for a Cash Flow Process .
- Click on the **Action** icon against the Cash Flow Process Name and select **Execute** to execute an existing Cash Flow Process . The Run Parameter Execution window is displayed.
- Select the **As of Date (Execution Date)** and **Legal Entity**, and then click **Run**.

 **Note:**

You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected then data of selected entity along with its child and descendants are processed.

- The **Cash Flow Process Run Confirmation** page is displayed. The status of the process is displayed in the **Status** column. After completion of the process, you can navigate to the Execution Details page by selecting the **Execution Details** option under the Action column.

 **Note:**

You can view the results of running a Cash Flow Process before the system updates the underlying records in the Instrument tables, provided you selected Preview Mode while defining it. If the runs in Preview Mode, query the FSI_CFE_MESSAGES_MLS table for any generated errors.

5.3.6.2.2 Using Scheduler Service

To execute the cash flow process, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Define a new batch.
3. Enter the **Batch Name** and **Description**, and then Save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from Batch drop-down list on Define Task window.
6. Click the **Add** button.
7. Define the Task Code, Task Name, and Description.
8. Select Components as “Cash Flow Process”.
9. Input the following mandatory parameters:
 - Process Name
 - Legal Entity Hierarchy
 - Legal Entity
10. Save and Execute the batch with Batch ID and MIS Date.

For more information, see the [Scheduler Service](#).

5.3.6.3 View Cash Flow Process Log

To view the execution details of the Cash Flow Process, follow these steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Search for a Cash Flow Process .

3. Click on the **Action** icon against the Cash Flow Process Name and select **Execution Details** . The **Execution Details** window is displayed.
4. Click any **Execution ID** to view the log details. The **Log Viewer** window shows the complete details of process along with Batch Run ID information.
5. Click **Export** to download the cash flow output details in csv format. This will fetch the Cash Flow Process Output from the `fsi_o_cfe_output_hist` table and store it in Object Store. Navigate to Data Management Tools > Data File Administration > File Upload and Download UI to download the csv file(s). More than one file can get created if volume is high. Number of records in each file depends on the value set for property Export File Row Count in Maintenance > Preferences.

5.3.6.3.1 Cash Flow Process Errors

Note:

- Error: Engine does not process, however sometimes default value can get used for calculations.
- Warning: Engine may use the default value or given wrong data for calculation, results may be incorrect.
- Info: Does not impact any processing but results may not be as expected.

The following table stores the processing error messages generated by the engine:

Table 5-28 List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 300 | Functionality Not Implemented | Error |
| 301 | Invalid Data | Error |
| 302 | Principal Cash Flow Not Handled for this Amortization Type | Warning |
| 303 | Invalid record: Account Number is mandatory | Error |
| 304 | Invalid value for Adjustable Type, Fixed Rate used | Warning |
| 305 | Invalid value for amortization term, Number of months between Origination and maturity date used | Warning |
| 306 | Invalid value for amortization term multiplier, Months (M) used | Warning |
| 307 | Invalid value for Instrument Type; Loan Contracts (180) used | Warning |
| 308 | Invalid value for original term; Number of months between Origination and maturity date used | Warning |
| 309 | Invalid value for original term multiplier; Months (M) used | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 310 | Missing or invalid data version number. Default value 1 used | Warning |
| 311 | Invalid value for Model with Gross Rates, account processed with net interest rate | Warning |
| 312 | Invalid value for Interest Capitalization Indicator, account processed without interest capitalization | Warning |
| 313 | Invalid value for Include Accrued Interest in cash flow, account processed without using given accrued interest. Accrued Interest > 0 but not used | Warning |
| 314 | Invalid value for Amortization Type; processed as simple interest or non-amortizing | Warning |
| 315 | Invalid record: End of Period Principal Balance (CUR_PAR_BAL) is zero or missing; Account not processed | Error |
| 316 | Invalid record: Accrued Interest Net <> 0 and (Last_payment_date < As_of_date) for Behavior pattern record. Accrued interest may be overstated | Warning |
| 317 | Original Principal Balance is zero/negative or missing; End of Period Principal Balance (CUR_PAR_BAL) used | Warning |
| 318 | Invalid record: Behavior Type Code is mandatory | Warning |
| 319 | Invalid record: Calculation date range is mandatory | Error |
| 320 | Invalid record: As of Date is mandatory | Warning |
| 321 | Invalid record: Origination date is mandatory | Error |
| 322 | Invalid record: Maturity date is mandatory; Account not processed; | Warning |
| 323 | Issue date cannot be greater than As-of-date; As-of-date used | Error |
| 324 | Issue date can not be greater than origination date; Origination date used | Error |
| 325 | Issue date not given; Origination date used | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 326 | Remaining Number of Payments is 1 but Next Payment Date and Maturity Date are different. Payment processed on Maturity Date | Warning |
| 327 | Invalid value for accrual basis; Processed using 30/360 | Warning |
| 328 | Invalid value of net interest rate; Processed using 0% interest rate | Warning |
| 329 | Invalid value for compounding basis; Processed as simple interest | Warning |
| 330 | Model with Gross Rates Indicator is GROSS but gross interest rate is not given; Processed using net interest rate | Warning |
| 331 | Current Payment cannot be less than 0; 0 used; | Warning |
| 332 | Invalid Last Interest Payment date; "Next Interest Payment Date minus Interest payment frequency" used. | Warning |
| 333 | Invalid next interest payment date; "Origination date + 1" or "As-of-date + 1" used. | Warning |
| 334 | Invalid original interest payment date; "Origination date + Interest Payment frequency" used. | Warning |
| 335 | Invalid value for interest payment frequency; Number of months between Origination and maturity date used; | Warning |
| 336 | Invalid value for interest payment frequency multiplier; Months (M) used; | Warning |
| 337 | Invalid value for Remaining Number of Payments; Default value 1 used; | Warning |
| 338 | Invalid Last Interest Payment date; "Origination Date" used. | Warning |
| 339 | Invalid Last Principal Payment date; "Next Principal Payment Date minus Principal payment frequency" used | Warning |
| 340 | Invalid Last Principal Payment date; "Origination Date" used. | Warning |
| 341 | Invalid Last Principal Payment date; Last Interest Payment Date used for conventional amortization types | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 342 | Invalid next principal payment date; "Origination date + 1" or "As-of-date + 1" used | Warning |
| 343 | Invalid Next Principal Payment date; Next Interest Payment Date used for conventional amortization types | Warning |
| 344 | Invalid original principal payment date; "Origination date + Interest Payment frequency" used. | Warning |
| 345 | Invalid Original Principal Payment date; Original Interest Payment Date used for conventional amortization types | Warning |
| 346 | Invalid value for principal payment frequency; Number of months between Origination and maturity date used; | Warning |
| 347 | Invalid value for principal payment frequency; Interest Payment Frequency used for conventional amortization types | Warning |
| 348 | Invalid value for interest payment frequency multiplier; Months (M) used; | Warning |
| 349 | Invalid value for interest payment frequency multiplier; Interest Payment Frequency Multiplier used for conventional amortization types | Warning |
| 350 | Invalid Account Type, Account type defaults to Earning Assets. | Warning |
| 351 | Invalid record: Payment type and/or amount is mandatory | Warning |
| 352 | Invalid record: Payment Date is mandatory | Warning |
| 353 | Invalid record: Payment type is Principal and Interest but Total Amount (TOT_AMOUNT) is missing | Error |
| 354 | Invalid record: Payment type is Principal Only but Principal Payment Amount (PRIN_AMOUNT) is missing | Error |
| 355 | Invalid record: Payment type is Interest Only but Interest Payment Amount (INT_AMOUNT) is missing. | Error |
| 356 | Invalid payment pattern: Payment Pattern Sub Type is not given | Error |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---|
| 357 | Invalid payment pattern: Payment Pattern | Payment Type is not given |
| 358 | Invalid payment pattern: Payment | event id is not given |
| 359 | Invalid payment pattern: Pattern | type or sub type is Relative but frequency multiplier is not given |
| 360 | Invalid payment pattern: Pattern | type is Absolute but event month is not given |
| 361 | Invalid payment pattern: Pattern | payment method is not given |
| 362 | Invalid payment pattern: Payment | Pattern Type is not given |
| 363 | Invalid payment type code in | payment pattern: Payment Type 300 (interest only) used; |
| 364 | Invalid payment pattern: Pattern | type or sub type is Relative but frequency is not given |
| 365 | Invalid payment pattern: Pattern | type is Absolute but event day is not given |
| 366 | Invalid payment pattern: Pattern | type is Split but split id is not given |
| 367 | Invalid payment pattern: Pattern | type is Split but percentage of split is not given |
| 368 | Invalid payment pattern: Pattern | type or sub type is Relative but payment event repeat is not given |
| 369 | Invalid payment pattern: Pattern | Events not given |
| 370 | Invalid value for holiday | calculation option; processed as Shift Dates. |
| 371 | Holiday Calculation Option can | only be Recalculate when accrual basis is B/252 |
| 372 | Invalid value for holiday calendar | code; Holiday adjustment not applied or details from process level parameters used; |
| 373 | Holiday Calendar Code is | mandatory when accrual basis is B/252. Holiday details from process level parameters or A/A used. |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 374 | Invalid value for holiday rolling convention; Holiday adjustment not applied; | Warning |
| 375 | Holiday Rolling Convention Code is mandatory when accrual basis is B/252. Following business day used. | Warning |
| 376 | Reprice frequency is > 0 and calculation date range is last reprice to next reprice date but balance on last reprice date is not available; Processed using End of Period Principal Balance; | Warning |
| 377 | Invalid value for margin type code; Default value RATE (0) used; | Warning |
| 378 | Invalid value for net margin code; Default value NRSB (0) used; | Warning |
| 379 | Invalid value for next reprice date; Default value Origination date + 1 or As-of-date + 1 used; | Warning |
| 380 | Invalid value for last reprice date; Default value Next Reprice Date minus Reprice Frequency used; | Warning |
| 381 | Warning: Negative Amortization Equalization Frequency cannot be negative; 0 used. | Warning |
| 382 | Warning: Invalid Negative Amortization Equalization Frequency Multiplier; Months used. | Warning |
| 383 | Warning: Negative Amortization Payment Change Frequency cannot be negative; 0 used. | Warning |
| 384 | Warning: Invalid Negative Amortization Payment Change Frequency Multiplier; Months used. | Warning |
| 385 | Warning: Negative Amortization Limit value does not fall in a valid range 0-200; 0 used. | Warning |
| 386 | Warning: Negative Amortization Equalization date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used. | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 387 | Warning: Negative Amortization Equalization date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used. | Warning |
| 388 | Warning: Negative Amortization Payment Adjustment date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used. | Warning |
| 389 | Warning: Negative Amortization Payment Adjustment date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used. | Warning |
| 390 | Warning: Negative Amortization payment change limit cannot be negative; Limit not applied. | Warning |
| 391 | Maturity date of account is different from highest payment date in schedule; Dates from schedule used; | Warning |
| 392 | Remaining Number of Payments given with account is different from count of payment dates after as of date in schedule; Dates from schedule used; | Warning |
| 393 | Invalid value for next reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency; | Warning |
| 394 | Invalid record: Maturity date is prior to As of date; Account not processed; | Warning |
| 395 | Invalid record: Maturity date is prior to Origination date; Account not processed; | Warning |
| 396 | Invalid record: Payment dates in schedule are prior to As of date; Account not processed; | Warning |
| 397 | Principal balance is not zero but maturity date is prior to as of date; Maturity date defaulted to As of date + 1 | Warning |
| 398 | Principal balance is not zero but maturity date is prior to origination date; Maturity date defaulted to As of date + 1 | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 399 | Next reprice date is after maturity date; Defaulted to maturity date; | Warning |
| 400 | Invalid value for last reprice date; Default value Origination Date used; | Warning |
| 401 | Invalid value for Adjustable Type; Calculation date range is AOD to NRD or LRD to NRD but adjustable Type of account is Fixed. Account not processed. | Warning |
| 402 | Adjustable Type of account is Floating or Other Adjustable but repricing frequency multiplier is not given or is not valid; Months (M) used; | Warning |
| 403 | Adjustable Type of account is Floating or Other Adjustable but Interest Rate Code is not given or is not valid; Processed with Interest Rate Code 0. | Warning |
| 404 | Adjustable Type of account is Floating or Other Adjustable but repricing frequency is not given or is not valid; Processed with fixed interest rate. | Warning |
| 405 | Adjustable Type of account is repricing pattern but repricing pattern code is not given or is not valid; Processed with fixed interest rate. | Warning |
| 406 | Interest timing type not given; Interest In Arrears used; | Warning |
| 407 | Interest timing type cannot be advance when amortization is conventional type; Interest In Arrears used; | Warning |
| 408 | Amortization Type of account is payment pattern but pattern code is not given or is not valid; Processed as non-amortizing instrument. | Warning |
| 409 | Accrual basis is B/252 but holiday adjustment is not enabled. A/A used. | Warning |
| 410 | Amortization Type of account is payment schedule but schedule data is not given; Processed as non-amortizing account. | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 411 | Invalid value for next reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency; | Warning |
| 412 | Invalid value for last reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency; | Warning |
| 413 | Teaser End Date is after Maturity Date; Value defaulted to Maturity Date; | Warning |
| 414 | Teaser End Date is before Origination Date; Value defaulted to Origination Date; | Warning |
| 415 | Invalid Mortgage Offset Account Expected Balance as Expected Balance (MOA_EXPECTED_BAL) is empty or <= 0, Processed as normal instrument. | Warning |
| 416 | Invalid Mortgage Offset Account Expected Balance Growth Percentage (MOA_EXPECTED_BAL_GROWTH_PCT), Processed with default value of 0. | Warning |
| 417 | Invalid Mortgage Offset Account Expected Balance on last reprice date (MOA_LRD_OFFSET_BAL), Processed using default value as MOA_EXPECTED_BAL | Warning |
| 418 | Invalid Mortgage Offset Account Minimum Balance (MOA_MIN_BAL), Processed with default value of 0. | Warning |
| 419 | Invalid Mortgage Offset Percent (MOA_OFFSET_PERCENT), Processed with default value of 100 | Warning |
| 420 | Invalid Mortgage Offset Account Original Expected Balance (MOA_ORG_OFFSET_BAL),but since calculation date range is Origination to Maturity, Processed as normal instrument. | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 421 | Invalid Mortgage Offset Account Original Expected Balance (MOA_ORG_OFFSET_BAL). but since calculation date range is other than Origination to Maturity, Process account with considering the mortgage offset account as Original Expected Balance doesnt impact on MOA calculations. | Warning |
| 422 | One or more required inputs are missing for factors calculation using arc tangent method | Warning |
| 423 | Cannot generate prepayment factors dates if PaymentDates are not provided | Warning |
| 424 | Cannot generate early redemption dates if PaymentDates are not provided | Warning |
| 425 | user tenor rules are not defined in prepayment meta data | Warning |
| 426 | conditions are not satisfied to apply early redemption on user defined tenors | Warning |
| 427 | Cannot generate prepayment factors dates if PaymentDates are not provided; | Warning |
| 428 | Behavior pattern is not applicable when calculation data range is Origination to Maturity. Generated cash flows from As of date to maturity | Warning |
| 429 | Behavior pattern is not applicable when calculation data range is Last Reprice to Next Reprice Date. Generated cash flows from As of date to Next Reprice Date | Warning |
| 430 | Maturity Date < Max Date of Pattern, Maturity Date set to Max Tenor of behavior pattern | Warning |
| 431 | Invalid value for Behavior Sub Type of account having devolvement & recovery or non-performing behavior type; Account not processed; | Error |
| 432 | Invalid value for devolvement status of account; Account not processed; | Error |
| 433 | Devolvement amount cannot be negative when devolvement status of account is devolved; Default value of 0 used; | Error |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 434 | Invalid value for Behavior Type of account; Processed using behavior type from pattern definition. | Warning |
| 435 | Invalid behavior pattern: Behavior Type is not given or is incorrect; Behavior pattern not used; Processed as non-amortizing instrument; | Warning |
| 436 | Invalid behavior pattern: Behavior Sub Type is not given or is incorrect; Behavior pattern not used; Processed as non-amortizing instrument; | Warning |
| 437 | Invalid behavior pattern: Tenor multiplier is not given; Processed as non-amortizing instrument; | Error |
| 438 | Invalid behavior pattern: Tenor is not given; Processed as non-amortizing instrument; | Error |
| 439 | Invalid behavior pattern: Percentage is not given; Processed as non-amortizing instrument; | Error |
| 440 | Invalid behavior pattern: Sequence is not given; Processed as non-amortizing instrument; | Error |
| 441 | Behavior Type definition is inconsistent between the Behavior Pattern and BEHAVIOR_TYPE_CD of account. Defaulted to the Behavior Type specified in the Behavior Pattern. | Warning |
| 442 | Interest in advance is not supported for behavior patterns, defaulting to Interest in Arrears | Warning |
| 443 | No prepayment parameter is found for payment date | Warning |
| 444 | Cannot generate early redemption prepayment rates if payment dates are not provided or calculation method is not Constant | Warning |
| 445 | Invalid value for Exchange of Principal flag for Off-balance sheet product; Processed with No Exchange of Principal | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 446 | Invalid value for Exchange of Principal flag for Off-balance sheet product; Processed with Leg Type 0 | Warning |
| 447 | Invalid value for Minimum Balance for Amortizing Swap; Processed with value 0 | Warning |
| 448 | Invalid value for purchase sale logic of Off-balance sheet product; Processed as sold contract (1) | Warning |
| 449 | Invalid value for swap classification code; Processed as generic swap (0) | Warning |
| 450 | Invalid Last Reprice Date for Forward Rate Agreement; Processed using Origination Date | Warning |
| 451 | Invalid Repricing Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier | Warning |
| 452 | Invalid Next Reprice Date for Forward Rate Agreement; Processed using Origination Date; | Warning |
| 453 | Invalid Repricing Frequency for Forward Rate Agreement; Processed using Original Term; | Warning |
| 454 | Invalid Exchange of Principal flag for Forward Rate Agreement; Processed using No Exchange of Principal | Warning |
| 455 | Invalid Interest Timing Type for Forward Rate Agreement; Processed as Interest in advance | Warning |
| 456 | Invalid Adjustable Type for Forward Rate Agreement; Processed as Other Adjustable (250); | Warning |
| 457 | Invalid Origination Date for Forward Rate Agreement; Processed with value As of Date + 1; | Warning |
| 458 | Invalid Maturity Date for Forward Rate Agreement; Processed using Origination Date + Original Term; | Warning |
| 459 | Invalid Remaining Number of Payments for Forward Rate Agreement; Processed using 1 | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 460 | Invalid Next Interest Payment Date for Forward Rate Agreement; Processed using Origination Date | Warning |
| 461 | Invalid Next Principal Payment Date for Forward Rate Agreement; Processed using Origination Date | Warning |
| 462 | Invalid Original Interest Payment Date for Forward Rate Agreement; Processed using Origination Date | Warning |
| 463 | Invalid Original Principal Payment Date for Forward Rate Agreement; Processed using Origination Date | Warning |
| 464 | Invalid Last Interest Payment Date for Forward Rate Agreement; Processed using Origination Date; | Warning |
| 465 | Invalid Interest Payment Frequency for Forward Rate Agreement; Processed using Original Term | Warning |
| 466 | Invalid Interest Payment Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier | Warning |
| 467 | Invalid Principal Payment Frequency for Forward Rate Agreement; Processed using Original Term | Warning |
| 468 | Invalid Principal Payment Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier | Warning |
| 469 | Invalid Amortization Type for Forward Rate Agreement; Processed as non-amortizing (700) instrument; | Warning |
| 470 | Invalid value for Exchange of Principal flag for Foreign Exchange instrument; Processed with Exchange of Principal; | Warning |
| 471 | Invalid Amortization Type for Foreign Exchange instrument; Processed as non-amortizing (700) instrument; | Warning |
| 472 | Invalid Adjustable Type for Foreign Exchange instrument; Processed as Fixed; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 473 | Invalid Interest Timing Type for Foreign Exchange instrument; Processed as Interest in arrears; | Warning |
| 474 | Invalid current gross interest rate for Foreign Exchange instrument; Processed with no interest; | Warning |
| 475 | Invalid current net interest rate for Foreign Exchange instrument; Processed with no interest; | Warning |
| 476 | Invalid remaining number of payments for Foreign Exchange Contract; Processed with 1 remaining payment; | Warning |
| 477 | Invalid Next Interest Payment Date for Foreign exchange contract; Processed using Maturity Date; | Warning |
| 478 | Invalid Next Principal Payment Date for Foreign exchange contract; Processed using Maturity Date; | Warning |
| 479 | Invalid Original Interest Payment Date for Foreign exchange contract; Processed using Maturity Date; | Warning |
| 480 | Invalid Original Principal Payment Date for Foreign exchange contract; Processed using Maturity Date; | Warning |
| 481 | Invalid Next Reprice Date for Foreign exchange contract; Processed using Maturity Date; | Warning |
| 482 | Invalid Repricing Frequency for Foreign Exchange Contract; Processed using Original Term; | Warning |
| 483 | Invalid Repricing Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier; | Warning |
| 484 | Invalid Interest Payment Frequency for Foreign Exchange Contract; Processed using Original Term; | Warning |
| 485 | Invalid Interest Payment Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier; | Warning |
| 486 | Invalid Principal Payment Frequency for Foreign Exchange Contract; Processed using Original Term; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 487 | Invalid Principal Payment Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier; | Warning |
| 488 | Invalid Last Interest Payment Date for Foreign Exchange Contract; Processed using Origination Date; | Warning |
| 489 | Invalid Last Reprice Date for Foreign Exchange Contract; Processed using Origination Date; | Warning |
| 490 | Invalid End of Period Principal Balance for Foreign Exchange Swap; Processed using no balance; | Warning |
| 491 | Invalid Original Principal Balance for Foreign Exchange Swap; Processed using no balance; | Warning |
| 492 | Invalid value for next reprice date for a teaser instrument; Defaulted to Teaser End Date; | Warning |
| 493 | Repricing pattern can not be used for teaser instrument; | Warning |
| 494 | Interest timing type cannot be advance when conventional payment pattern is used, Interest In Arrears used as default; | Warning |
| 495 | Interest timing type cannot be advance when Account Type is Other Asset or Other Liabilities or Non-Interest Income or Non-Interest Expense or Interest Income or Interest Expense, Interest In Arrears used as default; | Warning |
| 496 | Last interest payment date cannot be before Origination Date; Default value Origination Date used; | Warning |
| 497 | Last principal payment date cannot be before Origination Date; Default value Origination Date used; | Warning |
| 498 | Invalid amortization type for Other Asset-Liability; Processed as Non-amortizing instrument; | Warning |
| 499 | Invalid current net interest rate for Other Asset-Liability; Processed without interest and default as 0; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 500 | Invalid current gross interest rate for Other Asset-Liability; Processed without interest and default as 0; | Warning |
| 501 | Invalid adjustable type for Other Asset-Liability; Processed as fixed rate; | Warning |
| 502 | Interest timing type cannot be advance when adjustable type is floating rate, Interest In Arrears used as default; | Warning |
| 503 | Repricing pattern code is empty; | Warning |
| 504 | Adjustable Type of account is Repricing Pattern but Repricing Pattern definition not given. Processed as Other Adjustable (250); | Warning |
| 505 | Repricing Pattern Type Code is invalid in repricing pattern definition. Account not processed; | Error |
| 506 | Repricing Pattern Events UDS is empty | Error |
| 507 | Event Sequence number is invalid in repricing pattern definition. Account not processed; | Error |
| 508 | Repricing Method Code is invalid in repricing pattern definition. Account not processed; | Error |
| 509 | Balance Tier Type Code is invalid in repricing pattern definition. Account not processed; | Error |
| 510 | Event Day is invalid in absolute repricing pattern definition. Account not processed; | Error |
| 511 | Event Month is invalid in absolute repricing pattern definition. Account not processed; | Error |
| 512 | Repricing Pattern EventsDetail UDS is empty | Error |
| 513 | Event Detail Sequence number is invalid in repricing pattern definition. Account not processed; | Error |
| 514 | Repricing method is Indexed but Interest Rate Code is not given in repricing pattern definition. Account not processed; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 515 | Event Frequency is invalid in relative repricing pattern definition. Value assumed to be 1 Month; | Warning |
| 516 | Event Frequency Multiplier is invalid in relative repricing pattern definition. Value assumed to be 1 Month; | Warning |
| 517 | Event Repeat Times is invalid in relative repricing pattern definition. Value assumed to be 1; | Warning |
| 518 | Adjustable type code of account is 300 but corresponding data of balance tiers and rate is not available; Processed with fixed interest rate; | Warning |
| 519 | Invalid amortization type for an account with Balance Tier Interest Rate; Processed as non-amortization instrument; | Warning |
| 520 | Adjustable type of tier cannot be Floating Rate if Interest Timing Type of account is Advance; Processed as Interest in Arrears; | Warning |
| 521 | Adjustable type code of account is 300 but corresponding adjustable type of balance tiers is invalid; Processed tier with fixed interest rate; | Warning |
| 522 | Adjustable type code of balance tier is 250 but next reprice date, last reprice date or reprice frequency are missing; Processed tier with fixed interest rate; | Warning |
| 523 | Sum of current balances of all tiers of account is different from current par balance of account; | Warning |
| 524 | Current balance of tiers of account is not given; Account not processed; | Error |
| 525 | Sum of original par balances of all tiers of account is different from original par balance of account; | Warning |
| 526 | Original par balance of tier not given; End of Period Principal Balance used; | Warning |
| 527 | Invalid Contract Currency Pay for Foreign Exchange Swap; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 528 | Invalid Original Payment Amount Pay for Foreign Exchange Swap; | Warning |
| 529 | Invalid Contract Currency Receive for Foreign Exchange Swap; | Warning |
| 530 | Invalid Original Payment Amount Receive for Foreign Exchange Swap; | Warning |
| 531 | Invalid Exchange Rate Start for Foreign Exchange Swap; | Warning |
| 532 | Invalid Receive CCY for Foreign Exchange Swap; | Warning |
| 533 | Invalid Receive Leg Amount for Foreign Exchange Swap; | Warning |
| 534 | Invalid Pay CCY for Foreign Exchange Swap; | Warning |
| 535 | Invalid Pay Leg Amount for Foreign Exchange Swap; | Warning |
| 536 | Invalid Exchange Rate End for Foreign Exchange Swap; | Warning |
| 537 | Interest timing type cannot be advance when interest is capitalized; Interest In Arrears used; | Warning |
| 538 | Amortization type of Interest Rate Option can only be Non amortizing (700) or Level principal (820); Processed as Non amortizing instrument; | Warning |
| 539 | Binary Rate of Interest Rate Option cannot be less than zero; Processed without binary rate; | Warning |
| 540 | Invalid Interest Calculation Type for Interest Rate Option; Processed with default calculation type; | Warning |
| 541 | Functionality not implemented for Interest Calculation Types Numeric Average, Geometric Average, Range Calculation and Binary Range; Processed with default calculation type; | Warning |
| 542 | Adjustable Type of Interest Rate Option can only be Other Adjustable (250); | Warning |
| 543 | Next Reprice Date of Interest Rate Option must be same as Next Interest Payment Date; | Warning |
| 544 | Last Reprice Date of Interest Rate Option must be same as Last Interest Payment Date; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|--|---------------|
| 545 | Reprice frequency of Interest Rate Option must be same as Interest Payment Frequency; | Warning |
| 546 | Reprice Frequency Multiplier of Interest Rate Option must be same as Interest Payment Frequency Multiplier; | Warning |
| 547 | Adjustable type code for of 78s instrument can only be fixed rate; | Warning |
| 548 | Interest Timing Type of of 78s instrument can only Interest in Arrears; | Warning |
| 549 | Interest payment frequency of of 78s instrument must be 1 month; | Warning |
| 550 | Interest payment frequency multiplier of of 78s instrument must be in Months; | Warning |
| 551 | Principal payment frequency of of 78s instrument must be 1 month; | Warning |
| 552 | Principal payment frequency multiplier of of 78s instrument must be in Months; | Warning |
| 553 | Last Interest and Principal payment date of of 78s instrument must be same; Set Last Principal Payment Date = Last Interest Payment Date | Warning |
| 554 | Next Interest and Principal payment date of of 78s instrument must be same; Set Next Principal Payment Date = Next Interest Payment Date | Warning |
| 555 | Original Interest and Principal payment date of of 78s instrument must be same; Set Original Principal Payment Date = Original Interest Payment Date | Warning |
| 556 | Original Principal Balance of of 78s instrument must be higher than End of Period Principal Balance; | Warning |
| 557 | Original Term Multiplier of of 78s instrument must be in months; | Warning |
| 558 | Original Term of of 78s instrument must be in months; Number of months between Origination and maturity date used; | Warning |
| 559 | Current Payment Amount of of 78s instrument must not be zero; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 560 | Original Payment Amount of of 78s instrument must not be zero; | Warning |
| 561 | Remaining Number of Payments is different from number of months between Last Interest Payment Date and Maturity Date; Cash flows may have error; | Warning |
| 562 | Interest timing type can be Set in Arrears only when calculation date range is As of date to Maturity; Interest In Arrears used; | Warning |
| 563 | Amortization type of instrument can only be Simple Interest when embedded option is applied; Processed as non-amortizing instrument with embedded option; | Warning |
| 564 | Invalid Option Exercise Type; Processed as instrument without embedded option; | Warning |
| 565 | Option start date is required for American options, As of date used; | Warning |
| 566 | Invalid Option Type; Processed as instrument without embedded option; | Warning |
| 567 | Invalid Option Strike Type Code; Processed as instrument without embedded option; | Warning |
| 568 | Invalid Option Rate Lookup Code, Remaining Term used; | Warning |
| 569 | Rate lookup code for fixed rate instrument cannot be reprice frequency, Remaining Term used; | Warning |
| 570 | Invalid Option Strike Interest Rate Code; Processed as instrument without embedded option; | Warning |
| 571 | Option expiry date must be between As-of-date and Maturity date, Processed using Maturity Date as Expiry Date; | Warning |
| 572 | Option Strike Value not given for embedded option, Strike price 100 used; | Warning |
| 573 | Option Strike Value not given for embedded option, Strike rate set same as current net interest rate; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|------------|---|---------------|
| 574 | Embedded options schedule not given for Bermudan option, Processed as instrument without embedded option; | Warning |
| 575 | Option expiry date not given for Bermudan option in schedule; Processed as instrument without embedded option; | Warning |
| 576 | Option expiry date must not be after Maturity date, Processed using Maturity Date as Expiry Date; | Warning |
| 577 | Option Strike Value not given for embedded option, Strike price 100 used; | Warning |
| 578 | Option Strike Value not given for embedded option, Strike rate set same as current net interest rate; | Warning |
| 579 | Either Embedded Option Flag is Not Y or Invalid Option decision type, where instrument is Earning Asset or Interest Bearing Liabilities; | Warning |
| 580 | Invalid Index Adjustment Type. Processed without inflation-adjustment; | Warning |
| 581 | Account Index History not been given for inflation adjusted instrument. Processed without inflation-adjustment; | Error |
| 582 | Base Index Value not been given for inflation adjusted instrument. Processed without inflation-adjustment; | Error |
| 583 | Invalid Capital Protection Category for inflation indexed instrument. Processed with floor of 1; | Warning |
| 584 | Capital Protection Category for inflation indexed instrument is Max during life but Max Index Value is invalid; Processed with Capital Protection Category as Floor or 1; | Warning |
| 585 | Invalid Option decision type, where Embedded Option Flag is enabled, Processed as instrument without embedded option; | Warning |

Table 5-28 (Cont.) List of Error Codes for Cash Flow Process

| Error Code | Error Type | Error Message |
|-------------------|--|----------------------|
| 586 | Invalid Account Type, for embedded option, Processed as instrument without embedded option | Warning |
| 587 | Invalid DiscountMethod Sys Id, for embedded option, Processed as instrument without embedded option; | Warning |
| 588 | Invalid value for Amortization Method for Premiums and Discounts; Level Yield method used | Warning |
| 589 | Batch size is empty | Warning |
| 590 | Request ID is empty | Warning |
| 591 | Invalid Interest rate code | Warning |

6

Operations

This chapter covers the following topics:

1. **Scheduler Services:** The Scheduler Service is a service that automates behind-the-scenes work that is necessary to sustain various enterprise applications and functionalities. This automation helps the applications to control unattended background jobs program execution.
2. **Object Migration:** Object Migration is the process of defining, exporting and importing objects across environments (prod and non-prod)/instances. This feature also facilitates to migrate within the same setup or different setups.
3. **View Logs:** This module discusses the procedure to view the information about high-level processing steps from User Interface.

6.1 Scheduler Services

The Scheduler Service is a service that automates behind-the-scenes work that is necessary to sustain various enterprise applications and their operations. This automation helps the applications to control unattended background jobs program execution.

You can perform the following operations using Scheduler Services utility:

- **Define Batch** - A Batch contains a group of background tasks that are executed together, on a specific date and time during which the resources are available for batch processing.
- **Define Task** - A batch job is a piece of a program meant to meet specific and business-critical functions. The program is a REST API used in a batch.
- **Schedule Batch** - Batch jobs are scheduled to automate the tasks to be processed on a regular basis but don't necessarily need to occur during the day or have an employee interacted with the system are batch schedule. Jobs that happen on a regular basis are incorporated into batch schedules. You can also execute a Batch instantaneously and schedule batches.
- **Monitor Batch** - Track your batch executions using a Web browser. You can access the real-time feedback on the status of the current encoding job and lists the jobs pending in the batch. You can also **Cancel** or **Restart** the service when required.
- **Scheduler Service Dashboard** - The Scheduler Service Dashboard gives the complete status of the Executed Runs, Successful Runs, Failed Runs, Ongoing Runs, Interrupted Runs, and the Upcoming Runs.
- **External Scheduler Interface:** PBSM Cloud Services allows you to run your batches with an external scheduler.

6.1.1 Accessing Scheduler Services

Using the Scheduler Service feature, you can create and execute batches and schedules to run various tasks and also monitor them.

To access the Scheduler Service feature, from the left Navigation pane in the Service console, click **Operations and Processes > Scheduler**.

6.1.2 User Roles and Functions

The following roles and functions are required to use Scheduler Services, and create and manage Batches and tasks, and also use Scheduler Service Dashboard.

Role Codes

- BATCH_READ
- BATCH_WRITE
- BATCH_ADV
- BATCH_AUTH
- BATCH_OPER
- BATCH_MAINT

Function Codes

- BATCH_ADD
- BATCH_DEL
- BATCH_MOD
- BATCH_VIEW
- BATCH_SCH
- BATCH_SUMM
- BATCH_AUTH
- BATCH_PURGE
- BATCH_MON
- BATCH_EXEC
- BATCH_COPY

6.1.3 Define Batch

A Batch contains a group of background tasks that are executed together, on a specific date and time during which the resources are available for batch processing.

Batch Groups are a set of batches that are required to be execute together. Batch groups help to process Date and time-based background tasks based on a defined period during which the resources were available for Batch Processing.

To access the **Define Batch** page, from the left Navigation pane in the application console, click **Operations and Processes > Scheduler > Define Batch**.

The **Scheduler Service Summary Page (Define Batch)** with the list of Batches and Batch Groups is displayed. You can view the following details related to each Batch/Batch Group.

- **Batch ID** - The unique Alphanumeric Code assigned to a specific Batch.
- **Name** - The unique Batch Name.
- **Description** - The brief description of the Batch.
- **Last Modified** - The last modified By User, Date and Time details.

To search for a specific Batch/Batch Group, enter the keywords in the **Search** Field and click **Search**. You can search based on the Batch/Batch group name, code and description. You can also sort the Batch/Batch group list based on Code, Name, Created Date and Last Modified Date.

You can perform the following operations to manage Batch/Batch Groups, from the **Scheduler Service Summary (Define Batch)** page.

- [Create New Batch](#)
- [Create New Batch Group](#)
- [Edit a Batch](#)
- [Edit a Batch Group](#)
- [Copy a Batch](#)
- [Copy a Batch Group](#)
- [Delete a Batch](#)
- [Delete a Batch Group](#)

6.1.3.1 Creating a Batch

A Batch contains a group of background tasks that are executed together, on a specific date and time, when the resources are available for batch processing.

Refer to the following steps, to create a batch from the **Scheduler Service Summary (Define Batch)** page.

1. To create a new Batch, click the **Action** and click **Create**.

The **Create Batch Page** is displayed.

Enter the following **Batch Details** :

- **Code** - Enter a Unique Alphanumeric Code for the new Batch.
The Code name always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
- **Batch Name** - Enter a unique name for the new batch.
The Code name always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
- **Batch Description** - The description/details for the batch.
The description should start with alphabet and should not be more than 250 characters.
- **Service URL Name/ Service URL** - Select the **Service URL Name** from the drop-down list.

You can also enter the **Service URL Name** and associated URL is displayed in the **Service URL**. You can also provide the partial URL here and the complete URL in the Task Service URL.

2. After entering the Batch Details, provide the following Batch Parameters.

From the Batch Parameters pane, click **Add** to add a new Batch Parameter. By default, **\$FICMISDATES\$** and **\$BATCHRUNID\$** are added as Batch Parameters.

- **Parameter Name** - A valid parameter name for the new Batch parameter.
- **Parameter Value** - A valid Parameter Value required for Batch execution.

 **Note:**

Enclose the Parameter Value for a Run time with \$ symbol. For example, \$paramName\$.

To delete a Batch parameter, click **Delete** next to that Parameter details.

3. Enter the following **Header Parameter** details.
 - **Parameter Name** - A valid parameter name for the new header parameter.
 - **Parameter Value** - A valid Parameter Value required for Batch execution.
4. Click **Save**. The new Batch is created and displayed in the **Scheduler Services (Define Batch)** Page.

6.1.3.2 Creating a Batch Group

You can create a new Batch Group in the Define Batch Page and schedule and monitor the Batch Group that you created.

To create a new Batch Group, perform the following steps:

1. To create a new Batch, click the **Action** and click **Create**.

The **Create Batch Page** is displayed.

Enter the following **Batch Details** :

- **Code** - Enter a Unique Alphanumeric Code for the new Batch group. The Code name always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
 - **Batch Name** - Enter a unique name for the new batch group. The Code name always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
 - **Batch Description** - The description/details for the batch group. The description should start with alphabet and should not be more than 250 characters.
2. Select **Batch Group** option.
 3. Select the Batches to be grouped together for processing, from the drop-down list.
 4. Click **Save**.

The new Batch Group is created and added to the **Scheduler Services (Define Batch)** page.

6.1.3.3 Editing a Batch

The **Edit Batch** option allows you to edit the Batch details such as Batch Description, Service URL Name and Service URL and also add a new Batch Parameter.

Seeded batches cannot be edited.

1. In the **Scheduler Services (Define Batch)** Page, click **Edit** corresponding to the Batch you want to modify.

The Edit Batch Page is displayed.

2. Modify the required **Batch** details.

For more information, see [Create New Batch](#).

3. Click **Save**.

The edited batch is saved and displayed in the **Scheduler Services (Define Batch)** Page.

6.1.3.4 Editing a Batch Group

The Edit Batch Group option allows you to edit the Batch Group details such as Batch Group Name, Added Batches, and Batch Group Description.

To modify a Batch Group, perform the following steps:

1. In the **Scheduler Services (Define Batch)** Page, click **Batch Group** option to list the Batch Groups.

2. Click **Edit** corresponding to the Batch Group you want to modify.

3. Modify the required Batch Group details.

For more information, see [Create New Batch Group](#) section.

4. Click **Save**.

The edited Batch Group is saved and updated in the **Scheduler Services (Define Batch)**.

6.1.3.5 Copying a Batch

The Copy Batch option allows you to copy a Batch that you want to clone or create instances in the system from the Define Batch Window.

To copy a Batch, perform the following steps:

1. In the **Scheduler Services (Define Batch)** Page, click **Copy** corresponding to the Batch that you want to copy.

The Copy Batch Page is displayed.

2. Specify the Batch details as you want to clone and copy the existing batch.

For more information, see [Create New Batch](#) section.

3. Click **Save**.

The copied batch is saved and displayed in the **Scheduler Services (Define Batch)** Page.

6.1.3.6 Copying a Batch Group

The Copy Batch group option allows you to copy a Batch group that you want to clone or create instances in the system from the Define Batch Page.

To copy a Batch Group, perform the following steps:

1. In the **Scheduler Services (Define Batch)** Page, click **Copy** corresponding to the Batch group that you want to copy.

The Copy Batch group Page is displayed.

2. Specify the Batch group details as you want to clone and copy the existing batch group.

For more information, see [Copy a Batch Group](#) section.

3. Click **Save**.

The copied batch group is saved and displayed in the **Scheduler Services (Define Batch)** Page.

6.1.3.7 Deleting a Batch

The Delete Batch option allows you to delete a Batch that are no longer required in the system from the Define Batch Page.

Seeded batches cannot be deleted.

To delete a Batch, perform the following steps:

1. From the **Scheduler Services (Define Batch)** Page, click **Delete** corresponding to the Batch you want to delete.
2. Click **OK** to confirm deletion.

Note:

If the batch has any active schedules all the associated schedules of the batch are also deleted, after confirmation.

6.1.3.8 Deleting a Batch Group

The Delete Batch group option allows you to delete a Batch group that are no longer required in the system from the Define Batch page.

Seeded batches cannot be deleted.

To delete a Batch Group, perform the following steps:

1. From the **Scheduler Services (Define Batch)** Page, click **Delete** corresponding to the Batch group you want to delete.
2. Click **OK** to confirm deletion.

 **Note:**

If the batch group has any active schedules all the associated schedules of the batch are also deleted, after confirmation.

6.1.4 Define Tasks

The Define Tasks Page provides the list of tasks associated with a specific Batch Definition. You can create new tasks, and edit or delete existing tasks .

To access the **Define Task** page, from the left Navigation pane in the Service console,

1. From the left menu, click **Operations and Processes**.
2. Select **Define Task**, to view the page.
3. Select Batch/Batch Group from the drop-down list and select the particular batch/batch group.
The list of tasks associated with the specific batch/batch group is displayed. You can view the following details related to each task.
 - Task ID
 - Name
 - Parent Task
 - Component
 - Created Date
 - Last Modified

To search for a specific task, enter the keywords in the **Search** Field and click **Search**. You can search based on the Task Name, code and description. You can also sort the Task list based on Name Precedence, Component, Created Date and Last Modified Date.

You can perform the following operations to manage a Task, from the **Scheduler Service Summary (Define Task)** page.

- [Add a task](#)
- [Modify a task](#)
- [Define a task precedence](#)
- [Delete a task](#)

6.1.4.1 Adding a Task

Adding a new task option allows you to add new tasks to a selected Batch Definition.

To add new task, perform the following steps:

1. In the **Scheduler Service (Define Task)** select the Batch for which you want to add new task from the drop-down list.
2. Click **Actions** in page and click **Add**.
Add Task page is displayed.
3. Enter the details in the Add Task page:

- **Task Code** - Enter a Unique Alphanumeric Code for the new Task. The Code always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
 - **Task Name** - Enter a unique name for the new batch. The task name always begins with alphabets and should not contain any space. The maximum limit is 60 characters and should not contain any special characters except **Underscore (_)**.
 - **Task Description** - The description/details for the batch. The description should start with alphabet and should not be more than 250 characters. Words like Select From or Delete From should not be entered in the Description.
 - **Task Type** - Select the task type from the drop-down list.
 - **Batch Service URL** - Select the **Batch Service URL** from the drop-down list. You can also enter the **Task Service URL** and associated URL is displayed in the **Service URL**. You can also provide the partial URL here and the complete URL in the Task Service URL.
 - **Task Service URL** - Enter task service URL if it is different from Batch Service URL.
4. From the Task Parameters Pane, by default, all Batch Level Parameters are added and enabled as task parameters.
 - a. Enter the Parameter name in the **Param Name** field.
 - b. Enter the Parameter value in the **Param Value** field.You can delete a parameter by clicking corresponding to the parameter.
 5. Click **Save**.

6.1.4.2 Modifying a Task

Modifying Task option allows you to modify the details of existing tasks of a Batch Definition such as Task Description, Task Type, Batch Service URL and Task Service URL.

You can also add a new task parameter and enable or disable already existing task parameters.

To modify a Task, perform the following steps:

1. From the **Define Task** Page, select the Batch to modify the task details, from the drop-down list.
2. Click **Edit** corresponding to the Task to be modified.
The **Edit Task** Page is displayed.
3. Modify the required Task Details.
For more information, see [Add a task](#) Section.
4. Click **Save**.

6.1.4.3 Define Task Precedence

Task Precedence indicates the execution-flow of a Batch. Task Precedence Value helps to determine the order in which the specific Tasks of a Batch are executed.

For example, consider a Batch consisting of four tasks. The first three tasks does not have a precedence defined and hence will be executed simultaneously, during the Batch Execution. However, Task 4 has a precedence value as Task 1 which indicates that, Task 4 is executed only after Task 1 has been successfully executed.

You can set Task precedence between Tasks or define to run a Task after a set of other tasks. However, multiple tasks can be executed simultaneously, and cyclical execution of tasks is not permitted. If the precedence for a Task is not set, the Task is executed immediately on Batch Execution.

To define the task precedence in the Define Task Page, perform the following steps:

1. Click **Add or Remove Precedence** corresponding to the task for which you want to add precedence task.
The Task Precedence Mapping Window is displayed.

 **Note:**

The **Task Precedence** option is disabled if a batch has only one task associated.

- a. Select the batch that you want to execute before the current task, from the Available Tasks pane and click **Play**.
 - b. To select all the listed batches, click **Move** (Forward arrow).
 - c. To remove a batch, select the task from the Selected Tasks Pane and click **Remove** (Backward arrow).
 - d. To remove all the selected batches, click **Remove All** (double backward arrow).
2. Click **Save** to update Task Precedence in the batches.
 3. Click **Preview** to view the Precedence information.

6.1.4.4 Deleting a Task

You can remove a task from a Batch Definition which are no longer required in the system by deleting it from the Define Task page.

To delete a Task, perform the following steps:

1. From the Define Task Page, select the Batch from the drop-down list.
2. Click **Delete** corresponding to the Task you want to delete.
3. Click **OK** in the confirmation dialog to confirm deletion.

6.1.5 Schedule Batch

The Schedule Batch Page facilitates you to run, schedule, re-start, and re-run the batches in the Scheduler Service. After you upload the data in the required format into the Object Storage, you must load the data into the system using the Scheduler Service. You can schedule them to run in a required pattern and view the Run Time Status of the scheduled services using the Monitor Batch Feature.

To access the **Schedule Batch** page, from the left Navigation pane in the Service console,

1. From the left menu, click **Operations and Processes**.
2. Select **Schedule Batch**, to view the page.
3. Select Batch/Batch Group from the drop-down list and select the particular batch/batch group.
The list of tasks associated with the specific batch/batch group is displayed. You can view the following details related to each task.

You can perform the following operation for the batch:

- [Execute a Batch](#)
- Schedule a Batch - [Daily](#), [Weekly](#), [Monthly](#), and [Using Cron expression](#).
- [Re-start a Batch](#)
- [Re-run a Batch](#)
- [Edit Dynamic Parameters](#)
- [Task Definition of a Batch](#)

6.1.5.1 Task Definitions of a Batch

You can modify the Task Definition state in the Batch Execution Page to exclude or hold the defined task in a Batch from execution. The excluded tasks are therefore assumed to have completed execution and get excluded during the Batch Run.

While executing or scheduling a Batch from the Schedule Batch Page, you can:

- Exclude a task or include the excluded task.
- Hold a task or release the held task.

6.1.5.2 Execute a Batch and Batch Group

The Execute Batch option allows you to run a batch instantaneously.

To execute a Batch/Batch Group, perform the following steps:

1. In the **Schedule Batch** page, select Batch or Bath Group to execute, from the drop-down list.
2. Select the Batch /Batch Group Name from the drop-down list. For example, AMLDataLoad.
3. Click **Execute**.
The **Execution Schedule** Page is displayed.
4. Click **Exclude Tasks**, to add/remove tasks from the execution list..
5. Click **Hold Tasks**, to pause/release tasks during execution..
6. Click **Edit Dynamic Parameters**, to modify the dynamic parameters..
7. Click **Execute**.

The Batch is executed, and the associated unique execution ID is displayed.

8. Schedule a Batch/Batch Group.

You can schedule a Batch/Batch Group to run just for [Daily](#), [Weekly](#), and [Monthly](#). for scheduling the batches. You can also have a user defined schedule to schedule and run a batch, [Using Cron expression](#).

6.1.5.3 Schedule Once

To schedule a Batch /Batch Group to run once, perform the following steps:

1. Click **Schedule Batch** from the Header panel.
The Schedule Batch Page is displayed.
2. In the **Schedule Batch** Page, click **Schedule Once**.
3. Select **Batch or Bath Group** to execute, from the drop-down list.
4. Select the **Batch or Batch Group** Name you want to schedule for once from the drop-down list.
5. Enter a **Schedule Name**.
6. Select the **Start Date** on which you want to run the Batch.
7. Click **Run Time** and select the time at which you want to run the Batch.
8. Click **Schedule**.

6.1.5.4 Daily Batch Scheduling

To schedule a Batch to run daily, perform the following steps:

1. Click **Schedule Batch** from the Header panel. The Schedule Batch Page is displayed.
2. In the Schedule Batch Page, click **Daily**.
3. Select the **Batch /Batch Group Name**.
4. Select the **Batch or Batch Name** you want to schedule daily from the dro-down list.
5. Enter a **Schedule Name**.
6. Select the **Start Date** from which you want to run the Batch.
7. Select the **End Date** till which you want to run the Batch.
8. Select the **Time** at which you want to run the Batch daily.
9. Click **Schedule**.

6.1.5.5 Weekly Batch Scheduling

To schedule a Batch to run weekly, perform the following steps:

1. Click **Schedule Batch** from the Header panel.
The Schedule Batch Page is displayed.
2. In the Schedule Batch Page, click **Weekly**.
3. Select the Batch /Batch Group Name.
4. Select the **Batch or Batch Name** you want to schedule daily from the drop-down menu.
5. Enter a **Schedule Name**.
6. Select the **Start Date** from which you want to run the Batch.
7. Select the **End Date** till which you want to run the Batch.
8. Select the **Time** at which you want to run the Batch every week.

9. Select the days on a week you want to run the Batch from the **Select Days** of the Week multi-select drop down menu.
10. Click **Schedule**.

6.1.5.6 Monthly Batch Scheduling

To schedule a Batch to run weekly, perform the following steps:

1. In the **Schedule Batch** Page, click **Monthly**.
2. Select the **Batch /Batch Group Name**.
3. Select the **Batch or Batch Name** you want to schedule daily from the drop-down list.
4. Enter a **Schedule Name**.
5. Select the **Start Date** from which you want to run the Batch.
6. Select the **End Date** till which you want to run the Batch.
7. Select the **Time** at which you want to run the Batch every Month.
8. Select the months in a year you want to run the Batch from the **Select Months of the Year** multi-select drop-down list.
9. Select the day of the month that you want to run the Batch from the Select Day of the Month drop down menu.
10. Click **Schedule**.

6.1.5.7 Schedule Cron Expression

To run a Batch in a user-defined schedule, you can have custom schedule with the help of Cron Expression.

A Cron Expression is a string comprised of six or seven fields separated by white space. Fields can contain any of the allowed values, along with various combinations of the allowed special characters for that field. For more information, click the icon next to the Cron Expression field.

To schedule a Batch based on Cron Expression, perform the following steps:

1. In the Schedule Batch Page, click **Cron Expression**.
2. Select the **Batch /Batch Group**.
3. Select the Batch or Batch Group Name you want to schedule from the Select drop down menu.
4. Enter a **Schedule Name**.
5. Enter the **Cron Expression** for your schedule.
For more information about the Cron Expression, click Information icon next to the Cron Expression field.
6. Click **Schedule**.

6.1.5.8 Re-start a Batch

You can re-start a Batch which has not been executed successfully or which has been explicitly interrupted, or cancelled, or put on hold during the execution process.

By re-starting a Batch, you can continue Batch execution directly from the point of interruption or failure and complete executing the remaining tasks.

To re-start a batch, perform the following steps:

1. Click **Schedule Batch** from the Header panel.
The Schedule Page is displayed.
2. From the **Schedule** Page, select Re-start tab.
3. Select **Batch /Batch Group**.
4. Select the **Batch or Batch Name** you want to schedule daily from the drop-down list.
5. Select the **Batch Run ID**.
6. Click **Re-start**.

6.1.5.9 Re-run a Batch

You can re-run a Batch which has previously been executed. Re-run Batch facilitates you to run the Batch irrespective of the previous execution state.

A new Batch Run ID is generated during the Re-run process and the Batch is executed as similar to the new Batch Run.

To re-run a batch, perform the following steps:

1. Click **Schedule Batch** from the Header panel.
The **Schedule Batch** Page is displayed.
2. In the **Schedule Batch** Page, select **Re-run** tab.
3. Select **Batch /Batch Group**.
4. Select the **Batch or Batch group Name** you want to re-run from the Select Name drop down menu.
5. Select the **Batch Run ID**.
6. Click **Re-run**.

6.1.5.10 Edit Dynamic Parameters

Dynamic Parameters facilitate you to modify the dynamic parameters for the batch.

You can change the Param Value from the Edit Dynamic Params Page and save the changes to the Batch. The Edit Dynamic Parameters option is available in all the tab in the Schedule Batch Page.

To edit the dynamic parameters for a batch, perform the following steps:

1. In the **Schedule Batch Page**, click **Edit Dynamic Parameters**.
The **Edit Dynamic Params** Page is displayed.
2. In the **Edit Dynamic Params** Page, modify the values as required.

3. Click **Save**. The modified parameters are applied to the Batch.

6.1.6 Monitor Batch

The Monitor Batch enables you to view the status of executed Batch along with the tasks details. You can track the issues if any, on regular intervals and ensure smoother Batch Execution. A visual representation as well as tabular view of the status of each Tasks in the Batch is available.

To monitor a batch, perform the following steps:

1. Click **Monitor Batch** from the Header panel.
The **Monitor Batch Page** is displayed.
2. Select the **Batch/Batch Group** from the drop-down list and then select the **Batch Run ID**.
3. Click **Start Monitor**.
The results are displayed in **Visualization** and **List View** tabs. Details of these tabs are as follows:

The **Visualization** tab displays the details in the form of a chart represented with the following details:

- **Batch Status:** Displays the batch status, the different batch status are NOT-STARTED, ON-GOING, SUCCESSFUL, FAILED, INTERRUPTED, EXCLUDED, HELD, and UNDEFINED.
- **Batch Start Time:** Displays the Batch Start Time details.
- **Batch End Time:** Displays the Batch End Time details.
- **Task Details:** Mouse-over the task to display its status and details.

The **List View** tab displays the details in a tabular form with the following details:

- **Batch Status:** Displays the batch status, the different Batch Status are NOT-STARTED, ON-GOING, SUCCESSFUL, FAILED, INTERRUPTED, EXCLUDED, HELD, and UNDEFINED.
- **Batch Start Time:** Displays the Batch Start Time details.
- **Batch End Time:** Displays the Batch End Time details.
- **Task Details:** Mouse-over the task to display its status and details.
- **More Information:** The message returned by the Rest Service.

Select **Stop Monitor**, to stop monitoring. You can also specify the Start and Stop Monitor options along with refresh interval in the Refresh every second and minute fields.

You can also setup auto refresh to automatically update the status based on the set **Refresh Interval** and **Duration**. At any point, click **Stop Monitor** to stop the auto refresh.

- By default, the refresh interval is set to **5 seconds** and duration is set to **5 minutes**.
 - The refresh interval ranges between 5 to 60 seconds.
 - The duration ranges between 5 to 180 seconds.
4. To restart the Batch /Batch Group, select **Restart**.

5. To rerun the Batch/Batch Group, select **Rerun**.
6. To interrupt the Batch /Batch Group, select **Stop**.
7. In the Log Viewer pop-up the log information is displayed. You can click the **Download** icon to download the log or click the **Close** icon to close the log information.

6.1.7 Scheduler Service Dashboard

You can view and monitor the complete status of the Executed Runs, Successful Runs, Failed Runs, Ongoing Runs, Interrupted Runs, and the Upcoming Runs, from the Scheduler Service Dashboard.

To access the **Scheduler Service Dashboard** page, from the left Navigation pane in the Service console, click **Operations and Processes > Scheduler > Dashboard**.

The Scheduler Service Dashboard with the following details is displayed.

- The Executed Runs, Successful Runs, Failed Runs, Ongoing Runs, Interrupted Runs, and Upcoming Runs tabs. You can click the tabs to view the details of the Batches based on their status. For example, click **Ongoing Runs** to view the details of the batches that are currently running.
- The Batches that were executed within the last 7 or 30 days contain details such as Batch Name, Batch Run ID, and Run Time. Click 30 days to view the batches that were executed within the last 30 days. You can click the icon corresponding to a Batch to monitor it.
- The Batch Execution Summary Pane displays the count of total batches executed that were executed within the last 7 days, 30 days, and 120 days. You can also view the separate count of successful batches, failed batches, interrupted batches, on-going batches, and the batches which are yet to start, by hovering your mouse the batches.

6.1.8 External Scheduler Interface

External scheduler interface help you to execute tasks using any Command line utility such as cURL commands. You won't require the application interface to execute the tasks.

You can also integrate the Batches with external schedulers, using the external Scheduler interface.

Related Topics

- [Rest API Status Codes](#)
Refer to the following table for Rest API Status codes and their description.
- [Execution API](#)
The Execution (POST) API triggers a batch or a batch group.
- [Execution Status API](#)
The Execution Status (POST) API provides the current run status of batch/batch group execution.
- [Interrupt API](#)
The Execution Status (POST) API Interrupts a batch/batch group execution.
- [Restart API](#)
The Restart (POST) API restarts a batch/batch group execution.
- [Rerun API](#)
The Rerun (POST) API helps to rerun a batch/batch group execution.

6.1.8.1 Rest API Status Codes

Refer to the following table for Rest API Status codes and their description.

Table 6-1 Status Codes

| Status Code | Description |
|-------------|---|
| 0 | Success |
| -1 | Failure |
| -2 | Interrupted |
| 1 | Not Started |
| 2 | Ongoing |
| 3 | Aborted |
| 4 | Excluded |
| 5 | Held |
| -3 | Object does not exist |
| -4 | Invalid arguments passed in request/not enough params in Request body |
| -5 | Invalid request headers/request headers missing |
| -6 | No executable job is present. |
| -7 | Job is already interrupted |
| -8 | Job is not ongoing/aborted |

6.1.8.2 Execution API

The Execution (POST) API triggers a batch or a batch group.

- **HTTP Method** - POST
- **URL** - /SchedulerService/rest-api/v1/external/trigger
- **Header Parameters**
 - **ofs_tenant_id** - Tenant ID of the Application
 - **ofs_service_id** - Service ID of the Application
 - **ofs_workspace_id** - Workspace ID of the Application. It is defaulted to "WS001" and same should be passed each time.
 - **ofs_remote_user** - Used ID of the user. This parameter should be mapped to 'BATCH_EXEC' function.
 - **locale** - locale in languageCode-countryCode format. For example, en-US.
 - **Authorization: Bearer <token>** - Access token required to authenticate the API. If this token is not provided, 401 Unauthorized error is generated. For more information about Bearer token, refer to [Generate the Access Token](#).
- **Sample cURL Command**

```
curl -i -H "ofs_service_id:<Service ID>" -H "ofs_remote_user:<User ID>" -H
```

```

    "ofs_tenant_id:<Tenant ID>" -H "ofs_workspace_id:WS001" -H
"locale:en-US" -H
    "Content-Type: application/json" -H "Authorization: Bearer
<BEARER_TOKEN>" -X POST
    <APPLICATION_BASE_PATH>/<URL> -d '<REQUEST_JSON>'

```

6.1.8.2.1 Batch Execution API

Use the Execution API to trigger a batch.

Attributes

- `batchName` - The unique batch code
- `batchType` - The object type. For Batch, the batch type should be set to `rest`.
- `dynamicParamList` - List of run time parameters which should be overridden over actual values for this trigger. This is an optional parameter.

Request Body

```

{
  "batchName": "<Batch_code>",
  "batchType": "rest",
  "dynamicParamList": {
    "batchParams": {
      "$FICMISDATE$": "<MISDate (yyyy-mm-dd)>"
    }
  }
}

```

Sample Response Body

The following Response body is a sample for `Success : 200 OK`. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```

{
  "severity": "info",
  "summary": "Object triggered successfully with Run Id:
B2001_2022-05-20_1653041947296_1",
  "batchRunId": "B2001_2022-05-20_1653041947296_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}

```

6.1.8.2.2 Batch Group Execution API

Use the Execution API to trigger a batch group.

Attributes

- `batchName` - The unique batch code
- `batchType` - The object type. For Batchgroup, the batch type should be set to `group`.

- `dynamicParamList` - List of run time parameters which should be overridden over actual values for this trigger. This is an optional parameter.

Request Body

```
{
  "batchName": "<Batch_group_code>",
  "batchType": "group",
  "dynamicParamList": [
    {
      "batchName": "MIS_BATCH001",
      "batchParams": {
        "$FICMISDATE$": "2022-10-23"
      }
    },
    {
      "batchName": "MIS_BATCH002",
      "batchParams": {
        "$FICMISDATE$": "2022-10-28"
      }
    }
  ]
}
```

Sample Response Body

The following Response body is a sample for `Success : 200 OK`. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
{
  "severity": "info",
  "summary": "Object triggered successfully with Run Id:
B2001_2022-05-20_1653041947296_1",
  "batchRunId": "B2001_2022-05-20_1653041947296_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}
```

6.1.8.3 Execution Status API

The Execution Status (POST) API provides the current run status of batch/batch group execution.

- **HTTP Method** - POST
- **URL** - `/SchedulerService/rest-api/v1/external/status`
- **Header Parameters**
 - **ofs_tenant_id** - Tenant ID of the Application
 - **ofs_service_id** - Service ID of the Application
 - **ofs_workspace_id** - Workspace ID of the Application. It is defaulted to "WS001" and same should be passed each time.

- **ofs_remote_user** - Used ID of the user. This parameter should be mapped to 'BATCH_EXEC' function.
 - **locale** - locale in languageCode-countryCode format. For example, en-US.
 - **Authorization: Bearer <token>** - Access token required to authenticate the API. If this token is not provided, 401 Unauthorized error is generated. For more information about Bearer token, refer to [Generate the Access Token](#).
- **Sample cURL Command**

```
curl -i -H "ofs_service_id:<Service ID>" -H "ofs_remote_user:<User ID>" -H
      "ofs_tenant_id:<Tenant ID>" -H "ofs_workspace_id:WS001" -H
"locale:en-US" -H
      "Content-Type: application/json" -H "Authorization: Bearer
<BEARER_TOKEN>" -X POST
      <APPLICATION_BASE_PATH>/<URL> -d '<REQUEST_JSON>'
```

6.1.8.3.1 Batch Execution Status API

Use the Execution Status API to view the current run status of a batch execution.

Attributes

- **batchRunId** - Execution Id generated while triggering the object and can be obtained in the response of Execution API.
- **tasks** - List of Task Codes. This is an optional parameter.

Request Body

```
{
  "batchRunId": "<Batchrun_ID>",
}
```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
{
  "severity": "info",
  "batchRunId": "BatchTEST1_2022-05-31_1653994545003_1",
  "taskStatusList": [
    {
      "taskCode": "t1",
      "taskStatus": "SUCCESSFUL",
      "statusCode": "0"
    },
    {
      "taskCode": "t5",
      "taskStatus": "FAILED",
      "statusCode": "-1"
    }
  ],
  "batchStatusCode": "-1",
}
```

```

    "batchList": [],
    "batchStatus": "FAILED",
    "status": "success",
    "statusCode": "0"
  }

```

6.1.8.3.2 Batch Group Execution Status API

Use the Execution Status API to view the current run status of a batch group execution.

Attributes

- `batchRunId` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.
- `tasks` - List of Task Codes. This is an optional parameter.

Request Body

```

{
  "batchRunId": "<Batchrun_ID>",
}

```

Sample Response Body

The following Response body is a sample for `Success : 200 OK`. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```

{
  "severity": "info",
  "batchRunId": "AbTestBG001_2023-01-27_1674798339245_1",
  "batchStatusCode": "0",
  "batchList": [
    {
      "batchRunId": "AbTestBatch002_2023-01-27_1674798339462_1",
      "batchStatusCode": "0",
      "batchStatus": "SUCCESSFUL"
    },
    {
      "batchRunId": "AbTestBatch003_2023-01-27_1674798339556_1",
      "batchStatusCode": "0",
      "batchStatus": "SUCCESSFUL"
    }
  ],
  "batchStatus": "SUCCESSFUL",
  "status": "success",
  "statusCode": "0"
}

```

6.1.8.4 Interrupt API

The Execution Status (POST) API Interrupts a batch/batch group execution.

- **HTTP Method** - POST

- **URL** - /SchedulerService/rest-api/v1/external/interrupt
- **Header Parameters**
 - **ofs_tenant_id** - Tenant ID of the Application
 - **ofs_service_id** - Service ID of the Application
 - **ofs_workspace_id** - Workspace ID of the Application. It is defaulted to “WS001” and same should be passed each time.
 - **ofs_remote_user** - Used ID of the user. This parameter should be mapped to 'BATCH_EXEC' function.
 - **locale** - locale in languageCode-countryCode format. For example, en-US.
 - **Authorization: Bearer <token>** - Access token required to authenticate the API. If this token is not provided, 401 Unauthorized error is generated. For more information about Bearer token, refer to [Generate the Access Token](#).
- **Sample cURL Command**

```
curl -i -H "ofs_service_id:<Service ID>" -H "ofs_remote_user:<User ID>" -H
      "ofs_tenant_id:<Tenant ID>" -H "ofs_workspace_id:WS001" -H
"locale:en-US" -H
      "Content-Type: application/json" -H "Authorization: Bearer
<BEARER_TOKEN>" -X POST
      <APPLICATION_BASE_PATH>/<URL> -d '<REQUEST_JSON>'
```

6.1.8.4.1 Batch Interrupt API

Use the Interrupt API to interrupt a batch execution.

Attributes

- **batchName** - The unique batch code
- **batchRunID** - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```
{
  "batchName": "<Batch_code>",
  "batchRunId": "<Batchrun_ID>"
}
```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
{
  "severity": "info",
  "batchRunId": "B2001_2022-05-30_1653233511394_1",
  "details": "Execution interrupted successfully.",
  "statusCode": "0",
```

```

    "status": "success"
  }

```

6.1.8.4.2 Batch Group Interrupt API

Use the Interrupt API to interrupt a batch group execution.

Attributes

- `batchName` - The unique batch code
- `batchRunID` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```

{
  "batchName": "<Batchgroup_code>",
  "batchRunId": "<Batchrun_ID>"
}

```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```

{
  "severity": "info",
  "batchRunId": "B2001_2022-05-30_1653233511394_1",
  "details": "Execution interrupted successfully.",
  "statusCode": "0",
  "status": "success"
}

```

6.1.8.5 Rerun API

The Rerun (POST) API helps to rerun a batch/batch group execution.

- **HTTP Method** - POST
- **URL** - `/SchedulerService/rest-api/v1/external/rerun`
- **Header Parameters**
 - **ofs_tenant_id** - Tenant ID of the Application
 - **ofs_service_id** - Service ID of the Application
 - **ofs_workspace_id** - Workspace ID of the Application. It is defaulted to "WS001" and same should be passed each time.
 - **ofs_remote_user** - Used ID of the user. This parameter should be mapped to 'BATCH_EXEC' function.
 - **locale** - locale in `languageCode-countryCode` format. For example, en-US.

- **Authorization: Bearer <token>** - Access token required to authenticate the API. If this token is not provided, 401 Unauthorized error is generated. For more information about Bearer token, refer to [Generate the Access Token](#).
- **Sample cURL Command**

```
curl -i -H "ofs_service_id:<Service ID>" -H "ofs_remote_user:<User ID>" -H
      "ofs_tenant_id:<Tenant ID>" -H "ofs_workspace_id:WS001" -H
"locale:en-US" -H
      "Content-Type: application/json" -H "Authorization: Bearer
<BEARER_TOKEN>" -X POST
      <APPLICATION_BASE_PATH>/<URL> -d '<REQUEST_JSON>'
```

6.1.8.5.1 Batch Rerun API

Use the Rerun API to rerun an existing batch execution.

Attributes

- `batchName` - The unique batch code
- `batchRunID` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```
{
  "batchName": "<Batch_code>",
  "batchRunId": "<Batchrun_ID>"
}
```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
Success Scenario: 200 OK
{
  "severity": "info",
  "summary": "Object triggered successfully for rerun with Run Id:
B2001_2022-05-30_1653223084727_1",
  "batchRunId": "B2001_2022-05-30_1653223084727_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}
```

6.1.8.5.2 Batch Group Rerun API

Use the Rerun API to rerun an existing batch group execution.

Attributes

- `batchName` - The unique batch code

- `batchRunID` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```
{
  "batchName": "<Batchgroup_code>",
  "batchRunId": "<Batchrun_ID>"
}
```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
Success Scenario: 200 OK
{
  "severity": "info",
  "summary": "Object triggered successfully for rerun with Run Id:
B2001_2022-05-30_1653223084727_1",
  "batchRunId": "B2001_2022-05-30_1653223084727_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}
```

6.1.8.6 Restart API

The Restart (POST) API restarts a batch/batch group execution.

- **HTTP Method** - POST
- **URL** - `/SchedulerService/rest-api/v1/external/restart`
- **Header Parameters**
 - `ofs_tenant_id` - Tenant ID of the Application
 - `ofs_service_id` - Service ID of the Application
 - `ofs_workspace_id` - Workspace ID of the Application. It is defaulted to "WS001" and same should be passed each time.
 - `ofs_remote_user` - Used ID of the user. This parameter should be mapped to 'BATCH_EXEC' function.
 - **locale** - locale in languageCode-countryCode format. For example, en-US.
 - **Authorization: Bearer <token>** - Access token required to authenticate the API. If this token is not provided, 401 Unauthorized error is generated. For more information about Bearer token, refer to [Generate the Access Token](#).
- **Sample cURL Command**

```
curl -i -H "ofs_service_id:<Service ID>" -H "ofs_remote_user:<User
ID>" -H
  "ofs_tenant_id:<Tenant ID>" -H "ofs_workspace_id:WS001" -H
"locale:en-US" -H
```

```
"Content-Type: application/json" -H "Authorization: Bearer
<BEARER_TOKEN>" -X POST
<APPLICATION_BASE_PATH>/<URL> -d '<REQUEST_JSON>'
```

6.1.8.6.1 Batch Restart API

Use the Restart API to restart a batch execution.

Attributes

- `batchName` - The unique batch code
- `batchRunID` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```
{
  "batchName": "<Batch_code>",
  "batchRunId": "<Batchrun_ID>"
}
```

Sample Response Body

The following Response body is a sample for Success : 200 OK. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
{
  "severity": "info",
  "summary": "Object triggered successfully for restart with Run Id:
B0001_2022-04-30_1651731208588_1",
  "batchRunId": "B0001_2022-04-30_1651731208588_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}
```

6.1.8.6.2 Batch Group Restart API

Use the Restart API to restart a batch group execution.

Attributes

- `batchName` - The unique batch code
- `batchRunID` - Execution Id generated while triggering the object and can be obtained in the response of Execution API.

Request Body

```
{
  "batchName": "<Batchgroup_code>",
  "batchRunId": "<Batchrun_ID>"
}
```

Sample Response Body

The following Response body is a sample for `Success : 200 OK`. For more information about status code in the response body, refer to [Rest API Status Codes](#).

```
{
  "severity": "info",
  "summary": "Object triggered successfully for restart with Run Id:
B0001_2022-04-30_1651731208588_1",
  "batchRunId": "B0001_2022-04-30_1651731208588_1",
  "details": "Object triggered successfully.",
  "statusCode": "0",
  "status": "success"
}
```

6.2 Object Migration

Object Migration is the process of define, export and import objects across environments (prod and non-prod)/instances. This feature also facilitates to migrate within the same setup or different setups.

Objects refer to the various metadata definitions defined for various domains. You may want to migrate objects for several reasons such as manage global deployments on multiple environments or to create multiple environments so that you can separate the development, testing, and production processes.

For example, you can use the object migration feature to define PMF process object such as balance computation on your testing environment. After successful testing, you can use this feature to export the object to production/non-production environment.

You can migrate the following object types:

- **Schedule** - Schedule provides the instruction to schedule the execution of defined processes. When a schedule is migrated, the associated batch is also migrated.
- **Batch** - Batch is a group of jobs that are scheduled to automatically execute at a preset interval of time, without any user's intervention. When a batch is migrated, the batch and the associated pipeline information are also migrated.
- **Batch_Group** - A set of individual batches are consolidated to form a single Batch_Group. When we migrate a Batch_Group all the batches, tasks and pipeline information associated with that Batch_Group are also migrated.
- **Pipeline** - A pipeline is an embedded data processing engine that runs inside the application to filter, transform, and migrate data on-the-fly. Pipelines are a set of data processing elements called widgets connected in series, where the output of one widget is the input to the next element.
- **Threshold** - The threshold limit associated with set variables values for scenarios in FCCM Cloud Service. These threshold values are set when scenarios are created or installed and can be changed, if required.
- **Job** - Jobs provide set of instructions to execute Workflow Pipelines, based on the set threshold values.

- **Roles** - Roles are used to map functions to a defined set of groups to ensure user access system security.
- **Groups** - Groups are used to map Roles. Specific User Groups can perform only set of functions associated with that group.
- **CM_ADMIN** - The CM_ADMIN object type refers to all the case management related admin screens. Under this object type, you can export case management related admin metadata and settings for Business Domain, Case Actions/Statuses, Case Priority, Case Rules, Case System Parameters, Case Types, Jurisdictions and Security Mapping.

6.2.1 Migration Object Types

You can create Object Export and Import definitions for the following object types using Object Export/Import feature.

The Migration object types are categorized as follows:

Asset Liability Management

- Standardized_IRRBB_Shock
- Static_deterministic_process
- Time_bucket
- Dynamic_deterministic_process
- Forecast_balances
- Multi_dimensional_balance_sheet
- Pricing_margin
- Product_characteristics
- Behaviour_pattern_rule
- Discount_methods
- Forecast_rates
- Prepayment_model
- Prepayment_rules
- Transferring_Price_Rules

Cash Flow Edits

- Cash_flow_edits_rule
- Cash_flow_edits

Cash Flow Engine

- Cashflow_Process

Common Objects

- Batch
- Batch_group
- Currency

- Datamodel_extension_dimension
- Data_file_specification
- Dimensions

 **Note:**

Dimension definitions should be migrated before migrating the dependent object definitions. The source and the target dimension of the dependent objects should be the same.

- Expressions
- Filters
- Folder
- Hierarchy

 **Note:**

Dimension definitions should be migrated before migrating the Hierarchy associated with it. The Dimension should be the same in both source and target environments.

- Holiday_calendar
- Job
- Pipeline
- Schedule
- Slowly Changing Dimensions

Funds Transfer Pricing

- Add-on Rate Rule
- Alternate_Rate_Output_Mapping
- Replicating Portfolio
- Standard_Process

Identity Management

- **Groups** - For more information, refer to [Groups Summary in Admin Console](#).
- **Roles** - For more information, refer to [Roles Summary in Admin Console](#)

Patterns

- Behaviour_pattern
- Payment_pattern
- Reprice_pattern

Profitability Management

- Allocation Model
- Lookup Table
- Allocation Specification
- Static_Table

Profitability Analytics

- Financial Element Mapping
- Segmentation Mapping
- Line Item Display Order
- Geography Mapping

Rate Management

- Interest Rates
- Economic_indicator
- Volatility_surface

6.2.2 Accessing Object Export and Object Import Features

Using the Object Export and Import features, you can create Export and Import Object definitions.

To access the Object Export and Import feature, from the left Navigation pane in the PBSM Console, click **Operations and Processes > Object Administration**.

- To access Object Export feature, click **Export Object**.
- To access Object Import feature, click **Import Object**.

6.2.3 Object Export Definitions

Object Export Definition is a collection of objects that can be exported across environments.

You can view the list of object export definitions that are already created in the **Object Export Summary**. You can also view the following details about each object definition.

- **Name** - The unique name assigned to the collection when the export definition was created.
- **Object Migration Status** - The export status of a specific object definition.
 - **Success** - Indicates that the export is completed successfully.
 - **Failed** - Indicates that the export was not successful. You can reintiate the migration of the specific object definition.
 - **Saved** - Indicates that the object definition is created successfully and is yet to be exported.
 - **In Progress** - Indicates that the export is in progress. Once the export is complete, the status will change to Success/Failed.

- **Last Modified By** - The ID of the Last Modified by user who has modified the definition.
On mouse over, the Last Modified Time and Date are displayed.

To filter the list and view specific Object Definition, use one of the following search options:

- To search for a specific Export Object Definition, type the first few letters of the export definition that you want to search in the Search Box and click **Search**. The search results display the names that consist of your search string in the list of available definitions.
- Enter the number of records to be viewed in a single page, in the **Records** box, at the bottom of the page. You can increase or decrease the number of entries that are displayed using the up and down arrows.
- You can navigate between pages in the **View** bar, use the navigation buttons present at the bottom of the page.

6.2.3.1 Creating Export Definitions

You can create export Meta data objects using the System Configuration tab in Admin Console.

For more information about the supported object types, refer to [Migration Object Types](#). Refer to the following steps, to create a migration export object.

1. Click **Add** in the **Object Export Summary** Page to view the **Migration Definition** page.
2. Enter the following details, in the **Migration Definition** page.
 - **Migration Name**: Enter the code of the export of objects to be migrated definition. This is a unique identifier.
 - **File Name**: The system auto-creates the file name of the objects that can be used to export the definition in the following format:
 - **For Business Objects**: Migration Name_BO_Time Stamp (MMDDYYYY HHMMSS)
 - **For Identity Objects**: Migration Name_IDM_Time Stamp (MMDDYYYY HHMMYY)
3. Click **Apply** to save the details and view the **Object Selection** Page.
4. Click **Add** to include Migration objects to the definition.
5. select the required **Object Type** from the Object Types drop-down list.
6. Select the objects to be added to the Migrate Definition and click **Save**, to create a new migration object.

A confirmation message is displayed, when the definition is saved successfully. The new migration definition is listed in the Object Export Summary Page and the status is set to **Saved**.

You can also click **Export**, to export the object.

6.2.3.2 Editing Export Object Definitions

You can edit the Export Object definitions that are not exported and their status is **Saved** or **Failed**.

If the definitions is already exported and the status is set to **Success**, you cannot edit that definition.

To edit an Export Object definition, follow these steps.

1. In the Object Export Summary page, highlight the definition and click **Menu**, and select **Edit**.

The **Object Selection** page is displayed.

2. Modify the following details, if required, and click **Save** to changes.

- Select the required **Object Type** from the Object Types drop-down list.
- Select the objects to be added to/deleted from the definition.

3. After adding/deleting all the required objects, click **Save**.

The Export definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Export Summary page and the status is set to **Saved**.

4. If you want to Save and Export the Definition, click **Export**.

6.2.3.3 Exporting Object Definition

After creating the object definitions, you can export them for migrating between environments, using Object Migration (Export) feature.

You can export object definitions in **Saved** or **Failed** state from the object Summary page. Refer to the following steps, to export definitions.

1. In the Object Summary Page, highlight the migration definition and click **Menu**.
2. Select **Export** from the menu.

After you export, the following Export status types are displayed:

- **Success** - Indicates that the definition is exported successfully.
- **Failed** - Indicates that the definition was not exported. Right-click and select **Export**, to reinitiate the export process.
- **In Progress** - Indicates that the export is in progress. Once the export is completed, the status will change to Success/Failed.

6.2.3.4 Viewing Export Object Details

Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.

1. Highlight the Export definition and click **Menu**.
2. Select **View**. The object types, list of objects and the dependent objects added to the export definition are listed in the left pane.
3. Double-click an object to view the object attribute details.

6.2.3.5 View Object Definition Export Log Details

View log facilitates you to view the export log information of the object definition with the migration status.

**Note:**

The View Log page for an object definition with status **Saved** will be empty.

To view the log details of object with migration status **Success** or **Failed**, follow these steps.

1. In the Object Export Summary page, mouseover the object definition and click **Menu**.
2. Select **View Log** from the drop-down menu, to access the **View Log** page.

The migration status of the objects with following details is displayed.

- **Object Migration ID** - The migration ID associated with the definition.
- **Object Type** - The object type of the definition.
- **Object Code** - The object code associated with the definition.
- **Creation Date** - The date of creation of the definition.
- **Created By** - The User Id of the User who created the definition.
- **Status** - The migration status of the definition.
 - **Success** - Indicates that the export migration was completed successfully.
 - **Failed** - Indicates that the export migration did not complete.
 - **Export Status Message** - The complete export status message.

**Note:**

Export status message currently not supported for GL reconciliation.

3. Click **OK** to close the page, after viewing the log details.

6.2.3.6 Downloading Dump File

You can download the export dump file for exported definitions to a local directory, using Download Dump file option.

The downloaded export dump file can be used to upload objects to a different environment.

**Note:**

This option is enabled, only if the definition is exported successfully and the **Migration Status** is set to **Success**.

To download a export dump file, refer to the following procedure.

1. Mouseover a migrated object and select **Menu**.
2. Select **Download Dump File** from the drop-down menu, to download the associated dump file and store it to the local directory.

6.2.3.7 Deleting Export Object Definition

You can delete only definitions that are set to **Saved** or **Failed** status.

To delete a export object definition, follow these steps.

1. In the Object Export Summary page, mouseover the definition to be deleted and click **Delete**.
2. Click **Yes** to confirm and proceed with the deletion.

6.2.4 Object Import Definitions

Object Import Definitions is a collection of objects that can be imported across environments.

You can view the list of Object Import Definitions that are already created in the **Object Import Summary**. You can also view the following details about each Object definition.

- **Name** - The unique name assigned to the collection when the Import definition was created.
- **Object Migration Status** - The import status of a specific Object definition.
 - **Success** - Indicates that the import is completed successfully.
 - **Failed** - Indicates that the import was not successful. You can reinitiate the migration of the Specific Object Definition.
 - **Saved** - Indicates that the Object Definition is created successfully and is yet to be imported.
 - **In Progress** - Indicates that the import is in progress. Once the import is complete, the status will change to Success/Failed.
- **Last Modified By** - The ID of the Last Modified by user who has modified the definition. On mouse over, the Last Modified Time and Date are displayed.

To filter the list and view Specific Object Definition, use one of the following search options.

- To search for a Specific Import Object definition, type the first few letters of the Import definition that you want to search in the Search box and click **Search**. The search results display the names that consist of your search string in the list of available definitions.
- Enter the number of records to be viewed in a single page, in the **Records** box, at the bottom of the page. You can increase or decrease the number of entries that are displayed using the up and down arrows.

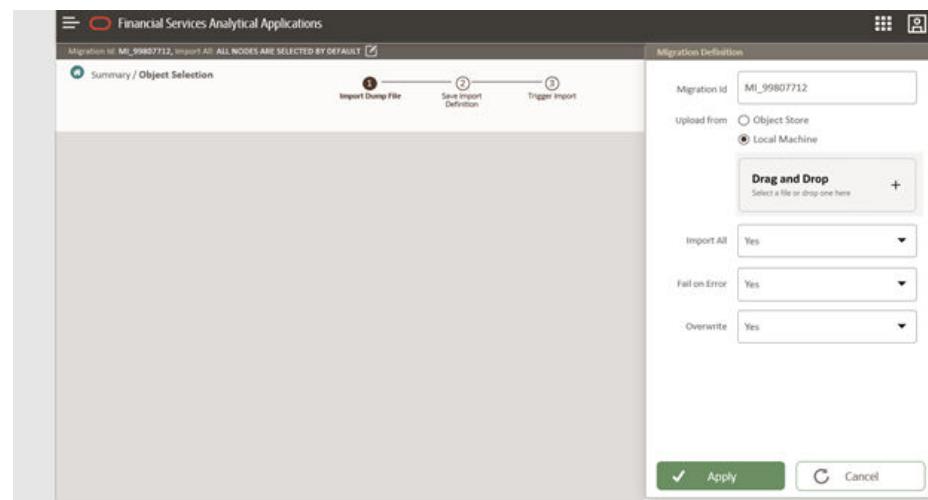
- You can navigate between pages in the **View** bar, use the navigation buttons present at the bottom of the page.

6.2.4.1 Creating Object Import Definitions

You can create Import definitions and add Import Objects using the Object Migration (Import) feature.

- Click **Add** in the **Object Import Summary** page to view the **Migration Definition** page.
- Enter the following details, in the **Migration Definition** page.
 - ID** - The Unique Name for the New Import Object definition. The migration ID should not contain any space and exceed 30 characters. Underscore (`_`) and hyphen (`-`) are allowed.
 - Dump File** -Select the .DMP file to be uploaded for creating the Import definition.

Figure 6-1 Importing Dump File



You can select the dump file using one of the following options:

- Select the option **Object Store**, to select the dump file (.DMP file) from the list of dump files available in the same environment.
- Select the option **Local Machine** and click **Drag and Drop**, to add a .DMP file, from the local directory. You can only Add Dump file that are downloaded using Download Dump file option.

 **Note:**

- Uploading a dmp file either created or edited locally will generate an error.
- You can rename the .DMP file, if required. Ensure to follow the naming convention. For more information, refer to [File Naming Conventions for Migrate Objects](#).

- **Import All** - Select an option to import the objects that are associated with the selected object type. You can edit this option if required, in the **Object Selection** page.
 - **Yes** - Imports all the objects that are included in the dump file.
 - **No** - Imports only those objects that you can select in the **Object Selection** page.
- **Fail on Error** - Select an option to proceed with the definition creation in case of an error. You can edit this option if required, in the **Object Selection** page.
 - **Yes** - Stops the creation process, if error is generated.
 - **No** - Creates the import definition even when error is generated. The object with the error is not included in the object creation.
- **Overwrite** - Select an option to overwrite the existing definition. You can edit this option if required, in the **Object Selection** page.
 - **Yes** - Replaces the existing Import definition.
 - **No** - Creates a new Import definition.

3. Click **Apply** to save the details.

The Import definition is created and **Object Selection** page is displayed. You can add objects to this import definition.

4. Click **Add** to include objects to the definition.
5. Select the required **Object Type** from the Object Types drop-down list.

Objects that are defined in the environment with respect to the selected object type are listed. For example, if Schedule is selected as the Object Type, all the Objects defined with respect to Schedule, in the environment are only listed.

You can also enter the first few letters of the object name in the Search Field, to narrow down the search.

6. Click the check box adjacent to each object, to include the objects associated with a specific object type, to the import definition.
7. Repeat steps 4, 5 and 6, to include objects associated with various object types.
8. After adding all the required objects, click **Save**.

The Import definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Import Summary page and the status is set to **Saved**.

9. If you want to Save and Export the Definition, click **Import**.

6.2.4.2 Editing Import Definitions

You can edit the Import definitions that are not imported and their status is **Saved** or **Failed**.

If the definitions is already imported and the status is set to **Success**, you cannot edit that definition.

To edit an Import definition, follow these steps.

1. In the Object Import Summary page, highlight the definition and click **Menu**, and select **Edit**.

The **Object Selection** page is displayed.

2. Edit the following details, if required, and click **Save** to changes.
 - Select the required **Object Type** from the Object Types drop-down list.
 - Select the objects to be added to/deleted from the definition.
3. After adding/deleting all the required objects, click **Save**.

The import definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Import Summary page and the status is set to **Saved**.

4. Click **Save** to update the changes.
5. If you want to Save and import the Definition, click **Import**.

6.2.4.3 Importing Object Definitions

After creating the object definitions, you can export them for migrating between environments, using Object Migration (Import) feature.

You can import object definitions in **Edited** state from the object Summary page. Refer to the following steps to import Object definitions.

 **Note:**

Comments and Documents attached to an Issue/Action will not be migrated.

1. In the Object Summary Page, mouse-over the definition and click **Menu**.
2. Select **Import** from the drop-down menu.

After you import, the following Import status types are displayed:

- **Success** - Indicates that the definition is imported successfully.
- **Failed** - Indicates that the definition was not imported. Right-click and select **Import**, to restart the import process.
- **In Progress** -Indicates that the import is in progress. Once the import is completed, the status will change to Success/Failed.

In case the migration fails, refer to [Troubleshooting Object Migration](#).

 **Note:**

- If a Change Request import fails, then it is recommended not to use the action created for it in the target (if any), otherwise subsequent re-import requests might fail.
- Approve the Change Request and publish, after it is imported successfully.
- After the import of segment extension
 - Creates an Issue with same name as Export Name (Issue name – “Issue – Exportname”) captured with current start and target date with 30 days ahead.
 - Creates an Action with same name as Export Name (Action name- “Action – Exportname”) captured with current start and target date with 30 days ahead.
 - Select all Dimensions exported. And action will be in submitted status.
 - After Import, Issue and action owner has to be reassigned accordingly for Approval process.

6.2.4.4 Viewing Import Object Details

Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.

1. Mouseover the migration definition and click **Menu**.
2. Select **View**. The object types, list of objects and the dependent objects added to the export definition are listed in the left pane.
3. Double-click an object to view the object attribute details.

6.2.4.5 Viewing Object Import Log Details

View log facilitates you to view the log information of the object definition with the migration status.

 **Note:**

The View Log page for a definition with migration status **Saved** will be empty.

To view the log details of definition with migration status **Success** or **Failed**, follow these steps.

1. In the Object Import Summary window, mouseover the migration definition and click **Menu**.
2. Select **View Log** from the drop-down menu, to access the **View Log** page.

The migration status with following details is displayed.

- **Object Migration ID** - The migration ID associated with the import object.
- **Object Type** - The object type of the import object.

- **Object Code** - The object code associated with the import object.
- **Creation Date** - The date of creation of the import object.
- **Created By** - The User Id of the User who created the import object.
- **Status** - The import status of the specific object.
 - **Success** - Indicates that the specific object was imported successfully.
 - **Failed** - Indicates that the specific object was not imported.
- **Import Status Message** - The complete import status message.

 **Note:**

Import status message currently not supported for GL reconciliation.

3. Click **OK** to close the page, after viewing the log details.

6.2.4.6 Deleting Import Definition

You can delete only definitions that are set to **Saved** or **Failed** status.

To delete an import definition, follow these steps.

1. In the Object Import Summary page, mouseover the definition to be deleted and click **Delete** .
2. Click **Yes** to confirm and proceed with the deletion.

6.3 Viewing Logs

This section describes the Cash Flow Engine log details.

- Cash Flow Process
- Cash Flow Edits Process

6.3.1 Cash Flow Process

You can view the information about high-level processing steps from User Interface. To view Cash Flow Process information, follow these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
2. Select **Batch** and **Run Id**.
3. Click **Start Monitor**.
4. Click **View Log** of the concerned task.
5. Navigate to **Operations and Processes** and select **Cash Flow Process**.
6. Search the **Process** and click **Action** of searched Process.
7. Select **Execution Details**.
8. Click on relevant Execution Run Id. Account level error message is available in table `FSI_O_CFE_MESSAGES_HIST` of data schema.

9. Query for a Process Id, Execution Run Id and Account Number.

LOG4J logs to debug the execution flow can be seen in Kubernetes session log for each POD. The LOG4J level can be controlled by setting the debugging level in Application Preferences. Default logging level is set to "Info".

6.3.1.1 Kubectl Commands

- `kubectl -n fsgbu-pbsm--cfe-<tenant id>-prd` : Get pods for CFE services.
- `kubectl -n fsgbu-pbsm--fsafnd-<tenant id>-prd` : Get pods for fsafnd services.

Example:

```
kubectl -n fsgbu-pbsm--cfe-cfeqa31052203-prd
```

- `kubectl get pods -n fsgbu-pbsm--fsafnd-cfeqa31052203-prd -o wide`

This is to get the IP-address of the pods and nod level details

- `kubectl logs <service name> -c <cfe-processor-service>-n fsgbu-pbsm--cfe-<tenant id> -f` – processor services logs

Example:

```
kubectl logs cfe-execution-processor-service-787c8469c7-bq557 -c cfe-processor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f
```

- `kubectl logs <service name> -c <cfe-executor-service>-n fsgbu-pbsm--cfe-<tenant id> -f` – executor services.

Example:

```
kubectl logs cfe-execution-executor-service-d5cb4c89c-zwlst -c cfe-executor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f
```

- `kubectl delete <> -n fsgbu-pbsm--cfe-<tenant id>` – Deleting the pods

Example:

```
kubectl delete pod cash-flow-engine-ui-service-74cd7c764-6mzdq -n fsgbu-pbsm--cfe-cfeqa31052203-prd
```

- Scaling up and down.
- `kubectl scale --replicas 0 deployment <service name> -n fsgbu-pbsm-- cfe -<tenant id>` – Scale down
- `kubectl scale --replicas 3 deployment <service name> -n fsgbu-pbsm--cfe-<tenant id>` – Scale up

Example:

- `kubectl scale --replicas 3 deployment cfe-execution-executor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd`

6.3.2 Cash Flow Edits Process

You can view the information about high level processing steps from User Interface. To view Cash Flow Edits Process information, follow these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.

2. Select **Batch** and **Run Id**.
3. Click **Start Monitor**.
4. Click **View Log** of concerned task.
5. Navigate to **Operations and Processes** and select **Cash Flow Process**.
6. Search the **Process** and click **Action** of searched Process.
7. Select **Execution Details**.
8. Click on relevant Execution Run Id. Account level error message is available in table FSI_O_CFE_EDITS_MESSAGES_HIST of data schema
9. Query for a Process Id, Execution Run Id and Account Number.

LOG4J logs to debug the execution flow can be seen in Kubernetes session log for each POD. The LOG4J level can be controlled by setting the debugging level in Application Preferences. Default logging level is set to "Info".

6.3.2.1 Kubectl Commands

```
kubectl logs <> -n fsgbu-pbsm--cfe-<tenanted> -f
kubectl logs cash-flow-edits-executor-service-79d598fff5-9cdqr -n
fsgbu-pbsm--cfe-cfeqa31052203-prd -f - executor service
kubectl logs cfe-execution-processor-service-787c8469c7-tsmwx -c cash-
flow-edits-processor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f
----- Processor
```

6.3.3 Instrument Data Loader (File to Stage)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
- Select **Batch** and **Run Id**.
- Click **Start Monitor**.

6.3.4 Instrument Data Loader (Stage to Processing)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
- Select **Batch** and **Run Id**.
- Click **Start Monitor**.

Additional information is available in table FSI_DATA_LDR_MESSAGE_LOG of data schema.

6.3.5 Dimension Loader (File to Stage to Dimension)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
- Select Batch and Run Id.
- Click **Start Monitor**.

7

Reports & Analytics

This section covers the following topics:

- [Cash Flow Engine Cloud Reports & Analytics](#): Oracle Analytics is a scalable and secure Oracle Cloud Service that provides a full set of capabilities to explore and perform collaborative analytics for you, your workgroup, and your enterprise.

7.1 Cash Flow Engine Cloud Reports & Analytics

Cash Flow Engine Cloud Service (CFE) Analytics User Guide describes the features and functions of CFE's Analytics is intended for the use of Administrators, Analysts, Reporting Analysts, and Administrators.

Cash Flow Engine (CFE) Cloud Service utilizes the power of Oracle Analytics to generate the Business Intelligence Reports.

Oracle Analytics is a scalable and secure Oracle Cloud Service that provides a full set of capabilities to explore and perform collaborative analytics for you, your workgroup, and your enterprise.

With Oracle Analytics Cloud, you also get flexible Service Management capabilities, including fast setup, easy scaling and patching, and automated lifecycle management.

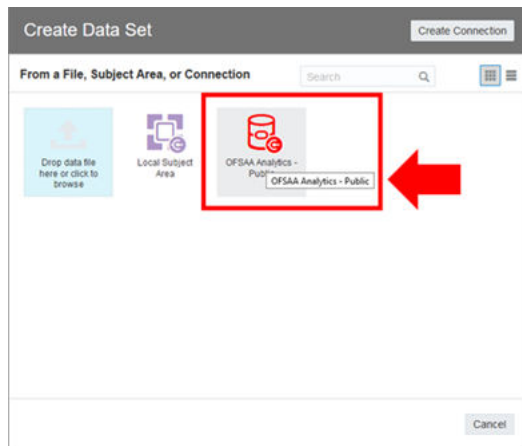
For more information, see the [Oracle Analytics Cloud](#) documentation.

7.1.1 Access Business Intelligence (BI) Reports

This section describes the steps to access the Business Intelligence (BI) Reports.

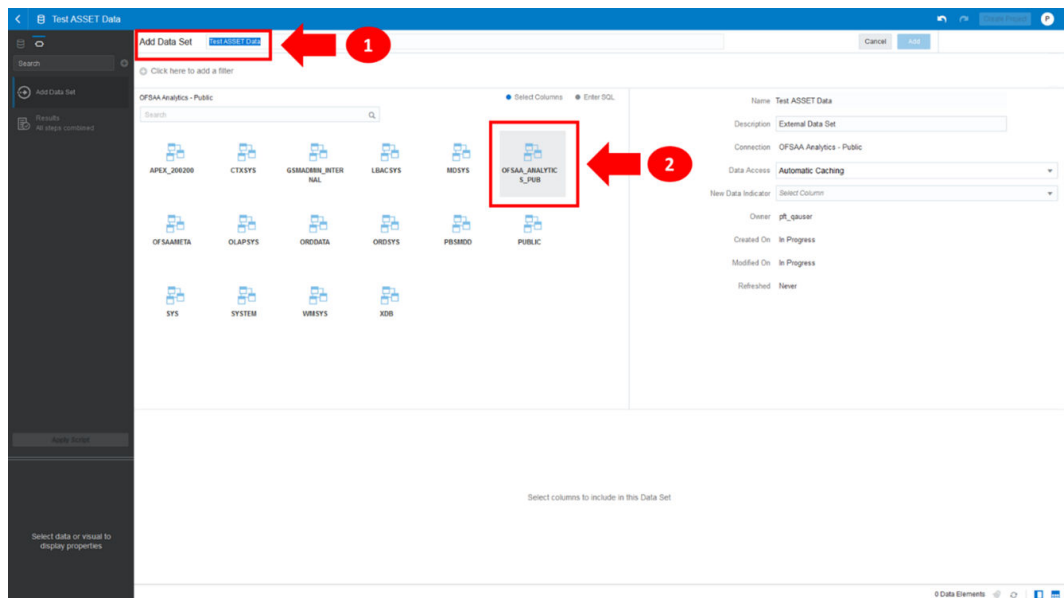
To access the Oracle Financial Services Profitability Management Cloud Service BI Reports, from the LHS Menu, select **Analytics**, and then select **Home Page**.

Figure 7-2 Create Data Set Screen



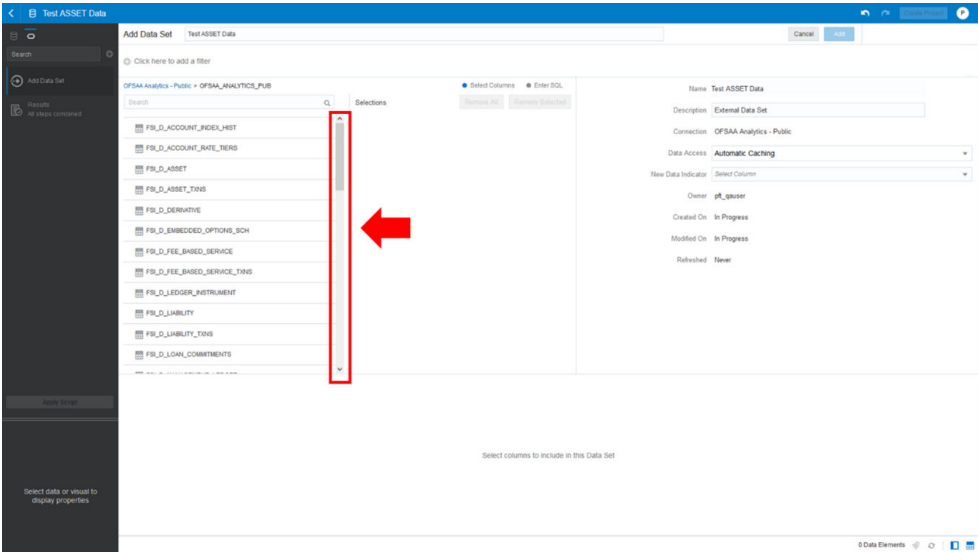
2. After selecting the Database Connector, you must select the Database Schema named OFSAA_ANALYTICS_PUB to proceed to the next step of Database Object Selection.

Figure 7-3 Add Data Set



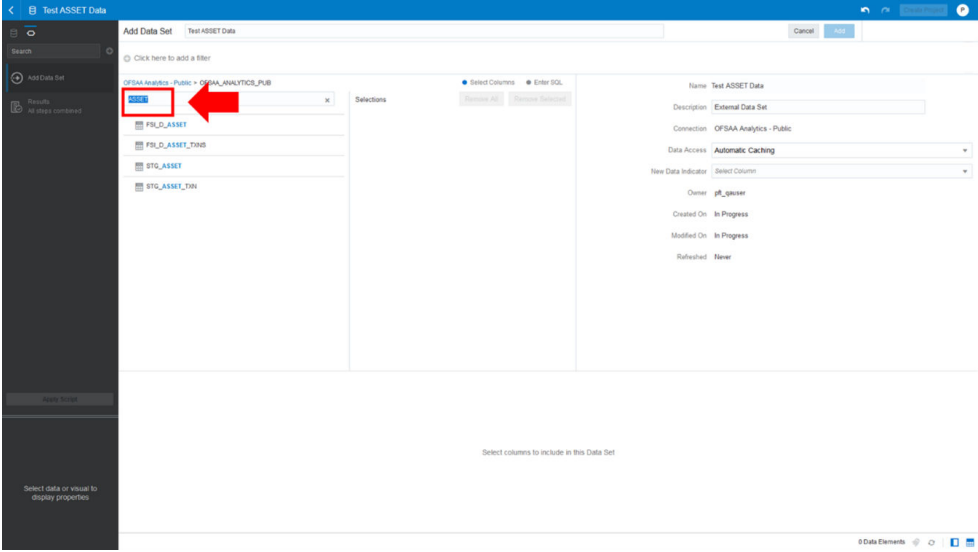
3. Provide a meaningful name to the Data Set, which will be generated from this process and be used for the SQL Query Analysis.
4. You can search for a Database Object from the available options. You can either scroll down or search the Database Objects displayed in alphabetical order.

Figure 7-4 Add Data Set – Search from the List



Or
Type the Database Object Name to filter the list with Description.

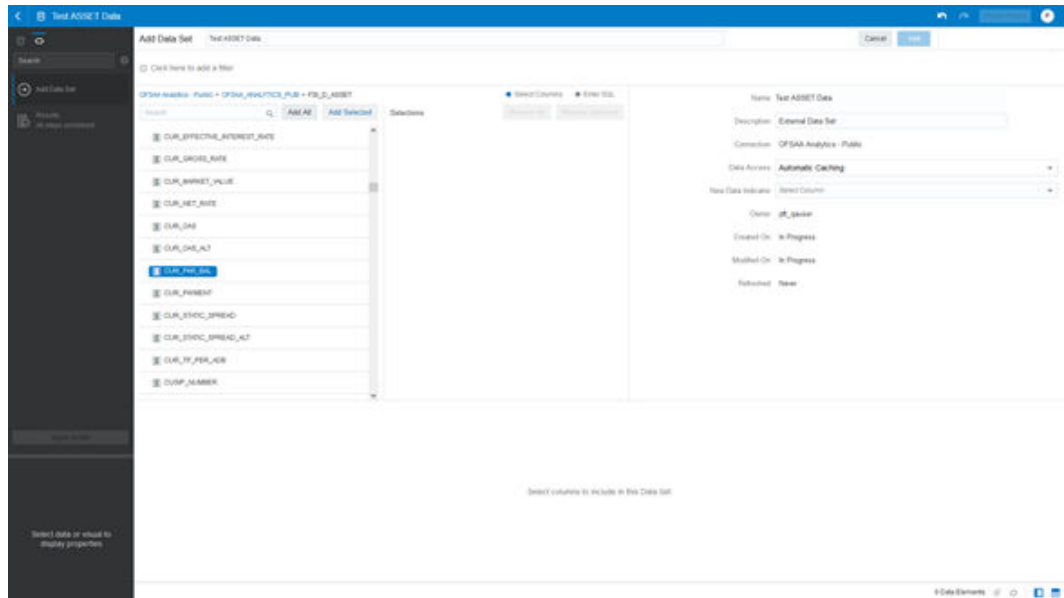
Figure 7-5 Add Data Set – Search by Name



After you select the Object that want, you can proceed to the next step.

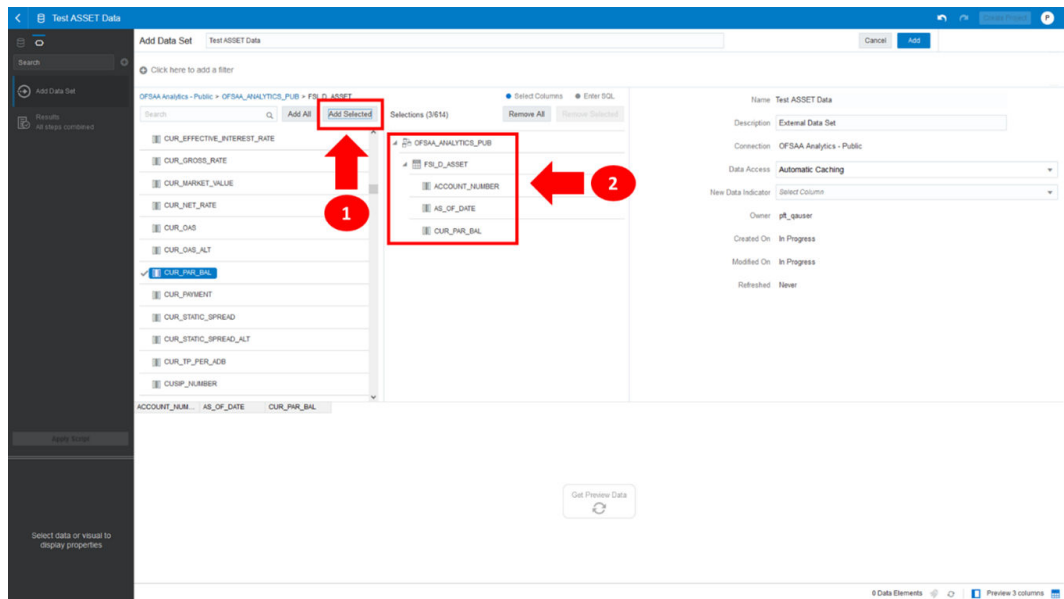
- 5. You search the Columns that are available for the selected Database Object by scrolling.

Figure 7-6 Add Data Set – Search Columns



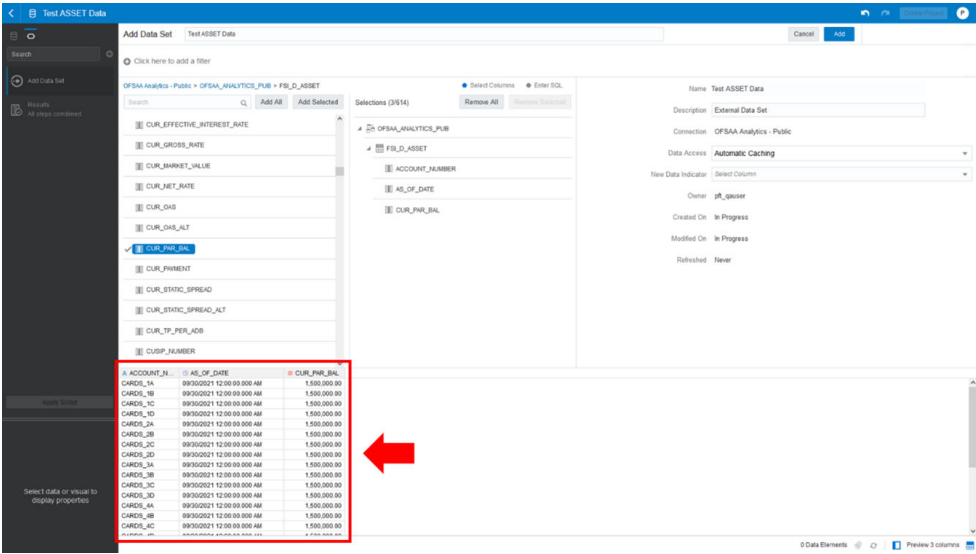
6. Add the Database Object Column as required.

Figure 7-7 Add Data Set – Adding the Database Object Column



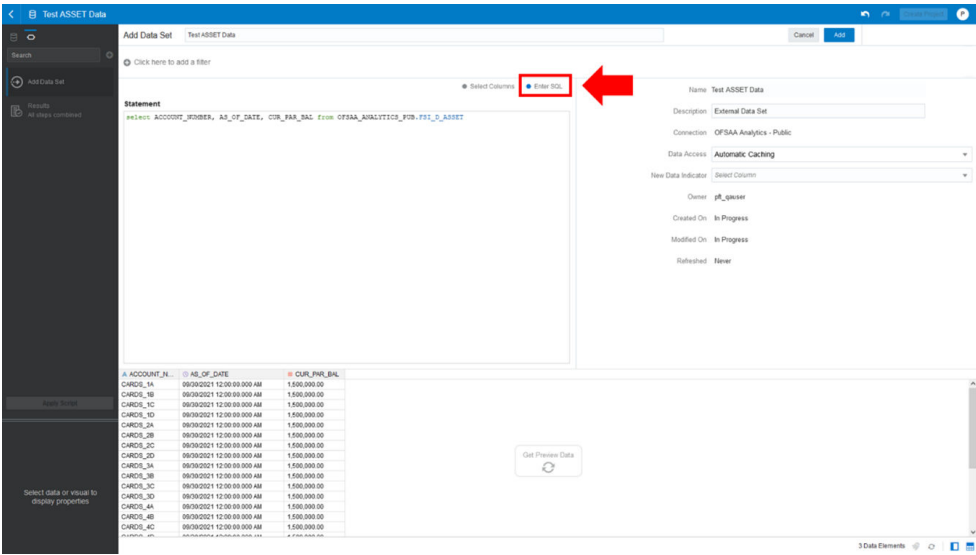
7. Click Get Preview Data to display the retrieved Data Results.

Figure 7-8 Data Results



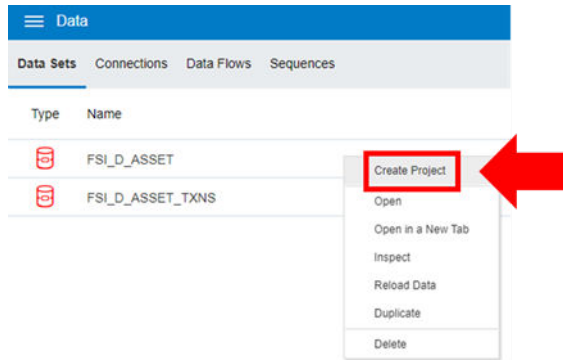
- In addition, you can switch to the Enter SQL Pane Editor. You can change the auto-generated SQL Query at any time and click Get Preview Data to retrieve the results based on the modified SQL Query.

Figure 7-9 Data Results based on modified SQL Query



- Click **Add** to save the SQL Data.
- Click **Data** on the LHS Menu and click **Data Sets** to display the available Data Sets for usage.
- Right-click on the Data Set name to display the options as shown:

Figure 7-10 Data Set Options



12. In the menu that is displayed, click **Create Project**.

7.1.3 Raw Data Analysis

To access the Raw Data Analysis Screen, from the LHS Menu, select Analytics, and then select Raw Data Analysis.

The following table lists the Raw Data Analysis Reports. You can select any report that you want.

Table 7-1 Raw Data Analysis Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|-------------------------|------------|-------------|------------------------|-------------------------------------|-------------------------|
| Staging Instrument Data | Instrument | STG Staging | STG_ASSET | Stage Asset Instruments | Assets |
| | | | STG_LIABILIT Y | Stage Liability Instruments | Liabilities |
| | | | STG_DERIVATI VE | Stage Derivative Contracts | Derivative Contracts |
| | | | STG_FEE_BA SED_SERVICE | Stage Fee Based Services | Fee Based Services |
| | | | STG_LOAN_C OMMITMENTS | Stage Loan Based and Other Services | Loan Commitments |
| | | | STG_OFF_BAL ANCE_SHEET | Stage Off Balance Sheet Items | Off Balance Sheet Items |
| | | | STG_LEDGER _INSTRUMENT | Stage Ledger Instruments | Ledger - Instruments |
| | | | | Stage Off Balance Sheet Contracts | |
| | | | | Stage Ledger Instrument | |

Table 7-1 (Cont.) Raw Data Analysis Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|---------------------------------------|--------------------------|-------------|---------------------|--------------------|--------------------|
| Staging Instrument Supplementary Data | Instrument Supplementary | STG Staging | STG_ACCOUN | Stage Account | Account Index |
| | | | T_INDEX_HIST | Index History | History |
| | | | STG_ACCOUN | Stage Account | Account Rate |
| | | | T_RATE_TIER | Rate Tiers | Tiers |
| | | | S | Stage | Embedded |
| | | | STG_EMBEDD | Embedded | Options |
| | | | ED_OPTIONS_SCH | Options Schedule | Schedule |
| Staging Ledger Data | Ledger | STG Staging | STG_PAYMEN | Stage Payment | Schedule |
| | | | T_SCHEDULE | Schedule | |
| | | | STG_MANAGE | Stage Management | Management |
| | | | MENT_LEDGE | Management | Ledger |
| | | | R | Ledger | Management |
| | | | STG_MANAGE | Stage Placeholder | Ledger 01 |
| | | | MENT_LEDGE | Placeholder | Management |
| | | | R_01 | Management | Ledger 02 |
| | | | STG_MANAGE | Ledger 01 | Management |
| | | | MENT_LEDGE | Stage Placeholder | Ledger 03 |
| | | | R_02 | Placeholder | Management |
| | | | STG_MANAGE | Management | Ledger 04 |
| | | | MENT_LEDGE | Ledger 02 | Management |
| | | | R_03 | Stage Placeholder | Ledger 05 |
| | | | STG_MANAGE | Placeholder | Management |
| MENT_LEDGE | Management | Ledger 03 | | | |
| R_04 | Ledger 03 | | | | |
| STG_MANAGE | Stage Placeholder | Management | | | |
| MENT_LEDGE | Placeholder | Ledger 04 | | | |
| R_05 | Management | Ledger 04 | | | |
| Staging Transaction Summary Data | Transaction Summary | STG Staging | STG_ASSET_T | Stage Asset | Assets |
| | | | XN | Transaction | Transaction |
| | | | STG_LIABILIT | Summary | Summary |
| | | | Y_TXN | Stage Liability | Liabilities |
| | | | STG_FEE_BA | Transaction | Transaction |
| | | | SED_SERVICE | Summary | Summary |
| | | | _TXN | Stage Fee | Fee Based |
| | | | STG_OFF_BAL | Based and | Services |
| | | | ANCE_SHEET | Other Services | Transaction |
| | | | _TXN | Transaction | Summary |
| | Summary | Off Balance | | | |
| | Stage Off | Sheet | | | |
| | Balance Sheet | Transaction | | | |
| | Transaction | Summary | | | |
| | Summary | | | | |

Table 7-1 (Cont.) Raw Data Analysis Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|---------------------------------|---------------------------|---------------------------|--|----------------------------------|-------------------------|
| Processing Instrument Data | Instrument | FSI Processing | FSI_D_ASSET | Asset | Assets |
| | | | FSI_D_LIABILITY | Instruments Liability | Liabilities |
| | | | FSI_D_DERIVATIVE | Instruments Derivative | Derivative Contracts |
| | | | FSI_D_FEE_BASED_SERVICES | Derivative Contracts | Fee Based Services |
| | | | FSI_D_LOAN_COMMITMENTS | Fee Based and Other Services | Loan Commitments |
| | | | FSI_D_OFF_BALANCE_SHEET | Loan Commitments | Off Balance Sheet Items |
| | | | FSI_D_OFF_BALANCE_SHEET_INSTRUMENTS | Off Balance Sheet Contracts | Ledger Instruments |
| | | | FSI_D_LEDGER_INSTRUMENT | Ledger Instrument | |
| | | | Processing Instrument Supplementary Data | Instrument Supplementary | FSI Processing |
| FSI_D_ACCOUNT_RATE_TIERS | Account Rate Tiers | Account Rate Tiers | | | |
| FSI_D_EMBEDDED_OPTIONS | Embedded Options | Embedded Options | | | |
| FSI_D_SCHEDULE_PAYMENT_SCHEDULE | Schedule Payment Schedule | Schedule Payment Schedule | | | |
| FSI_D_PAYMENT_SCHEDULE | | | | | |
| FSI_D_SCHEDULE | | | | | |
| FSI_D_SCHEDULE | | | | | |
| Processing Ledger Data | Ledger | FSI Processing | FSI_D_MANAGEMENT_LEDGER | Management Ledger | Management Ledger |
| | | | FSI_D_MANAGEMENT_LEDGER_01 | Placeholder Management Ledger 01 | Management Ledger 01 |
| | | | FSI_D_MANAGEMENT_LEDGER_02 | Placeholder Management Ledger 02 | Management Ledger 02 |
| | | | FSI_D_MANAGEMENT_LEDGER_03 | Placeholder Management Ledger 03 | Management Ledger 03 |
| | | | FSI_D_MANAGEMENT_LEDGER_04 | Placeholder Management Ledger 04 | Management Ledger 04 |
| | | | FSI_D_MANAGEMENT_LEDGER_05 | Placeholder Management Ledger 05 | Management Ledger 05 |
| | | | FSI_D_MANAGEMENT_LEDGER_01 | Placeholder Management Ledger 01 | Management Ledger 01 |
| | | | FSI_D_MANAGEMENT_LEDGER_02 | Placeholder Management Ledger 02 | Management Ledger 02 |
| | | | FSI_D_MANAGEMENT_LEDGER_03 | Placeholder Management Ledger 03 | Management Ledger 03 |
| | | | FSI_D_MANAGEMENT_LEDGER_04 | Placeholder Management Ledger 04 | Management Ledger 04 |
| | | | FSI_D_MANAGEMENT_LEDGER_05 | Placeholder Management Ledger 05 | Management Ledger 05 |

Table 7-1 (Cont.) Raw Data Analysis Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|-------------------------------------|---------------------|----------------|---------------------|--------------------|--------------------|
| Processing Transaction Summary Data | Transaction Summary | FSI Processing | FSI_D_ASSET | Asset | Assets |
| | | | _TXNS | Transaction | Transaction |
| | | | FSI_D_LIABILI | Summary | Summary |
| | | | TY_TXNS | Liability | Liabilities |
| | | | FSI_D_FEE_B | Transaction | Transaction |
| | | | ASED_SERVIC | Summary | Summary |
| | | | E_TXNS | Fee Based and | Fee Based |
| | | | FSI_D_OFF_B | Other Services | Services |
| ALANCE_SHE | Transaction | Transaction | | | |
| ET_TXNS | Summary | Summary | | | |
| | | | Off Balance | Off Balance | |
| | | | Sheet | Sheet | |
| | | | Transaction | Transaction | |
| | | | Summary | Summary | |

7.1.3.1 Staging Instrument Data

You can use this report to perform the analysis on the Staging Area Tables related to Instrument Data. The report contains specifically the following Staging Database Objects:

Table 7-2 Staging Instrument Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|-------------------------|---------------|-------------|---------------------|--------------------|--------------------|
| Staging Instrument Data | Instrument | STG-Staging | STG_ASSET | Stage Asset | Assets |
| | | | STG_LIABILIT | Instruments | Liabilities |
| | | | Y | Stage Liability | Derivative |
| | | | STG_DERIVA | Instruments | Contracts |
| | | | TIVE | Stage | Fee Based |
| | | | STG_FEE_BA | Derivative | Services |
| | | | SED_SERVIC | Contracts | Loan |
| | | | E | Stage Fee | Commitments |
| | | | STG_LOAN_ | Based and | Off Balance |
| | | | COMMITMEN | Other | Sheet Items |
| | | | TS | Services | Ledger - |
| | | | STG_OFF_BA | Stage Loan | Instruments |
| LANCE_SHE | Commitments | | | | |
| ET | Stage Off | | | | |
| STG_LEDGE | Balance Sheet | | | | |
| R_INSTRUME | Contracts | | | | |
| NT | Stage Ledger | | | | |
| | Instrument | | | | |

7.1.3.1.1 Assets

The Assets Report provides the Analysis Capability on the Stage Asset Instrument Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

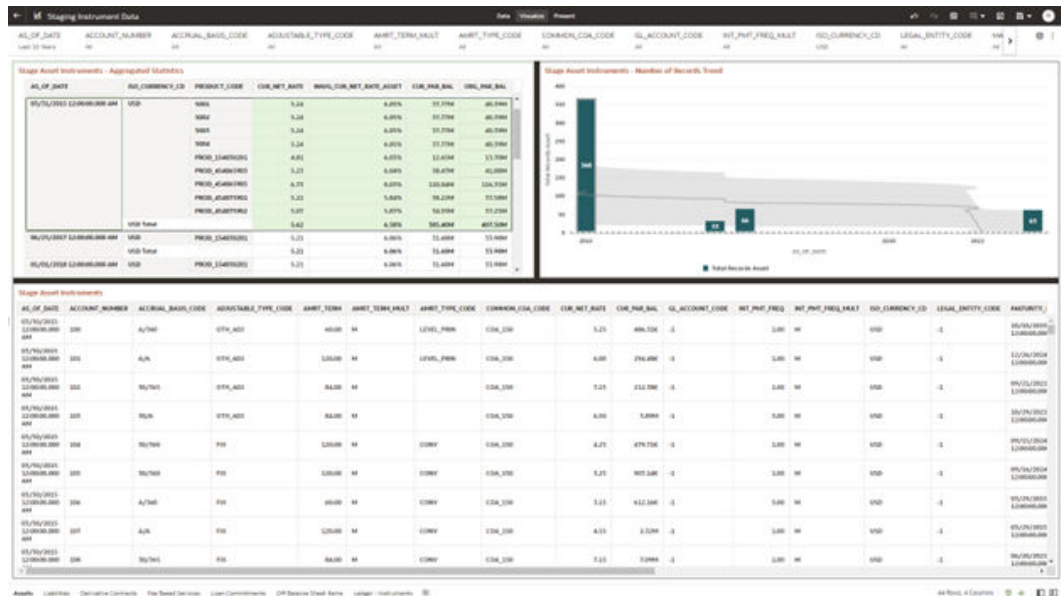
The report displays the underlying data according to the following Charts' logic:

- Stage Asset Instruments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the Additional Balance Weighted Rate, WAVG_CUR_NET_RATE_ASSET, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Stage Asset Instruments - Number of Records Trend
Total Records Asset aggregated by AS_OF_DATE.
- Stage Asset Instruments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-11 Staging Instrument Data - Assets



7.1.3.1.2 Liabilities

The Liabilities Report provides the Analysis Capability on the Stage Liability Instrument Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

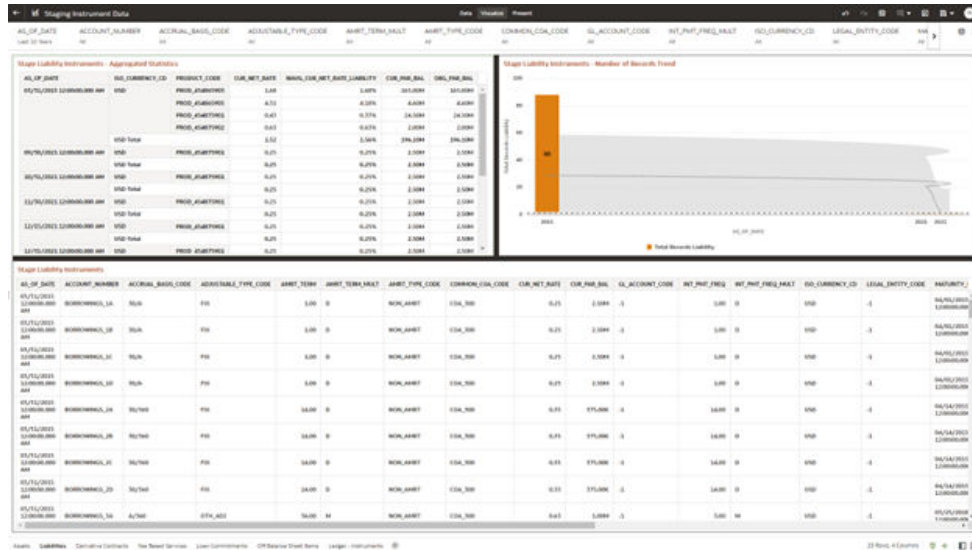
The report displays the underlying data according to the following Charts' logic:

- Stage Liability Instruments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LIABILITY, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Stage Liability Instruments - Number of Records Trend
Total Records Liability aggregated by AS_OF_DATE.
- Stage Liability Instruments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-12 Staging Instrument Data - Liabilities



7.1.3.1.3 Derivative Contracts

The Derivative Contracts Report provides the Analysis Capability on the Stage Derivative Contracts Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Derivative Contracts (Payment) - Aggregated Statistics
Aggregation for CUR_PAR_BAL_PAY (sum), ORG_PAR_BAL_PAY (sum) and CUR_NET_RATE_PAY (avg) by AS_OF_DATE, ISO_CURRENCY_CD_PAY and PRODUCT_CODE.

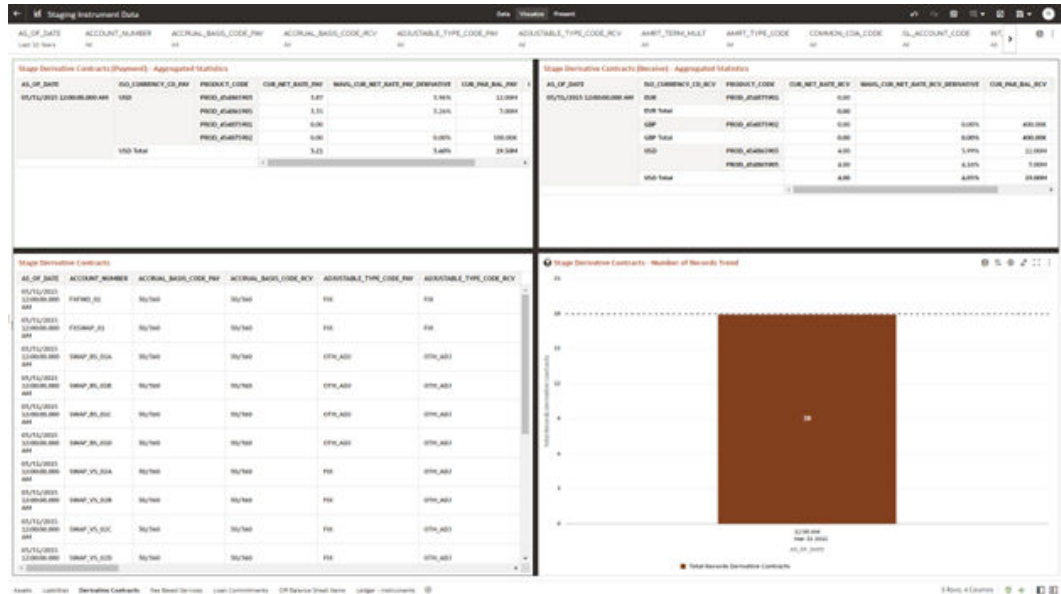
In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_PAY_DERIVATIVE, is calculated as the Weighted AVG by CUR_PAR_BAL_PAY.

- Stage Derivative Contracts (Receive) - Aggregated Statistics
Aggregation for CUR_PAR_BAL_RCV (sum), ORG_PAR_BAL_RCV (sum) and CUR_NET_RATE_RCV (avg) by AS_OF_DATE, ISO_CURRENCY_CD_RCV and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_RCV_DERIVATIVE, is calculated as the Weighted AVG by CUR_PAR_BAL_RCV.

- Stage Derivative Contracts - Number of Records Trend
Total Records Derivative Contracts aggregated by AS_OF_DATE.
- Stage Derivative Contracts
Granular table records at ACCOUNT_NUMBER level.

Figure 7-13 Staging Instrument Data – Derivative Contracts



7.1.3.1.4 Fee Based Services

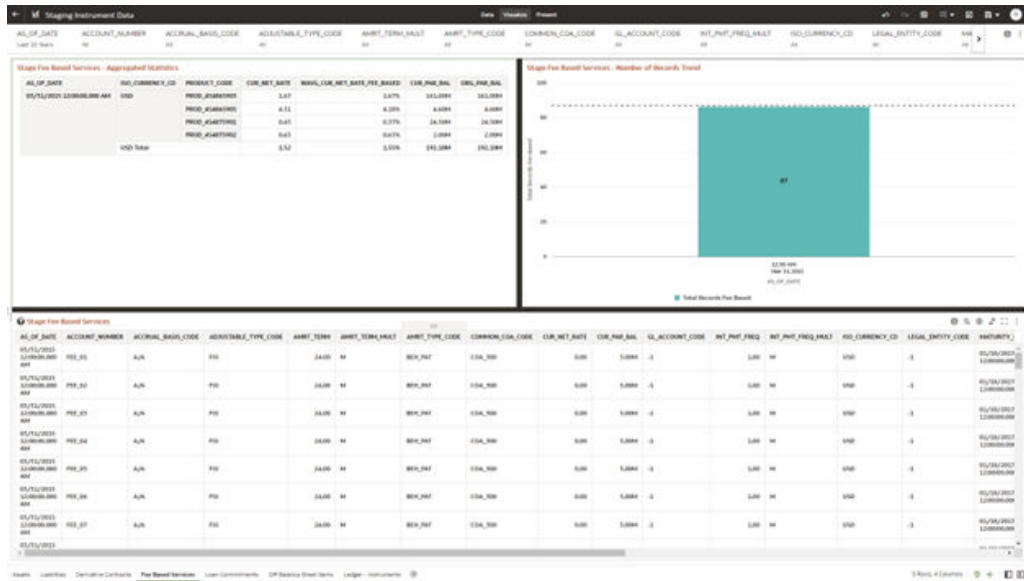
The Fee Based Services Report provides the Analysis Capability on the Stage Fee Based and Other Services Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Fee Based Services - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.
In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_FEE_BASED, is calculated as the Weighted AVG by CUR_PAR_BAL.
- Stage Fee Based Services - Number of Records Trend
Total Records Fee Based aggregated by AS_OF_DATE.
- Stage Fee Based Services
Granular table records at ACCOUNT_NUMBER level.

Figure 7-14 Staging Instrument Data – Fee Based Services



7.1.3.1.5 Loan Commitments

The Loan Commitments Report provides the Analysis Capability on the Stage Loan Commitments Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

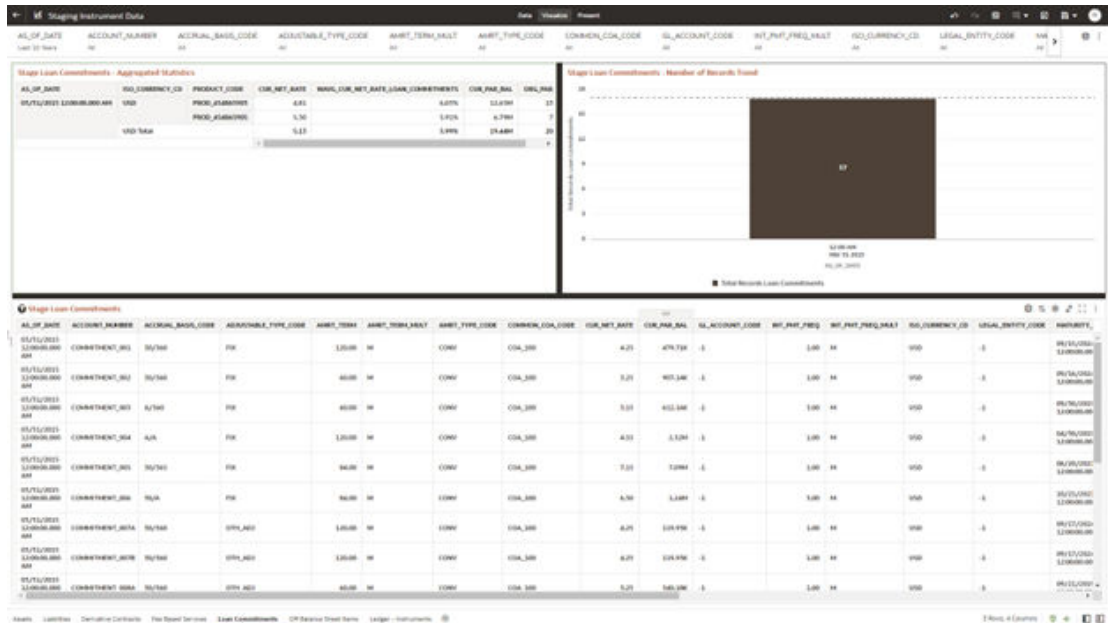
The report displays the underlying data according to the following Charts' logic:

- Stage Loan Commitments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LOAN_COMMITMENTS, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Stage Loan Commitments - Number of Records Trend
Total Records Loan Commitments aggregated by AS_OF_DATE.
- Stage Loan Commitments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-15 Staging Instrument Data – Loan Commitments



7.1.3.1.6 Off Balance Sheet Items

The Off Balance Sheet Items Report provides the analysis capability on the Stage off Balance Sheet Contracts Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

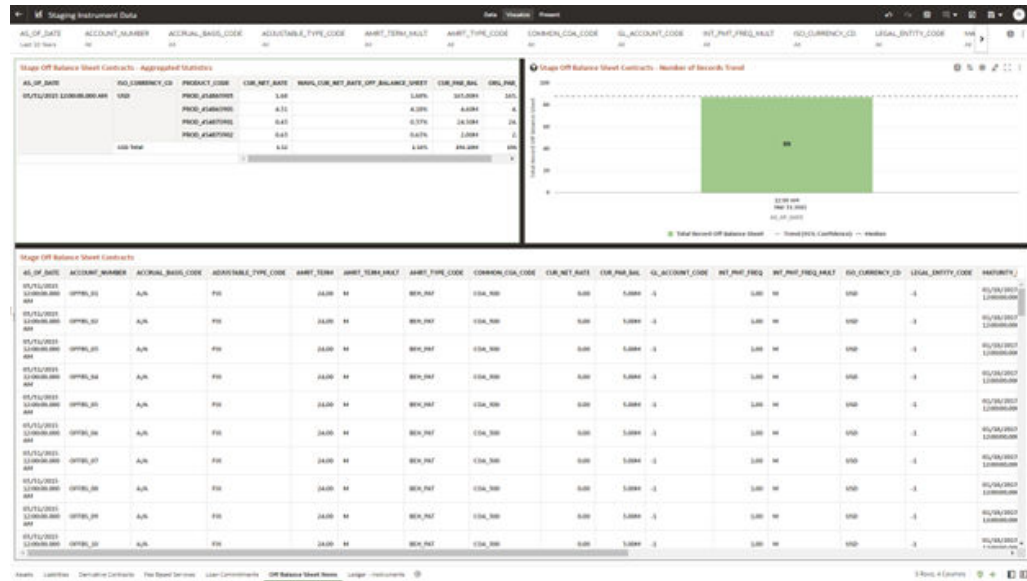
The report displays the underlying data according to the following Charts' logic:

- Stage Off Balance Sheet Contracts - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_OFF_BALANCE_SHEET, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Stage Off Balance Sheet Contracts - Number of Records Trend
Total Record off Balance Sheet aggregated by AS_OF_DATE.
- Stage Off Balance Sheet Contracts
Granular table records at ACCOUNT_NUMBER level.

Figure 7-16 Staging Instrument Data – Off Balance Sheet Items



7.1.3.1.7 Ledger - Instruments

The Ledger – Instrument Report provides the analysis capability on the Stage Ledger Instrument Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Ledger Instrument - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_CODE.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LEDGER_INSTRUMENTS, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Stage Ledger Instrument - Number of Records Trend
Total Records Ledger Instruments aggregated by AS_OF_DATE.
- Stage Ledger Instrument
Granular table records at ACCOUNT_NUMBER level.

Table 7-3 Staging Instrument Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|---------------------------------------|--------------------------|-------------|---|--|--|
| Staging Instrument Supplementary Data | Instrument Supplementary | STG-Staging | STG_ACCOUNT_INDEX_HISTORY STG_ACCOUNT_RATE_TIERS STG_ACCOUNT_INDEX_OPTIONS_SCHEDULE STG_ACCOUNT_INDEX_PAYMENT_SCHEDULE | Stage Account Index History Stage Account Rate Tiers Stage Embedded Options Schedule Stage Payment Schedule | Account Index History Account Rate Tiers Embedded Options Schedule Payment Schedule |

7.1.3.2.1 Account Index History

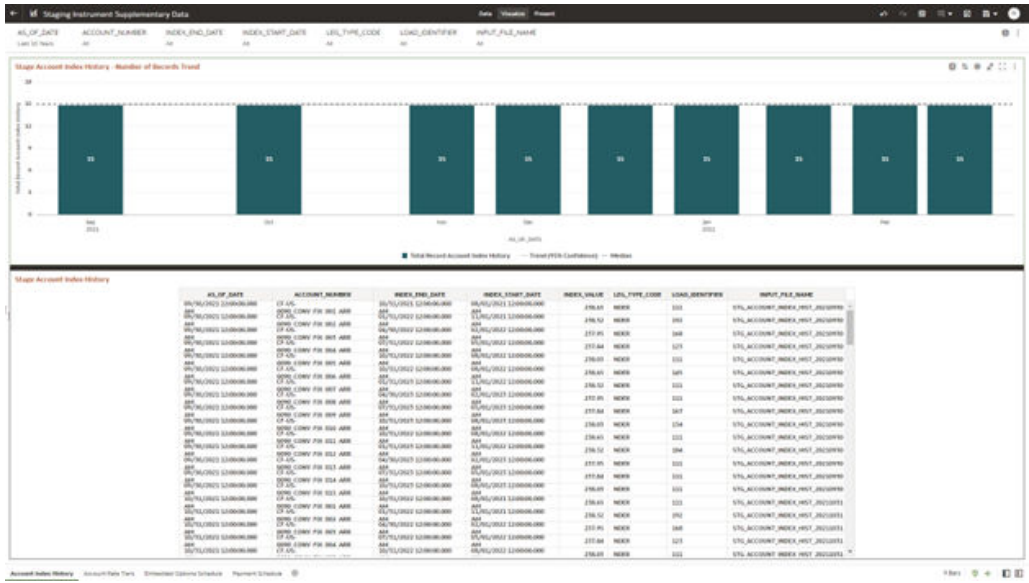
The Account Index History Report provides the analysis capability on the Stage Account Index History Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Account Index History - Number of Records Trend
Total Records Account Index History aggregated by AS_OF_DATE.
- Stage Account Index History
Granular table records at ACCOUNT_NUMBER level.

Figure 7-19 Staging Instrument Supplementary Data – Account Index History



7.1.3.2.2 Account Rate Tiers

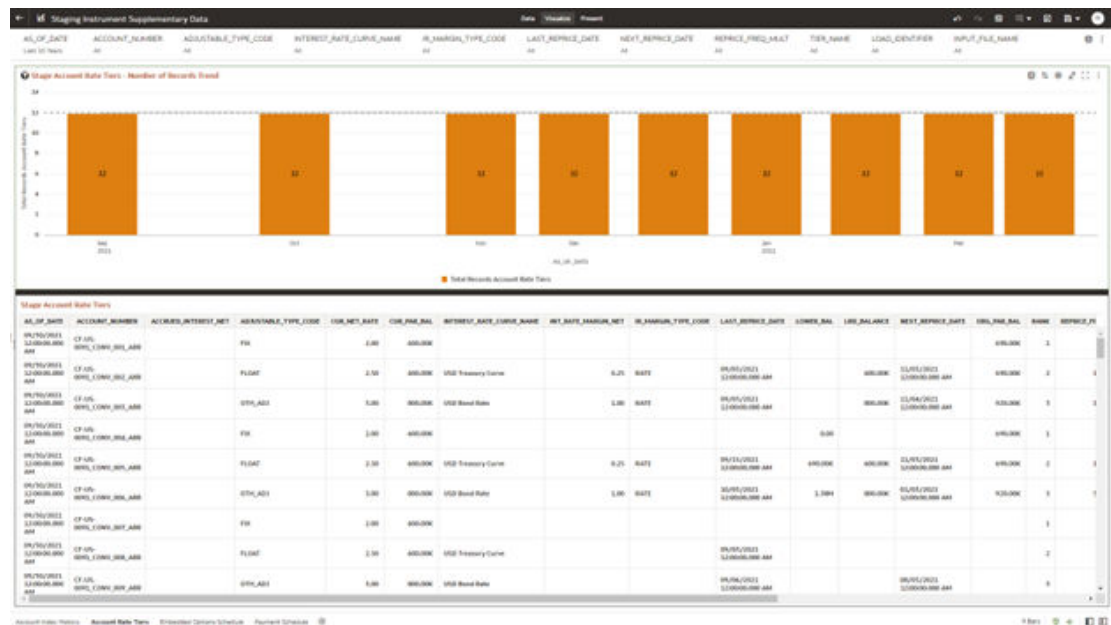
The Account Rate Tiers Report provides the analysis capability on the Stage Account Rate Tiers Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Account Rate Tiers - Number of Records Trend
Total Records Account Rate Tiers aggregated by AS_OF_DATE.
- Stage Account Rate Tiers
Granular table records at ACCOUNT_NUMBER level.

Figure 7-20 Staging Instrument Supplementary Data – Account Rate Tiers



7.1.3.2.3 Embedded Options Schedule

The Embedded Options Schedule Report provides the analysis capability on the Stage Embedded Options Schedule Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Embedded Options Schedule - Number of Records Trend
Total Records Embedded Options Schedule aggregated by AS_OF_DATE.
- Stage Embedded Options Schedule
Granular table records at ACCOUNT_NUMBER level.

Table 7-4 Staging Ledger Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|---------------------|----------------------|-------------|---------------------|----------------------|--------------------|
| Staging Ledger Data | Ledger | STG-Staging | STG_MANAG | Stage | Management Ledger |
| | | | EMENT_LED | Management Ledger | |
| | | | GER | Ledger | |
| | | | STG_MANAG | Stage | |
| | | | EMENT_LED | Placeholder | |
| | | | GER_01 | Management Ledger 01 | |
| | | | STG_MANAG | Stage | |
| | | | EMENT_LED | Placeholder | |
| | | | GER_02 | Management Ledger 02 | |
| | | | STG_MANAG | Stage | |
| | | | EMENT_LED | Placeholder | |
| | | | GER_03 | Management Ledger 03 | |
| | | | STG_MANAG | Stage | |
| | | | EMENT_LED | Placeholder | |
| | | | GER_04 | Management Ledger 04 | |
| STG_MANAG | Stage | | | | |
| EMENT_LED | Placeholder | | | | |
| GER_05 | Management Ledger 05 | | | | |
| | Stage | | | | |
| | Placeholder | | | | |
| | Management Ledger 05 | | | | |

7.1.3.3.1 Management Ledger

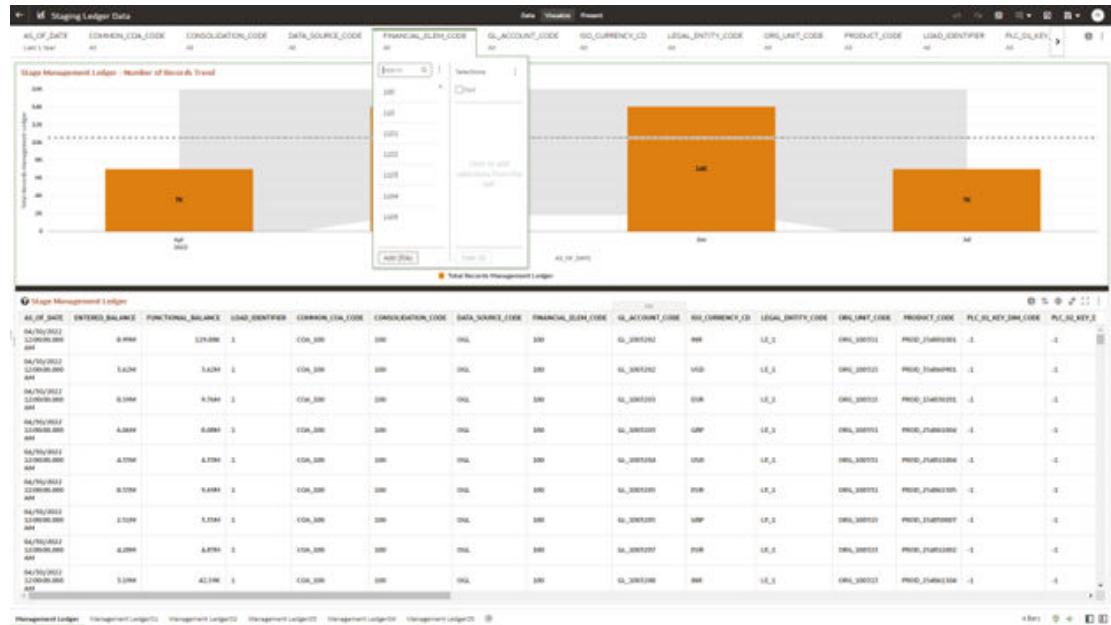
The Management Ledger Report provides the analysis capability on the Stage Management Ledger Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger - Number of Records Trend
Total Records Management Ledger aggregated by AS_OF_DATE.
- Stage Management Ledger
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-23 Staging Ledger Data – Management Ledger



7.1.3.3.2 Management Ledger01

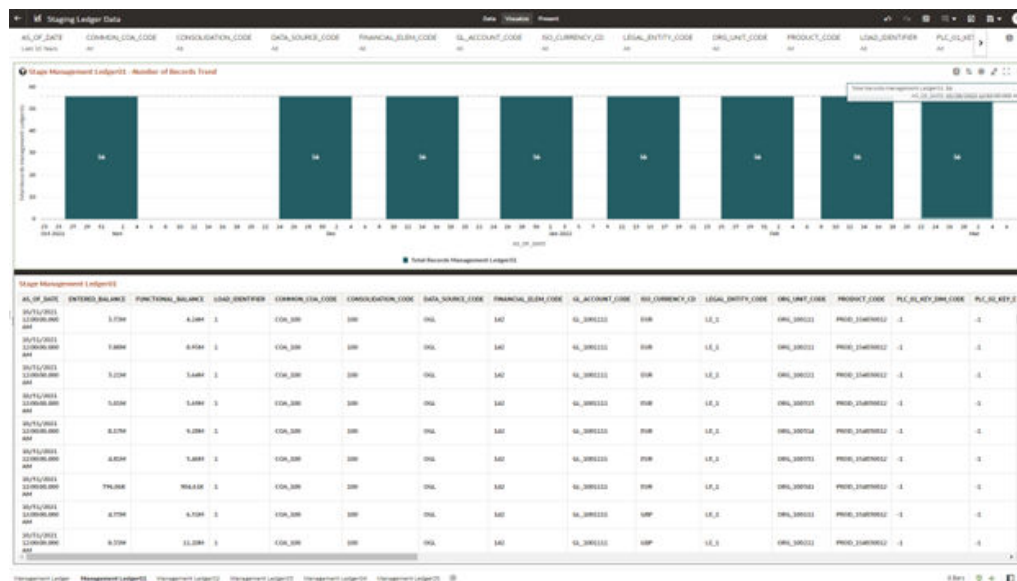
The Management Ledger01 Report provides the analysis capability on the Stage Placeholder Management Ledger 01 table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger01 - Number of Records Trend
Total Records Management Ledger01 aggregated by AS_OF_DATE.
- Stage Management Ledger01
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-24 Staging Ledger Data – Management Ledger01



7.1.3.3.3 Management Ledger02

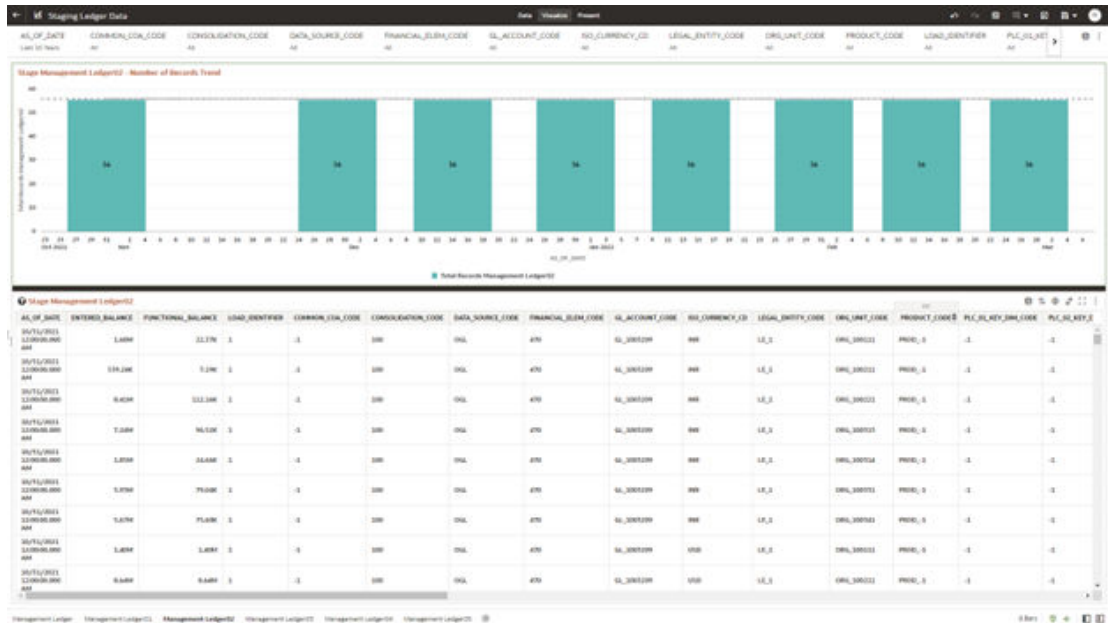
The Management Ledger02 Report provides the analysis capability on the Stage Placeholder Management Ledger 02 table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger02 - Number of Records Trend
Total Records Management Ledger02 aggregated by AS_OF_DATE.
- Stage Management Ledger02
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-25 Staging Ledger Data – Management Ledger02



7.1.3.3.4 Management Ledger03

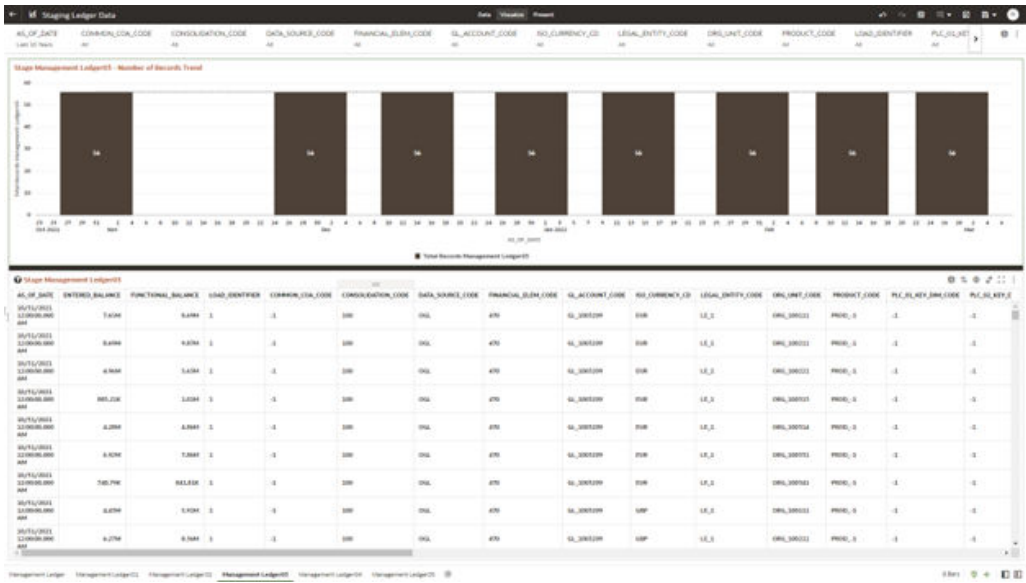
The Management Ledger03 Report provides the analysis capability on the Stage Placeholder Management Ledger 03 table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger03 - Number of Records Trend
Total Records Management Ledger03 aggregated by AS_OF_DATE.
- Stage Management Ledger03
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-26 Staging Ledger Data – Management Ledger03



7.1.3.3.5 Management Ledger04

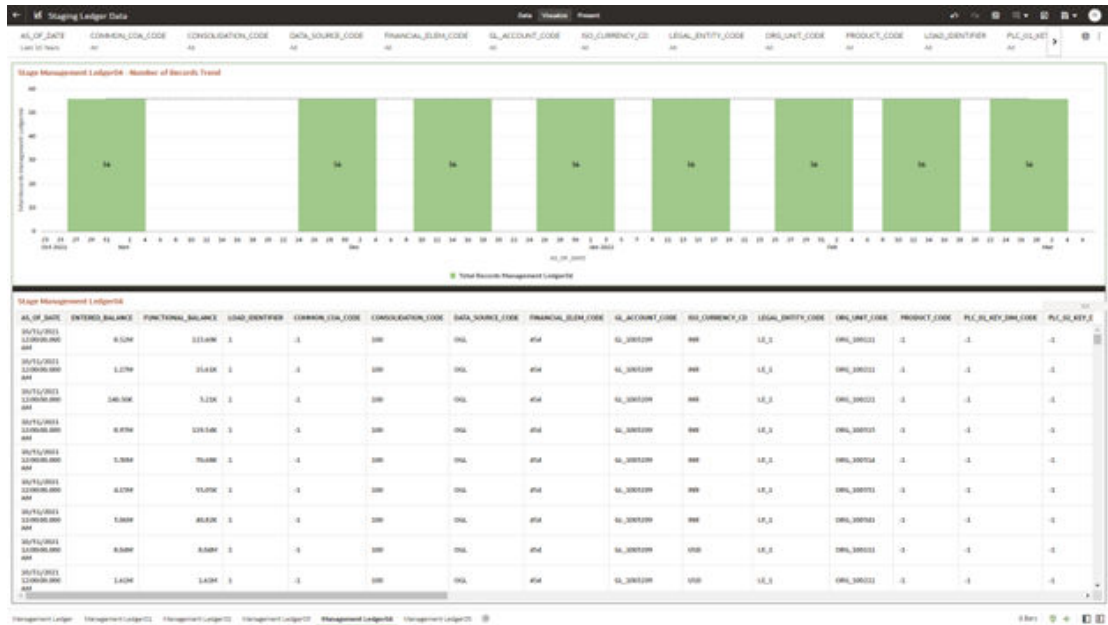
The Management Ledger04 Report provides the analysis capability on the Stage Placeholder Management Ledger 04 table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger04 - Number of Records Trend
Total Records Management Ledger04 aggregated by AS_OF_DATE.
- Stage Management Ledger04
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-27 Staging Ledger Data – Management Ledger04



7.1.3.3.6 Management Ledger05

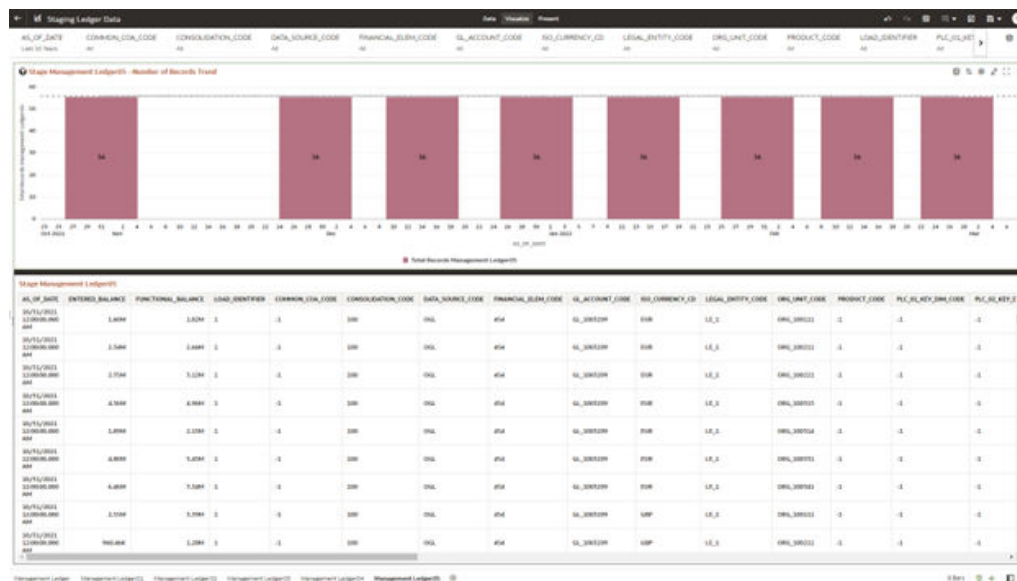
The Management Ledger05 Report provides the analysis capability on the Stage Placeholder Management Ledger 05 table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Management Ledger05 - Number of Records Trend
Total Records Management Ledger05 aggregated by AS_OF_DATE.
- Stage Management Ledger05
Granular table records at FINANCIAL_ELEM_CODE level.

Figure 7-28 Staging Ledger Data – Management Ledger05



7.1.3.4 Staging Transaction Summary Data

You can use this report to perform the analysis on the Staging area tables related to Transaction Summary Data. The report contains specifically the following Staging Database Objects:

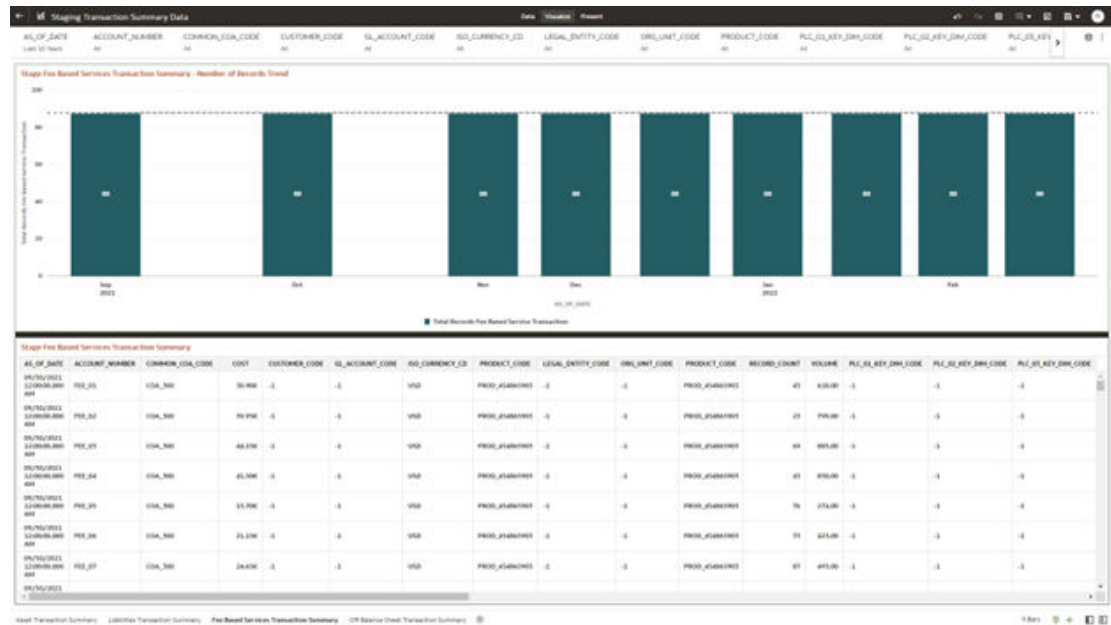
Table 7-5 Staging Ledger Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|----------------------------------|---------------------|-------------|----------------------------|--|--|
| Staging Transaction Summary Data | Transaction Summary | STG–Staging | STG_ASSET_TXN | Stage Asset Transaction Summary | Assets Transaction Summary |
| | | | STG_LIABILITY_TXN | Stage Liability Transaction Summary | Liabilities Transaction Summary |
| | | | STG_FEE_BASED_ETXN | Stage Fee Based and Other Services Transaction Summary | Fee Based Services Transaction Summary |
| | | | STG_OFF_BALANCE_SHEET_ETXN | Stage Off Balance Sheet Transaction Summary | Off Balance Sheet Transaction Summary |
| | | | STG_BALANCE_SHEET_ETXN | Stage Balance Sheet Transaction Summary | Balance Sheet Transaction Summary |
| | | | STG_TRANSACTION_SUMMARY | Transaction Summary | Transaction Summary |
| | | | STG_TRANSACTION_SUMMARY | Transaction Summary | Transaction Summary |
| | | | STG_TRANSACTION_SUMMARY | Transaction Summary | Transaction Summary |

7.1.3.4.1 Asset Transaction Summary

This report provides the analysis capability on the Stage Assets Transaction Summary Table.

Figure 7-31 Staging Transaction Summary Data – Fee Based Services Transaction Summary



7.1.3.4.4 Off Balance Sheet Transaction Summary

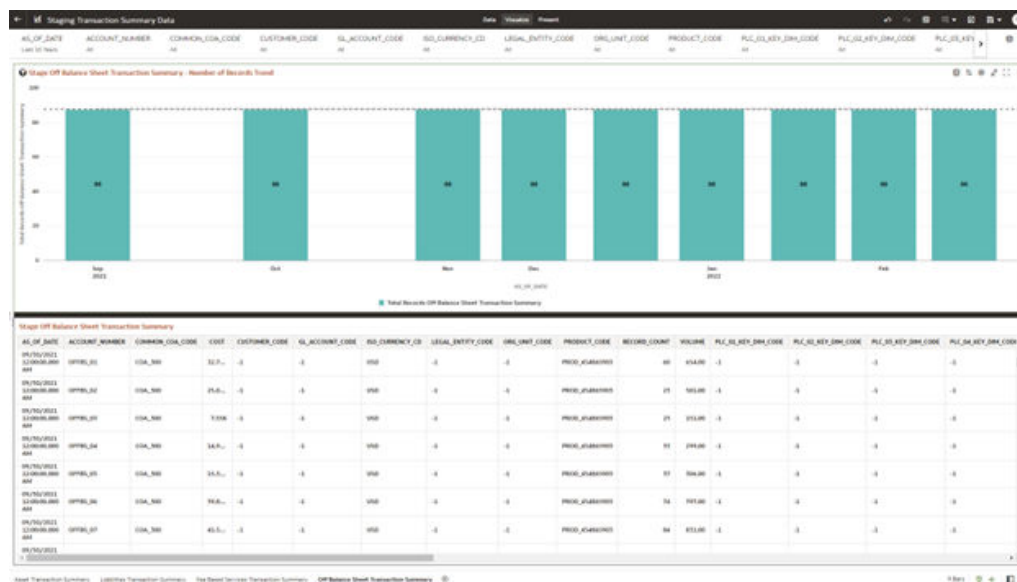
The Off Balance Sheet Transaction Summary Report provides the analysis capability on the Stage Off Balance Sheet Transaction Summary Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Stage Off Balance Sheet Transaction Summary - Number of Records Trend
Total Records Off Balance Sheet Transaction Summary aggregated by AS_OF_DATE.
- Stage Off Balance Sheet Transaction Summary
Granular table records at ACCOUNT_NUMBER level.

Figure 7-32 Staging Transaction Summary Data – Off Balance Sheet Transaction Summary



7.1.3.5 Processing Instrument Data

You can use this report to perform the analysis on the Processing Area Tables related to Instrument Data. The report contains specifically the following Processing Database Objects:

Table 5:

Table 7-6 Processing Instrument Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|----------------------------|------------|----------------|-------------------------|------------------------------|-------------------------|
| Processing Instrument Data | Instrument | FSI-Processing | FSI_D_ASSET | Asset Instruments | Assets |
| | | | FSI_D_LIABILITY | Liability Instruments | Liabilities |
| | | | FSI_D_DERIVATIVE | Derivative Contracts | Derivative Contracts |
| | | | FSI_D_FEE_BASED_SERVICE | Fee Based and Other Services | Fee Based Services |
| | | | FSI_D_LOAN_COMMITMENTS | Loan Commitments | Loan Commitments |
| | | | FSI_D_OFF_BALANCE_SHEET | Off Balance Sheet Contracts | Off Balance Sheet Items |
| | | | FSI_D_LEDGER_INSTRUMENT | Ledger Instrument | Ledger - Instruments |

7.1.3.5.1 Assets

The Assets Report provides the analysis capability on the Asset Instrument Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

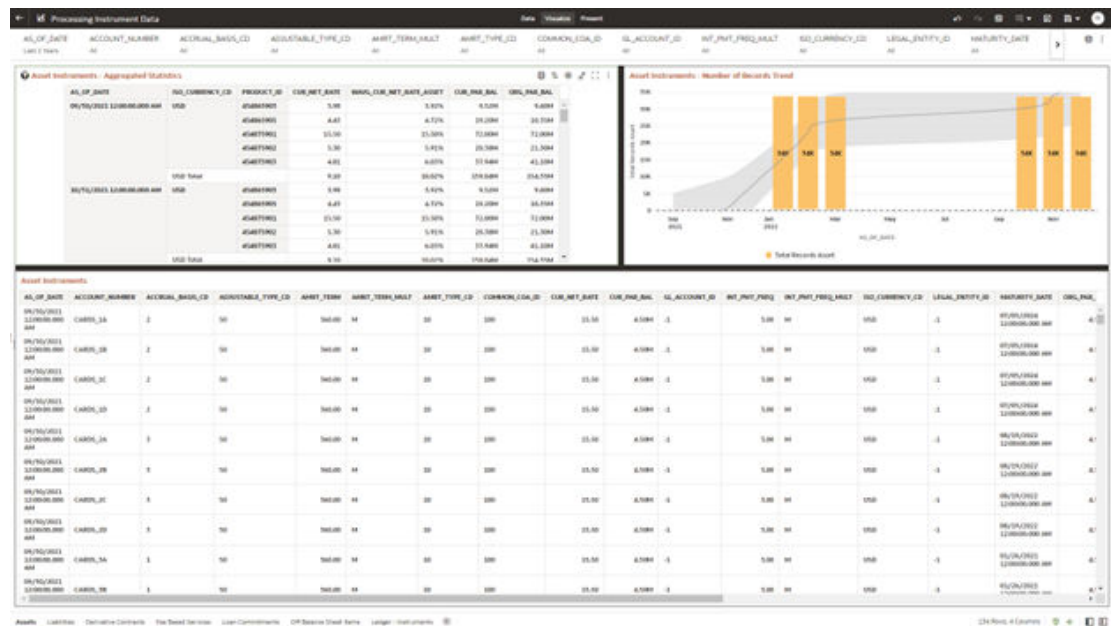
The report displays the underlying data according to the following Charts' logic:

- Asset Instruments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_ASSET, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Asset Instruments - Number of Records Trend
Total Records Asset aggregated by AS_OF_DATE.
- Asset Instruments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-33 Processing Instrument Data - Assets



7.1.3.5.2 Liabilities

The Liabilities Report provides the analysis capability on the Liability Instrument Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

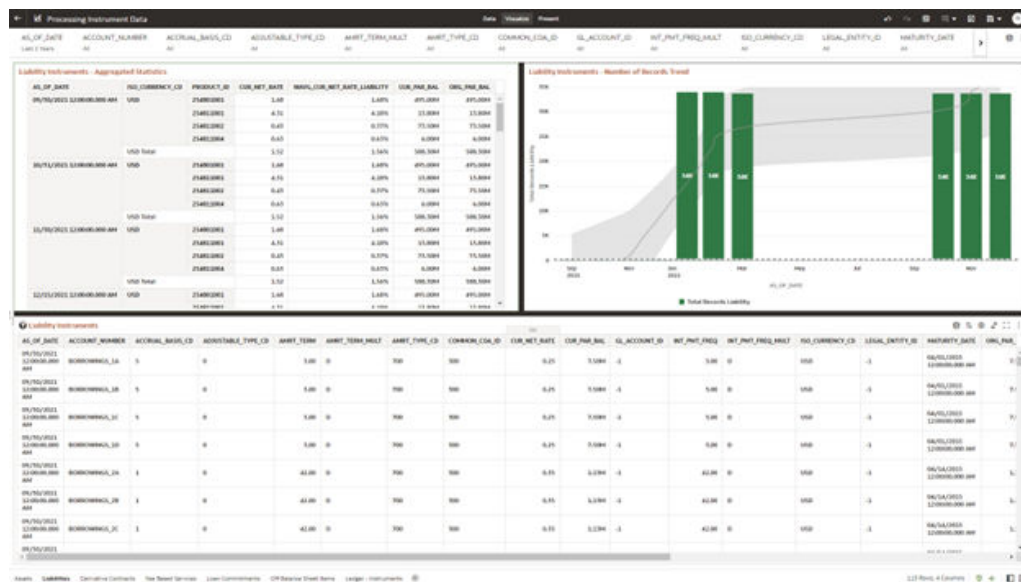
The report displays the underlying data according to the following Charts' logic:

- Liability Instruments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LIABILITY, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Liability Instruments - Number of Records Trend
Total Records Liability aggregated by AS_OF_DATE.
- Liability Instruments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-34 Processing Instrument Data - Liabilities



7.1.3.5.3 Derivative Contracts

The Derivative Contracts Report provides the analysis capability on the Derivative Contracts Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

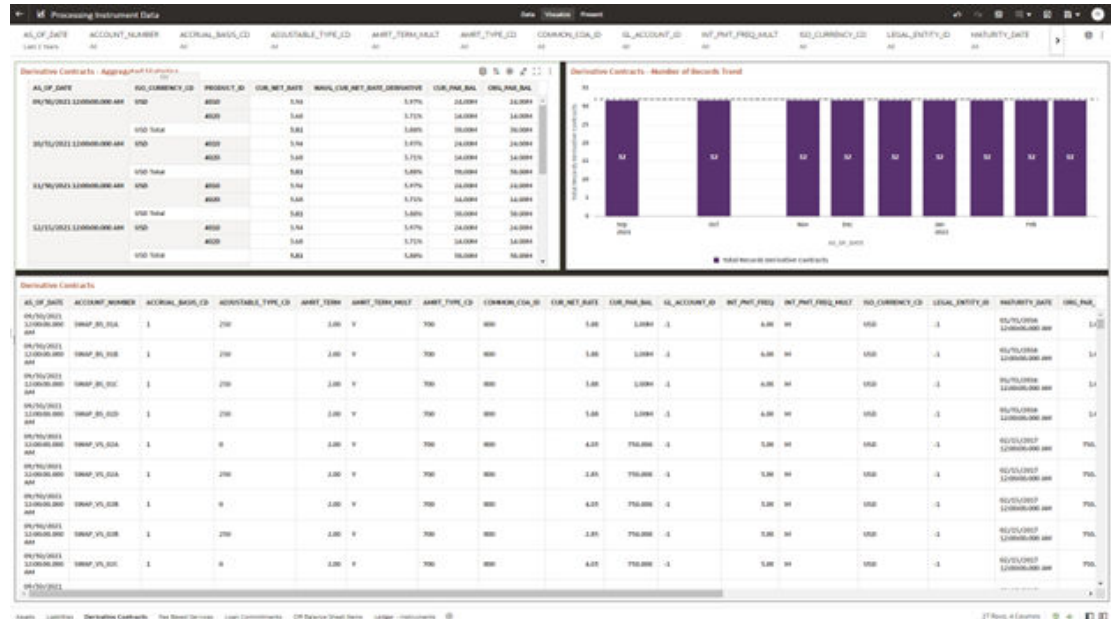
- Derivative Contracts - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LIABILITY, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Derivative Contracts - Number of Records Trend
Total Records Derivative Contracts aggregated by AS_OF_DATE.

- Derivative Contracts
Granular table records at ACCOUNT_NUMBER level.

Figure 7-35 Processing Instrument Data – Derivative Contracts



7.1.3.5.4 Fee Based Services

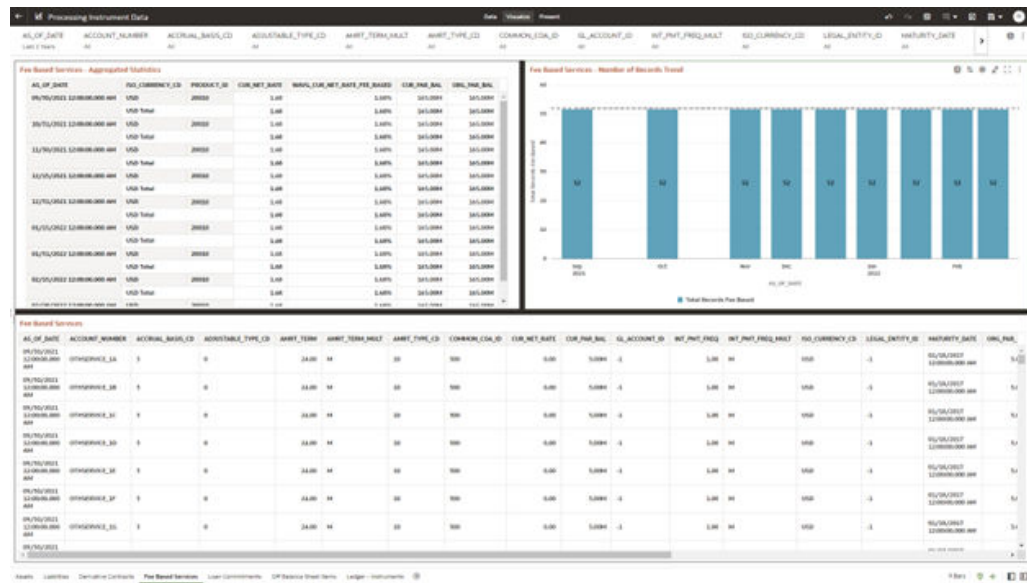
The Fee Based Services Report provides the analysis capability on the Fee Based and Other Services Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Fee Based Services - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.
In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_FEE_BASED, is calculated as the Weighted AVG by CUR_PAR_BAL.
- Fee Based Services - Number of Records Trend
Total Records Fee Based aggregated by AS_OF_DATE.
- Fee Based Services
Granular table records at ACCOUNT_NUMBER level.

Figure 7-36 Processing Instrument Data – Fee Based Services



7.1.3.5.5 Loan Commitments

The Loan Commitments Report provides the analysis capability on the Loan Commitments Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

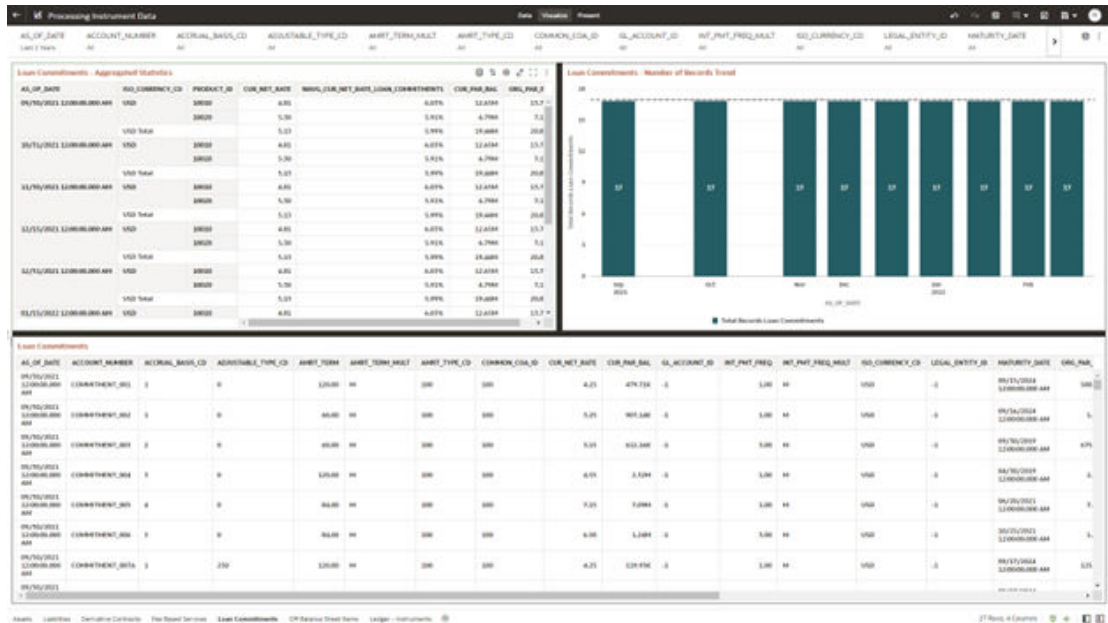
The report displays the underlying data according to the following Charts' logic:

- Loan Commitments - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LOAN_COMMITMENTS, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Loan Commitments - Number of Records Trend
Total Records Loan Commitments aggregated by AS_OF_DATE.
- Loan Commitments
Granular table records at ACCOUNT_NUMBER level.

Figure 7-37 Processing Instrument Data – Loan Commitments



7.1.3.5.6 Off Balance Sheet Items

The Off Balance Sheet Items Report provides the analysis capability on the Off Balance Sheet Contracts Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Off Balance Sheet Contracts - Aggregated Statistics
Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_OFF_BALANCE_SHEET, is calculated as the Weighted AVG by CUR_PAR_BAL.

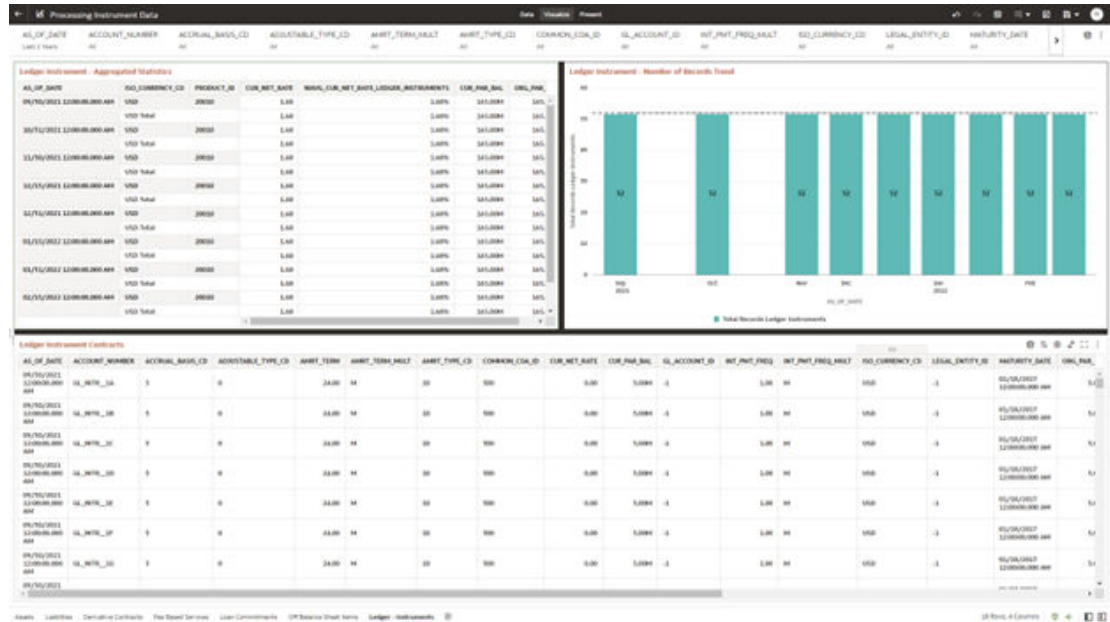
- Off Balance Sheet Contracts - Number of Records Trend
Total Record Off Balance Sheet aggregated by AS_OF_DATE.
- Off Balance Sheet Contracts
Granular table records at ACCOUNT_NUMBER level.

Aggregation for CUR_PAR_BAL (sum), ORG_PAR_BAL (sum) and CUR_NET_RATE (avg) by AS_OF_DATE, ISO_CURRENCY_CD and PRODUCT_ID.

In addition, for CUR_NET_RATE, the additional Balance Weighted Rate, WAVG_CUR_NET_RATE_LEDGER_INSTRUMENTS, is calculated as the Weighted AVG by CUR_PAR_BAL.

- Ledger Instrument - Number of Records Trend
Total Records Ledger Instruments aggregated by AS_OF_DATE.
- Ledger Instrument
Granular table records at ACCOUNT_NUMBER level.

Figure 7-40 Processing Instrument Data – Ledger Instruments



7.1.3.6 Processing Instrument Supplementary Data

You can use this report to perform the analysis on the Processing Area Tables related to Instrument Data. The report contains specifically the below Processing Database Objects:

Table 6: Processing Instrument Supplementary Data

Table 7-7 Processing Instrument Supplementary Data

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|--|--------------------------|----------------|---|--|--|
| Processing Instrument Supplementary Data | Instrument Supplementary | FSI-Processing | FSI_D_ACCO UNT_INDEX_HIST FSI_D_ACCO UNT_RATE_TIERS FSI_D_EMBEDDED_OPTIONS_SCHEDULE FSI_D_PAYMENT_SCHEDULE | Account Index History Account Rate Tiers Embedded Options Schedule Payment Schedule | Account Index History Account Rate Tiers Embedded Options Schedule Payment Schedule |

7.1.3.6.1 Account Index History

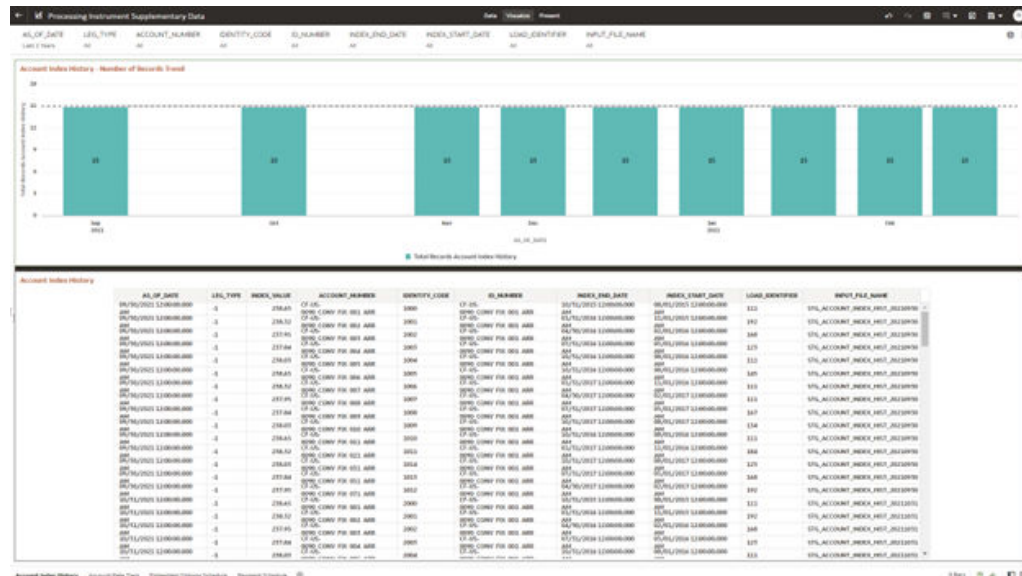
The Account Index History Report provides the analysis capability on the Account Index History Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Account Index History - Number of Records Trend
Total Records Account Index History aggregated by AS_OF_DATE.
- Account Index History
Granular table records at ACCOUNT_NUMBER level.

Figure 7-41 Processing Instrument Supplementary Data – Account Index History



7.1.3.6.2 Account Rate Tiers

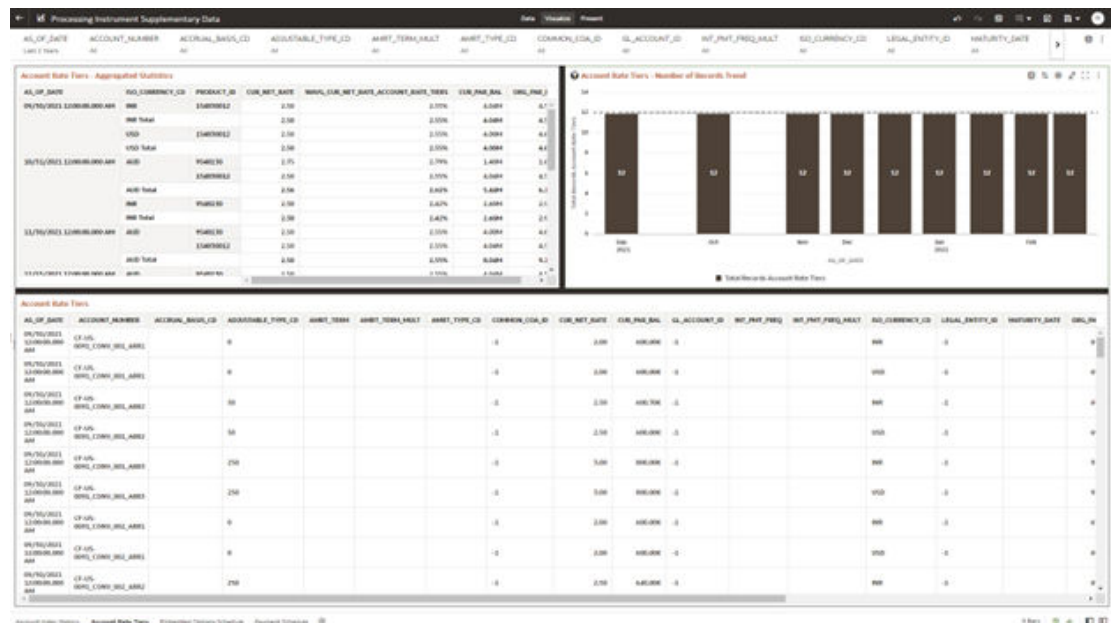
The Account Rate Tiers Report provides the analysis capability on the Account Rate Tiers Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Account Rate Tiers - Number of Records Trend
Total Records Account Rate Tiers aggregated by AS_OF_DATE.
- Account Rate Tiers
Granular table records at ACCOUNT_NUMBER level.

Figure 7-42 Processing Instrument Supplementary Data – Account Rate Tiers



7.1.3.6.3 Embedded Options Schedule

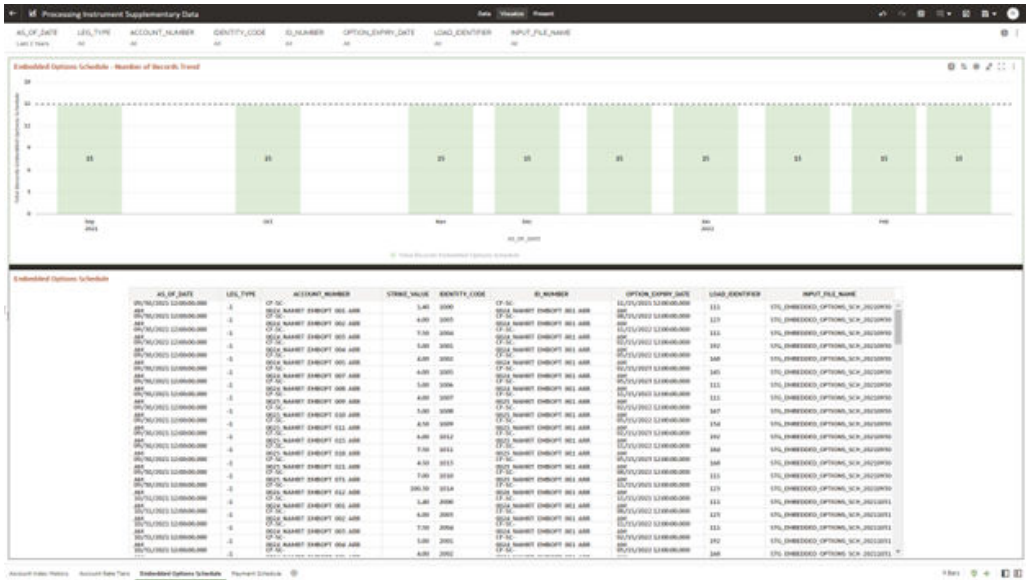
The Embedded Options Schedule Report provides the analysis capability on the Embedded Options Schedule Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Embedded Options Schedule - Number of Records Trend
Total Records Embedded Options Schedule aggregated by AS_OF_DATE.
- Embedded Options Schedule
Granular table records at ACCOUNT_NUMBER level.

Figure 7-43 Processing Instrument Supplementary Data – Embedded Options Schedule



7.1.3.6.4 Payment Schedule

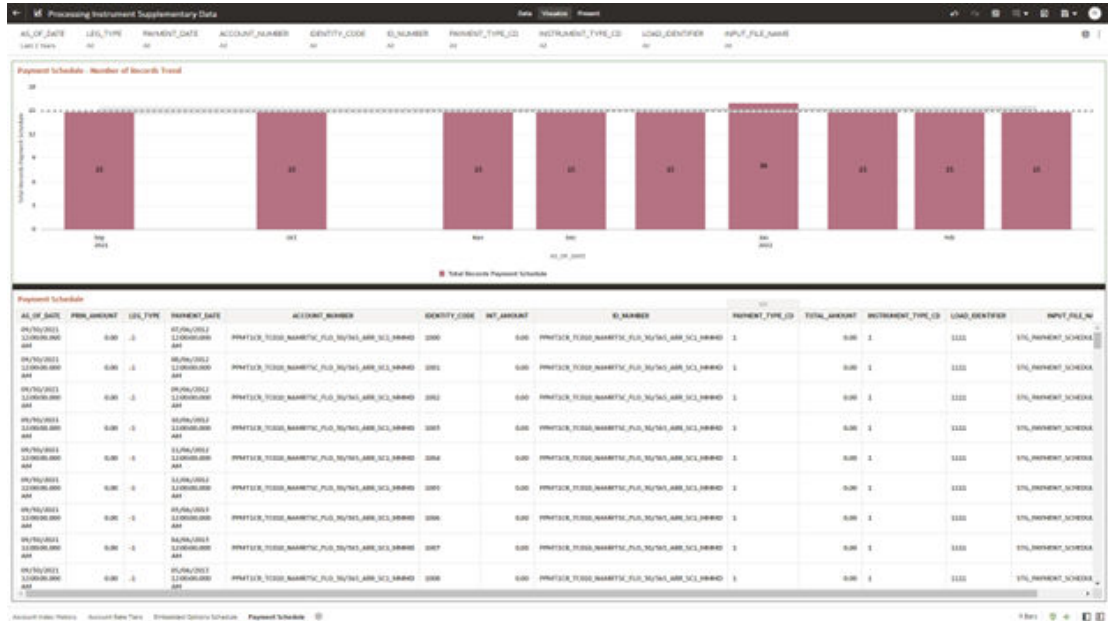
The Payment Schedule Report provides the analysis capability on the Payment Schedule Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Payment Schedule - Number of Records Trend
Total Records Payment Schedule aggregated by AS_OF_DATE.
- Payment Schedule
Granular table records at ACCOUNT_NUMBER level.

Figure 7-44 Processing Instrument Supplementary Data – Payment Schedule



7.1.3.7 Processing Ledger Data

You can use this report to perform analysis on the Processing Area Tables related to Ledger Data. The report contains specifically the following Staging Database Objects:

Table 7: Staging Ledger Data Reports

Table 7-8 Staging Ledger Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|------------------------|--------|----------------|----------------------------|----------------------|----------------------|
| Processing Ledger Data | Ledger | FSI-Processing | FSI_D_MANAGEMENT_LEDGER | Management Ledger | Management Ledger |
| | | | FSI_D_MANAGEMENT_LEDGER_01 | Management Ledger 01 | Management Ledger 01 |
| | | | FSI_D_MANAGEMENT_LEDGER_02 | Management Ledger 02 | Management Ledger 02 |
| | | | FSI_D_MANAGEMENT_LEDGER_03 | Management Ledger 03 | Management Ledger 03 |
| | | | FSI_D_MANAGEMENT_LEDGER_04 | Management Ledger 04 | Management Ledger 04 |
| | | | FSI_D_MANAGEMENT_LEDGER_05 | Management Ledger 05 | Management Ledger 05 |
| | | | FSI_D_MANAGEMENT_LEDGER_06 | Management Ledger 06 | Management Ledger 06 |
| | | | FSI_D_MANAGEMENT_LEDGER_07 | Management Ledger 07 | Management Ledger 07 |
| | | | FSI_D_MANAGEMENT_LEDGER_08 | Management Ledger 08 | Management Ledger 08 |
| | | | FSI_D_MANAGEMENT_LEDGER_09 | Management Ledger 09 | Management Ledger 09 |

7.1.3.7.1 Management Ledger

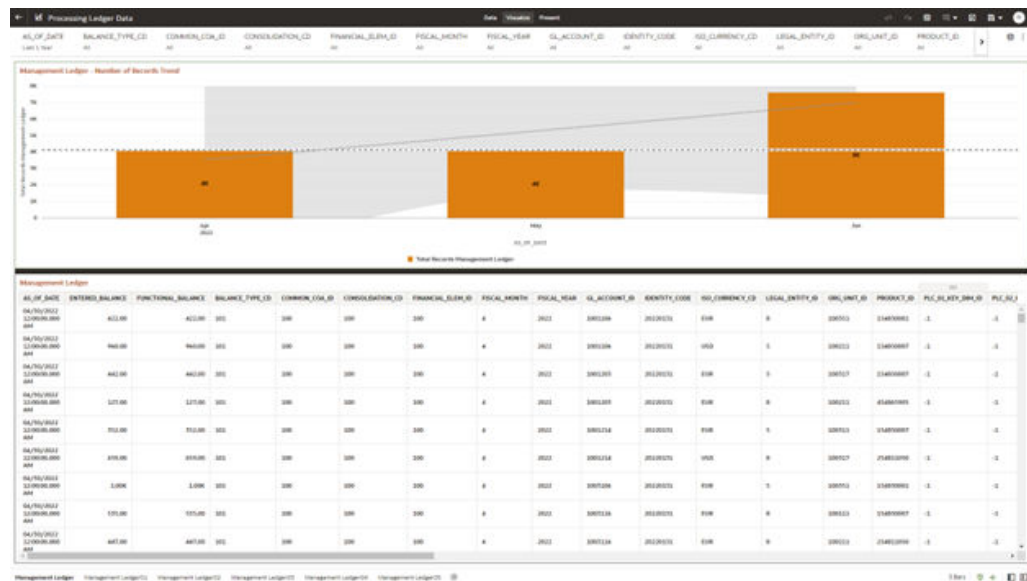
The Management Ledger Report provides the analysis capability on the Management Ledger Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger - Number of Records Trend
Total Records Management Ledger aggregated by AS_OF_DATE.
- Management Ledger
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-45 Processing Ledger Data – Management Ledger



7.1.3.7.2 Management Ledger01

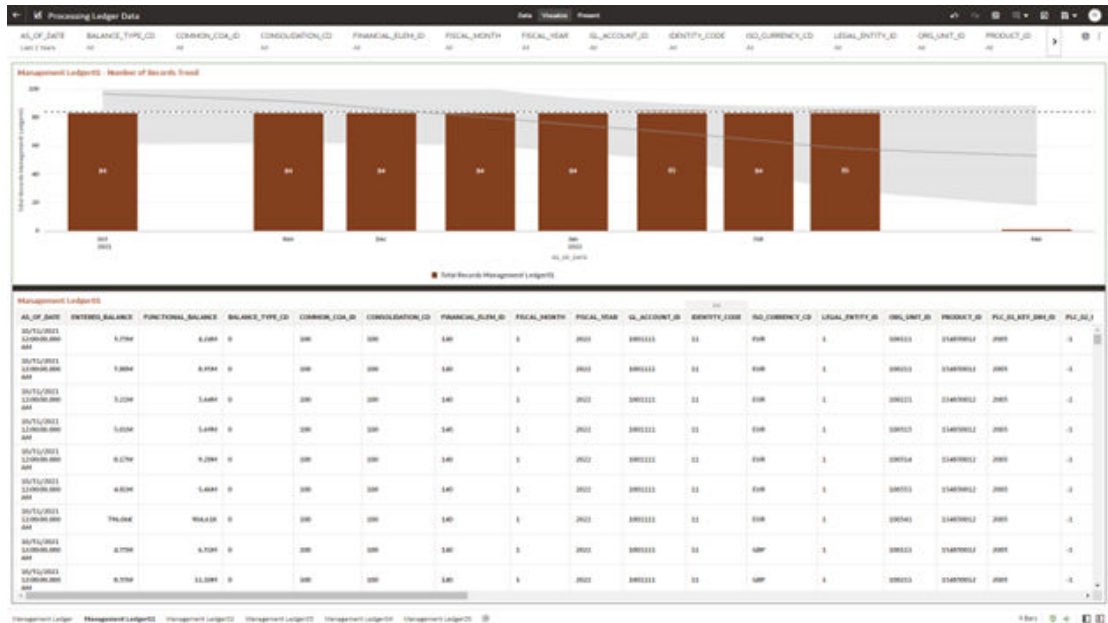
The Management Ledger01 Report provides the analysis capability on the Placeholder Management Ledger 01 Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger01 - Number of Records Trend
Total Records Management Ledger01 aggregated by AS_OF_DATE.
- Management Ledger01
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-46 Processing Ledger Data – Management Ledger01



7.1.3.7.3 Management Ledger02

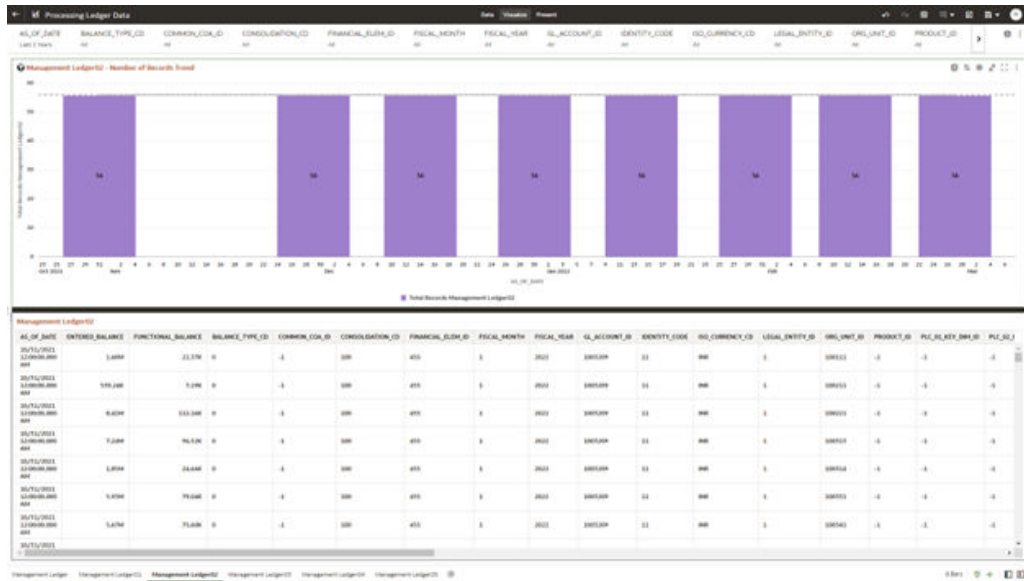
The Management Ledger02 Report provides the analysis capability on the Placeholder Management Ledger 02 Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger02 - Number of Records Trend
Total Records Management Ledger02 aggregated by AS_OF_DATE.
- Management Ledger02
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-47 Processing Ledger Data – Management Ledger02



7.1.3.7.4 Management Ledger03

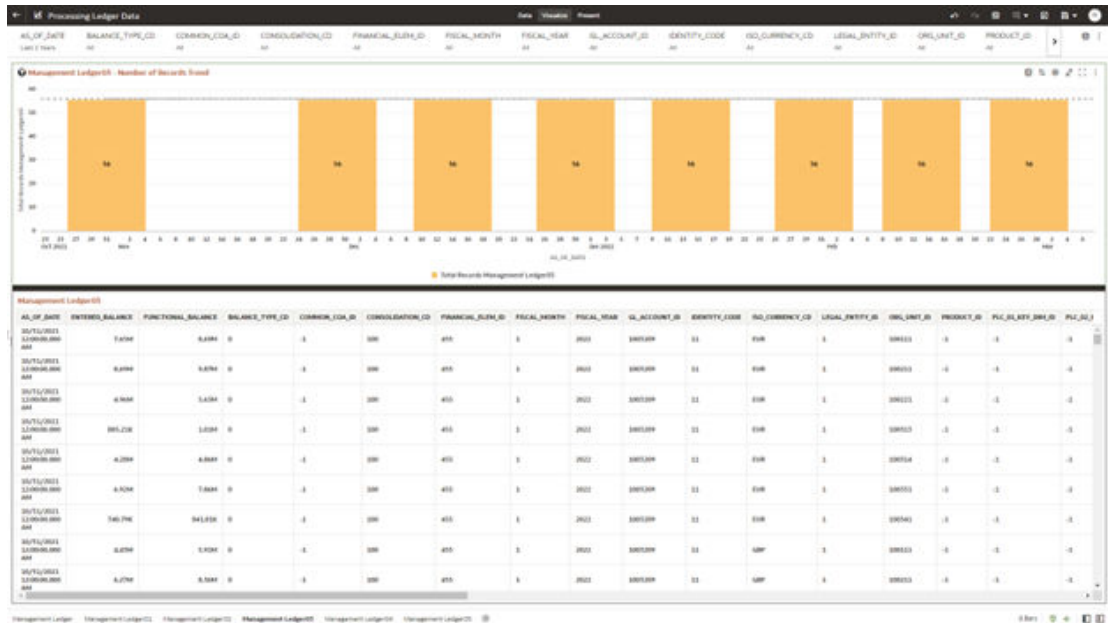
The Management Ledger03 Report provides the analysis capability on the Placeholder Management Ledger 03 Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger03 - Number of Records Trend
Total Records Management Ledger03 aggregated by AS_OF_DATE.
- Management Ledger03
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-48 Processing Ledger Data – Management Ledger03



7.1.3.7.5 Management Ledger04

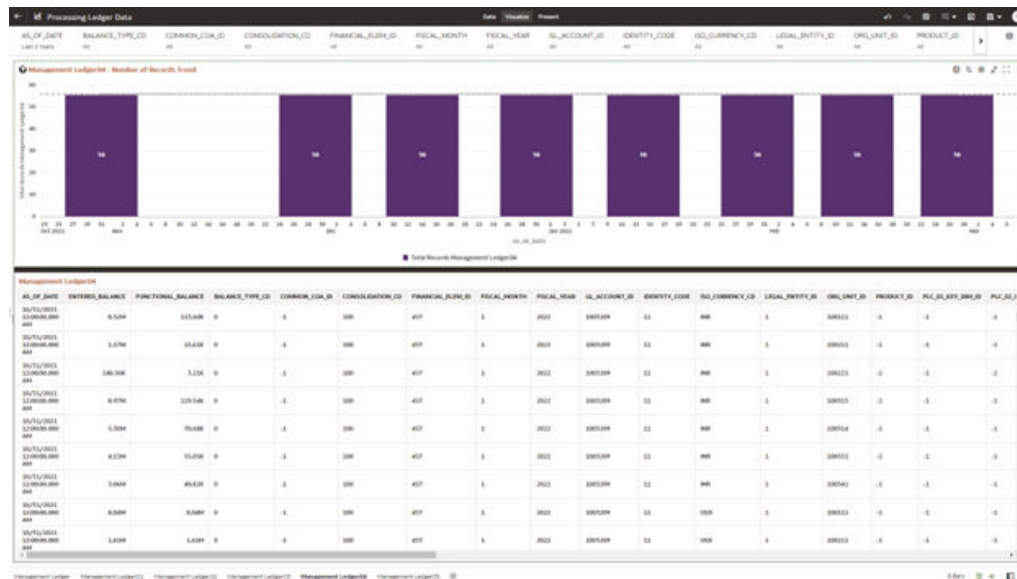
The Management Ledger04 Report provides the analysis capability on the Placeholder Management Ledger 04 Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger04 - Number of Records Trend
Total Records Management Ledger04 aggregated by AS_OF_DATE.
- Management Ledger04
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-49 Processing Ledger Data – Management Ledger04



7.1.3.7.6 Management Ledger05

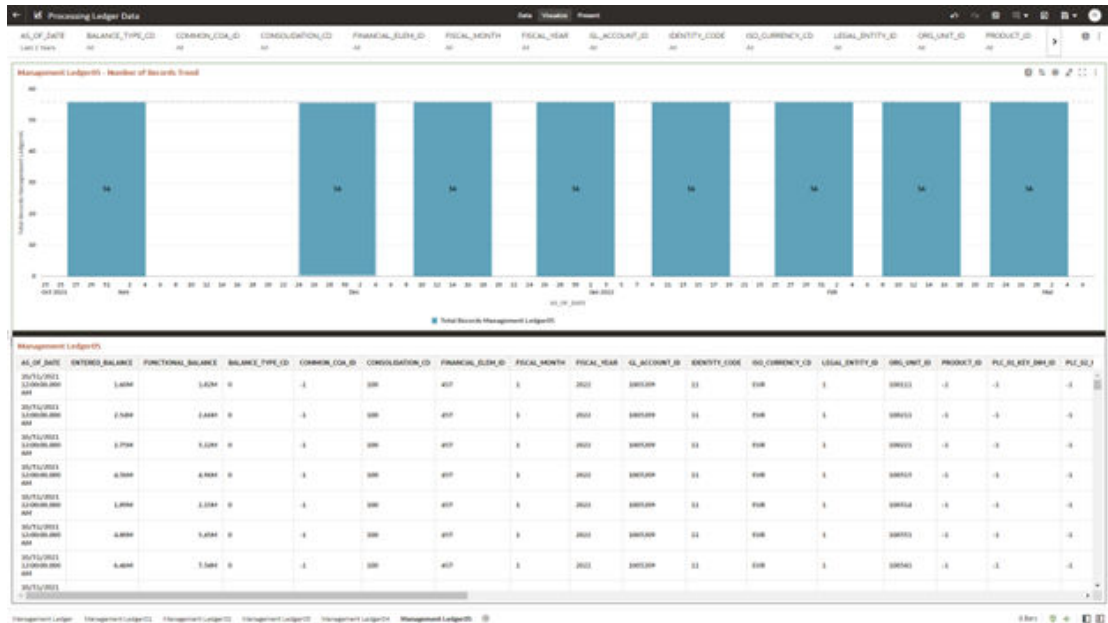
The Management Ledger05 Report provides the analysis capability on the Placeholder Management Ledger 05 Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Management Ledger05 - Number of Records Trend
Total Records Management Ledger05 aggregated by AS_OF_DATE.
- Management Ledger05
Granular table records at FINANCIAL_ELEM_ID level.

Figure 7-50 Processing Ledger Data – Management Ledger05



7.1.3.8 Processing Transaction Summary Data

You can use this report to perform the analysis on the Processing Area Tables related to Transaction Summary Data.

The report contains specifically the following Staging Database Objects:

Table 7-9 Staging Transaction Summary Data Reports

| Report Name | Scope | Table Layer | Physical Table List | Logical Table List | Report Canvas Name |
|-------------------------------------|---------------------|----------------|------------------------------|--|--|
| Processing Transaction Summary Data | Transaction Summary | FSI-Processing | FSI_D_ASSET_TXNS | Asset Transaction Summary | Assets Transaction Summary |
| | | | FSI_D_LIABILITY_TXNS | Liability Transaction Summary | Liabilities Transaction Summary |
| | | | FSI_D_FEE_BASED_SERVICE_TXNS | Fee Based and Other Services Transaction Summary | Fee Based Services Transaction Summary |
| | | | FSI_D_OFF_BALANCE_SHEET_TXNS | Off Balance Sheet Transaction Summary | Off Balance Sheet Transaction Summary |
| | | | FSI_D_ASSET_TXNS | Asset Transaction Summary | Assets Transaction Summary |
| | | | FSI_D_LIABILITY_TXNS | Liability Transaction Summary | Liabilities Transaction Summary |
| | | | FSI_D_FEE_BASED_SERVICE_TXNS | Fee Based and Other Services Transaction Summary | Fee Based Services Transaction Summary |

7.1.3.8.1 Asset Transaction Summary

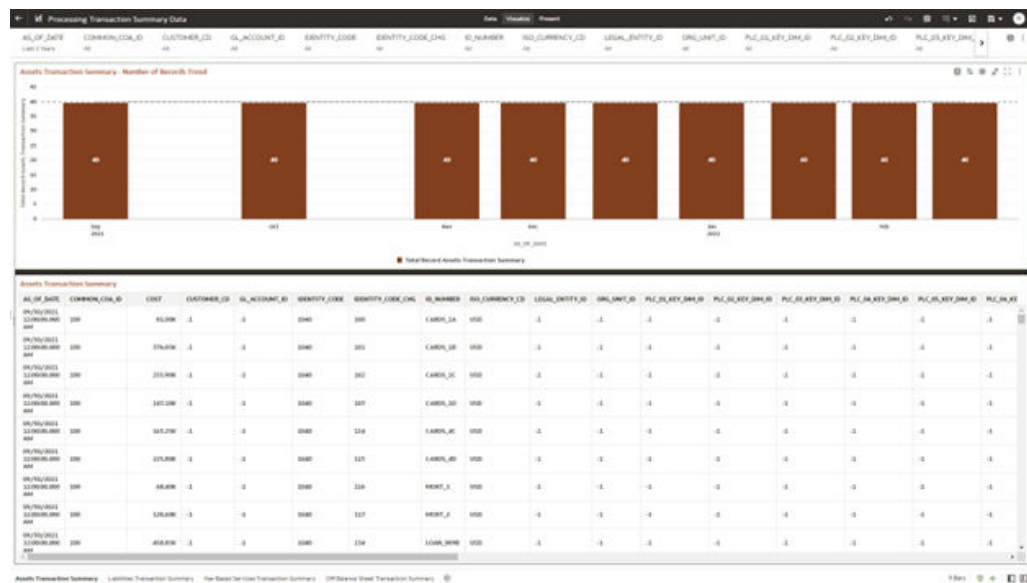
The Asset Transaction Summary Report provides the analysis capability on the Assets Transaction Summary Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Assets Transaction Summary - Number of Records Trend
Total Record Assets Transaction Summary aggregated by AS_OF_DATE.
- Assets Transaction Summary
Granular table records at ID_NUMBER level.

Figure 7-51 Processing Transaction Summary Data - Asset Transaction Summary



7.1.3.8.2 Liabilities Transaction Summary

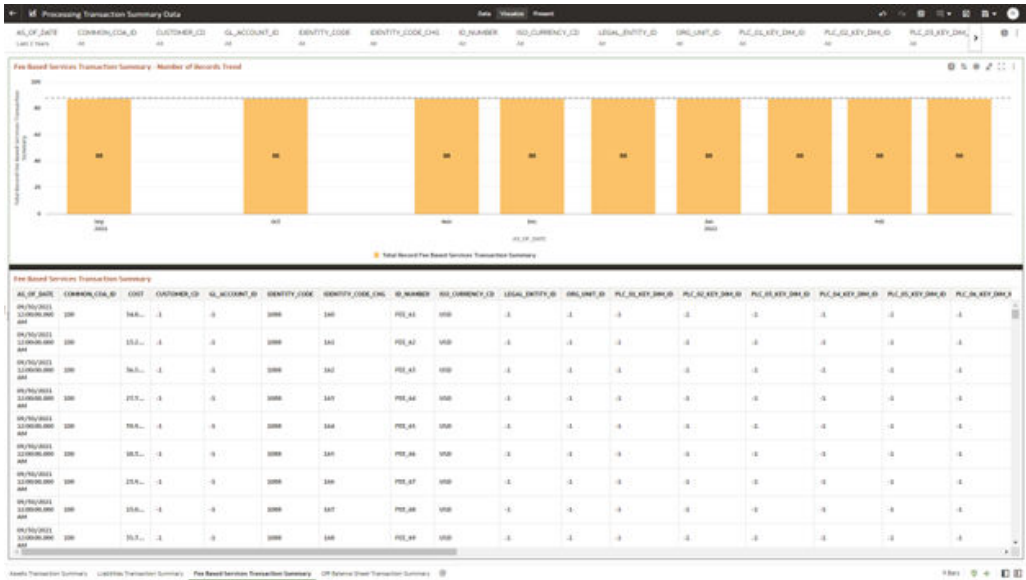
The Liabilities Transaction Summary Report provides the analysis capability on the Liability Transaction Summary Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Liabilities Transaction Summary - Number of Records Trend
Total Record Liability Transaction Summary aggregated by AS_OF_DATE.
- Liabilities Transaction Summary
Granular table records at ID_NUMBER level.

Figure 7-53 Processing Transaction Summary Data – Fee Based Services Transaction Summary



7.1.3.8.4 Off Balance Sheet Transaction Summary

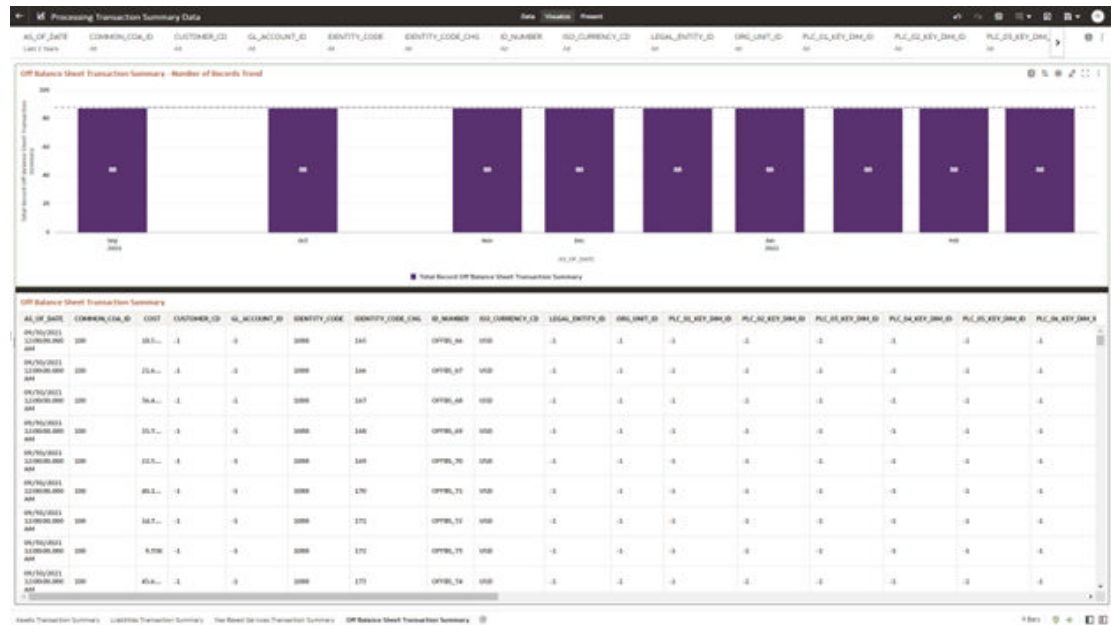
The Off Balance Sheet Transaction Summary Report provides the analysis capability on the Off Balance Sheet Transaction Summary Table.

You can use a series of Report Prompts to filter the data according to Functional Key Attributes pertaining to the Table Columns Perimeter.

The report displays the underlying data according to the following Charts' logic:

- Off Balance Sheet Transaction Summary - Number of Records Trend
Total Record Off Balance Sheet Transaction Summary aggregated by AS_OF_DATE.
- Off Balance Sheet Transaction Summary
Granular table records at ID_NUMBER level.

Figure 7-54 Processing Transaction Summary Data – Off Balance Sheet Transaction Summary



7.1.4 Operational Analysis

This topic covers the following reports:

- [Dimensions Registry](#)
- [Currency Rates](#)
- [Interest Rate Curves](#)
- [Data Quality Checks](#)
- [File Uploads Report](#)
- [Groups and Roles Report](#)

7.1.4.1 Dimensions Registry

To access the Dimensions Registry report, from the LHS menu, select **Operational Analysis**, and then select **Dimensions Registry**.

This is arranged as a set of reports catering to the analysis of the following categories:

- Financial Element
- Legal Entity
- Common COA
- GL Account
- Org Unit
- Product
- Industry

- Branch
- Geography
- IFRS9 Stage

7.1.4.1.1 Financial Element

Figure 7-55 Key & Standard Dimensions Registry

The screenshot displays the Oracle Key & Standard Dimensions Registry interface. It is divided into three main sections:

- Financial Element Hierarchy:** A tree view showing the hierarchy of dimensions from Level 1 to Level 5. The hierarchy starts with 'Financial Element' and branches into 'Allocated Assets', 'Allocated Liabilities', and 'Allocated Equity'.
- Financial Element Members:** A table listing members with columns: Financial Element Member ID, Financial Element Member Name, Financial Element Description, Is Enabled, Is Active, Is Deleted, Is Archived, Is Archived Date, Is Archived User, Is Archived Reason, Is Archived Date, Is Archived User, Is Archived Reason, Is Archived Date.
- Management Ledger Tables:** A table listing management ledger tables with columns: Management Ledger Table Name, Financial Element Identifier, Financial Element Leaf Name, As of Date.

- **HCY Report:** Report displays the names of the hierarchy levels and dimensions from Level 1 to Level 5, as well as the names of the leaf nodes. More Levels can be added by the user as per user convenience.
- **Member Report:** Report displays the information regarding member names, Descriptions, and other member-related information. This Report will help the user in identifying the members of the dimension that are loaded in the application.
- **Instrument Tables Report:-** Report displays the Instrument table name and the corresponding Member ID and Member Name along with As of Date. Users can identify a particular dimension present in which instrument tables and the corresponding as-of-date.
- **Management Ledger Tables Report:** Report displays the ML table name and the corresponding Member ID and Member Name along with As of Date. Users can identify a particular dimension is present in which Management Ledger tables and the corresponding as-of-date.

Report Filters

The following Report Filters are available:

- **Financial Element Hierarchy Name:** Note that this is a mandatory filter for the group filtering on Financial Element Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Financial Element Hierarchy Name” must be selected with only a single value simultaneously.

- **Financial Element Leaf Name:** You can use this filter to select the Financial Element Leaf Name that is related to the underlying Management Ledger data.

7.1.4.1.2 Legal Entity

The following Report Filters are available:

- **Legal Entity Hierarchy Name:** Note that this is a mandatory filter for the group filtering on Legal Entity Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “LE Hierarchy Name” must be selected with only a single value simultaneously.
- **Legal Entity Leaf Name:** You can use this filter to select the Legal Entity Leaf Name that is related to the underlying Management Ledger data.

Figure 7-56 Legal Entity-Key & Standard Dimensions Registry

The screenshot displays the Oracle Financial Element Key & Standard Dimensions Registry. It is divided into four main sections:

- Legal Entity Hierarchy:** A table with columns for LE Hierarchy Name, LE Level 1 Name, LE Level 2 Name, LE Level 3 Name, LE Level 4 Name, LE Level 5 Name, and Legal Entity Leaf Name. It lists various entities like Bank Holding Company, Europe, and US Entity.
- Legal Entity Members:** A table with columns for LE Member ID, LE Code, LE Description, LE Enabled Flag, LE Leaf Only Flag, LE M/L_ID, LE Created By, LE Creation Date, LE Last Modified By, and LE Effective Date. It lists members like Default Member, US Entity, India Entity, Singapore Entity, Japan Entity, USM Entity, European Entity, and Netherlands Entity.
- Investment Tables Legal Entities:** A table with columns for Investment Table Name, Legal Entity Identifier, Legal Entity Leaf Name, and As of Date. It lists tables like Investment Table 01 and Asset Rebalancemts.
- ML Tables Legal Entities:** A table with columns for Management Ledger Table Name, Legal Entity Identifier, Legal Entity Leaf Name, and As of Date. It lists the Management Ledger Table 01.

7.1.4.1.3 Common COA

The following Report Filters are available:

- **Common COA Hierarchy Name:** N.B. This is a mandatory filter for the group filtering on Common COA Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Common COA Hierarchy Name” must be selected with only a single value simultaneously.
- **Common COA Leaf Name:** You can use this filter to select the Common COA Leaf Name that is related to the underlying management ledger data.

Figure 7-57 Common COA-Key and Standard Dimensions Registry

The screenshot displays the 'Key & Standard Dimensions Registry' interface. It features a main grid for 'Common COA Hierarchy Name' and 'Common COA Leaf Name' with columns for hierarchy levels (Level 1 to Level 6). Below this, there are two detailed views: 'Common COA Members' and 'Common COA Key'. The 'Common COA Members' table lists various COA identifiers (e.g., 10, 100, 101, 102) with their corresponding codes, names, descriptions, and flags. The 'Common COA Key' view shows a table with columns for 'Management Ledger Table Name', 'Common COA Key', and 'As of Date', providing a detailed view of the key data for specific COA members.

7.1.4.1.4 GL Account

The following Report Filters are available:

- GL Account Hierarchy Name:** Note that this is a mandatory filter for the group filtering on GL Account Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “GL Account Hierarchy Name” must be selected with only a single value simultaneously.
- GL Account Leaf Name:** You can use this filter to select the GL Account Leaf Name that is related to the underlying Management Ledger data.

Figure 7-58 GL Account - Key and Standard Dimensions Registry

The screenshot displays the 'Key & Standard Dimensions Registry' interface, which is divided into four main sections:

- GL Account Hierarchy:** A tree view showing the structure of GL accounts across six levels (Level 1 to Level 6) and their leaf names. Examples include 'ALL OTHER ASSETS', 'ASSETS', 'CAPITAL WORKS', 'CENTRAL BANK BILLS', 'DEPOSITS - DOMESTIC BANKS', 'DEPOSITS - FOREIGN BANKS', 'ELECTRONIC BANKING COSTS', and 'FUTURE INCOME TAX BENEFIT'.
- GL Account Members:** A table listing members for each GL account. Columns include 'GL ACCOUNT Member ID', 'GL ACCOUNT Member ID', 'GL ACCOUNT Code ID', 'GL ACCOUNT Description', 'GL ACCOUNT Excluded Flag', 'GL ACCOUNT Leaf Only Flag', 'GL ACCOUNT M3, CD', 'GL ACCOUNT Created By', and 'GL Account Creation Date'. Rows show details for various account codes like 100, 1000, 1002, 1005, 1001, 1002, and 1003.
- Instrument Tables GL Accounts:** A table showing the relationship between 'Instrument Table Name', 'General Ledger Account Identifier', 'GL Account Leaf Name', and 'As of Date'. It lists specific accounts like 'ELECTRONIC BANKING COSTS' and 'CAPITAL' with their respective dates.
- ML Tables GL Accounts:** A table showing 'Management Ledger Table Name', 'General Ledger Account Identifier', 'GL Account Leaf Name', and 'As of Date'. It lists management ledger tables such as 'BALANCE SHEET_GL', 'CONTINGENT ASSETS', and 'ALL OTHER ASSETS'.

7.1.4.1.5 Org Unit

The following Report Filters are available:

- Org Hierarchy Name:** Note that this is a mandatory filter for the group filtering on Org Unit Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select "Org Hierarchy Name" must be selected with only a single value simultaneously.
- Org Unit Leaf Name:** You can use this filter to select the Org Unit Leaf Name that is related to the underlying Management Ledger data.

Figure 7-59 Org Unit - Key & Standard Dimensions Registry

The screenshot displays the 'Key & Standard Dimensions Registry' report. It is organized into four main panels:

- Org Unit Hierarchy:** A tree view showing levels from 'ALL ORG UNIT' down to 'SERV LEAD OPS'.
- Org Unit Members:** A table listing members with columns for 'Org Unit Member ID', 'Org Unit Code', 'Org Unit Name', 'Org Unit Description', 'Org Unit Enabled Flag', 'Org Unit Leaf Only Flag', 'Org Unit MSL_ID', 'Org Unit Created By', 'Org Unit Creation Date', 'Org Unit Last Modified By', and 'Org Unit Last Modified Date'. Rows include 'Default Member', 'ALL ORG UNIT', 'HEAD OFFICE', 'BRNCH', 'BACK OFFICE', 'HUMAN BRANCH', and 'CITY 1' through 'CITY 3'.
- Subsidiary Tables (Org Units):** A table with columns 'Subsidiary Table Name', 'Organization Unit Identifier', 'Org Unit Leaf Name', and 'As of Date'. It shows data for 'HEAD OFFICE BRANCH' and 'CITY 1 BRANCH'.
- M1 Tables (Org Units):** A table with columns 'Management Ledger Table Name', 'Organization Unit Identifier', 'Org Unit Leaf Name', and 'As of Date'. It shows data for 'HEAD OFFICE BRANCH'.

7.1.4.1.6 Product

The following Report Filters are available:

- Product Hierarchy Name:** Note that this is a mandatory filter for the group filtering on Product Key Processing Dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Prod Hierarchy Name” must be selected with only a single value simultaneously.
- Product Leaf Name:** You can use this filter to select the Prod Leaf Name that is related to the underlying Management Ledger data.

Figure 7-60 Product - Key & Standard Dimensions Registry

The screenshot displays the 'Key & Standard Dimensions Registry' interface, which is divided into four main sections:

- Product Hierarchy:** A tree view showing levels from 'ALL PRODUCT' down to specific product types like 'ASSETS', 'CORP_LOAN', 'CORP_BOND', 'LOAN', 'MORTGAGE', and 'RETAIL_LOAN'.
- Product Members:** A table listing individual products with columns for Product Identifier, Product Code, Product Name, Product Description, Product Enabled Flag, Product Leaf Only Flag, Product MSL_CD, Product Created By, Product Creation Date, and Product Last Modified By. Rows include 'Default Member', 'ALL PRODUCT', 'ASSETS', 'LIABILITIES', 'CONTINGENT ASSETS', 'CONTINGENT LIABILITIES', 'OTHER_ASSETS', 'OD', 'Personal Loan', and 'M3_PLACEMENT'.
- Instrument Tables Products:** A table showing 'Instrument Table Name', 'Product Identifier', 'Prod Leaf Name', and 'As of Date'. It lists products like 'Personal Loan' and 'Fixed Rate Mortgage' with dates ranging from 11/11/2012 to 01/01/2013.
- M3 Tables Products:** A table showing 'Management Ledger Table Name', 'Product Identifier', 'Prod Leaf Name', and 'As of Date'. It lists products like 'Personal Loan' and 'Fixed Rate Mortgage' with dates ranging from 11/11/2012 to 01/01/2013.

7.1.4.1.7 Industry

The following Report Filters are available:

- Industry Hierarchy Name:** As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Industry Hierarchy Name” must be selected with only a single value simultaneously.
- Industry Leaf Name:** You can use this filter to select the Industry Leaf Name that is related to the underlying Industry.

Figure 7-61 Industry - Key & Standard Dimensions Registry

The screenshot displays the 'Industry' dimension registry. The main table lists industry levels and leaf names. The 'Subsegment Tables Inclusions' table is as follows:

| Subsegment Table Name | Industry ID | Industry Leaf Name | As of Date |
|-----------------------|-------------|--------------------|------------|
| 200 | Automobile | 31/11/2021 | 01/11/2021 |
| | | 01/08/2021 | 01/08/2021 |
| | | 01/11/2021 | 01/11/2021 |
| | | 04/06/2021 | 04/06/2021 |
| | | 31/11/2021 | 01/11/2021 |
| 200 | Architect | 01/08/2021 | 01/08/2021 |
| | | 01/11/2021 | 01/11/2021 |
| | | 31/11/2021 | 01/11/2021 |
| 400 | Healthcare | 01/08/2021 | 01/08/2021 |
| | | 01/11/2021 | 01/11/2021 |
| | | 01/11/2021 | 01/11/2021 |

7.1.4.1.8 Branch

The following Report Filters are available:

- **Branch Hierarchy Name:** As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Branch Hierarchy Name” must be selected with only a single value simultaneously.
- **Branch Leaf Name:** You can use this filter to select the Branch Leaf Name that is related to the underlying Branch.

Figure 7-62 Branch - Key and Standard Dimensions Registry

The screenshot displays the 'Branch' dimension registry. The 'Subsegment Tables Inclusions' table is as follows:

| Subsegment Table Name | Branch Code | Branch Leaf Name | As of Date |
|-----------------------|-------------|------------------|------------|
| 200 | Branch 001 | 31/11/2021 | 01/11/2021 |
| | | 01/08/2021 | 01/08/2021 |
| | | 01/11/2021 | 01/11/2021 |
| | | 04/06/2021 | 04/06/2021 |
| | | 31/11/2021 | 01/11/2021 |
| Account Incentives | 200 | Branch 001 | 01/08/2021 |
| | | | 01/11/2021 |
| | | | 04/06/2021 |
| 300 | Branch 001 | 31/11/2021 | 01/11/2021 |
| | | 01/11/2021 | 01/11/2021 |
| | | 01/08/2021 | 01/08/2021 |

7.1.4.1.9 Geography

The following Report Filters are available:

- **Geography Hierarchy Name:** You can use this filter to select a hierarchical grouping of geography types for a country. For example, the structure Geograph states, cities, and Locations.
- **Geography Leaf Name:** You can use this filter to select the Geography Leaf Name that is related to the underlying Geograph.

Figure 7-63 Geography - Key & Standard Dimensions Registry

The screenshot displays the 'Key & Standard Dimensions Registry' interface. It features two main tables: 'Geography Hierarchy' and 'Geography Members'.

Geography Hierarchy Table:

| Geography Hierarchy Name | Geography Level 1 Name | Geography Level 2 Name | Geography Level 3 Name | Geography Level 4 Name | Geography Level 5 Name | Geography Leaf Name |
|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------|
| Geography Hierarchy | North America | North America | Chicago | Chicago | Chicago | Chicago |
| | | United States | Los Angeles | Los Angeles | Los Angeles | Los Angeles |
| | United States | New York | New York | New York | New York | New York |
| | | | United States | United States | United States | United States |
| | | United States | United States | United States | United States | United States |
| | | | United States | United States | United States | United States |

Geography Members Table:

| Geographic Member ID | Geographic Code | Geographic Name | Geographic Description | Geographic Existence Flag | Geographic Leaf Only Flag | Geographic M3, CD | Geographic Created By | Geographic Creation Date | Geographic Last Modified By | Geographic Last Modified Date |
|----------------------|-----------------|-----------------|------------------------|---------------------------|---------------------------|-------------------|-----------------------|--------------------------|-----------------------------|-------------------------------|
| 0 | -1 | Default Member | Default Member | Y | Y | en-US | ADMIN USER | 04/24/2012 | ADMIN USER | 04/24/2012 |
| 100 | GEO_100 | North America | North America | Y | N | en-US | FFUSER | 04/24/2012 | FFUSER | 04/24/2012 |
| 200 | GEO_200 | United States | United States | Y | N | en-US | FFUSER | 04/24/2012 | FFUSER | 04/24/2012 |
| 300 | GEO_300 | Chicago | Chicago | Y | Y | en-US | FFUSER | 04/24/2012 | FFUSER | 04/24/2012 |
| 400 | GEO_400 | Los Angeles | Los Angeles | Y | Y | en-US | FFUSER | 04/24/2012 | FFUSER | 04/24/2012 |
| 500 | GEO_500 | New York | New York | Y | Y | en-US | FFUSER | 04/24/2012 | FFUSER | 04/24/2012 |

Instrument Tables Geographies Table:

| Instrument Table Name | Geographic Location ID | Geographic Leaf Name | As of Date |
|-----------------------|------------------------|----------------------|------------|
| Asset Instruments | 100 | Chicago | 03/31/2012 |
| | | Chicago | 03/31/2012 |
| | 200 | Los Angeles | 03/31/2012 |
| | | Los Angeles | 03/31/2012 |
| | 300 | New York | 03/31/2012 |
| | | New York | 03/31/2012 |

7.1.4.1.10 IFRS9 Stage

The following Report Filters are available:

- **IFRS9 Stage Hierarchy Name:** IFRS 9, financial assets are classified according to the business model for managing them and their characteristics. An individual or collective basis – in three stages under IFRS 9.
- **IFRS9 Stage Leaf Name:** You can use this filter to select the IFRS9 Stage Leaf Name that is related to the underlying IFRS9.

Figure 7-64 IFRS9 State - Key & Standard Dimensions Registry

| IFRS9 Stage Hierarchy Name | IFRS9 Stage Level 1 Name | IFRS9 Stage Level 2 Name | IFRS9 Stage Level 3 Name | IFRS9 Stage Level 4 Name | IFRS9 Stage Level 5 Name | IFRS9 Stage Leaf Name |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Default | Default | Default | Default | Default | Default | Default |
| IFRS9 Stage Hierarchy | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer |
| | Stage 1 | Stage 2 | Stage 3 | Stage 3 | Stage 3 | Stage 3 |
| | Stage 2 | Stage 2 | Stage 3 | Stage 3 | Stage 3 | Stage 3 |
| | Stage 3 | Stage 3 | Stage 3 | Stage 3 | Stage 3 | Stage 3 |

| IFRS9 Member | IFRS9 Code | IFRS9 Name | IFRS9 Description | IFRS9 Enabled Flag | IFRS9 Leaf Only Flag | IFRS9 NLS_ID | IFRS9 Control By | IFRS9 Creation Date | IFRS9 Last Modified By | IFRS9 Last Modified Date |
|--------------|--------------------|--------------------------|--------------------------|--------------------|----------------------|--------------|------------------|---------------------|------------------------|--------------------------|
| -1 | -1 | Default Member | Default Member | Y | Y | en-US | ADMIN | 04/19/2012 | ADMIN | 04/19/2012 |
| 100 | IFRS9_STAGE_100 | Stage 1 | Stage 1 | Y | Y | en-US | PF TUSER | 01/01/2012 | PF TUSER | 01/01/2012 |
| 200 | IFRS9_STAGE_200 | Stage 2 | Stage 2 | Y | Y | en-US | PF TUSER | 01/01/2012 | PF TUSER | 01/01/2012 |
| 300 | IFRS9_STAGE_300 | Stage 3 | Stage 3 | Y | Y | en-US | PF TUSER | 01/01/2012 | PF TUSER | 01/01/2012 |
| 400 | IFRS9_STAGE_400 | Default | Default | Y | Y | en-US | PF TUSER | 01/01/2012 | PF TUSER | 01/01/2012 |
| 100000 | IFRS9_STAGE_100000 | IFRS9 Stage Total Buffer | IFRS9 Stage Total Buffer | Y | N | en-US | PF TUSER | 01/01/2012 | PF TUSER | 01/01/2012 |

| Account Table Name | IFRS9 Stage ID | IFRS9 Stage Leaf Name | As of Date |
|--------------------|----------------|-----------------------|------------|
| | -1 | Default Member | 01/01/2012 |
| | | | 02/01/2012 |
| | | | 03/01/2012 |
| | | | 04/01/2012 |
| | | | 05/01/2012 |
| | | | 06/01/2012 |
| | | | 07/01/2012 |
| | | | 08/01/2012 |
| | | | 09/01/2012 |
| | | | 10/01/2012 |
| | | | 11/01/2012 |
| | | | 12/01/2012 |

7.1.4.2 Currency Rates

To access the Currency Rates report, from the LHS menu, select **Operational Analysis**, and then select **Currency Rates**.

Reporting Currency Rates is the currency in which an entity's financial statements or other financial documents are reported. Choosing one currency for reporting makes it easier to understand the financial documents across the board.

This is arranged as a set of reports catering to the analysis of the following categories:

- Floating Segment Rate
- Fixed Exchange Rate
- Exchange Rate

7.1.4.2.1 Report Filters

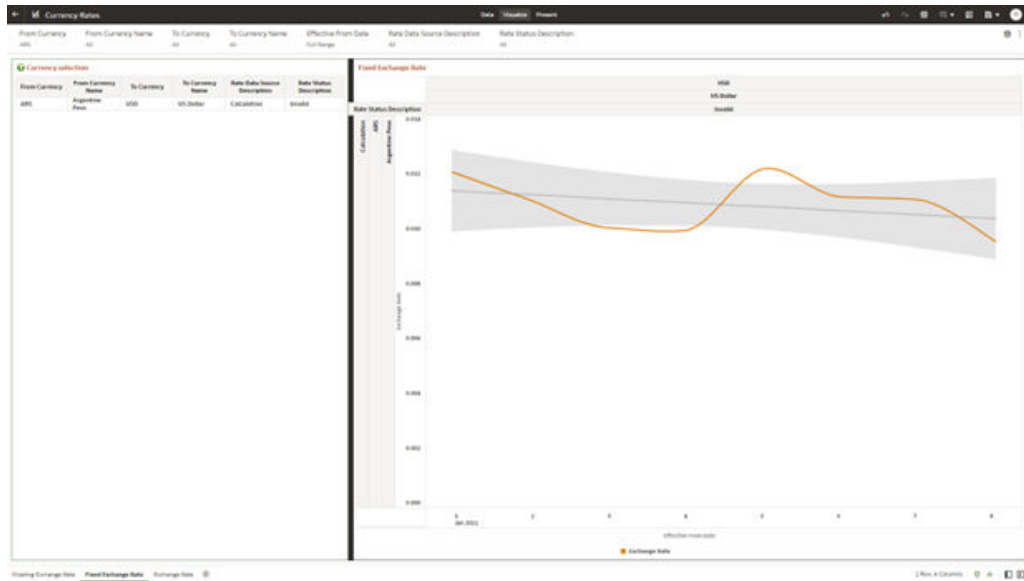
The following Report Filters are available:

Figure 7-65 Report Filters

| From Currency | From Currency Name | To Currency | To Currency Name | Effective Date | Rate Data Source Description | Rate Status Description |
|---------------|--------------------|-------------|------------------|----------------|------------------------------|-------------------------|
| All | All | All | All | Full Range | All | All |

- **From Currency:** You can use this filter to select the Currency Code source corresponding to the hierarchy.
- **From Currency Name:** You can use this filter to select the Currency Name source corresponding to the hierarchy.
- **To Currency:** You can use this filter to select the Currency Code destination corresponding to the hierarchy.

Figure 7-67 Fixed Exchange Rate



7.1.4.2.4 Report Filters

The following Report Filters are available:

Figure 7-68 Exchange Rate Report Filters

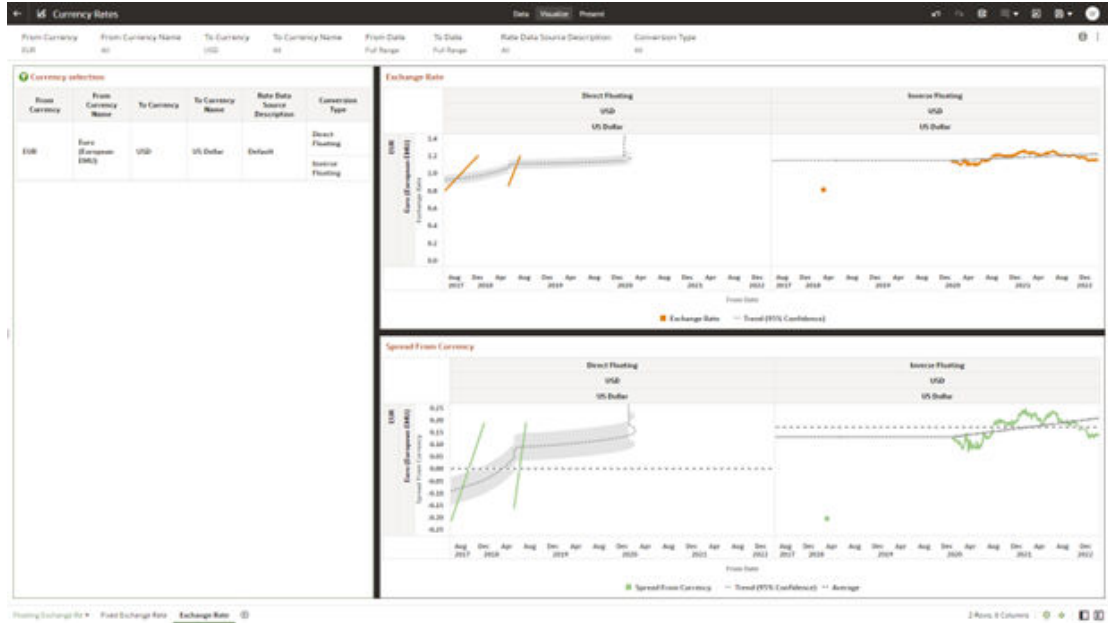
| From Currency | From Currency Name | To Currency | To Currency Name | From Date | To Date | Rate Data Source Description | Conversion Type |
|---------------|--------------------|-------------|------------------|------------|------------|------------------------------|-----------------|
| All | All | All | All | Full Range | Full Range | All | All |

- **From Currency:** You can use this filter to select the Currency Code source corresponding to the hierarchy.
- **From Currency Name:** You can use this filter to select the Currency Name source corresponding to the hierarchy.
- **To Currency:** You can use this filter to select the Currency Code destination corresponding to the hierarchy.
- **To Currency Name:** You can use this filter to select the Currency Name destination corresponding to the hierarchy.
- **From Date:** You can use this filter to select a date as the specific date source to begin.
- **To Date:** You can use this filter to select a date is the specific date destination to end.
- **Rate Data Source Description:** You can use this filter to select the Rate Data Source Description could be Bloomberg, Calculation, etc.
- **Conversion Type:** You can use this filter to select a Conversion Type as Direct Floating, Inverse Fixed, Inverse Floating, or Non-triangulated.

7.1.4.2.5 Exchange Rate

In this canvas, the Exchange rate shows Currency and spread of them.

Figure 7-69 Exchange Rate Canvas

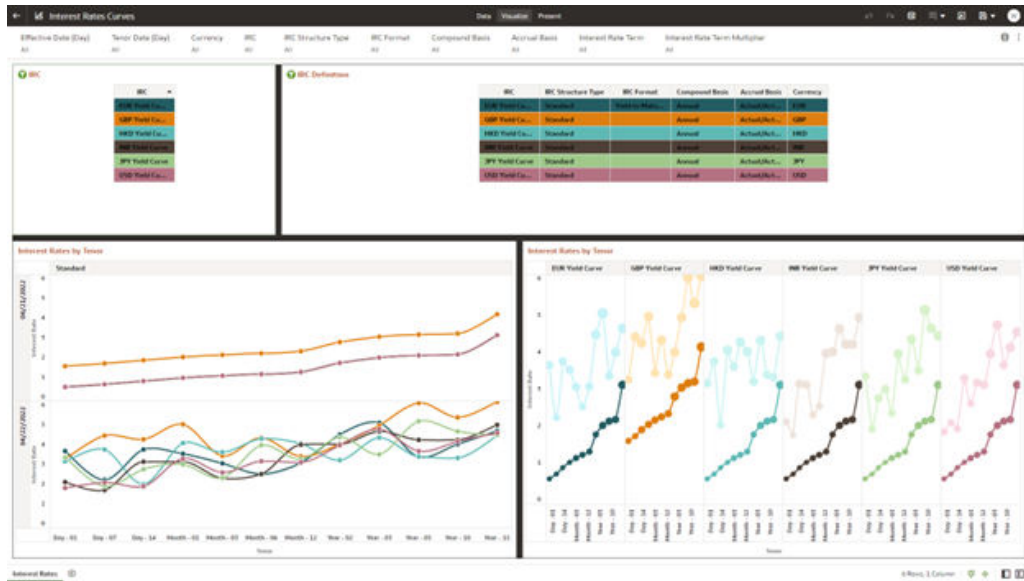


7.1.4.3 Interest Rate Curves

Interest rate curves are fundamental to Treasury applications. In the context of Funds Transfer Pricing, interest rate curves are referred by all calculations.

The summary screen for interest rate curves displays all the existing interest rate curves with additional details.

Figure 7-70 Interest Rate Curves Summary screen



Report Common Filters

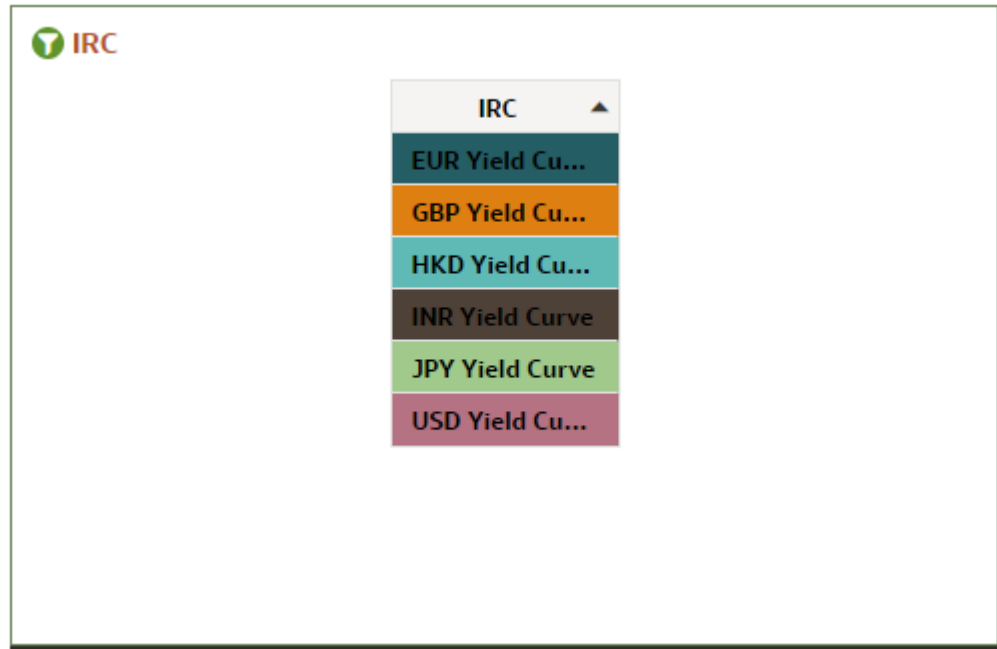
You can use a series of Report Prompts to filter the Data according to Functional Key Attributes as follows:

- **Effective Date (Day):** You can use this filter to select a specific Day for the underlying Time Dimension.
- **Tenor (Day):** You can use this filter to select a Maturity Date for the underlying Time Dimension.
- **Currency:** You can use this filter to select a specific Currency to be applied to the underlying dataset.
- **IRC:** You can use the filter Interest Rates Curves to be applied to the underlying dataset.
- **IRC Structure Type:** You can use the filter Interest Rates Curves Structure Type to be applied to the underlying dataset.
- **IRC Format:** You can use the filter Interest Rates Curves Format to be applied to the underlying dataset.
- **Compound Basis:** Indicates the compounding frequency used to calculate interest income.
- **Accrual Basis:** The basis on which the interest accrual is calculated.
- **Interest Rate Term:** You can use the filter Interest Rates Curves Term to be applied on the dataset filter based on the number of days, months, and/or years.
- **Interest Rate Term Multiplier:** You can use the filter Interest Rates Curves Term Multiplier to be applied to as D (Day), M (Month) and Y (Year).

IRC

The initial report will present a comprehensive list of available IRCs (Individual Report Categories). Users can select one or more IRCs based on their specific reporting needs.

Figure 7-71 IRC Canvas



IRC Definition

The IRC Definition Report showcases essential information such as IRC, IRC structure type, format, compound basis, accrual basis, and currency. This report is also a versatile tool for data filtration to meet specific needs.

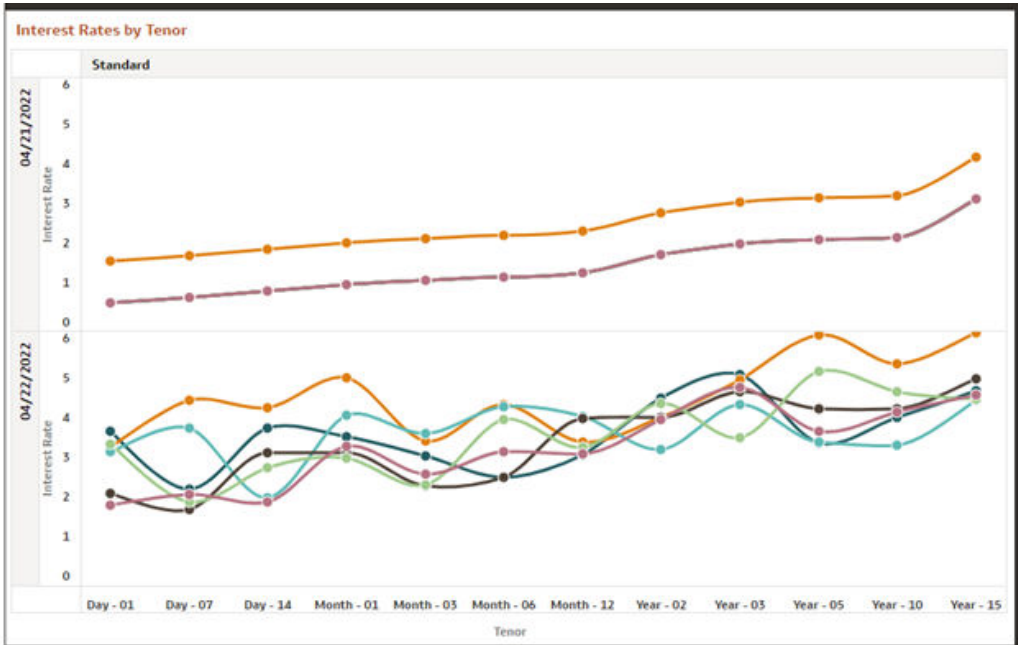
Figure 7-72 IRC Definition Canvas

| IRC | IRC Structure Type | IRC Format | Compound Basis | Accrual Basis | Currency |
|-----------------|--------------------|-------------------|----------------|---------------|----------|
| EUR Yield Cu... | Standard | Yield to Matur... | Annual | Actual/Act... | EUR |
| GBP Yield Cu... | Standard | | Annual | Actual/Act... | GBP |
| HKD Yield Cu... | Standard | | Annual | Actual/Act... | HKD |
| INR Yield Curve | Standard | | Annual | Actual/Act... | INR |
| JPY Yield Curve | Standard | | Annual | Actual/Act... | JPY |
| USD Yield Cu... | Standard | | Annual | Actual/Act... | USD |

Interest Rates by Tenor

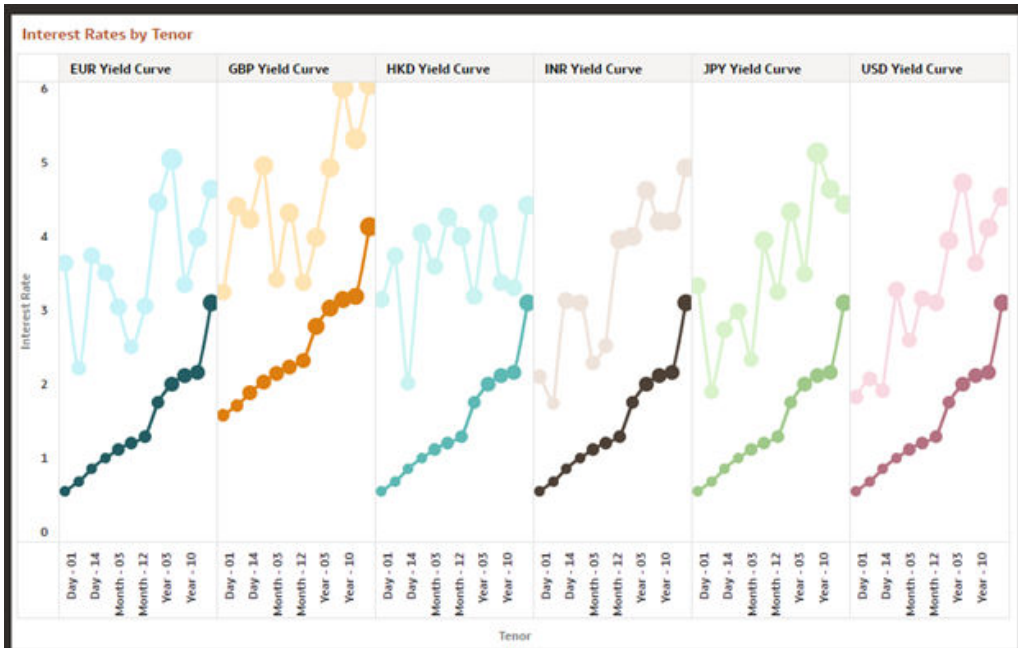
The "Interest Rates by Tenor Report" organizes interest rates based on their effective date and tenor.

Figure 7-73 Canvas IRC by Effective date



The "Interest Rates by Tenor Report" categorizes interest rates based on IRCs according to their respective tenors.

Figure 7-74 Canvas IRC by Period and Currency



7.1.4.4 Data Quality Checks

To access the Data Quality Checks report, from the LHS menu, select **Operational Analysis**, and then select **Data Quality Checks**.

Data Quality Check Reports are divided into four canvases.

- DQ Check Platform Availability
- DQ Batch Executions
- DQ Results
- DQ Detail Results

DQ Check Platform Availability

You can use the following filters:

- **DQ Rule Name:** Rules created in the Application
- **Base Table:** Base tables used in the rules
- **Severity Values:** Error, Warning, Info

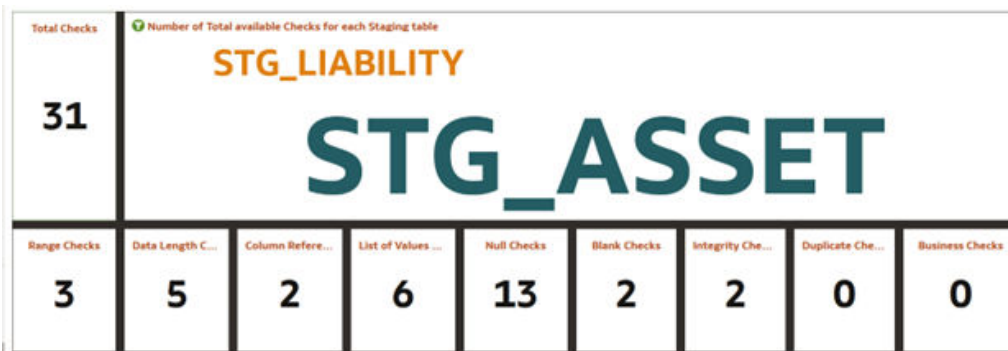
Total Checks: Number of Checks created in the OFSAA Application.

Number of Total available checks for each Staging table: Gives the information regarding number of checks based on the various staging tables.

The following reports gives the information regarding the number of various checks created.

- **Range Checks:** Total number of Range checks defined in the system.
- **Data Length Checks:** Total number of Data Length checks defined in the system.
- **Column Reference Checks:** Total number of Column Reference checks defined in the system.
- **List of Values Checks:** Total number of List of values check defined in the system.
- **Null Checks:** Total number of Null checks defined in the system.
- **Blank Checks:** Total number of Blank checks defined in the system.
- **Integrity Checks:** Total number of Integrity checks defined in the system.
- **Duplicate Checks:** Total number of Duplicate checks defined in the system.
- **Business Checks:** Total number of Business checks defined in the system.

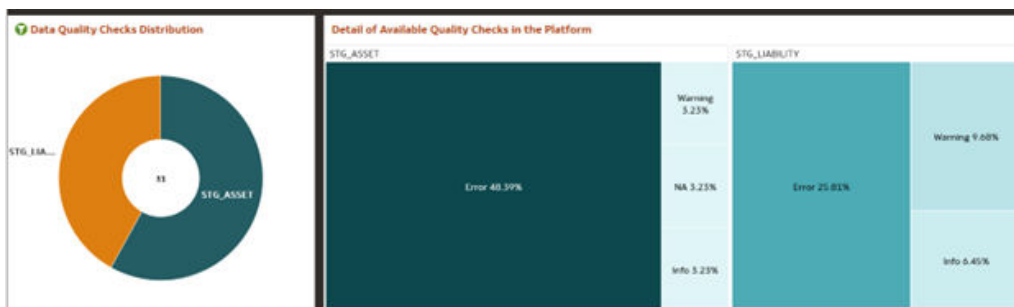
Figure 7-75 Number of Total available Checks for each Staging table



Data Quality Checks Distribution gives the distribution of checks based on the base tables.

Detail of Available quality checks in the platform gives the percentage distribution according to severity category defined on different Staging tables.

Figure 7-76 Detail Quality Checks Distribution and Detail of Available Quality Checks in the Platform



DQ Batch Executions Canvas

This canvas gives the information regarding the Batches executed on Data Quality Checks.

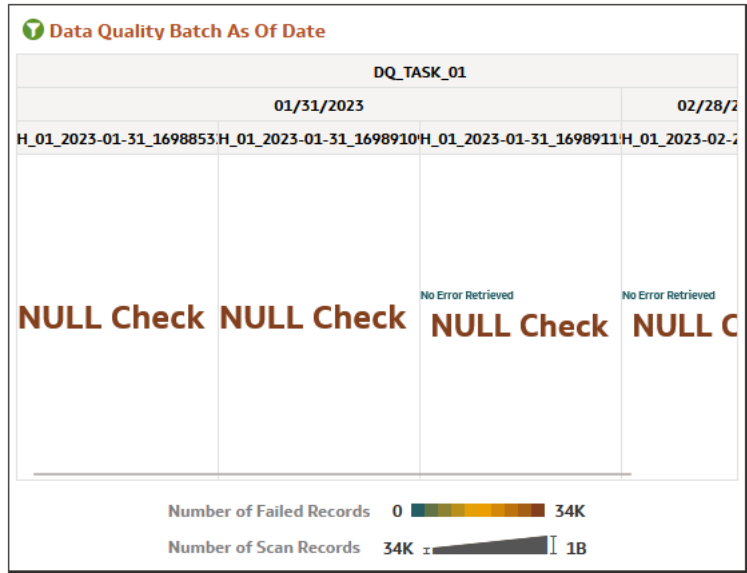
You can use the following filters:

- **Batch Identifier:** Batches executed in the system.
- **Process Identifier:** Process Name for the executed batch in the system.
- **Fic Mis Date:** Batch execution date.
- **DQ Group Identifier:** Data Quality Groups created in the system.
- **DQ Group Description:** Description of Data Quality Groups.
- **DQ Check Identifier:** Data Quality checks created in the system.
- **DQ Check Description:** Description of Data Quality checks.
- **DQ Source Table:** Base table on which Data Quality check is created.

- **DQ Category Name:** Data Quality check category.

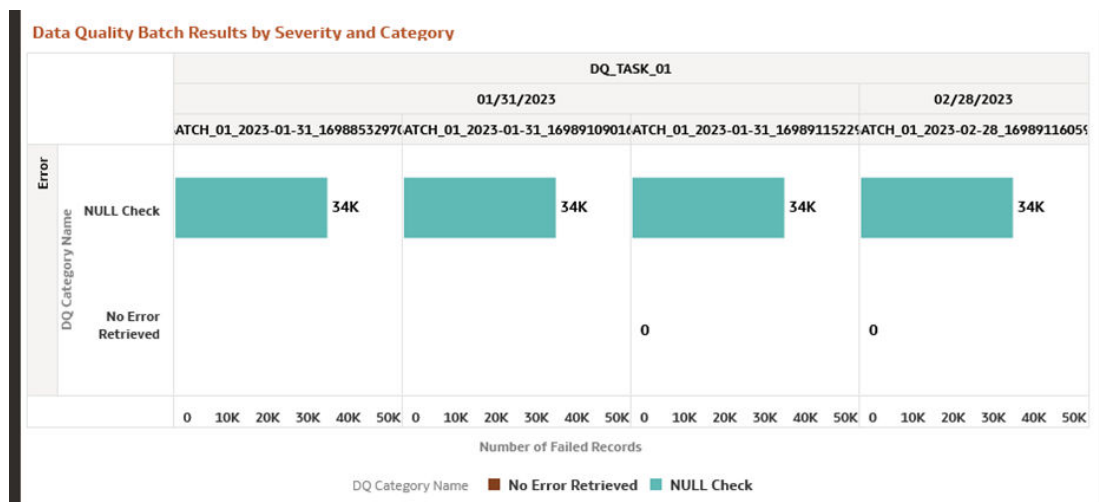
Data Quality Batch As Of Date: This report provides details on the executed checks, including the date of execution, Batch name, and the count of scanned records and failed records against each defined check and corresponding to Data Quality Category name.

Figure 7-77 Data Quality Batch As Of Date



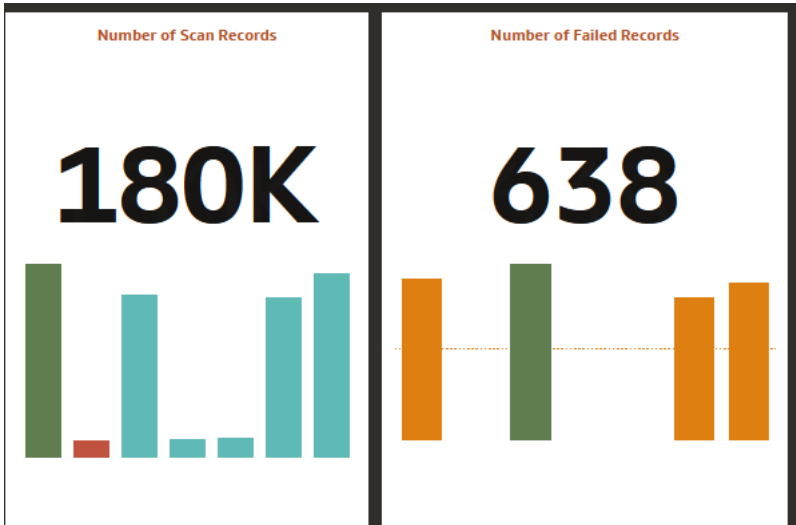
Results of Data Quality Batches by Severity and Category: This report provides details on the quantity of failed records across various batches, including the execution date and batch name according to Data Quality Category Name.

Figure 7-78 Data Quality Batch Results by Severity and Category



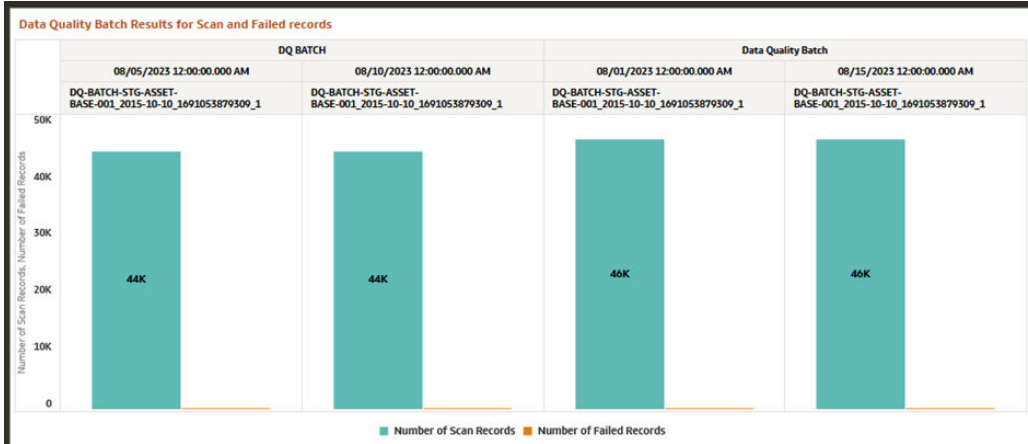
These tile reports display information about total number of scanned records and total number of failed records according to the last available Data Quality batch execution.

Figure 7-79 Number of Scan Records and Number of Failed Records



Results of Data Quality Batches for Scanned and Failed Records: This report presents a bar chart illustrating the total number of scanned records and total number of failed records, categorized by batch name and execution date.

Figure 7-80 Data Quality Batch Results for Scan and Failed Records



DQ Results

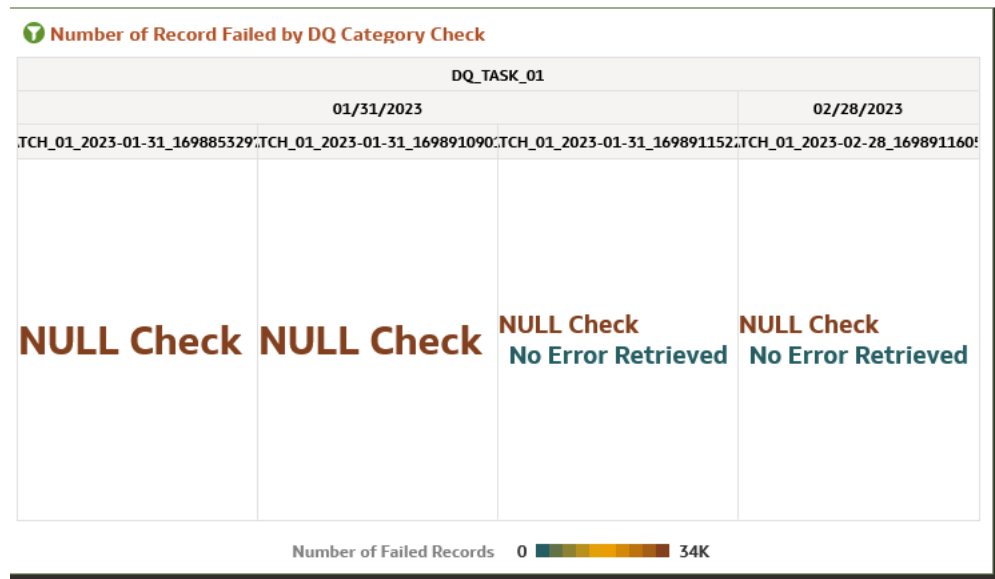
You can use the following filters:

- **Batch Identifier:** Batches executed in the system.
- **Process Identifier:** Process Name for the executed batch in the system.
- **Fic Mis Date:** Batch execution date.
- **DQ Group Identifier:** Data Quality Groups created in the system.
- **DQ Group Description:** Description of Data Quality Groups.

- **DQ Check Identifier:** Data Quality checks created in the system.
- **DQ Check Description:** Description of Data Quality checks.
- **DQ Source Table:** Base table on which Data Quality check is created.
- **DQ Category Name:** Data Quality check category.

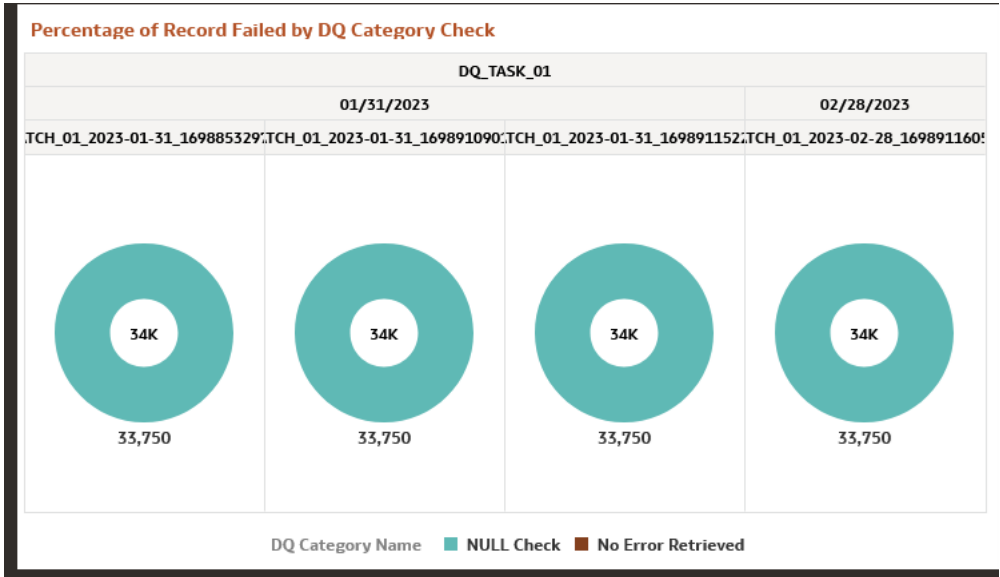
Number of Records Failed by Data Quality Category Check: This report showcases the number of failed records for each Data quality check by batch names and execution dates according to Data Quality Category Name.

Figure 7-81 Number of Record Failed by DQ Category Check



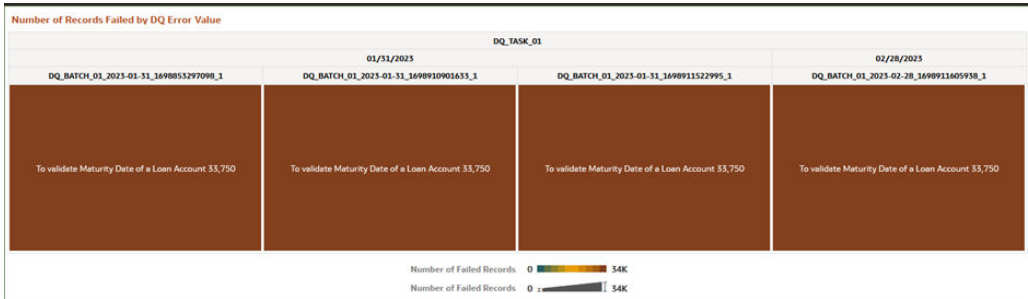
Percentage of Record Failed by DQ Category Check: This report gives the information regarding Percentage distribution and total number of checks by batch names and execution dates displayed by Data Quality Category Name.

Figure 7-82 Percentage of Record Failed by DQ Category Check



Number of Records Failed by DQ Error Value: This report shows the information regarding number of errors along with the Data Quality Check Description separated by batch names and execution dates.

Figure 7-83 Number of Records Failed by DQ Error Value



DQ Detail Results

This canvas gives the detailed information regarding the Data Quality Batch information.

Figure 7-84 DQ Detail Results

DQ Detail Results

| File Date | Batch Identifier | Process Identifier | DQ Group Identifier | DQ Group Description | DQ Check Identifier | DQ Check Description | DQ Category | DQ Category Name | DQ Source Table | DQ Source Column | Severity Value | Error Value | Default Value | Owner | Number of Scan Records | Number of Failed Records | N_THRESHOLD_PERCENT | Iteration Count | Threshold Flag | Source PK Code |
|------------|--------------------|--|------------------------------|--|---------------------|--|-------------|--------------------|-----------------|------------------|----------------|-------------|---------------|--------|------------------------|--------------------------|---------------------|-----------------|----------------|----------------|
| 10/10/2015 | T001 | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0001 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | ACCOUNT_NUMBER | Error | | | CFTEST | 1,914 | 0 | 1 | 1 | N | |
| 10/10/2015 | T001 | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0002 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | FRQNTN_FEES | Error | | | CFTEST | 1,914 | 0 | 1 | 1 | N | |
| 10/10/2015 | T001 | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0006 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | AMRT_TERM_MUET | Error | | | CFTEST | 1,914 | 0 | 1 | 1 | N | |
| 10/10/2015 | T001 | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0007 | Common Chart Of Account Code in Stage Assets should be ignored Ledger Account Code in Stage Assets should be Not Null Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | 93 | NULL Check | STG_ASSET | COMBANK_COA_CODE | Error | | | CFTEST | 17,226 | 9 | 9 | 9 | N | ACCOUNT_NUMBER |
| 10/10/2015 | T001 | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0009 | Common Chart Of Account Code in Stage Assets should be ignored Ledger Account Code in Stage Assets should be Not Null Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | 93 | NULL Check | STG_ASSET | GL_ACCOUNT_CODE | Warning | -1 | | CFTEST | 17,226 | 9 | 9 | 9 | N | ACCOUNT_NUMBER |
| 06/10/2013 | Data Quality Batch | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0001 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | ACCOUNT_NUMBER | Error | | | CFTEST | 2,431 | 0 | 1 | 1 | N | |
| 06/10/2013 | Data Quality Batch | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0002 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | FRQNTN_FEES | Error | | | CFTEST | 2,179 | 0 | 1 | 1 | N | |
| 06/10/2013 | Data Quality Batch | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0006 | Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | | No Error Retrieved | STG_ASSET | AMRT_TERM_MUET | Error | | | CFTEST | 2,465 | 0 | 1 | 1 | N | |
| 06/10/2013 | Data Quality Batch | DQ-BATCH-STG-ASSET-BASE-001_2015-10-10_104920538797009_1 | DQG-PR04-BASE-STG_ASSET_0001 | Data Quality Group for Stage Assets Instruments PDSACS | DQCL-PR04-BASE-0007 | Common Chart Of Account Code in Stage Assets should be ignored Ledger Account Code in Stage Assets should be Not Null Account Number of the customer in Stage Assets should not have blank transcription fees in Stage Assets must not be greater than Annual Fee Amortization Term Multiplier in Stage Assets should have list of values as Y/N | 93 | NULL Check | STG_ASSET | COMBANK_COA_CODE | Error | | | CFTEST | 19,248 | 74 | 9 | 9 | N | ACCOUNT_NUMBER |

Figure 7-85 Data Action

The screenshot shows a data quality report interface. At the top, it displays 'Number of Total available Checks for each Staging table' with a total of 13. Below this is a table with columns for different check types: 'Range Checks' (2), 'Data Length Checks' (2), 'Column Reference Checks' (1), and 'List of Values Checks' (1). A context menu is open over the 'STG_LIABILITY' header, showing options like 'Keep Selected', 'Remove Selected', 'Sort By', 'Drill to Attribute/Hierarchy...', 'Navigate to DQ Results', and 'Navigate to DQ Detail Results'. Below the table, there are summary statistics for 'Blank Checks' (1), 'Integrity Checks' (1), 'Duplicate Checks' (0), and 'Business Checks' (0). At the bottom, there is a section for 'Data Quality Checks Distribution' and 'Detail of Available Qu'.

Data Action: A Data Action link can pass context values as parameters to other canvas. In Data Quality Reports we have two data actions namely DQ Results and DQ details results.

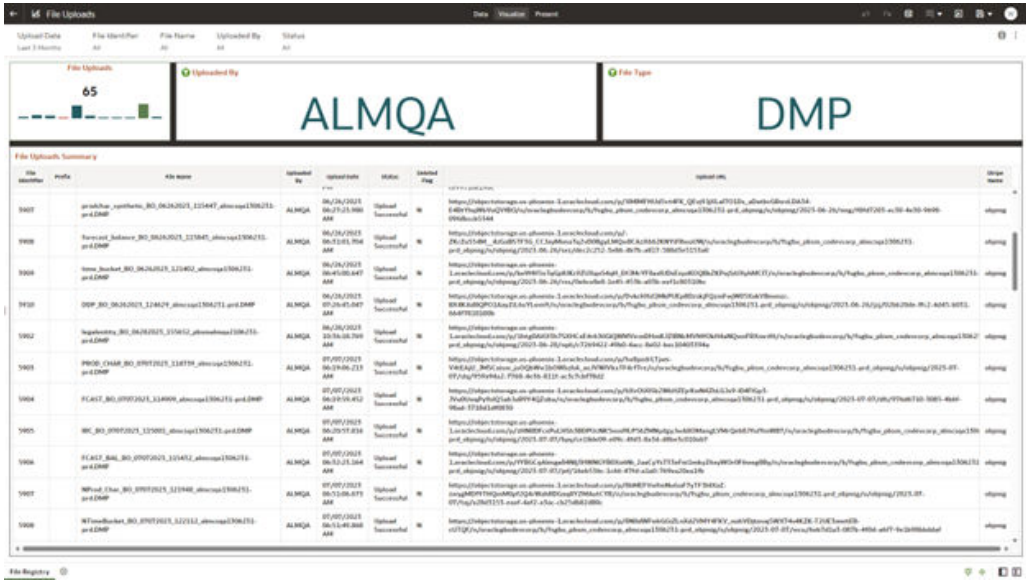
DQ Results: When user right clicks on any element and navigates to DQ Result, the selected object will get passed as a filter and pass this filter in DQ results Canvas.

DQ Result Details: When user right clicks on any element and navigates to DQ Result Details, the selected object will get passed as a filter and pass this filter in DQ Results Details Canvas.

7.1.4.5 File Uploads Report

To access the File Uploads report, from the LHS menu, select **Operational Analysis**, and then select **File Uploads**.

Figure 7-86 File Upload Report



Report Common Filters

You can use a series of canvas level pinned Prompts to filter the data according to Functional Key Attributes as follows:

Figure 7-87 Canvas Prompt Filters

| Upload Date | File Identifier | File Name | Uploaded By | Status |
|---------------|-----------------|-----------|-------------|--------|
| Last 3 Months | All | All | All | All |

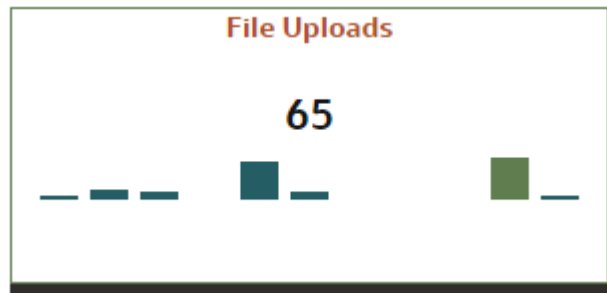
The following filters are available:

- **Update Date:** Use this filter to select the Update Date. The selection default is Last 3 Months.
- **File Identifier:** Use this filter to select a specific File Identifier.
- **File Name:** Use this filter to select a specific File Name.
- **Upload By:** Use this filter to select Upload By.

Canvas File Uploads

This chart shows the total number of files uploaded based on a reporting period.

Figure 7-88 Canvas File Uploads



Canvas Uploads by

This filter enables you to view the details of the users who have uploaded the files via the UI or batch process.

Figure 7-89 Canvas Uploads by



Canvas File Type

This filter the data by the file type. In this case, it's DMP, but it can be CSV, TXT, or other formats supported by the UI.

Figure 7-90 Canvas File Type



Canvas Summary

This table gives a clear view of detailed file upload information, that is displayed based on the search filters. Here, you can see the file identifier, prefix, File Name, the user who uploaded the file, Upload Data, status, Deleted Flag – which identifies if the file has been deleted, and the Upload URL.

Figure 7-91 Canvas Summary

| File Identifier | Profile | File Name | Uploaded By | Upload Date | Status | Size (KB) | File Type | Upload URL | Import Status |
|-----------------|---|-----------|-------------|-------------------|-------------------|-----------|----------------------|--|---------------|
| 5907 | prod/har_synthetics_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5908 | Revenue_Analysis_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5909 | Time_Budget_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5910 | QBR_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5902 | Regulatory_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5903 | PMO_CRM_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5904 | FCAT_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5905 | HR_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |
| 5906 | FCAT_BO_06262023_125447_almecap1306211.ppt | ALMCAQ | 59/29/2023 | 59/29/23 09:00 AM | Upload Successful | 16 | Microsoft PowerPoint | https://delphireports.com/almecap1306211.ppt | Imported |

7.1.4.6 Groups and Roles Report

To open the Group and Users Report, from the LHS menu, select **Operational Analysis**, and then select **Groups and Roles Report**.

The Groups and Roles Report Reporting reports section is arranged as a set of canvases, classified into the following:

- Master Registry for Groups - Roles - Functions
- User to Groups Mapping
- Group to Roles Mapping
- Roles to Functions Mapping

Report Common Filters

You can use a series of canvas-level pinned Prompts to filter the data according to Functional Key Attributes as follows:

Figure 7-92 Canvas Prompt Filters for Users, Groups and Roles

| User Id | Group Code | Group Name | Role Name | Role Code | Function Code | Function Name |
|---------|------------|------------|-----------|-----------|---------------|---------------|
| All | All | All | All | All | All | All |

The following filters are available:

- **User ID:** To select/search for a specific user ID.
- **Group Code:** To select/search for a specific group code.
- **Group Name:** To select/search for a specific group name.
- **Role Name:** To select/search for a specific role name.
- **Role Code:** To select/search for a specific role code.
- **Function Code:** To select/search for a specific function code.
- **Function Name:** To select/search for a specific function name.

Report Data Action

The reports provide the capability to analyze data across canvases via a Data Action. The following are the Data Action Configuration details:

Figure 7-93 Data Action Configuration

Data Actions

Actions

| Analyze by User to Groups | Analyze by Group to Roles | Analyze by Role to Functions |
|-------------------------------------|-------------------------------------|--|
| Name: Analyze by User to Groups | Name: Analyze by Group to Roles | Name: Analyze by Role to Functions |
| Type: Analytics Link | Type: Analytics Link | Type: Analytics Link |
| Anchor To: Select Data | Anchor To: Select Data | Anchor To: Select Data |
| Target: This Workbook | Target: This Workbook | Target: This Workbook |
| Canvas Link: User to Groups Mapping | Canvas Link: Group to Roles Mapping | Canvas Link: Role to Functions Mapping |
| Pass Values: All | Pass Values: All | Pass Values: All |
| Supports Multiple Selection: On | Supports Multiple Selection: On | Supports Multiple Selection: On |

Cancel OK

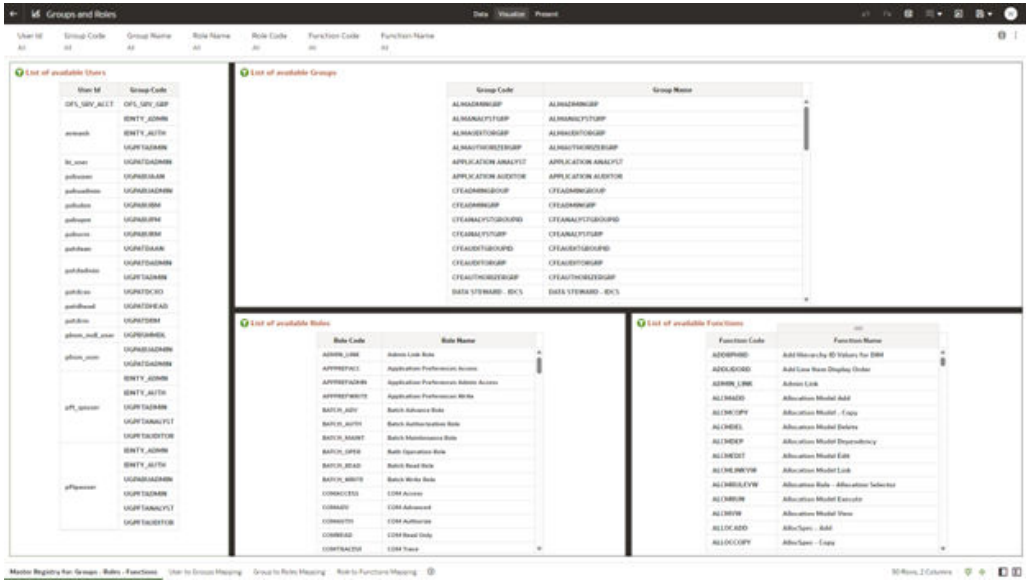
You can analyze by User to Groups, Group to Roles, or Role to Functions.

Report Master Registry For Groups, Rules, Functions

The Master Registry for Groups-Roles-Functions, displays users mapped from the Identity Cloud Service (or IDCS) into PBSMCS applications based on the user ID, user group, and related roles and functions, which are assigned to off the shelf groups.

Note that, IDCS enables you to set up and manage users and groups, and assigns users to different user groups. You can also use the interactive charts available in the report to analyze the groups, roles, and functions for a given user.

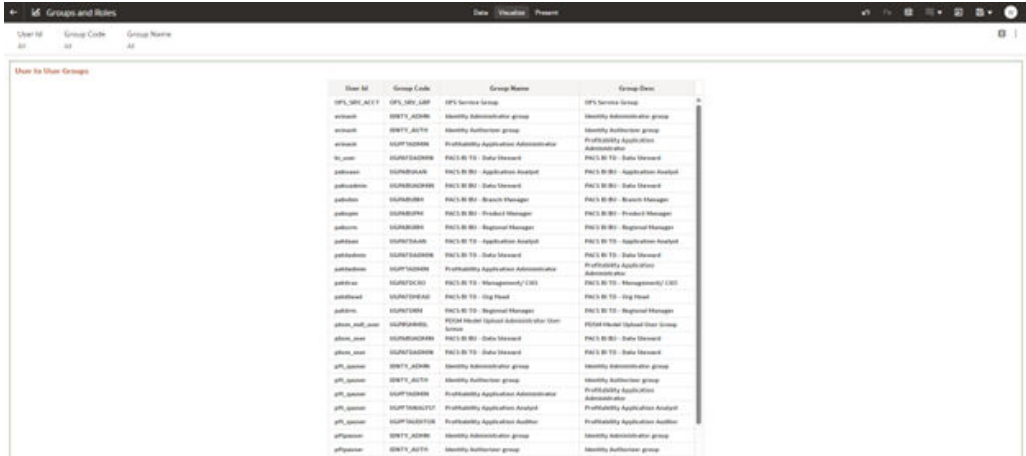
Figure 7-94 Groups and Roles



User Group Mapping

In this canvas, you can view the User ID, Group Code, Group Name, and the Group Description. By using the User ID filter at top to search for a particular user, you can see the corresponding group name and description for the selected user.

Figure 7-95 User Group Mapping



Group to Rules Mapping

In this canvas, you can filter using User ID, Group Code, Group Name, Role Code, and Role Name. For example, you can filter using a particular role name to view the groups assigned to that role.

Figure 7-96 Groups to Role Mapping

| User ID | Group Code | Group Name | Role Code | Role Name | Role Desc |
|---------|--------------|----------------------------------|-------------------|------------------------|---|
| | IDENTY_ADMIN | Identity Administrator group | ADMIN_LINK | Admin Link Role | |
| | IDENTY_ADMIN | Identity Administrator group | FLDR_ADV | Folder Advanced Role | |
| | IDENTY_ADMIN | Identity Administrator group | FLDR_READ | Folder Read Role | |
| | IDENTY_ADMIN | Identity Administrator group | GRP_ADV | Group Advanced Role | |
| | IDENTY_ADMIN | Identity Administrator group | METABOLM_ACC | Metaborg Access | |
| | IDENTY_ADMIN | Identity Administrator group | ROLE_ADV | Role Advanced Role | |
| | IDENTY_ADMIN | Identity Administrator group | USER_ADV | User Advanced Role | |
| | IDENTY_AUTH | Identity Authorizer group | ADMIN_LINK | Admin Link Role | |
| | IDENTY_AUTH | Identity Authorizer group | FLDR_AUTH | Folder Authorize | Folder Authorize Role |
| | IDENTY_AUTH | Identity Authorizer group | FLDR_READ | Folder Read Role | |
| | IDENTY_AUTH | Identity Authorizer group | GRP_AUTH | Group Authorize Role | |
| | IDENTY_AUTH | Identity Authorizer group | GRP_READ | Group Read Role | |
| | IDENTY_AUTH | Identity Authorizer group | ROLE_AUTH | Role Authorize Role | |
| | IDENTY_AUTH | Identity Authorizer group | ROLE_READ | Role Read Role | |
| | IDENTY_AUTH | Identity Authorizer group | USER_AUTH | User Authorize Role | |
| | OPS_SVC_GRP | OPS Service Group | BATCH_ADV | Batch Advance Role | Batch advance role in scheduler service |
| | OPS_SVC_GRP | OPS Service Group | FLDR_ADV | Folder Advanced Role | |
| | OPS_SVC_GRP | OPS Service Group | FLDR_WRITE | Folder Write Role | |
| | OPS_SVC_GRP | OPS Service Group | OPS_SVC_GRP | OPS Service Role | OPS Service Role |
| | UPRBIANAL | PACS BI BI - Application Analyst | BATCH_MAINT | Batch Maintenance Role | Batch maintenance role in scheduler service |
| | UPRBIANAL | PACS BI BI - Application Analyst | BATCH_OPER | Batch Operation Role | Batch operation role in scheduler service |
| | UPRBIANAL | PACS BI BI - Application Analyst | BATCH_READ | Batch Read Role | Batch read role in scheduler service |
| | UPRBIANAL | PACS BI BI - Application Analyst | BATCH_WRITE | Batch Write Role | Batch write role in scheduler service |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_ACCESS | COM Access | User Group mapped will have access to Common Object Metadata Link and Summary |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_READ | COM Read Only | User Group mapped will have access to View Common Object Metadata |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_WRITE | COM Write | User Group mapped will have access to Link and Summary |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_COPY | Copy | User Group mapped will have access to add, edit, copy and delete Common Object Metadata |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_DELETE | Delete | User Group mapped will have access to delete Common Object Metadata |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_COPY_ONLY | Copy Mapping Read Only | User Group mapped will have access to View Definition |
| | UPRBIANAL | PACS BI BI - Application Analyst | COMMON_COPY_WRITE | Copy Mapping Write | User Group mapped will have access to add, edit, copy and delete Data Mapping |
| | UPRBIANAL | PACS BI BI - Application Analyst | FILE_DOWNLOAD | File Download Role | |

Rule to Functions Mapping

This canvas displays all the functions mapped to the roles. You can filter based on User ID, Role Code, Role Name, Function Code and Function Name. For example, you can select a particular role, to view the role name, description, and the function assigned to that role.

Figure 7-97 Role to Functions Mapping

| User ID | Role Code | Role Name | Function Code | Function Name | Function Desc |
|---------|-------------------|--------------------------------------|------------------|---|---|
| | ADMIN_LINK | Admin Link Role | ADMIN_LINK | Admin Link | This gives access to administrators UI |
| | APPREFACCESS | Application Preferences Access | APPREFACCESS | Application Preferences Access Function Code | This function gives access to perform service |
| | APPREFACCESS | Application Preferences Access | APPREFACCESSVIEW | Application Preferences Access View Function Code | This function gives access to view the preferences defined for admin user |
| | APPREFACCESS | Application Preferences Access | APPREFACCESSVIEW | Application Preferences Access View Function Code | This function gives access to view preferences for specific user |
| | APPREFACCESSADMIN | Application Preferences Admin Access | APPREFACCESSDEF | Application Preferences Admin Function Code | This function gives user access to define the preferences for admin user |
| | APPREFACCESSADMIN | Application Preferences Admin Access | APPREFACCESSVIEW | Application Preferences Admin View Function Code | This function gives access to view the preferences defined for admin user |
| | APPREFACCESSWRITE | Application Preferences Write | APPREFACCESSDEF | Application Preferences Admin Function Code | This function gives user access to define the preferences for admin user |
| | APPREFACCESSWRITE | Application Preferences Write | APPREFACCESSVIEW | Application Preferences Admin View Function Code | This function gives access to view the preferences defined for admin user |
| | APPREFACCESSWRITE | Application Preferences Write | APPREFACCESSDEF | Application Preferences User Function Code | This function gives user access to define the preferences for specific user |
| | APPREFACCESSWRITE | Application Preferences Write | APPREFACCESSVIEW | Application Preferences User View Function Code | This function gives access to view preferences for specific user |
| | BATCH_ADV | Batch Advance Role | BATCH_ADD | Batch Add Function | Batch add function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_COPY | Batch Copy Function | Batch copy function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_DELETE | Batch Delete Function | Batch delete function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_EXEC | Batch Execute Function | Batch execution function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_MOD | Batch Modify Function | Batch modify function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_PURGE | Batch Purge Function | Batch purge function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_SCHED | Batch Schedule Function | Batch schedule function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_SUMM | Batch Summary Function | Batch summary function in scheduler service |
| | BATCH_ADV | Batch Advance Role | BATCH_VIEW | Batch View Function | Batch view function in scheduler service |
| | BATCH_ADV | Batch Advance Role | FUNC_SUMM | Func Summ | This gives access to function summary |
| | BATCH_AUTH | Batch Authorize Role | BATCH_AUTH | Batch Authorize Function | Batch authorize function in scheduler service |
| | BATCH_AUTH | Batch Authorize Role | BATCH_SUMM | Batch Summary Function | Batch summary function in scheduler service |
| | BATCH_AUTH | Batch Authorize Role | BATCH_VIEW | Batch View Function | Batch view function in scheduler service |
| | BATCH_AUTH | Batch Authorize Role | FUNC_SUMM | Function Summary | This gives access to function summary |
| | BATCH_MAINT | Batch Maintenance Role | BATCH_MOD | Batch Modify Function | Batch modify function in scheduler service |
| | BATCH_MAINT | Batch Maintenance Role | BATCH_SUMM | Batch Summary Function | Batch summary function in scheduler service |
| | BATCH_MAINT | Batch Maintenance Role | BATCH_VIEW | Batch View Function | Batch view function in scheduler service |

7.1.5 Data Insights

To access the Data Insights Report, select Analytics from the LHS Menu, and then select Data Insights.

7.1.5.1 Cash Flow Edits

The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.

The Cash Flow Edits is arranged as a set of reports catering to analysis of the following categories:

- “Rules”
- “Process Stats”
- “Message Log”

7.1.5.2 Common Filters

Topics:

- “Rules” Canvas Prompt Filters
- “Process Stats” Canvas Prompt Filters
- “Message Log” Canvas Prompt Filters

7.1.5.2.1 “Rules” Canvas Prompt Filters

You can use a series of Report Prompts to filter the data according to Functional Key Attributes as described below:

Figure 7-98 Canvas Prompt Filters for key Attributes

| Group Name | Subgroup Name | Rule Name | Rule Identifier | Condition Columns |
|------------|---------------|-----------|-----------------|-------------------|
| All | All | All | All | All |

- Group Name: You can use this filter to select a specific Group value related to the available granular rules
- Subgroup Name: You can use this filter to select a specific Subgroup value related to the available granular rules
- Rule Name: You can use this filter to select a specific Rule value
- Rule Identifier: You can use this filter to select a specific Rule Identifier value
- Rule Condition Columns: You can use this filter to select a specific Condition value related to the available granular rules

7.1.5.2.2 “Process Stats” Canvas Prompt Filters

You can use a series of Report Prompts to filter the data according to Functional Key Attributes as described below:

Figure 7-99 Canvas Prompt Filters for Time Dimension

Processor Execution As Of Date Processor Execution As of Date (Year) Processor Execution As of Date (Quarter) Processor Execution As of Date (Month) Processor Execution As of Date (Day)
Last 2 Quarters All All All All

- Processor Execution As of Date: The Execution Period of the Cash Flow Edit process. You can use this filter to isolate a selected timeframe for the analysis. The following screenshot displays the possible options that this filter provides against the Time Dimension.

Figure 7-100 As of Processor Execution Date Selection

Processor Execution As Of Date
Last 2 Quarters

Relative Time

Type Last

Increment

Time Level Quarters

Relative To

- Years
- Quarters
- Months
- Weeks
- Days
- Hours
- Minutes
- Seconds

- Additional Filters for the Time Dimension as follows:
 - Processor Execution As of Date (Year)
 - Processor Execution As of Date (Quarter)
 - Processor Execution As of Date (Month)
 - Processor Execution As of Date (Day)

Figure 7-101 Canvas Prompt Filters for Standard Dimension

Cashflow Edits Process Name Execution Run Identifier Legal Entity Leaf Name Source Table Name
All All All All

- Cashflow Edits Process Name: You can use this filter to select a specific Cashflow Edit Process value
- Execution Run Identifier: You can use this filter to select a specific Execution Run Identifier value at leaf related to the Cashflow Edits Process
- Legal Entity Leaf Name: You can use this filter to select the Legal Entity Leaf Name that is related to the Cashflow Edit Process execution
- Source Table Name: You can use this filter to select a specific Source Table value related to the to the Cashflow Edit Process execution

7.1.5.2.3 “Message Log” Canvas Prompt Filters

You can use a series of Report Prompts to filter the data according to Functional Key Attributes as described below:

Figure 7-102 Canvas Prompt Filters for Standard Dimension

| Processor Execution As of Date (Day) | Cashflow Edits Process Name | Execution Run Identifier | Account Number |
|--------------------------------------|-----------------------------|--------------------------|----------------|
| All | All | All | All |

- Processor Execution As of Date (Day): The Execution Period of the Cash Flow Edit process. You can use this filter to isolate a selected timeframe for the analysis
- Cashflow Edits Process Name: You can use this filter to select a specific Cashflow Edit Process value
- Execution Run Identifier: You can use this filter to select a specific Execution Run Identifier value at leaf related to the Cashflow Edits Process
- Account Number: You can use this filter to select a specific Account Number value related to the to the Cashflow Edit Process execution

7.1.5.3 Report Data Action

The Data Actions provide the capability to perform drill down analysis across the downstream report canvases. The drill down is enabled via a data action.

From “Rules” and “Process Stats” report canvases charts, you can select a combination of values, and then perform the navigation to the “message Log” report canvas.

In order to do so, with a right click on the chart selection, the data action options will appear for you to be able to navigate further as described in the following mapping:

- **Navigate to Message Log** – the Data Action will be drilling through the “Message Log” canvas.

The following screenshots show the Data Action list as well as the navigation options that appears once you right click on the desired selection.

Figure 7-103 Data Action configuration

Data Actions

Actions +

▾ Navigate to Message Log ×

Name

Type

Anchor To +

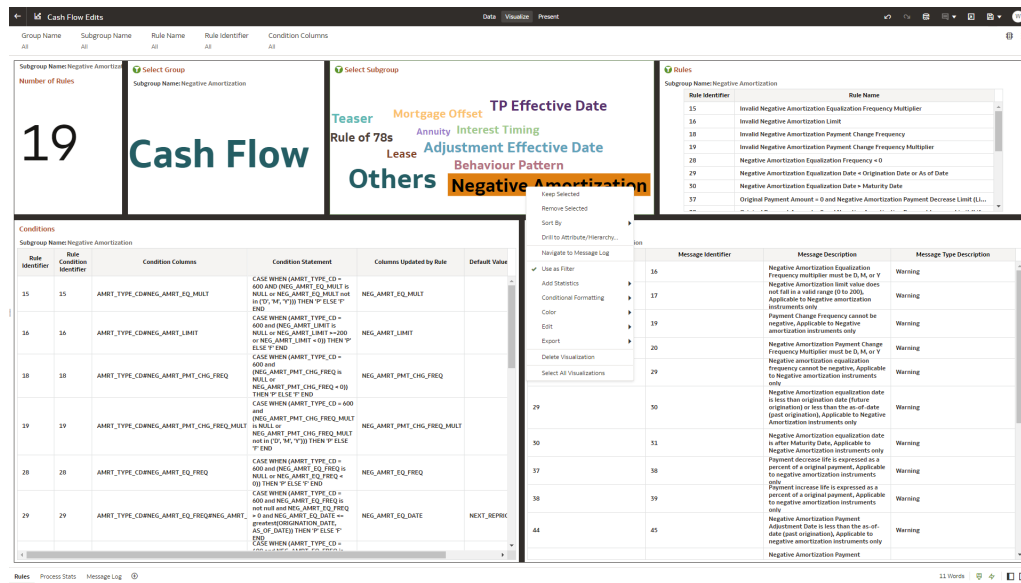
Target

Canvas Link

Pass Values

Supports Multiple Selection On

Figure 7-104 Data Action for Drill down with report Canvases



7.1.5.4 Rules

The “Rules” Report provides a view of the available Rules to be leveraged by the Cash Flow Edits processes. You can use the report to identify the list of the available rules within the Application as well as to look at their grouping and subgrouping with the granular details for Conditions and Messages.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Edit messages.

The report displays the underlying data according to the following Chart’ logic:

- **Number of Rules**The chart provides you with the total Number of Rules available within the Application
- **Select Group**The chart provides you with a selection capability for the desired Group of rules
- **Select Subgroup**The chart provides you with a selection capability for the desired Subgroup of rules
- **Rules**

The chart reports the list of rules available within the Application.

The columns displayed in the chart are the following:

- Rule Identifier
- Rule Name

- **Conditions**

The chart reports the list of conditions defined for each of the rules available within the Application.

The columns displayed in the chart are the following:

- Rule Identifier

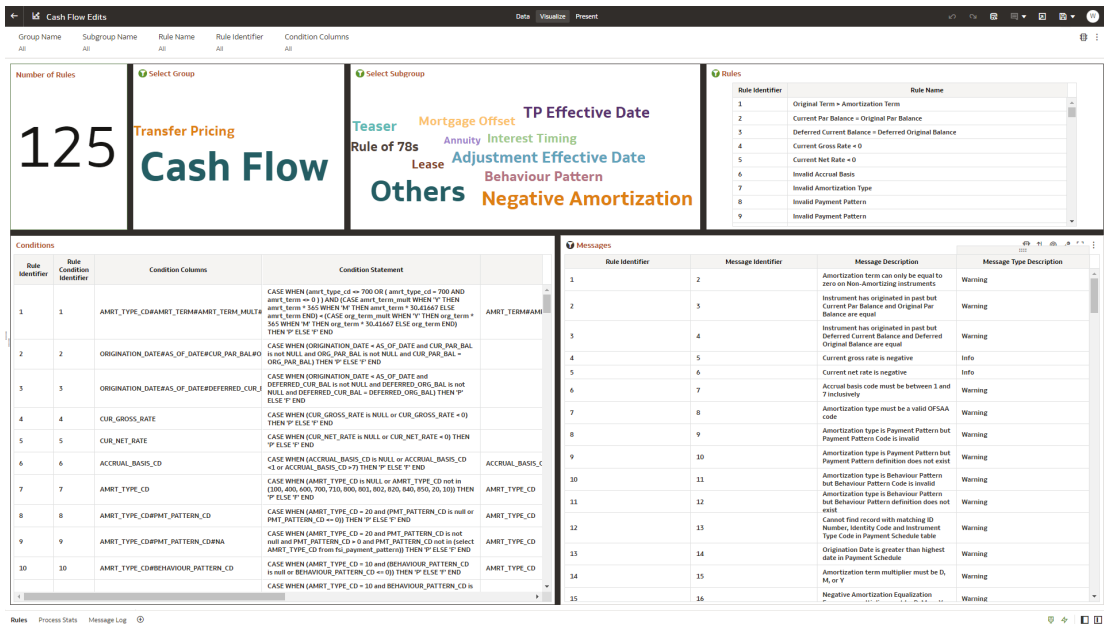
- Rule Condition Identifier
- Condition Columns
- Condition Statements
- **Messages**

The chart reports the list of log messages defined for each of the rules available within the Application.

The columns displayed in the chart are the following:

- Rule Identifier
- Message Identifier
- Message Description
- Message Type Description

Figure 7-105 “Rules” Report



7.1.5.5 Process Stats

The “Process Stats” Report provides a view of the available statistics related to the execution of the Cash Flow Edits processes. You can use the report to identify the number of errors and the aggregated details for the Cash Flow Edits executed out of the underlying Instrument table account data.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Edit messages.

The report displays the underlying data according to the following Chart’ logic:

- **Cashflow Edits found**

The chart reports the trend analysis of the Number of Errors for each Cash Flow Edit execution with respect to Processor Execution As of Date and the Message Type received during the executions.

The columns displayed in the chart are the following:

- Processor Execution As of Date (Day)
- Cashflow Edits Process Name
- Execution Run Identifier
- Message Type Description
- Number of Errors

- **Processing Time (in Mins)**

The chart reports the trend analysis of the Processing Time for each Cash Flow Edit execution with respect to Processor Execution As of Date.

The columns displayed in the chart are the following:

- Processor Execution As of Date (Day)
- Cashflow Edits Process Name
- Execution Run Identifier
- Processor Execution Time In Minutes

- **Number of Errors**

The chart reports the trend analysis of the Number of Errors for each Cash Flow Edit execution with respect to Processor Execution As of Date.

The columns displayed in the chart are the following:

- Processor Execution As of Date (Day)
- Cashflow Edits Process Name
- Execution Run Identifier
- Number of Errors

- **Number of Errors by Source Table Name**

The chart reports the trend analysis of the Number of Errors for each Cash Flow Edit execution with respect to Processor Execution As of Date and the Source Table Name where the errors have been identified.

The columns displayed in the chart are the following:

- Processor Execution As of Date (Day)
- Cashflow Edits Process Name
- Execution Run Identifier
- Source Table Name
- Message Type Description
- Number of Errors

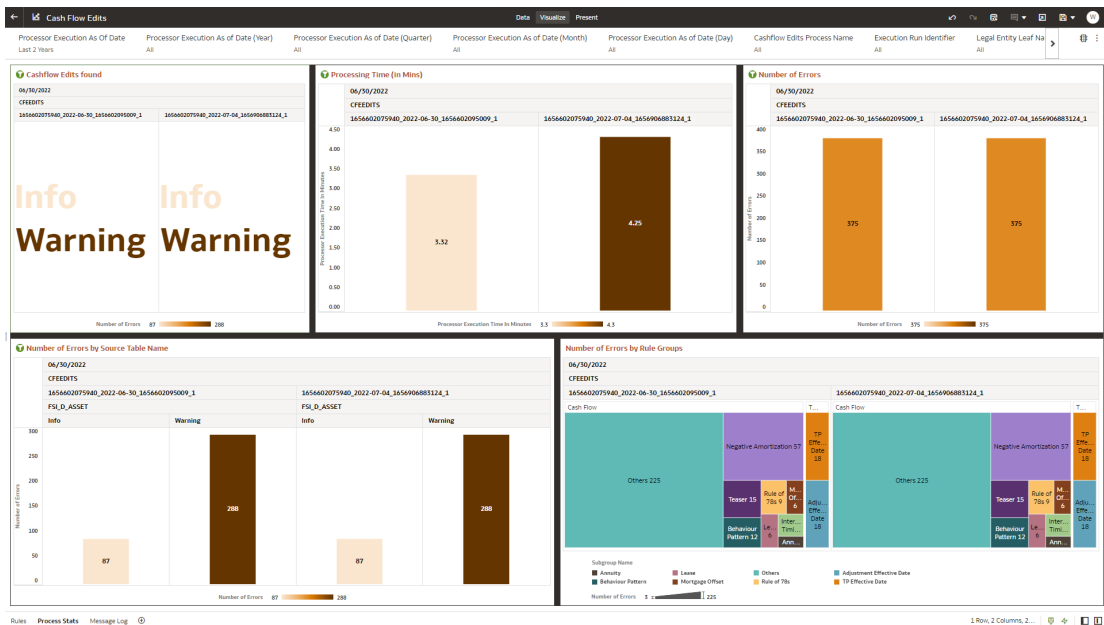
- **Number of Errors by Rule Groups**

The chart reports the trend analysis of the Number of Errors for each Cash Flow Edit execution with respect to Processor Execution As of Date and the Rule Group/Subgroup.

The columns displayed in the chart are the following:

- Processor Execution As of Date (Day)
- Cashflow Edits Process Name
- Execution Run Identifier
- Group Name
- Subgroup Name
- Number of Errors

Figure 7-106 “Process Stats” Report



7.1.5.6 Message Log

The “Message Log” Report provides a view of the underlying Cash Flow Edits messages retrieved during the Cash Flow Edit Process execution, and the available granularity is at Customer Accounts level.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Edit messages.

The report displays the underlying data according to the following Chart’ logic:

- Message Log

The tabular report displays all the message details related to the execution of the Cash Flow Edit process, including information related to the Customer Account details.

Following the granular elements available for this table chart:

- "Cashflow Edits Process Name", "Processor Execution As of Date (Day)", "Execution Run Identifier", "Account Number", "Source Table Name", "Rule Name" and "Message Description".

Figure 7-107 “Message Log” Report

| Processor Execution As of Date (Day) | Execution Run Identifier | Account Number | Source Table Name | Rule Name | Message Description |
|--------------------------------------|--|--|-------------------|---|---|
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Adjustable Negative Amortization Instrument has Reprice Frequency = 0 | Reprice Frequency cannot be zero for Adjustable Negative Amortization Instrument |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Adjustable Rate Instrument has Invalid Interest Rate Code | Interest rate code must be valid for adjustable rate instruments |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Adjustable Type is fixed rate for Negative amortization instrument | Negative amortization instruments cannot have fixed adjustable type code |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Adjustable Type is not fixed but Reprice Frequency is 0 | Adjustable Type is not fixed but Reprice Frequency is 0 |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Amortization Type / Accrued Basis Error | Accrued basis code cannot have a 50 day month assumption on instruments with payment frequency multiplier in day or defined by a payment schedule |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Amortization Type is conventional but Interest Timing is Advance | Interest type can only be interest for conventional instruments |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Amortization Type is Rule of 78% but Adjustable Type is not fixed | Rule of 78% instrument should only have a Fixed adjustable type code |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Amortization Type is Rule of 78% but Reprice Frequency is not 0 | Rule of 78% instruments are implicitly fixed rate |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Balance on Last Reprice Date = 0 | The balance as of the last repricing date cannot be equal to 0 |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Behavior Type Code is Null | Behavior Type Code is Null, defaulted to 1 (Non-Maturity) |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Calculated Offset Balance + Current Par Balance | Calculated Offset Balance is higher than Current Par Balance |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Gross Rate = 0 | Current gross rate is negative |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Net Rate = 0 | Current net rate is negative |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Par Balance = 0 | Instrument with Current Par Balance zero are not processed |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Par Balance + Original Par Balance | Instrument has originated in past but Current Par Balance and Original Par Balance are equal |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Payment and Current Par Balance have opposite signs | Current payment and current par balance can not have opposite signs |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Payment is greater than Life Pay Cap | Current payment is greater than the maximum payment amount. Applicable to negative amortization instruments only |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Current Payment is less than Life Pay Floor | Current payment is less than the minimum payment amount. Applicable to negative amortization instruments only |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Deferred Current Balance - Deferred Original Balance | Instrument has originated in past but Deferred Current Balance and Deferred Original Balance are equal |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Holiday calendar not given for B/252 accrual basis | Holiday calendar must be given when using Business/252 accrual basis |
| 06/30/2022 | 1656602075940_2022-06-30_1656602099009_1 | SIA_TC033_PPRCONV_AD1_AJ345_ADV_SCA_DMM40_24073A | FSI_D_ASSET | Interest Payment Frequency cannot be | Interest Payment Frequency cannot be |

7.1.6 Processed Data Insights

To access the Processed Data Insights Reports, select Analytics from the LHS Menu, and then select Processed Data Insights.

7.1.6.1 Cash Flow Output

The Cash Flow Output allows you to get insight into projected cash inflows and outflows of your Balance Sheet.

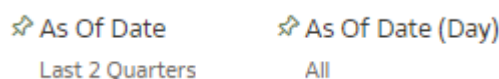
The Cash Flow Output is arranged as a set of reports catering to analysis of the following categories:

- “Process Stats”
- “Runoff by KPDs”
- “Balances by KPDs”
- “Rates by KPDs”
- “Process Results Details”

7.1.6.1.1 Common filters

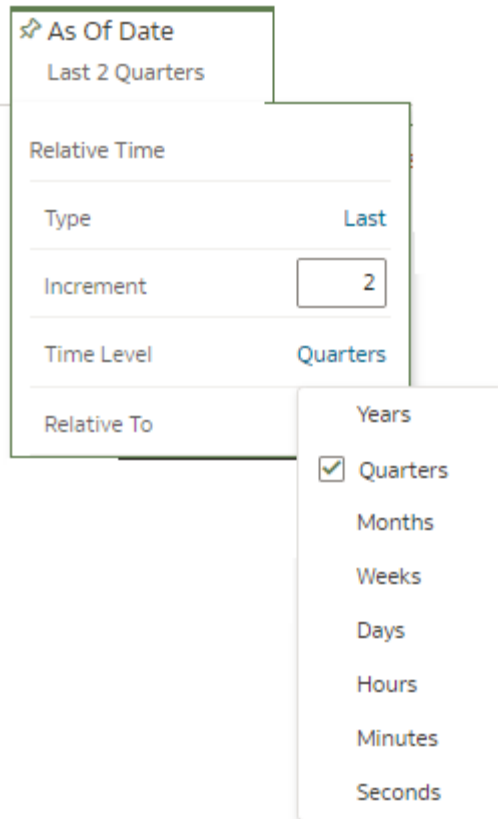
You can use a series of Report Prompts to filter the data according to Functional Key Attributes as described below:

Figure 7-108 Canvas Prompt Filters for Time Dimension



- As of Date: The Execution Period for the output results. You can use this filter to isolate a selected timeframe for the analysis. The following screenshot displays the possible options that this filter provides against the Time Dimension.

Figure 7-109 As of Date Selection



- Additional Filters for the Time Dimension as follows:
 - As of Date (Day)

Figure 7-110 Canvas Prompt Filters for Cashflow Output Process execution data

| Number of Cashflow Projection in Years | Cash Flow Date | Cashflow Process Name | Execution Run Identifier | Scenario Name | Currency Name |
|--|----------------|-----------------------|--------------------------|---------------|---------------|
| Full Range | Full Range | All | All | All | All |

- Number of Cashflow Projection in Years: You can use this filter to select a specific Cashflow Projection period to be applied to the Cashflow Output Process execution data; i.e. for next two years of Cashflow Projection you can apply the following selection

Figure 7-111 Number of Cashflow Projection in Years

Number of Cashflow Projection in Years

0 - 2

Range

| | | |
|-------|---|-----|
| Start | 0 | Min |
| End | 2 | Max |

- **Cash Flow Date:** You can use this filter to select a specific Cashflow Date to be applied to the Cashflow Output Process execution data
- **Cashflow Process Name:** You can use this filter to select a specific Cashflow Process Name to be applied to the Cashflow Output Process execution data
- **Execution Run Identifier:** You can use this filter to select a specific Execution Run Identifier to be applied to the Cashflow Output Process execution data
- **Scenario Name:** You can use this filter to select a specific Scenario Name to be applied to the Cashflow Output Process execution data
- **Currency Name:** You can use this filter to select a specific Currency Name to be applied to the Cashflow Output Process execution data

Figure 7-112 Canvas Prompt Filters for Legal Entity key processing dimension

LE Hierarchy Name Legal Entity Leaf Name

All All

- **LE Hierarchy Name:** N.B. this is a mandatory filter for the group filtering on Legal Entity key processing dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “LE Hierarchy Name” must be selected with only a single value simultaneously.
- **Legal Entity Leaf Name:** You can use this filter to select the Legal Entity Leaf Name that is related to the Cashflow Output Process execution data.

Figure 7-113 Canvas Prompt Filters for Org Unit key processing dimension

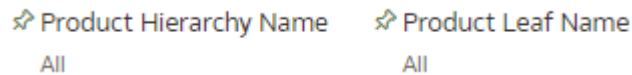
Org Unit Hierarchy Name Org Unit Leaf Name

All All

- **Org Hierarchy Name:** N.B. this is a mandatory filter for the group filtering on Org Unit key processing dimension. As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Org Hierarchy Name” must be selected with only a single value simultaneously.

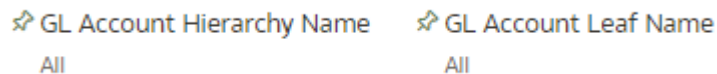
- Org Unit Leaf Name: You can use this filter to select the Org Unit Leaf Name that is related to the Cashflow Output Process execution data.

Figure 7-114 Canvas Prompt Filters for Product key processing dimension



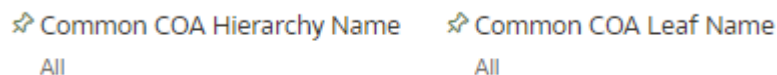
- Prod Hierarchy Name: N.B. this is a mandatory filter for the group filtering on Product key processing dimension.
As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Prod Hierarchy Name” must be selected with only a single value simultaneously.
- Prod Leaf Name: You can use this filter to select the Prod Leaf Name that is related to the Cashflow Output Process execution data.

Figure 7-115 Canvas Prompt Filters for GL Account key processing dimension



- GL Account Hierarchy Name: N.B. this is a mandatory filter for the group filtering on GL Account key processing dimension.
As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “GL Account Hierarchy Name” must be selected with only a single value simultaneously.
- GL Account Leaf Name: You can use this filter to select the GL Account Leaf Name that is related to the Cashflow Output Process execution data.

Figure 7-116 Canvas Prompt Filters for Common COA key processing dimension



- Common COA Hierarchy Name: N.B. this is a mandatory filter for the group filtering on Common COA key processing dimension.
As the Application supports the creation of multiple hierarchies for the same Dimension of analysis, and to avoid displaying results from multiple Dimension Hierarchies at the same time, a mandatory driver to select “Common COA Hierarchy Name” must be selected with only a single value simultaneously.
- Common COA Leaf Name: You can use this filter to select the Common COA Leaf Name that is related to the Cashflow Output Process execution data.

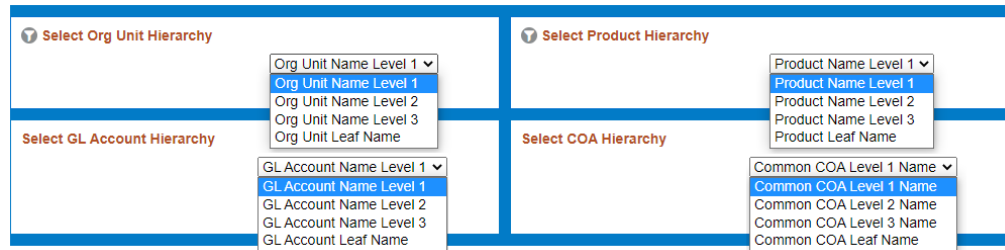
7.1.6.1.2 Report Hierarchies

The Report provides you with the roll-up and drill down capability on the Cashflow Output Process execution data, leveraging the available levels for the following Hierarchies:

- Org Unit Entity Hierarchy
- Product Hierarchy
- GL Account Hierarchy
- Common COA Hierarchy

Following screenshot displays the available selections for the aforementioned hierarchies.

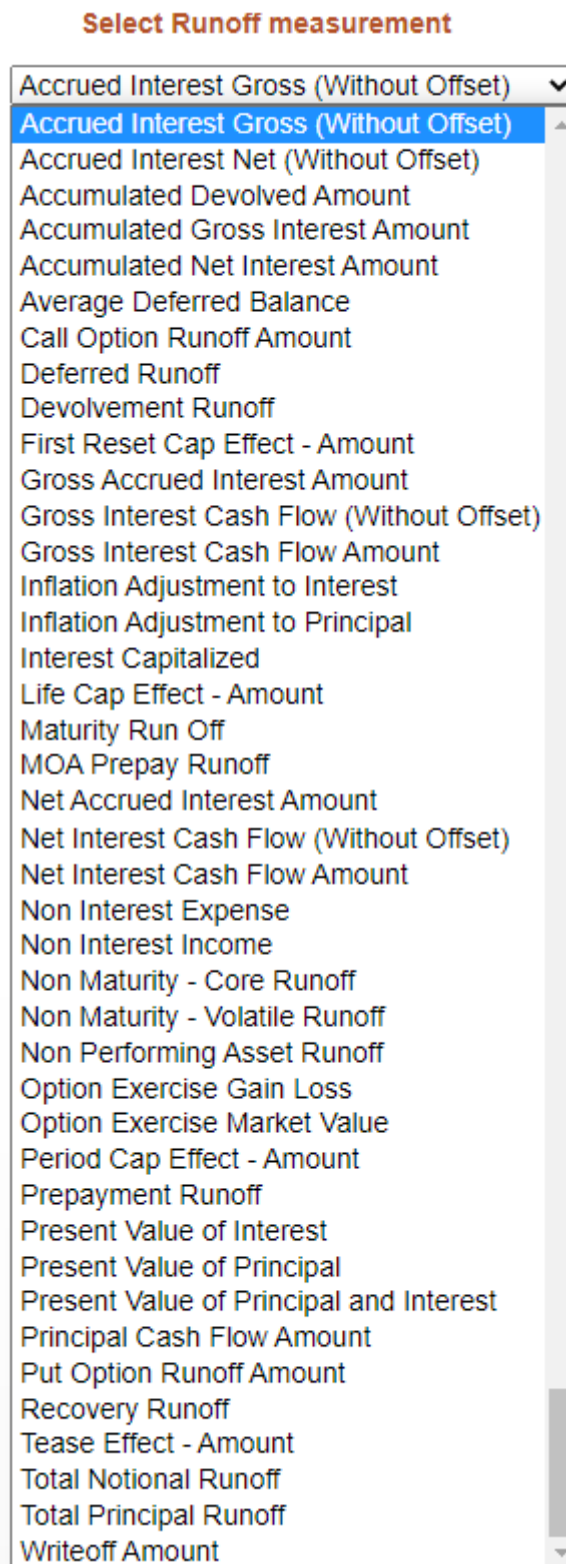
Figure 7-117 Cashflow Output key processing dimension hierarchies



7.1.6.1.3 In canvas Variable Prompts

- Select Runoff measurement: This is the variable prompt to select the desired Runoff measurement to be applied to the "Runoff by KPDs" report canvas charts. The following elements are available for selection:
 - "Accrued Interest Gross (Without Offset)", "Accrued Interest Net (Without Offset)", "Accumulated Devolved Amount", "Accumulated Gross Interest Amount", "Accumulated Net Interest Amount", "Average Deferred Balance", "Call Option Runoff Amount", "Deferred Runoff", "Devolvement Runoff", "First Reset Cap Effect - Amount", "Gross Accrued Interest Amount", "Gross Interest Cash Flow (Without Offset)", "Gross Interest Cash Flow Amount", "Inflation Adjustment to Interest", "Inflation Adjustment to Principal", "Interest Capitalized", "Life Cap Effect - Amount", "Maturity Run Off", "MOA Prepay Runoff", "Net Accrued Interest Amount", "Net Interest Cash Flow (Without Offset)", "Net Interest Cash Flow Amount", "Non Interest Expense", "Non Interest Income", "Non Maturity - Core Runoff", "Non Maturity - Volatile Runoff", "Non Performing Asset Runoff", "Option Exercise Gain Loss", "Option Exercise Market Value", "Period Cap Effect - Amount", "Prepayment Runoff", "Present Value of Interest", "Present Value of Principal", "Present Value of Principal and Interest", "Principal Cash Flow Amount", "Put Option Runoff Amount", "Recovery Runoff", "Tease Effect - Amount", "Total Notional Runoff", "Total Principal Runoff" and "Writeoff Amount".

Figure 7-118 “Select Runoff measurement” list



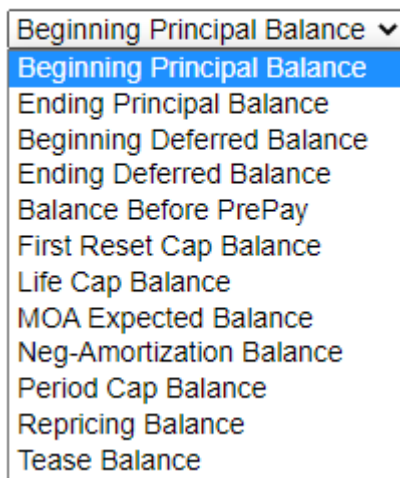
- Select Balance measurement: This is the variable prompt to select the desired Balance measurement to be applied to the “Balances by KPDs” report canvas charts.

The following elements are available for selection:

- "Beginning Principal Balance", "Ending Principal Balance", "Beginning Deferred Balance", "Ending Deferred Balance", "Balance Before PrePay", "First Reset Cap Balance", "Life Cap Balance", "MOA Expected Balance", "Neg-Amortization Balance", "Period Cap Balance", "Repricing Balance" and "Tease Balance".

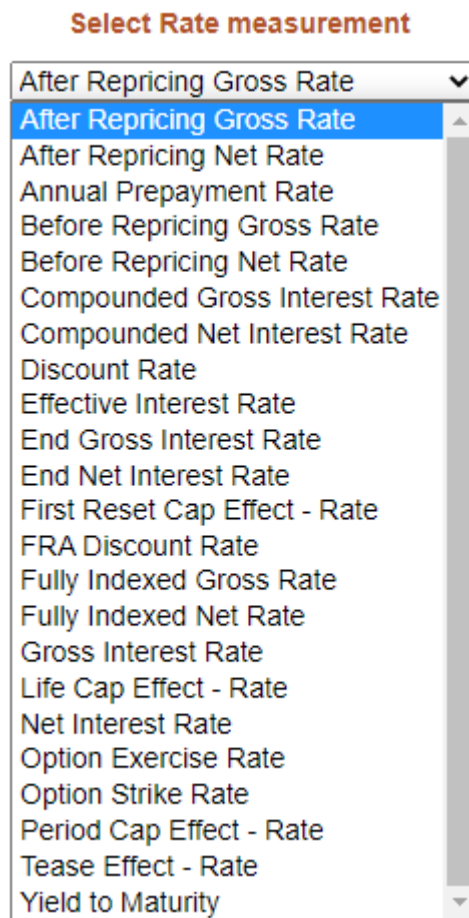
Figure 7-119 "Select Balance measurement" list

Select Balance measurement



- Select Rate measurement: This is the variable prompt to select the desired Rate measurement to be applied to the "Rates by KPDs" report canvas charts. The following elements are available for selection:
 - "After Repricing Gross Rate", "After Repricing Net Rate", "Annual Prepayment Rate", "Before Repricing Gross Rate", "Before Repricing Net Rate", "Compounded Gross Interest Rate", "Compounded Net Interest Rate", "Discount Rate", "Effective Interest Rate", "End Gross Interest Rate", "End Net Interest Rate", "First Reset Cap Effect - Rate", "FRA Discount Rate", "Fully Indexed Gross Rate", "Fully Indexed Net Rate", "Gross Interest Rate", "Inflation Index Factor", "Life Cap Effect - Rate", "Net Interest Rate", "Option Exercise Rate", "Option Strike Rate", "Period Cap Effect - Rate", "Tease Effect - Rate" and "Yield to Maturity".

Figure 7-120 “Select Rate measurement” list



7.1.6.1.4 Report Data Action

The Data Actions provide the capability to perform drill down analysis across the downstream report canvases. The drill down is enabled via a data action.

From every report canvas charts, you can select a combination of values, and then perform the navigation to the “Process Results Details” report canvas.

In order to do so, with a right click on the chart selection, the data action options will appear for you to be able to navigate further as described in the following mapping:

- **Navigate to Process Results Details** – the Data Action will be drilling through the “Process Results Details” canvas.

The following screenshots show the Data Action list as well as the navigation options that appears once you right click on the desired selection.

Figure 7-121 Data Action configuration

Data Actions

Actions +

▲ Navigate to Process Results Details

Name

Type

Anchor To +

Target

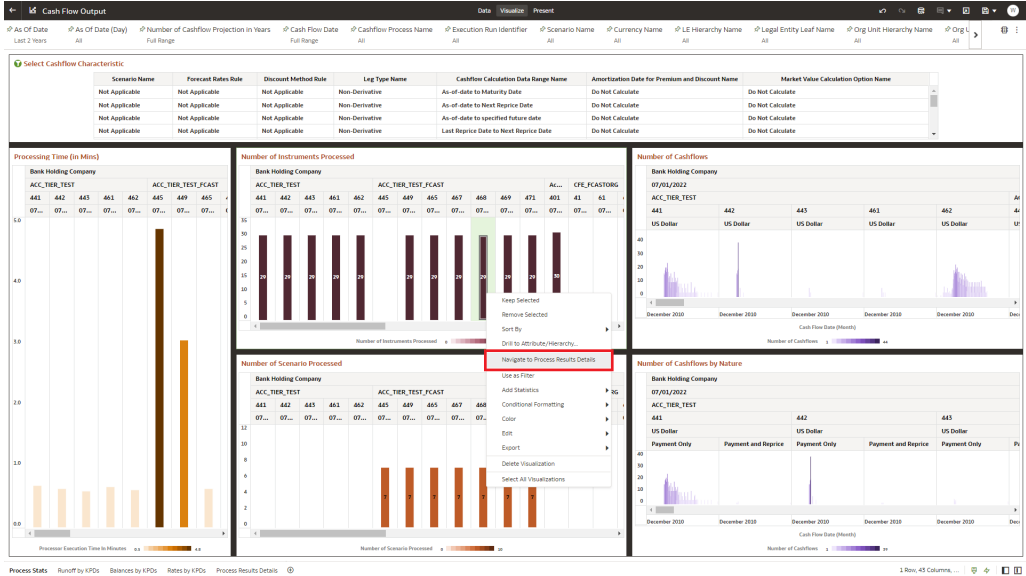
Canvas Link

Pass Values

Supports Multiple Selection On

Cancel
OK

Figure 7-122 Data Action for Drill down with report Canvases



7.1.6.1.5 Process Stats

The “Process Stats” Report provides a view of the available statistics related to the execution of the Cash Flow Output processes. You can use the report to identify the process statistics related to the processing time, the number of cashflow generated as well as the number of instruments and scenarios processed.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Output results.

The report displays the underlying data according to the following Chart’ logic:

- **Select Cashflow Characteristic**The chart provides you with a selection capability on the desired Cashflow characteristics utilized by the Cashflow Output processes.

The columns displayed in the chart are the following:

- Scenario Name
- Forecast Rates Rule
- Discount Method Rule
- Leg Type Name
- Cashflow Calculation Data Range Name
- Amortization Date for Premium and Discount Name
- Market Value Calculation Option Name

- **Processing Time (in Mins)**The chart reports the trend analysis of the Processing Time for each Cash Flow Output execution with respect to As of Date.

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Processor Execution Time In Minutes

- **Number of Instruments Processed**The chart reports the trend analysis of the Number of Instruments Processed for each Cash Flow Output execution with respect to As of Date.

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Number of Instruments Processed

- **Number of Cashflows**

The chart reports the trend analysis of the Number of Cashflows generated for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- As Of Date (Day)
- Cashflow Process Name
- Execution Run Identifier
- Currency Name
- Cash Flow Date (Month)
- Number of Cashflows

- **Number of Scenario Processed**

The chart reports the trend analysis of the Number of Scenario processed for each Cash Flow Output execution with respect to As of Date.

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Number of Scenario Processed

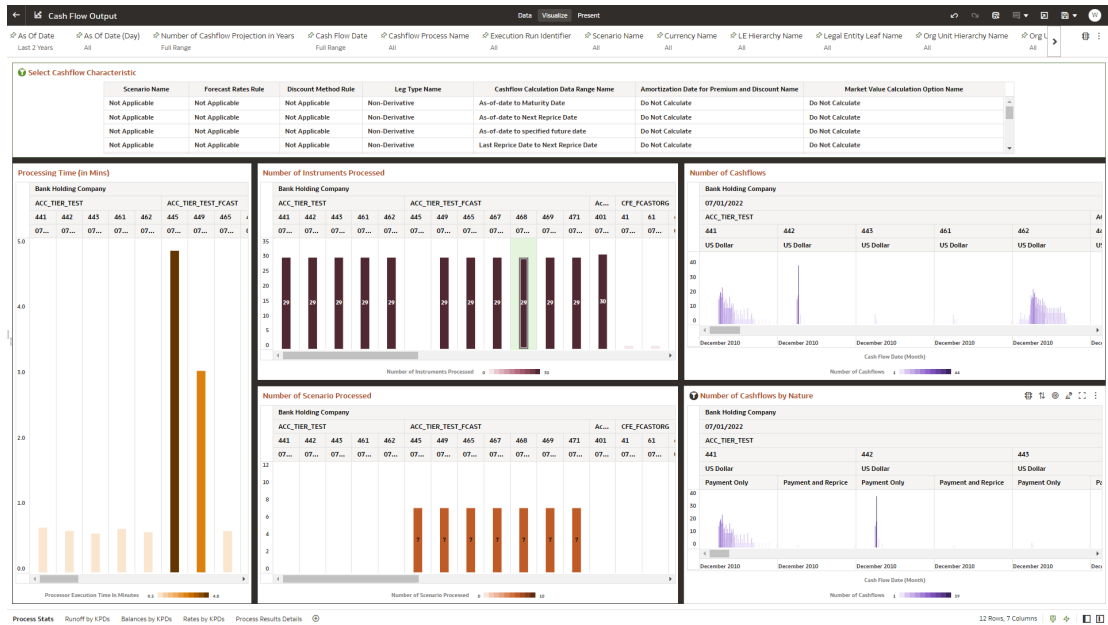
- **Number of Cashflows by Nature**

The chart reports the trend analysis of the Number of Cashflows generated for each Cash Flow Output execution with respect to As of Date, Cash Flow Date (Month) and Cash Flow Nature (“*Cashflow Code Name*”).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- As Of Date (Day)
- Cashflow Process Name
- Execution Run Identifier
- Currency Name
- Cashflow Code Name
- Cash Flow Date (Month)
- Number of Cashflows

Figure 7-123 “Process Stats” Report



7.1.6.1.6 Runoff by KPDS

The “Runoff by KPDS” Report provides the Cash Flow Output processes results related to the Runoff measurements, you can drill down and roll up the results across hierarchies for the Key Processing Dimensions of Org Unit, Product, GL Account and Common COA.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Output results.

The report displays the underlying data according to the following Chart’ logic:

- **Select Runoff measurement**The chart provides you with a selection capability on the desired Cashflow Runoff measurement.
- **Select Org Unit Hierarchy**The chart provides you with a selection capability for the desired Org Unit Hierarchical level.
- **Select Product Hierarchy**The chart provides you with a selection capability for the desired Product Hierarchical level.
- **Select GL Account Hierarchy**The chart provides you with a selection capability for the desired GL Account Hierarchical level.
- **Select COA Hierarchy**The chart provides you with a selection capability for the desired Common COA Hierarchical level.
- **Selected Runoff Measure by Org Unit**The chart reports the generated Cashflow output Runoff Measure by Org Unit for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier

- As Of Date (Day)
- Currency Name
- Org Unit Hierarchy
- Cash Flow Date (Month)
- Runoff Measure
- **Selected Runoff Measure by Product**The chart reports the generated Cashflow output Runoff Measure by Product for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Currency Name
- Product Hierarchy
- Cash Flow Date (Month)
- Runoff Measure
- **Selected Runoff Measure by GL Account**

The chart reports the generated Cashflow output Runoff Measure by GL Account for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

 - Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - GL Account Hierarchy
 - Cash Flow Date (Month)
 - Runoff Measure
- **Selected Runoff Measure by Common COA**

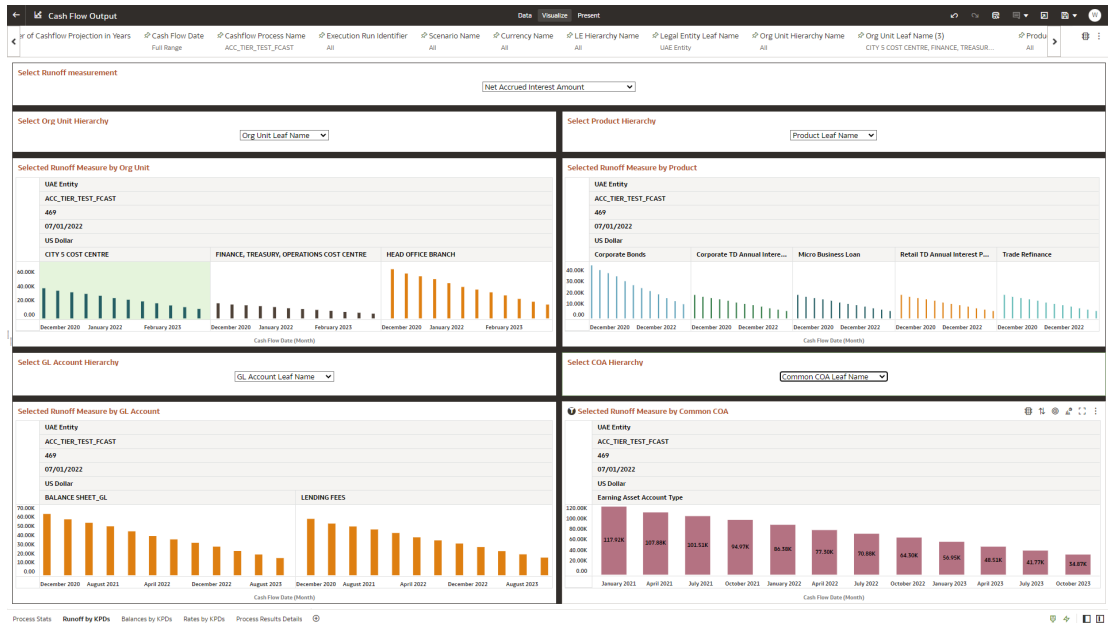
The chart reports the generated Cashflow output Runoff Measure by Common COA for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)

- Currency Name
- COA Hierarchy
- Cash Flow Date (Month)
- Runoff Measure

Figure 7-124 “Runoff by KPDs” Report



7.1.6.1.7 Balances by KPDs

The “Balances by KPDs” Report provides the Cash Flow Output processes results related to the Balances measurements, you can drill down and roll up the results across hierarchies for the Key Processing Dimensions of Org Unit, Product, GL Account and Common COA.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Output results.

The report displays the underlying data according to the following Chart’ logic:

- **Select Balance measurement**The chart provides you with a selection capability on the desired Cashflow Balance measurement.
- **Select Org Unit Hierarchy**The chart provides you with a selection capability for the desired Org Unit Hierarchical level.
- **Select Product Hierarchy**The chart provides you with a selection capability for the desired Product Hierarchical level.
- **Select GL Account Hierarchy**The chart provides you with a selection capability for the desired GL Account Hierarchical level.
- **Select COA Hierarchy**The chart provides you with a selection capability for the desired Common COA Hierarchical level.

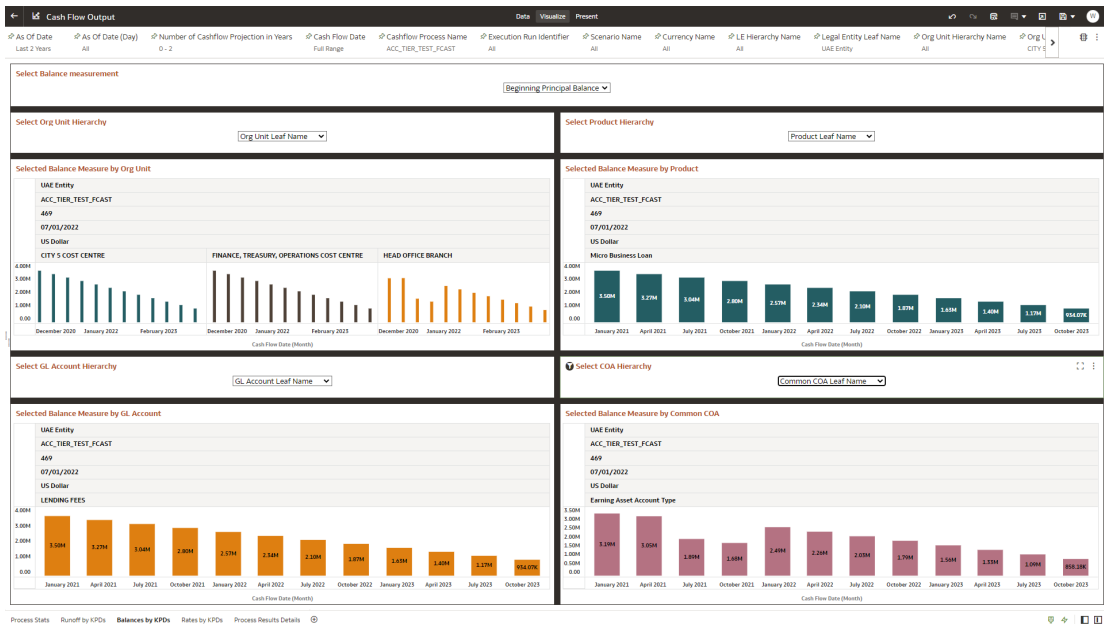
- **Selected Balance Measure by Org Unit**The chart reports the generated Cashflow output Balance Measure by Org Unit for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).
The columns displayed in the chart are the following:
 - Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - Org Unit Hierarchy
 - Cash Flow Date (Month)
 - Balance Measure
- **Selected Balance Measure by Product**The chart reports the generated Cashflow output Balance Measure by Product for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).
The columns displayed in the chart are the following:
 - Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - Product Hierarchy
 - Cash Flow Date (Month)
 - Balance Measure
- **Selected Balance Measure by GL Account**
The chart reports the generated Cashflow output Balance Measure by GL Account for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).
The columns displayed in the chart are the following:
 - Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - GL Account Hierarchy
 - Cash Flow Date (Month)
 - Balance Measure
- **Selected Balance Measure by Common COA**

The chart reports the generated Cashflow output Balance Measure by Common COA for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Currency Name
- COA Hierarchy
- Cash Flow Date (Month)
- Balance Measure

Figure 7-125 “Balances by KPDs” Report



7.1.6.1.8 Rates by KPDs

The “Rates by KPDs” Report provides the Cash Flow Output processes results related to the Rates measurements, you can drill down and roll up the results across hierarchies for the Key Processing Dimensions of Org Unit, Product, GL Account and Common COA.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Output results.

The report displays the underlying data according to the following Chart' logic:

- **Select Rate measurement**The chart provides you with a selection capability on the desired Cashflow Rate measurement.

- **Select Org Unit Hierarchy**The chart provides you with a selection capability for the desired Org Unit Hierarchical level.
- **Select Product Hierarchy**The chart provides you with a selection capability for the desired Product Hierarchical level.
- **Select GL Account Hierarchy**The chart provides you with a selection capability for the desired GL Account Hierarchical level.
- **Select COA Hierarchy**The chart provides you with a selection capability for the desired Common COA Hierarchical level.
- **Selected Rate by Org Unit**The chart reports the generated Cashflow output Rate by Org Unit for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - Org Unit Hierarchy
 - Cash Flow Date (Month)
 - Rate
- **Selected Rate by Product**The chart reports the generated Cashflow output Rate by Product for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
 - Cashflow Process Name
 - Execution Run Identifier
 - As Of Date (Day)
 - Currency Name
 - Product Hierarchy
 - Cash Flow Date (Month)
 - Rate
- **Selected Rate by GL Account**
The chart reports the generated Cashflow output Rate by GL Account for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier

- As Of Date (Day)
- Currency Name
- GL Account Hierarchy
- Cash Flow Date (Month)
- Rate

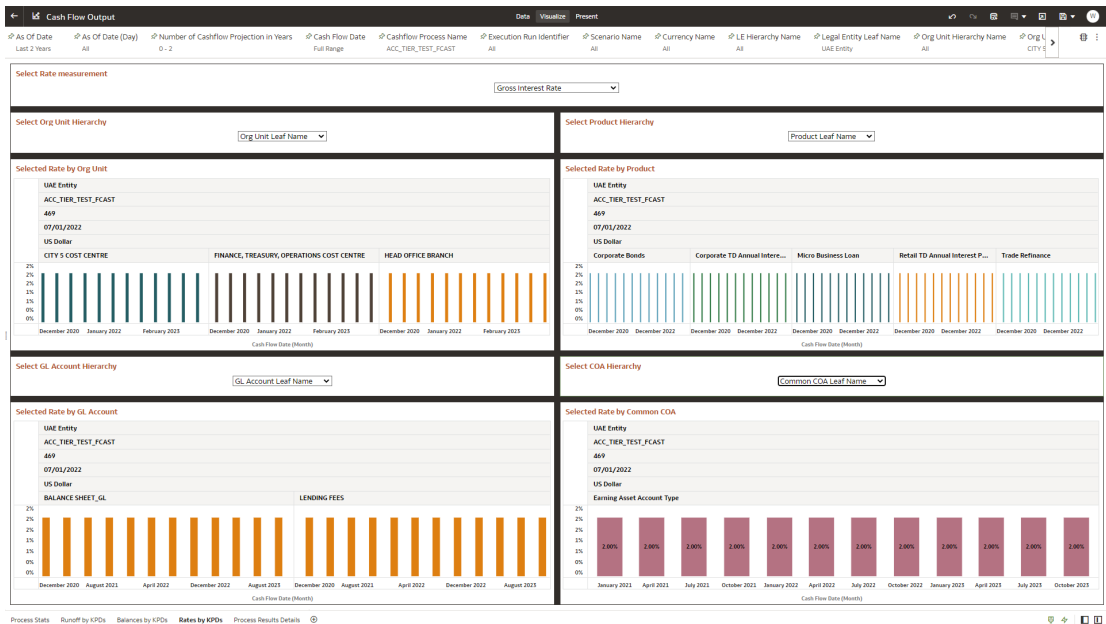
- **Selected Rate by Common COA**

The chart reports the generated Cashflow output Rate by Common COA for each Cash Flow Output execution with respect to As of Date and Cash Flow Date (Month).

The columns displayed in the chart are the following:

- Legal Entity Leaf Name
- Cashflow Process Name
- Execution Run Identifier
- As Of Date (Day)
- Currency Name
- COA Hierarchy
- Cash Flow Date (Month)
- Rate

Figure 7-126 “Rates by KPDs” Report



7.1.6.1.9 Process Results Details

The “Process Results Details” Report provides a view of the underlying Cash Flow Output results generated during the Cash Flow Output Process execution, and the available granularity is at Customer Accounts level.

The report provides the “Account Number” additional filter as shown in the screenshot **“Process Results Details Report – Account Number selection”**.

You can use a series of Report Prompts, as previously described, to filter the data according to key attributes pertaining to the underlying Cash Flow Output results.

The report displays the underlying data according to the following Chart’ logic:

- Process Results Details

The tabular report displays all the Cash Flow Output results details related to the execution of the Cash Flow Output process, including information related to the Customer Account details.

Following the granular elements available for this table chart:

- "As Of Date (Day)", "Cash Flow Date (Day)", "Cashflow Process Name", "Execution Run Identifier", "Record Sequence", "Legal Entity Leaf Name", "Common COA Leaf Name", "GL Account Leaf Name", "Org Unit Leaf Name", "Product Leaf Name", "Cashflow Calculation Data Range Name", "Discount Method Rule", "Forecast Rates Rule", "Prepayment Rule", "Model With Gross Rate Indicator", "Payment Pattern Split Identifier", "Rate Set Date (Day)", "Tiered Rate Rank", "Cashflow Code Name", "Scenario Name", "Leg Type Name", "Holiday Calendar Enabled", "Market Value Calculation Indicator", "Amortization Date for Premium and Discount Name", "Source Table Name", "Account Number", "Identity Number", "Currency Code", "Currency Name", "Accrued Interest Gross (Without Offset)", "Accrued Interest Net (Without Offset)", "Accumulated Devolved Amount", "Accumulated Gross Interest Amount", "Accumulated Net Interest Amount", "Average Deferred Balance", "Balance Before PrePay", "Beginning Deferred Balance", "Beginning Principal Balance", "Call Option Runoff Amount", "Deferred Runoff", "Devolvement Runoff", "Ending Deferred Balance", "Ending Principal Balance", "First Reset Cap Balance", "First Reset Cap Effect - Amount", "Gross Accrued Interest Amount", "Gross Interest Cash Flow (Without Offset)", "Gross Interest Cash Flow Amount", "Inflation Adjustment to Interest", "Inflation Adjustment to Principal", "Interest Capitalized", "Life Cap Balance", "Life Cap Effect - Amount", "Maturity Run Off", "MOA Expected Balance", "MOA Prepay Runoff", "Neg-Amortization Balance", "Net Accrued Interest Amount", "Net Interest Cash Flow (Without Offset)", "Net Interest Cash Flow Amount", "Non Interest Expense", "Non Interest Income", "Non Maturity - Core Runoff", "Non Maturity - Volatile Runoff", "Non Performing Asset Runoff", "Option Exercise Gain Loss", "Option Exercise Market Value", "Period Cap Balance", "Period Cap Effect - Amount", "Prepayment Runoff", "Present Value of Interest", "Present Value of Principal", "Present Value of Principal and Interest", "Principal Cash Flow Amount", "Put Option Runoff Amount", "Recovery Runoff", "Repricing Balance", "Tease Balance", "Tease Effect - Amount", "Total Notional Runoff", "Total Principal Runoff", "Writeoff Amount", "After Repricing Gross Rate", "After Repricing Net Rate", "Annual Prepayment Rate", "Before Repricing Gross Rate", "Before Repricing Net Rate", "Compounded Gross Interest Rate", "Compounded Net Interest Rate", "Convexity Value", "Day Count", "Discount Factor", "Discount Factor Term in Years", "Discount Rate", "Discount Rate Lookup Term In Days", "Dollar Duration DV01", "Macaulay Duration", "Effective Interest Rate", "End Gross Interest Rate", "End Net Interest Rate", "First Reset Cap Effect - Rate", "FRA Discount Factor", "FRA Discount Rate", "Fully Indexed Gross Rate", "Fully Indexed Net Rate", "Gross Interest Rate", "Inflation Index Factor", "Life Cap Effect - Rate", "Modified Duration", "Net Interest Rate", "Option Exercise Rate", "Option Strike Rate", "Period Cap Effect - Rate", "Tease Effect - Rate" and "Yield to Maturity".

- [Viewing Cash Flow Report](#)
- [Downloading Cash Flow Report](#)

7.1.7.1 Overview of Cash Flow Report

The Cash Flow Report UI allows you to view the reports with the following information:

1. View the report for following input information about the selected instrument as follows:
 - Instrument Attributes
 - Payment Schedule, if applicable
 - Rate Tiers, if applicable
 - Embedded Options Schedule, if applicable
 - Index History, if applicable
2. View the report for the following output information about the selected instrument as follows:
 - Cash Flow
 - Forecast Interest Rate Curve, if applicable
 - Forecast Economic Indicator, if applicable
 - Messages logged during processing

The Cash Flow Report Summary Page allows you to do the following:

- Viewing Cash Flow Report. For more information, see the [Viewing Cash Flow Report](#) section.
- Downloading the report in CSV or Excel. For more information, see the [Downloading Cash Flow Report](#) section.

The account number based on the search criteria are listed here. This is the search section that contains multiple parameters. You can specify one or multiple search criteria in this section. It is mandatory to select a Process and Execution ID to view the report. When you click Search, depending upon the search criteria, this filters and displays the relevant search combination parameters under the Cash Flow Report Summary as a list. You can perform search on the following search criteria:

- As of Date
- Process Name
- Execution ID
- Legal Entity
- Products
- Currency
- Account Number


The Cash Flow Report Summary Page displays the following columns:

Table 7-10 Cash Flow Process rule – Fields and Descriptions

| Column | Description |
|----------------|---|
| Account Number | Displays the Account Number of Cash Flow Report |
| As of Date | Displays the As of Date of the Instrument |
| Legal Entity | Displays the Legal Entity of the Instrument |
| Product | Displays the Product |
| Currency | Displays the Currency of the Instrument |

7.1.7.2 Viewing Cash Flow Report

To view Cash Flow Report of an account, perform the following steps:

1. Navigate to the **Cash Flow Report Summary** Page.
 2. Apply search criteria to get list of account numbers that are available. It is mandatory to select a Process and Execution ID to view the report. Click on an account number to view report.
The Cash Flow Report is displayed.
 3. Select **Input** Section. Here, you can view the Input information for the following fields:
 - **Instrument Attributes:** Displays the Input Data from Instrument Tables for selected ACCOUNT_NUMBER and AS_OF_DATE. Attributes have been grouped into multiple categories to simplify viewing. Select the Category, Version, and Leg Type. Leg Type drop-down list is applicable for Derivative Accounts.
 - **Payment Schedule:** Displays the Input Data from FSI_D_PAYMENT_SCHEDULE (order by PAYMENT_DATE) for selected ACCOUNT_NUMBER and AS_OF_DATE in Table format. This is applicable if the Amortization type is Payment Schedule (800, 801, 802).
 - **Rate Tiers:** Displays the Input Data from FSI_D_ACCOUNT_RATE_TIERS (order by rank) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if the Adjustable type is Tiered Rate (300)
 - **Embedded Options Schedule:** Displays the Input Data from FSI_D_EMBEDDED_OPTIONS_SCH (order by option_expiry_date) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if Embedded Options Flag is Yes and the Option Exercise Type is Bermudan.
 - **Index History:** Displays the Input Data from FSI_D_ACCOUNT_INDEX_HIST (order by INDEX_START_DATE) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if Index Adjustment Type is not 'Not Applicable' and Index ID is null or zero.
-  **Note:**
You can download the data in CSV or Excel format.
4. Select **Output** section. Here, you can view the Output information for the following fields:
 - **Cash Flow:** Displays the Output from FSI_O_CFE_OUTPUT_HIST for selected ACCOUNT_NUMBER, AS_OF_DATE, and EXECUTION_RUN_ID in table format.

Here, you can Order by data of the SCENARIO_NUM, LEG_TYPE, SPLIT_ID, RECORD_SEQUENCE.

- **Forecast Interest Rate:** Displays the Output from FSI_O_FCAST_IRC_RATES_HIST for selected PROCESS_ID and EXECUTION_RUN_ID. Here, you can Order by data of the SCENARIO_NUMBER, INTEREST_RATE_TERM_DAYS. You can compare the Forecast Rates across the scenario. You can select interest rate from INTEREST_RATE_CD drop-down list. Data appears here if Forecast Rates has been selected in Cash Flow Process and Interest Rate Curve(s) have been selected under Calculation Elements.
- **Forecast Economic Indicator:** Displays the Output from FSI_O_FCAST_ECO_IND_RATES_HIST for selected PROCESS_ID and EXECUTION_RUN_ID. You can filter Economic Indicator from Economic Indicator Name drop-down list to display data. You can compare the Forecast Economic Indicator across the scenario. Here, you can Order by data of the SCENARIO_NUMBER, RATE PERIOD. Data appears here if Forecast Rates has been selected in Cash Flow Process and Economic Indicator(s) have been selected under Calculation Elements.
- **Message Log:** Displays the Output from FSI_O_CFE_MESSAGES_HIST for selected ACCOUNT_NUMBER, and EXECUTION_RUN_ID in table format.

7.1.7.3 Downloading the Report

You can download the Cash Flow Report in CSV or Excel format.

To download the report, follow these steps:

1. Navigate to **Cash Flow Report** and select the **Input** or **Output** Section.
2. Click the **Download** link. The report will be downloaded.

8

Technical Documents

This chapter covers the following topics:

1. **Cash Flow Engine Cloud Service Data Requirement:** This document contains detail of account, ledger, reference, and market data needed to deliver business functionality. They are required at a pre-defined granularity / format and can come from your source systems and external data providers.
2. **Reference Guide:** The Reference Guide emphasizes business analysis and provides definitions, analytical concepts, processes, and calculations used in the Oracle Financial Services Cash Flow Engine (CFE). The information provided includes data requirements, payment and repricing event logic, calculation formulas, and various methodologies used to produce cash flows.
3. **Data Dictionary:** This guide contains detailed information necessary for correct data population, including field definitions, and recommended default values for the cash flow processing fields.