

Oracle Financial Services Cash Flow Engine User Guide



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1

About This Content

This guide provides information on the Oracle Financial Services Cash Flow Engine Application (OFS CFE).

Audience

This guide is intended for the users of Oracle Financial Services Cash Flow Engine Application (OFS CFE).

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Related Resources

See these Oracle resources:

- [Oracle Financial Services Cash Flow Engine Application Pack Release Notes](#)
- [Oracle Financial Services Cash Flow Engine Installation and Configuration Guide](#)
- [Oracle Financial Services Cash Flow Engine User Guide](#)
- [Oracle Financial Services Cash Flow Engine Reference 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.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

2

Introduction to Oracle Cash Flow Engine

Cash flow calculation is an integral part of finance and risk solutions. Oracle Financial Services Cash Flow Engine (OFSCFE) 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 application 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 OFSCFE is suitable for both financial and non-financial institutions with exposure to financial securities/instruments.

2.1 Key Benefits

OFSCFE calculates cash flows at the most granular level of account/instrument and sometimes at sub-account level if tiered-balance interest rate is used or multiple repayment types are used for same account. Since no aggregation is performed, it allows you to do micro-analysis of each payment. You can choose to generate cash flows using pure contractual terms agreed with customer or incorporate certain customer behaviour like prepayment, redemptions, non-maturity profiles, and so on.

Since cash flows are at an instrument level, you can perform unlimited dimensional analysis for an advanced insight. Few ways in which you can benefit from this are:

- Improve insight into branch liquidity and cash-in-hand
- Optimize payables and receivables by focusing on customers with large exposure
- Cash management
- Create analytics-driven efficient collections strategy, chase late payers promptly and regularly

In addition to cash flows such as principal, interest, prepayment, maturity, etc, the CFE calculates and stores a variety of financial measures for greater insight and auditability:

- Accrual period, Rate set date
- Accrual adjusted and Compounded interest rate used for calculations
- Repricing balance, Before and after repricing interest rates
- Accrued interest
- Accumulated interest amount, Interest credited
- Core, Volatile runoff for non-maturing deposits
- Devolvement and recovery runoff for products like bank guarantee
- Non-performing runoff
- Periodic & Life cap effect rate and amount
- Tease effect rate and amount
- Negative amortization balance

- Prepayment rate and runoff
- Mortgage offset account expected balance and runoff

OFSCFE is designed to operate on instrument-level data, using Oracle's highly accessible and flexible financial data model. Each account is modelled independently on a daily cash flow basis using daily forecasted interest rates, where applicable.

A wide range of products are supported for both on-balance sheet and off-balance sheet, with a variety of amortization and repricing methods, including:

- Revolving loans, Mortgages, Consumer loans, Leases
- Negative amortization mortgages
- Mortgage offset accounts
- Irregular payment and repricing schedules on, for example, agricultural or construction loans
- Step-up and step-down loans
- Balloon and Bullet instruments
- Instruments with different interest and principal frequency and dates
- Bonds and money market instruments
- Open and fixed maturity deposits
- Tiered rate loans and deposits
- Annuities
- Swaps, Caps, Floors, FRAs, Forwards and FX Derivatives
- Inflation indexed instruments
- Interest Only instrument

Unique payment, interest rate and holiday characteristics are directly used to accurately model cash flows for multiple time horizons:

- Conventional, simple Interest and Level Principal for regular payments
- Principal only
- Interest only
- Schedule and Patterns for irregular payments
- Fixed, floating, adjustable rates and pattern (for irregular repricing)
- Interest repricing & payments in advance and arrears
- Multiple day count conventions
- Caps and floors, both absolute and incremental
- Gross and Net Rates
- Margin, Spread
- Rate cap & floor - Life
- Rate increase & decrease limit – periodic
- First reset cap/floor (tease)
- Lag, rounding

- Compounding and interest credited
- Holiday adjustments

2.2 Oracle Cash Flow Engine and Other Oracle Financial Services Applications

OFSCFE operates on top of a common infrastructure, Oracle Financial Services Analytical Applications Infrastructure (OFSAI). OFSAA applications form a comprehensive decision support solution that significantly enhances enterprise risk and performance management functions across a financial institution.

3

Overview of OFSAA Infrastructure

OFSAA Infrastructure includes facilities for creating and maintaining:

- Dimensional reference data
- Interest rate & currency exchange rate data
- Process tuning data

OFSAA Infrastructure also includes functionality for building and maintaining rules that may be used by any Oracle Financial Services Analytical Application. These common rule objects include:

- Expressions
- Hierarchies
- Filters

Topics:

- [OFSAA Infrastructure](#)
- [Overview of Dimensionality in OFSAA](#)
- [Rollup Members for Dimensions Supporting Hierarchies](#)
- [Dimension Types](#)
- [Attributes](#)
- [OFSAA Rules](#)
- [OFSAA Filters](#)
- [OFSAA Expressions](#)
- [Folders](#)
- [Visibility of Rules](#)
- [Access Type](#)
- [Application Preferences](#)
- [Global Preferences](#)
- [System Configuraton](#)

3.1 Overview of Dimensionality in OFSAA

Dimensions are used to stratify your business data for processing or reporting purposes. For example, at a minimum General Ledger systems are typically stratified by a General Ledger dimension, an organization or cost center dimension, and a time dimension. Customer account level data will normally have these same dimensions but are often additionally segmented by dimensions such as Product or Customer. You may wish to construct models using a specialized product dimension or other customized dimensions such as geography, cost pool, transaction, activity or channel.

Dimensions are comprised of lists of members. For example, the Organizational Unit dimension might be comprised of Branch #1, Branch #2, Branch #3, etc. Some dimensions may contain tens or even hundreds of thousands of members (for example, a large organizational or customer dimension) while others may contain as few as two members (for example, a simple product-type dimension with values of Fixed and Variable).

The member values or "Chart of Accounts" for each dimension may be maintained either internally within the OFSAA Infrastructure or externally

Internally

OFSAA Infrastructure includes functionality for Adding, Viewing, Editing, or Deleting dimension member values. Which of these functions you can access depends on your logon privilege and on the dimension with which you wish to work. For details, on the creation and maintenance of Dimension Members, refer to the Oracle Financial Services Analytical Applications Infrastructure User guide.

Externally

You may choose to source and maintain some Charts of Accounts from external systems such as your General Ledger, a Data Warehouse, or from some other external master data management system. For more information, see the [Oracle Financial Services Analytical Applications Data Model Utilities User Guide](#).

Combination

You may also choose to maintain some Chart of Account values from an external source while maintaining other Chart of Account values internally.

3.2 Referential Integrity

You may have dimension member values defined in your Chart of Accounts that do not exist in your business data, particularly if the dimension member values are used as attribute values (see discussion of attributes below). But you would never want to have an occurrence of a dimension member value in your business data that did not exist in the dimension's Chart of Accounts. When you load business data into OFSAA, you need assurance that there are no dimension member values present in the business data that are not defined in your Chart of Accounts. For details on ensuring referential integrity between your business data and your Chart of Accounts data, see the [Oracle Financial Services Analytical Applications Infrastructure \(OFSAAI\) Installation and Configuration Guide](#).

3.3 Dimension Attributes

Some OFSAA dimensions support attributes. Dimension attribute values are used to qualify dimension members. For example, a cost center, say Branch #1, might have a Headcount attribute with a value of 32 and a Volume attribute with a value of High. A product dimension member, say 30-year fixed-rate jumbo LIBOR mortgage, might have a Rate attribute with a value of LIBOR, a Size attribute with a value of Jumbo, and a Loan Type attribute of Fixed. A General Ledger account, say Benefit Expense, might have an Account Type attribute with a value of Non-Interest Expense.

Like dimensions, attributes are used to stratify your business data for processing or reporting purposes. Some dimension attributes are seeded within the OFSAA data

model and are used extensively in processing. You may define as many user-defined attributes as you need.

OFSAA Infrastructure includes functionality for Adding, Viewing, Editing, or Deleting dimension attributes. Which of these functions you can access depends on your logon privilege and on the dimension with which you wish to work.

Once an attribute has been defined for a dimension, attribute values may be assigned to individual dimension member values. These attribute values may be open-ended (dates, numbers, or strings) or may be restricted to a defined set of members.

3.4 Hierarchies

Some OFSAA dimensions support hierarchies. Hierarchies may be used to provide sophisticated stratification for either processing or reporting purposes. For example, an organizational hierarchy might start with a Division level containing Western Region, Eastern Region, and Southern Region; the next level down within the hierarchy might be state or county. A product hierarchy might begin with branches for Asset vs. Liability vs. Service products; under the Asset branch, you might define additional branches for Mortgage Lending, Commercial Lending, Consumer Lending, and so on. Hierarchies are used extensively in OFSAA models to assign methods to products and to support allocation methodologies.

Like dimension members, dimension hierarchies may be maintained either internally within the OFSAA Infrastructure or externally.

Internally

OFSAA Infrastructure includes functionality for Adding, Viewing, Editing, or Deleting hierarchies. Which of these functions you can access depends on your logon privilege and on the hierarchy with which you wish to work.

Externally

You may choose to source and maintain some or all of your hierarchies from external systems such as your General Ledger, a Data Warehouse, or from some other external master data management system, such as Oracle Data Relationship Management (DRM). For more information on loading hierarchy data from external systems, see the [Oracle Financial Services Analytical Applications Data Model Utilities User Guide](#).

Combination

You may also choose to maintain some hierarchies from an external source while maintaining other hierarchies internally.

3.5 Rollup Members for Dimensions Supporting Hierarchies

For dimensions that support hierarchies, every dimension member value has the property of being either a **leaf** value (child-only or last descendent child value) or a **rollup node** value. For example, if Branch #1, Branch #2, and Branch #3 all belonged to the West rollup point of an organizational hierarchy, then West would also be a dimension member value of the Organizational Unit dimension. Your business data is typically expressed at the leaf level.

3.6 Dimension Types

OFSAA supports the following three fundamentally different kinds of dimensions:

- Key Processing Dimensions
- Standard Dimensions
- Simple Dimensions

3.6.1 Key Processing Dimensions

Key Processing Dimensions have the following features:

- Accessible as modeling dimensions for all of the OFSAA analytical engines.
- Expressed as columns in nearly all of your business fact tables.
- Support both attributes and hierarchies

Metadata for Key Processing Dimensions are stored in four tables:

- A base table (For example, DIM_PRODUCTS_B)
- A translation table (For example, DIM_PRODUCTS_TL)
- An attribute table (For example, DIM_PRODUCTS_ATTR)
- A hierarchy table (For example, DIM_PRODUCTS_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).

Seeded Key Processing Dimensions

OFSAA is seeded with six Key Processing dimensions:

- Financial Element
- Organizational Unit
- General Ledger Account
- Common Chart of Accounts
- Product
- Legal Entity

Among the six seeded Key Processing dimensions, only the Financial Element dimension is pre-populated with a Chart of Accounts, but it is only populated in the range between 0 and 10,000 (For more details on the seeded Chart of Accounts for the Financial Element dimension see the [Oracle Financial Services Profitability Management User Guide](#). This is a reserved range in which you may not add new members, or edit or delete existing members. You may add user-defined Financial Elements anywhere outside the reserved range.

User-Defined Key Processing Dimensions

For more information on adding your own user-defined Key Processing dimensions, see the [Oracle Financial Services Analytical Applications Infrastructure \(OFSAAI\) Installation and Configuration Guide](#).

3.6.2 Standard Dimensions

Standard dimensions may support attributes and/or hierarchies depending on how they are configured, but are not used as processing dimensions within any of the analytical application engines. Like Key Processing Dimensions, metadata for Standard Dimensions is stored in a base table and in a translation table. A Standard Dimension may or may not have an attribute table or a hierarchy table depending it is configured. Within the OFSAA modules, Standard dimensions that are defined as having a hierarchy table will support hierarchies, and Standard dimensions that are defined as having an attribute table will support attributes. See the [Oracle Financial Services Analytical Applications Infrastructure \(OFSAAI\) Installation and Configuration Guide](#).

Seeded Standard Dimensions

OFSAAI is seeded with two Standard Dimensions

- Country
- Customer

Both dimensions support attributes and hierarchies. Default member values are provided for the Country dimension, but no values are provided for the Customer dimension.

User-Defined Standard Dimensions

Refer to the Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) Installation and Configuration Guide for details on adding user-defined Standard dimensions.

3.6.3 Simple Dimensions

Sometimes referred to as Code dimensions, Simple dimensions are a "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 the **list of values** when used as attributes

The OFSAA Data Model comes with more than 150 seeded Simple dimensions. Many of these seeded Simple dimensions are also seeded with dimension members. Unlike Key Processing dimensions and Standard dimensions, Simple dimensions are stored in two tables:

- A code table (For Example, AMRT_TYPE_CD)
- A Multi-Language Support or MLS table (For Example, AMRT_TYPE_MLS)

Simple Dimension "Process Identifier Code" helps to improve CFE process execution performance by skipping VALIDATE_NODE_MAP_CFE package execution incase there is no change in underlying metadata while running CFE Process everytime. There is no direct method to identify whether any change in underlying data at the node level and one need to execute VALIDATE_NODE_MAP_CFE and thats where the "Process Identifier Code" Simple

Dimension takes place. This dimension should contain the list of process Ids for which there is no change in underlying node level metadata hence no need to run VALIDATE_NODE_MAP_CFE everytime the process is run. In turn whenever CFE Engine is run; it checks the currently considered process id and checks its existence in FSI_PROCESS_IDENTIFIER_CD table; if present then ignores VALIDATE_NODE_MAP_CFE procedure run.

3.6.3.1 Reserved Simple Dimensions

Accrual Basis Code is an example of a seeded Simple dimension that is used extensively by the application modules. It is seeded with a small list of values (such as 30/360, Actual/360, Actual/Actual, and so on.) and its value set may not be modified.

Amortization Type Code is another example of a reserved Simple Dimension. Amortization Type Code is populated with reserved values that the Cash Flow engine interprets, and its value set may not be modified. Many other Simple Dimensions are reserved and may not be modified.

3.6.3.2 Simple Dimensions Used for Processing or Reporting Purposes

This kind of Simple Dimension cannot be used directly by the application engines, but they are accessible to OFSAA Filter rules.

Credit Rating is an example of a seeded Simple Dimension that may be used for processing or reporting purposes. You may, for example, wish to allocate risk equity to individual instruments as a function of Credit Rating. The seeded values for Credit Rating are Moody's credit ratings, but you are free to completely redefine the membership of this dimension. Geographic Location is another example. Geographic Location is pre-populated with the US States and Canadian provinces, but you are free to completely redefine the completely geographic locations.

3.6.3.3 Simple Dimensions Used as Attribute Domains

Both seeded and user-defined attributes often utilize a Simple Dimension to provide a list of values. For example, you might create an Adjustable Type attribute on your Product dimension and you might want this attribute to be limited to the values of Fixed, Variable, or Administered. In this case, you might first build a Simple Dimension called Type whose dimension members were limited to three values: Fixed, Variable, or Administered. Next you could assign the Type dimension to be the domain of your new Adjustable Type attribute.

See [Oracle Financial Services Analytical Applications Infrastructure \(OFSAAI\) Installation and Configuration Guide](#).

3.7 Attributes

OFSAA Infrastructure includes functionality for Adding, Viewing, Editing, or Deleting dimension attributes. Which of these functions you can access depends on your logon privilege and on the dimension with which you wish to work.

The seeded OFSAA Key Processing Dimensions have a number of seeded or seeded & required attributes. For example, the Common Chart of Accounts dimension includes an Account Type attribute and an Accrual Basis attribute; the Financial Element dimension includes an Aggregation Method attribute. Some of these attributes have important implications in processing within OFSAA.

You may add Attributes to any Key Processing Dimension or to any Standard Dimension that supports Attributes (see sections above describing Key Processing Dimensions and Standard Dimensions).

One of the important properties of an Attribute is its Data Type. OFSAA Infrastructure supports Dimension Attribute Data Types of:

- Date, String, or Number
- Dimension

3.7.1 Unbounded and Bounded Attribute Data Types

Dimension attribute data types may be either bounded or unbounded. The Date, String, and Number types are unbounded, that is, there is no predetermined set of attribute values. A Date attribute value may be any valid date, a String attribute value may be any string up to 30 characters in length, and a Number attribute value may be any number. Examples of these kinds of attribute data types might include:

- Cost Center Open Date (a Date attribute on the Organizational Unit dimension)
- Product Memo (a String attribute on the Product dimension)
- Cost Center Headcount (a Number attribute on the Organizational Unit dimension)

Unlike attributes having the Date, String, or Number data type, attributes whose data type is Dimension have defined sets of values. For example, the Product dimension has a seeded attribute called Accrual Basis the data type of which is Dimension. The Accrual Basis dimension is seeded with 8 values. Accrual Basis is a restricted dimension (you may View Accrual Basis dimension members but you may not delete them or add new accrual bases), but whenever you assign an Accrual Basis attribute value to one of your Product dimension member values, you must select from the list of 8 available Accrual Bases.

3.8 Overview of OFSAA Rules

OFS Analytical Application models are constructed using combinations of OFSAA rules. For example:

- An Allocation rule might utilize a Hierarchy Filter rule, an Expression rule, and a Static Table Driver rule
- A Transfer Pricing rule might utilize a Hierarchy rule, a Data Element Filter rule, and a Prepayment rule
- A Data Element Filter rule might utilize an Expression rule
- A Group Filter rule always incorporates one or more underlying Data Element Filter rules
- Hierarchy Filter rules always utilize an underlying Hierarchy rule

The advantage of constructing models from discrete rule components is that individual rules may be re-used dozens or even hundreds of times. For example, if you wish to build a large series of allocation rules which operate on non-interest expense data in the Western region, you may build filters for (1) non-interest expense and (2) the Western region and then utilize these filters in every allocation rule. As another example, if you wanted to assign the same transfer pricing method and assumptions to all mortgage products, you could build a Hierarchy on the product dimension containing a Mortgage Products rollup point and assign your method and assumptions at the rollup level. You could subsequently utilize the same Hierarchy rule for allocation processing or reporting purposes.

Many rule types are specific to individual analytical applications (For example, Transfer Pricing rules, Cash Flow Engine rules, Allocation rules, and so on.) while OFSAA Infrastructure rules are shared across all OFS applications. Rule types that are shared across all applications include:

- Hierarchies
- Hierarchy Filters
- Data Element Filters
- Group Filters

Dimensions, dimension members, attributes, and currency exchange rates are also shared across all applications.

3.8.1 Dependencies

OFSAA rules often depend on other rules for some or all of their data or usefulness. For example, an Allocation rule may depend on a Data Element Filter rule to select and focus data in a meaningful way. If that Data Element Filter is deleted, then the Allocation rule becomes unusable. OFSAA applications track such dependencies and ensure that users may not delete rules that are consumed by other rules. Additionally, rule summary screens that present lists of rules that you have defined, offer functionality for you to generate reports on rule interdependency.

3.9 OFSAA Filters

OFSAA Infrastructure supports three kinds of filtering:

- Data Element Filters
- Group Filters
- Hierarchy Filters
- Attribute Filters

Data Element Filters

Data Element Filters are used to select and focus data. For example, you may transfer price some financial instruments at their source and may therefore wish to ensure that you do not overwrite the transfer rates for any instruments that already have a non-zero transfer rate. In such a case, you could construct a Data Element Filter to isolate only those instruments having a non-zero transfer rate. As another example, you may wish to allocate a charge to demand deposit accounts having small balances. In this case, you could construct a Data Element Filter to focus on just those instrument records having balances less than your chosen threshold.

Group Filters

Group Filters are used to join together one or more Data Element Filters. For example, if you built one Data Element Filter that focused on balances less than 10,000 and a second Data Element Filter that focused on accounts whose origination date was prior to 2009, a Group Filter built on the two Data Element Filters would focus on accounts with balances less than 10,000 AND whose origination dates were prior to 2009.

Hierarchy Filters

Hierarchy Filters allow you to focus on data that rolls up to one or more points within a chosen hierarchy. You may also focus on "leaf" level data or a combination of "leaf" level and rollup levels. For example, if your organization had a Western, Northern, Southern, and Eastern division, you could construct a Hierarchy Filter that focused on data belonging to branch 1, 2, or 7 within the Eastern division plus any data belonging to the Northern division.

Attribute Filters

Attribute Filters allow you to filter on any dimension attribute values including standard, seeded attributes such as Account Type or Accrual Basis as well as on user-defined attributes.

3.10 OFSAA Expressions

Expressions represent formulas for combining data from your data model (For example, Column A divided by Column B times Column C). The results of Expressions may be invoked within a number of OFSAA rule types (For example, Data Element Filters, Allocation rules, and so on).

3.11 Folders

One of the fundamental properties of any OFSAA rule is the Folder in which it is stored. Your System Administrator will configure your user ID to have access to one or more folders in which you can store your rules. Your access rights will likely be similar to co-workers who have a similar business role. For details on security management and defining Segment Maintenance in OFSAA, refer to Oracle Financial Services Analytical Applications Infrastructure User Guide.

Storing rules in folders gives you the means to segregate your rules for functional or security considerations. For example, you may wish to:

- Set up folders to store Transfer Pricing rules that are separate from folders you have built for Profitability Management rules and that are also separate from folders you have built for Asset/Liability Management rules
- Establish some folders for rules you are in the process of developing and testing and other folders for fully tested, production-ready rules
- Segregate some rules that are fundamental to the definition of other rules (For example, some Data Element Filters may be used in dozens or hundreds of other rules) to ensure that access to those fundamental rules is highly controlled
- Segregate your hierarchies, which are also frequently fundamental to OFSAA models, into a restricted-access folder

3.12 Visibility of Rules

Every navigation path to view a rule in OFSAA begins with a Summary screen. Within the Summary screen for each rule type, a user may browse through all of the rules that are stored within Folders to which the user has access. From each Summary screen, users may be granted the ability to Add, Edit, View, or Delete rules.

When building rules in an OFS Analytical Application, you frequently call upon other OFSAA rules (For example., a Data Element Filter nested within an Allocation rule or a Hierarchy utilized within a Transfer Pricing rule). When nesting a child rule within a parent rule you must specify the child rule by its Name and Folder (where both Name and Folder are presented in drop-down list boxes). In this context, the Folder drop-down list box for every user will include every Folder in the Information Domain regardless of his Folder access rights. This means that a user may invoke a child rule from any Folder even if he cannot access that child rule directly through its Summary screen.

Additionally, whenever a user nests a parent rule within a child rule, the OFSAA user interface provides the user the ability to view a read-only version of the underlying child rule.

3.13 Access Type

Another fundamental property of every OFSAA rule is its Access Type.

Access Type may be set to either Read/Write or Read Only. Only the "creator" or "owner " of a rule may modify the rule if it is set to Read Only. The user ID under which a rule is initially built is the owner of a rule. You may modify a rule that you do not own provided that:

- The rule has been stored with the Read/Write access type
- You have been granted Edit privilege for the rule's type
- You have been granted access to the Folder in which the rule is stored

Again, for details on security management in OFSAA, refer [Oracle Financial Services Cash Flow Engine Installation and Configuration Guide](#) .

3.14 Application Preferences

In addition to Global Preferences, each of the OFS Analytical Applications has its own local application preferences. In the same way as in Global Preferences, Application Preferences (for each application) employs a "delegation" model that allows Administrators to set some preference items for all users while allowing non-administrative users to personalize other preference items.

Normally, you will set Application Preferences for yourself, but if you are logged in as an Administrator, you may set Application Preferences for all users of an application. When setting preferences for all users, you may restrict the ability of non-Administrators to change an Application Preference item by deselecting the **Is Editable** check box. If a preference item for a non-administrative user is defined as **not editable**, a user who is not an Administrator will inherit the value of the preference item that his Administrator has set for him and he will not have the ability to change it for himself.

While most Application Preferences items are unique to the application to which they belong, two properties are common to Application Preferences for each of the OFS Analytical Applications: Folder Name and Access Type.

Having the Folder Name and Access Type properties set at the application level allows you to have a different default Folder and Access Type for each OFS Analytical Application. Within the Left Hand Side or LHS menu, all OFSAA Infrastructure rules (Hierarchies, Filters, and Expressions) are maintained under Master Maintenance.

Since Folder and Access Type are not Global Preference items, a user must select one application's set of Application Preferences to be **Active** to govern the default values of Folder and Access Type for Oracle Financial Services Analytical Applications Infrastructure rules. This is done by selecting one of your Application Preference sets to be the one that is **Active for Master Maintenance**.

3.15 Global Preferences

Clicking Global Preferences invokes the Global Preferences screen. Global Preferences items are used to configure your user interface. Here, you set your default application language and date format, and your desired Pagination Records. Pagination Records determine how many rows will be displayed on summary screens. If you select Pagination Records to be 25 records, then any screen displaying results in a tabular format will display a maximum of 25 records. To see the next set of 25 records, you can use the Next VCR button.

Functional Currency and Signage are installation-time parameters that may not be reset in Global Preferences.

Functional Currency is defined as the currency of the primary economic environment in which an entity conducts its business. For details on signage, see the Oracle Financial Services Analytical Applications Profitability Management User Guide.

Normally, you will set preferences for yourself, but if you are logged in as an Administrator, you may set Global Preferences for All Users. When setting preferences for All Users, you may restrict the ability of non-Administrators to change a Global Preference item by deselecting the Is Editable check box. If a preference item is defined as not editable, a user who is not an Administrator will inherit the value of the preference item that his Administrator has set for him and he will not have the ability to change it for himself.

3.16 System Configuration

Application

Starting 8.0 release, once an application pack is installed, you can use only the Production or Sandbox information domain, created during the installation process. Though there is an option to create a new Information Domain, there is no menu to work with the frameworks on this new information domain. This new information domain then created acts only as a Sandbox Infodomain. The Create New Application feature allows you (System Administrator) to create a new Application other than the standard OFSAA Applications and associate the standard/default platform framework menu with it, thereby enabling the new application for usage. The standard platform framework menu is seeded and rendered.

For more information, refer to System Configuration section in [Oracle Financial Services Analytical Applications User Guide](#)

4

Boundaries and Limitations

This chapter lists the boundaries and limitations that apply to the Oracle Cash Flow Engine and the configuration of the Oracle Financial Services Analytical Applications (OFSA) database.

Topics:

- [Oracle Cash Flow Engine](#)
- [Database Configuration](#)

4.1 Oracle Cash Flow Engine

The following limitations apply to this product.

Product Dimension

The product dimension ID must be a numeric integer value greater than 0. In application preferences, users must always select 'Product' in preferences. Common COA and GL Account are not used by Cash Flow Engine.

CFE Processing

When a process generates a balance value larger than 999,999,999,999.99, the database cannot support the value and a numeric overflow occurs.

This may be caused if multiple accounts have been aggregated before giving as input to Cash Flow.

Forecast Rates

Only one scenario can be defined within a single Forecast Rates assumption rule.

The following methods to forecast Interest Rate Curve and Economic Indicator are supported:

- Flat
- Direct Input

Prepayment Model

There is a maximum of three dimensions/drivers per Prepayment Model.

Prepayment Rule

There is a maximum of 100 origination or maturity date ranges per product within a Prepayment rule. The earliest and maximum origination or maturity date that can be entered through the user interface are 01/01/1900 and 12/31/2499, respectively.

Cash Flow Engine does not support conditional assumption in the Prepayment rule. Prepayment method can be specified only at product and currency combination.

User-defined Behavior Patterns

Cash Flow Engine supports unlimited number of Behavior Pattern. However, due to compatibility with other applications like Asset Liability Management, Fund Transfer Pricing, there is a restriction in User Interface where the valid range for user-defined pattern codes is 70000-99999.

User-defined Payment Patterns

Cash Flow Engine supports unlimited number of Payment Pattern. However, due to compatibility with other applications like Asset Liability Management, Fund Transfer Pricing, there is a restriction in User Interface where the valid range for user-defined pattern codes is 1000-69999.

User-defined Repricing Patterns

Cash Flow Engine supports unlimited number of Repricing Pattern. However, due to compatibility with other applications like Asset Liability Management, Fund Transfer Pricing, there is a restriction in User Interface where the valid range for user-defined pattern codes is 500-99999.

Filter

Cash Flow Engine only supports Data Filter.

4.2 Database Configuration

The following limitations apply to the configuration of the OFSAA database.

Users and Groups

User names have a maximum of 16 characters.

OFSAA Assumption Rule Names

The maximum number of characters in a short description name is 15, and in a long description name is 60.

Number of assumption rules

The maximum System ID number in the system is 9,999,999,999. The maximum number of assumption rules for each rule type is 16,000.

SQL Statements in All Processes

SQL statements within processes are limited to a maximum length of 65,535 characters.

User Interface Display of Dates

All dates displayed in user interfaces have an input and display range of 01/01/1901 to 12/31/2499.

Dimension Leaf Member Set-Up

Dimension Leaf values can have a maximum of 14 digits.

Only 26 key (processing) dimensions are allowed in the database. Examples of seeded key leaf types are Common COA ID, Organizational Unit ID, GL Account ID, Product ID, Legal Entity ID.

The maximum number of columns that the Oracle database allows in a unique index is 32. This is the overriding constraint. After subtracting `IDENTITY_CODE`, `YEAR_S`, `ACCUM_TYPE_CD`, `CONSOLIDATION_CD`, and `ISO_CURRENCY_CD`, this leaves 27 columns available for Key Processing Dimensions (leaf dimensions). `BALANCE_TYPE_CD` is now part of the unique index so this brings the maximum number of leaf columns down to 26.

Balances

Balances stored in Instrument tables are limited to 999,999,999,999.99.

The maximum precision for a balance used in a calculation process is 15 digits, with the range of $1.7e-308$ to $1.7e+308$. Calculation precision on larger numbers is compromised.

Rates

By default, rates stored in instrument tables are limited to 9999.999999 and -9999.999999. More precision can be achieved by increasing the number of decimals in the column. Internally, rates are stored with the same precision as balances.

Terms and Frequencies

The maximum size of a term used within any process is 32,767, although interface limits are imposed to restrict this number to 999 when entered through a user interface. Terms affected by this restriction include payment frequency, reprice frequency, original term, amortization term, negative amortization frequency, and payment change frequency.

5

OFSAA Rate Management

OFSAA Rate Management is a comprehensive utility enabling you to manage currencies, yield curves, interest rates, and currency exchange rate data with a high degree of security and. OFSAA Rate Management also allows you to maintain economic forecasts such as GDP growth, inflation rates, or unemployment projections that can be linked to your models for interest rates, exchange rates, or new business growth.

Historical rate data obtained from OFSAA Rate Management is utilized by the Enterprise Performance Management (EPM) applications (OFS Funds Transfer Pricing, OFS Profitability Management, OFS Asset Liability Management, and OFS Balance Sheet Planning).

- Interest Rates
- Currency
- Currency Rates
- Economic Indicators

5.1 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 Rates module in OFSAA Rate Management 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 Rates module also supports the creation and maintenance of historical rate data for each yield curve you define.

Historical interest rate data from OFSAA Rate Management is utilized in OFSAA Transfer Pricing to generate transfer rates and option costs. Historical interest rate data is also utilized in OFSAA Asset Liability Management and OFSAA Balance Sheet Planning to generate forecasted interest rate scenarios.

To view the Interest Rate Code Summary page, navigate to Common Object Maintenance and select Rate Management, and then select Interest Rates.

Figure 5-1 Interest Rate Summary Page

Interest Rates As of Date: 05/31/2020

Search

Code Name

Currency Rate Format

Curve Type

Code a	Name	Rate Format	Compound Basis	Accrual Basis	Currency	Curve Type	Creation Date	Created By	Last Modification Date	Last Modified By
-1	OTH	Zero Coupon Yield	Annual	Actual/Actual	US Dollar	Interest Rate Curve	09/10/2009 12:18:35	RTUSER		
11	PS - Base Curve A	Zero Coupon Yield	Annual	Actual/Actual	US Dollar	Interest Rate Curve	07/12/2020 11:29:09	FTPUSER	07/12/2020 11:29:52	FTPUSER
12	PS - Base Curve B	Zero Coupon Yield	Annual	Actual/Actual	US Dollar	Interest Rate Curve	07/12/2020 11:30:27	FTPUSER	07/12/2020 11:30:55	FTPUSER
2321	PS - Hybrid Curve	Zero Coupon Yield	Annual	Actual/Actual	US Dollar	Interest Rate Curve	07/07/2020 05:58:00	FTPUSER	07/07/2020 05:58:30	FTPUSER
6666666	StandardIRC	Zero Coupon Yield	Semiannual	30/365	US Dollar	Interest Rate Curve	06/17/2020 10:05:28	FTPUSER	06/17/2020 10:05:48	FTPUSER

5.1.1 Searching for Interest Rate Curve

A Search pane is provided to search for interest rate curves using Code, Name, Currency, Rate Format, or Curve Type parameters.

To search the Interest Rate, follow these steps:

1. Enter the search criteria and click **Search**.
2. Click Reset to remove any **Code**, **Name**, **Currency**, **Rate Format**, or **Curve Type** constraint specified and refresh the window.

The search results are displayed in a table containing all of the interest rate curves that meet the search criteria. The **Interest Rates Summary** page offers several icons that allow you to perform different functions when an interest rate curve is selected.

 - **Add:** Click Add to build a new interest rate curve. The Add icon is disabled if any row in the pane is selected.
 - **View:** Select a single row in the table to enable the View icon. Click View to view the contents of an Interest rate curve in read-only format. The View icon is enabled only when a single Interest rate curve is selected in the table.
 - **Edit:** Select a single row in the table to enable the Edit icon. Clicking the Edit icon allows you to modify a previously saved Interest rate curve. The Edit icon is only enabled when a single row is selected. You can control the number of rows to display on the window by selecting the Pagination Options icon from the action bar.
 - **Delete:** Select one or more rows out of the table to enable the Delete icon. Clicking on the Delete deletes the Interest rate curve you have selected.
 - **Copy:** Selecting a single row in the table enables the Copy icon. Click the Copy icon to create a copy of an existing Interest rate curve. The Copy icon is only enabled when a single Interest rate curve is selected.
 - **Check Dependencies:** Select an interest rate curve and then click the Check Dependencies icon to generate a report on all rules that utilize your selected interest rate curve. The Check Dependencies icon is only enabled when a single interest rate curve is selected.
 - **Execute the Historical Interest Rates Data Loader:** This icon executes a function to import historical rates and parameters for all defined Interest rate

curves. For more information on setting up the automated process, see the OFS Data Model Utilities User Guide.

FusionApps.properties file must be present under Web Server <deployed path>/WEB-INF/props and \$FIC_WEB_HOME/webroot/WEB-INF/props directories.

Update the entry details of the source name. It must be
infodom_SOURCE_NAME=Actual_Source_Name.

For example, if Infodom Name is DEV6INFO and the source Name is DEVETLSRC, then the entry will be DEV6INFO_SOURCE_NAME=DEVETLSRC.

Launch the Historical Interest Rates Data Loader from the Interest Rates Summary page after making this change.

For more information, see [Doc ID 2233513.1](#).

To execute a historical Interest Rate data load, execute the **Historical Interest Rates Data Loader**. A warning message will appear *Upload all available Interest Rates and Parameters?* Click **Ok** to load all historical rates and parameters.

Click **Data Loader** to execute all the interest rates and parameters.

3. To select an Interest rate curve, select a check-box in the first column of the table. More than one Interest rate curve can be selected at a time, but this disables some of the icons.
You can select or deselect all the Interest rate curves in the Summary page by selecting the check box in the upper left-hand corner of the Summary table directly to the left of the Code column header.

The following list provides the Interest Rate details based on the search criteria.

- **Code:** Displays 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:** Displays the interest rate curve's short name.
- **Rate Format:** Displays the Interest rate curve's rate format (zero-coupon or yield-to-maturity).
- **Compound Basis:** Displays the Interest rate curve's compounding basis (Annual, Semiannual, Monthly, or Simple).
- **Accrual Basis:** Displays the Interest rate curve's Accrual Basis (that is, 30/360, Actual/Actual, and so on).
- **Currency:** Displays the Currency (Reference Currency) to which an Interest rate curve is applicable.
- **Curve Type:** Displays the curve type as an Interest rate curve or Volatility Curve.
- **Creation Date:** Displays the Date and Time at which an Interest rate curve was created.
- **Created By:** Displays the Name of the user who created the Interest rate curve.
- **Last Modification Date:** Displays the Date and Time at which an Interest rate curve was last modified.
- **Modified By:** Displays the Name of the user who last modified the Interest rate curve.

5.2 Interest Rates Details

When you **Add**, **Edit**, or **View** an interest rate curve, the **Interest Rate Code Details** window is displayed. The **Interest Rate Code Details** window includes an **Interest Rate Code Details** pane, five **Interest Rate Code** tabs, and an **Audit Trail** pane.

The **Audit Trail** pane is a standard footer pane for every OFSAA rule type. The **Audit Trail** pane displays **Created By**, **Creation Date**, **Last Modified By**, and **Modification Date**. The **User Comments** tab can be used to add comments to any rule, subject to a maximum of 4000 characters.

5.2.1 Creating an Interest Rate Code

To create an Interest Rate Code, follow these steps:

1. Click **Add** from the Interest Rate Code Summary page.

Figure 5-2 Interest Rate Code Details window

2. Enter the following information in the Interest Rate Code 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 Rate Management or other OFS Analytical Applications, 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 and T_RATE_INT_RATE_CD columns within the instrument data are populated with Interest Rate Codes). After you have saved a yield curve, you cannot renumber its Interest Rate Code.
 - **Name and Reference Currency:** You must provide a Name and Reference Currency for your yield curve. Unlike Interest Rate Codes, you can rename or change the Reference Currency for previously saved yield curves. While you can choose to rename a yield curve, however, it is very unlikely that you will choose to modify a yield curve's Reference Currency. A yield 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. LIBOR or other internationally quoted rates are always quoted with respect to an underlying Reference Currency (for example, US Dollar LIBOR, Euro LIBOR, and so on). The Reference Currencies drop-down list displays only Active currencies. For more information on Active and Inactive currencies, see the Currency section.

- **Description:** You can optionally describe or modify your yield curve's description at any time.
 - **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.
 - **Volatility Curve:** You can select the Volatility Curve option to indicate the curve selected will contain volatility rates. If you select this option, all other curve attributes become disabled and the curve is used exclusively for managing volatility details. For FTP Volatility, both the Terms tab and Historical Rates tab are available with this option. For ALM Volatility, only the Historical Rates tab is available. After you have saved the yield curve, you cannot change the selected Volatility Curve. Volatility curves are used in FTP to calculate the Rate Lock Option Costs. ALM Volatility is used to evaluate embedded options for the Black 76 market valuation.
 - **Risk-Free:** (Optional) This flag is for tagging IRCs as risk-free. That is editable in new and edit modes. It is available for non-hybrid curves and hybrid curves, and not available for Volatility Curves.
 - **Display for all currencies:** This option 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 Code appears in assumption rules for all currencies.
3. Click **Save**. To build out the Interest Rate Code, you must enter data within the Interest Rate Code tabs. For more information, see the Interest Rate Code Tabs section.

5.2.2 Interest Rate Code Tabs

Interest Rate Code tabs are used to define the yield curve and to add, edit, or delete historical interest rate data. The Interest Rate Code tabs are:

- Attributes
- Terms
- Historical Rates
- Parameters
- Hybrid Term Structure

5.2.2.1 Navigating Between Interest Rate Code Tabs

For new yield curves, you must begin with the Attributes tab. After you have selected 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 or volatility curve, that is, an overnight rate, a one-month rate, a three-month rate, and so on. To navigate to the Terms tab, either click Apply on the Attribute tab or click the Terms tab.

 **Note:**

You must specify an Interest Rate Code, Name, and Reference Currency in the Interest Rate Code Details window before navigating to the Terms tab.

The first time you navigate to the Terms 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 the 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 Term tab before navigating to the Historical Rates tab. The Historical Rates tab is used to input interest rate or volatility data. This tab is used for maintaining the interest rates database. To navigate to the Historical Rates tab, either click Apply on the Terms 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 tab.

5.2.2.1.1 Attributes Tab

Yield curve attributes include Rate Format, Compounding Basis, Accrual Basis, and Curve Identifier.

Figure 5-3 Attribute Tab of Interest Rate Code screen



All attributes are disabled if the Volatility Curve is selected. The following list describes the fields in the Attribute Tab of Interest Rate Code screen.

- **Rate Format:** To define the yield curve, you must select either the Zero Coupon or Yield to Maturity Rate Format. Rates entered into Rate Management (in the Historical Rates tab) are always entered in the nominal form, such as 5.125% or 6.875%, not as discount factors. For more information on how the two rate formats affect internal cash flow engine calculations, see the OFS Cash Flow Engine Reference Guide.
- **Compounding Basis:** Select a Compounding Basis for the yield curve: Annual, Semiannual, Monthly, or Simple. Annual is the most common method. The

Monthly Option is enabled based on Rate Format selection (if Rate Format is selected as Yield to Maturity). For more information on Compounding Basis and how different compounding bases affect cash flow calculations in OFSAA, see the OFS Cash Flow Engine Reference Guide.

- **Accrual Basis:** Select an Accrual Basis for the yield curve. The Accrual Basis list depends on the Compounding Basis selection. If the Compounding Basis is selected as Annual, Semiannual, or Monthly, then the following Accrual Basis types are available:

- Actual/Actual
- 30/365
- Actual/365

If the Compounding Basis is selected as Simple, then the following Accrual Basis types are available:

- 30/360
- Actual/360
- Actual/Actual
- 30/365
- 30/Actual
- Actual/365

For more information on Accrual Basis and how different accrual bases affect cash flow calculations in OFSAA, see the OFS Cash Flow Engine Reference Guide.

- **Curve Identifier:** The curve identifiers can be mapped to the Adjustable Rate Mortgage (ARM) indices used for ADCO prepayment model processing. This is a drop-down list that contains the six Curve Identifier types, that is, Par Treasury, Zero-coupon Treasury, Par LIBOR/Swap, Zero-coupon LIBOR/Swap, Prime Lending Rate, and Cost of Funds Index. The Reference Currency for these indices is always US Dollar. The curve identifier is optional when the IRC is not used for ADCO prepayment model processing. This is applicable only in ALM and HM applications.

5.2.2.1.2 Terms Tab

Use the Terms tab to construct the yield curve's term structure. You can specify as many yield curve terms from the 1 day to 100 years range.

Figure 5-4 Terms Tab on Interest Rate Code window

The screenshot shows the 'Terms' tab of the Interest Rate Code window. The window has a header with tabs: 'Attributes', 'Terms', 'Historical Rates', 'Parameters', and 'Hybrid Term Structure'. The 'Terms' tab is selected. Below the header is a table with the following structure:

Term	Multiplier
1	Months

Below the table, there are three buttons: 'Apply', 'Save', and 'Cancel'.

 **Note:**

When constructing a volatility curve, the term types available are Contract Term and Expiration Term. You must add the relevant terms for each of these dimensions. Click **Apply** after defining terms for each dimension to save the assumptions before proceeding.

- **Adding New Term Points:** Click **Add** to add new term points by selecting a Term value and a Multiplier (such as 7 days, 2 months, 5 years, and so on). You can also add term points using the Data Input Helper option. For more information, see the **Data Input Helper** section.
- **Deleting Existing Term Points:** To delete an existing term, select the term point (or terms), and click **Delete**. A confirmation message is displayed. Click **Ok**.

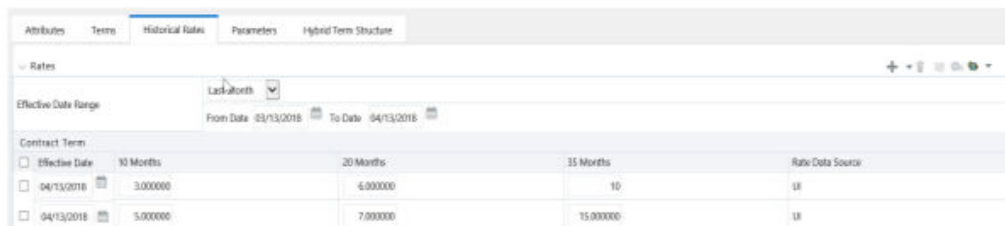
5.2.2.1.3 Historical Rates Tab

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). If you are entering historical rates for a volatility curve, then enter volatilities for the combination of Contract Term and Expiration Term. Select the desired Expiration Term from the drop-down list to complete the Volatility Matrix. Effective dates must be entered separately for each Expiration term in the list.

5.2.2.1.4 Historical Rates Tab on Interest Rate Code window

The Historical Rates Tab pane on the Interest Rate Code window allows you to see the historical rates available for the interest rate code that is being created.

Figure 5-5 Interest Rate Code window - Historical Rates Tab



Effective Date	10 Months	20 Months	35 Months	Rate Data Source
04/13/2018	3.000000	6.000000	10	LR
04/13/2018	5.000000	7.000000	15.000000	LR

 **Note:**

FTP Volatility curves are only applicable to FTP Rate lock option cost calculations and ALM Volatility only applies to embedded option market valuation.

To enter historical rates for an FTP volatility curve, enter volatilities for the Contract Term. Select the desired Expiration Term from the drop-down list to complete the Volatility Matrix. Effective Dates must be entered for each Expiration Term.

To enter historical rates for an ALM Volatility Surface, enter volatilities based on the following two dimensions:

- Strike Rate (Vertical Axis)
- Expiration Date (Horizontal Axis)

For a new ALM Volatility Surface, enter an As of Date and the number of breakpoints for Strike Rate and Expiration Date, then click Generate. The size of the matrix cannot exceed 20 x 20. For Strike Rate, enter values in ascending order. For Expiration Date, enter values in ascending order with values greater than the currently specified As of Date. At every intersection of Strike Rate and Expiration Date, enter a volatility amount in percent (that is, 25 = 25%).

The Rate Data Source parameter shows from where the rates are taken from, either they are 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
- Rate Lookup Behavior Between Term Points
- Rate Lookup Behavior Beyond Term Points
- Rate Lookup Behavior Between Effective Dates
- Generate Graph
- Excel Copy or Paste
- Deletion of Historical Rates
- Data Input Helper

5.2.2.1.5 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.

5.2.2.1.6 Rate Lookup Behavior between Term Points

The OFS Cash Flow Engine is common to OFS FTP, OFS PMTPC, OFS ALM, and OFS BSP applications. To lookup rates from Rate Management, the Cash Flow Engine performs an interpolation between yield curve Term Points. For example, in determining a Straight Term Transfer Rate (common for products such as time deposits), the Engine must determine a three-month rate from a yield curve that contains only a one-month rate and a six-month rate. In such a case, the Cash Flow Engine performs interpolation to determine the implied three-month rate. While each of the applications supports simple linear interpolation, OFS FTP and OFS ALM also support Cubic and Quartic Spline interpolation methods. These more advanced methods will be supported for all the OFS Analytical Applications in a future release.

5.2.2.1.7 Rate Lookup Behavior Beyond Term Points

If the Cash Flow Engine must determine a rate from a yield curve for a term point smaller than the first term point of the yield curve, then the Engine utilizes the first term point of the yield curve. For example, if the Engine must determine an overnight rate from a yield curve whose first term point is one month, the Engine utilizes the one-month rate.

If the Cash Flow Engine must determine a rate from a yield curve for a term point greater than the longest term point on the yield curve, the Engine utilizes the last term point of the yield curve. For example, if the Engine must determine a 30-year rate from a yield curve whose last term point is 10 years, the Engine utilizes the 10-year rate.

5.2.2.1.8 Rate Lookup Behavior between Effective Dates

When you are looking up rates from Rate Management for a business date, the Cash Flow Engine helps to find if there is no rate data for that specific business date.

For example, in generating an original term transfer rate for an instrument with an origination date of June 14, 2010, the Cash Flow Engine may find rate data for May 31, 2010, and for June 30, 2010, but no rate data for any dates between May 31, 2010, and for June 30, 2010. In such cases, the Cash Flow Engine always falls back to the latest available rate data before the business date of interest (May 31, 2010, in this case).

5.2.2.1.9 Deletion of Historical Rates

To delete historical rates entered, select one or more rows and then click **Delete**.

5.2.2.1.10 Generate Graph

The Generate Graph option allows you to generate the graph for selected Historical rates.

To generate a graph, follow these steps:

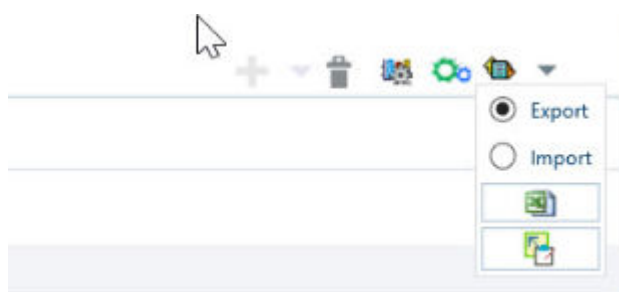
1. Select the Effective Date Range on the Historical Rates tab. The From Date and To Date fields will be automatically updated after selecting the Effective Date Range.
2. Select the Effective Date using the corresponding **Calendar** icon.
3. Enter the term points in respective fields and click **Apply**.
4. Select the **Terms** using the corresponding check boxes.
5. Click **Generate Graph**. The graph is generated. Here, you can view the graph for Interest Rate vs Effective Date or Interest Rate vs Term Point.

5.2.2.1.11 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.

To export the data, follow these steps:

1. **Excel Export:**
2. On the Interest Rates toolbar, click the **Excel** icon.
3. 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.

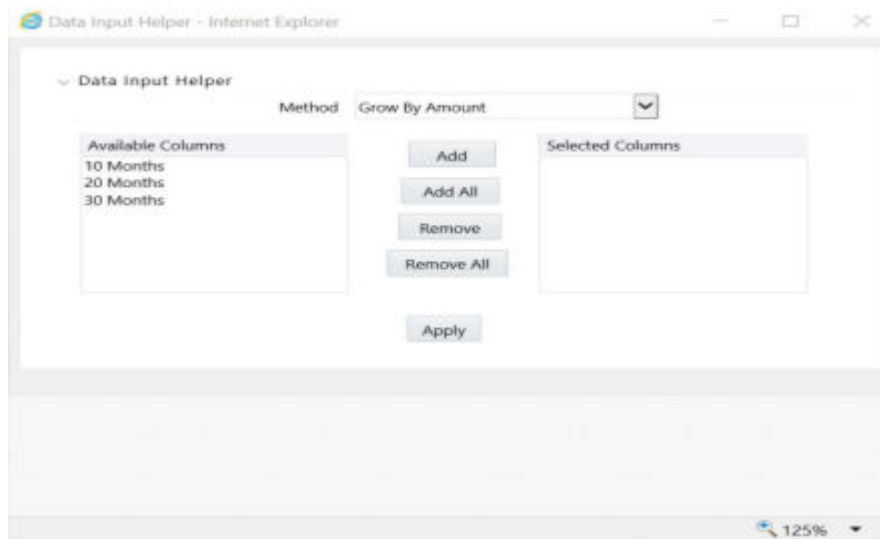
Figure 5-6 Export and Import options for Historical Rates data

- 4. Excel Import:**
You can add rows to the pane in the same format. After complete data is entered (or existing data is edited), copy the range of the pane you want to append and go back to the **Historical Rates** pane. In the same block, click the **Import**. The data copied from excel will appear in the **Historical Rates** pane.
- 5.** If appending data that pre-existed for the same effective date, the import will overwrite existing data.
- 6.** In some cases, some fields will be output to the pane that is not editable, such as bucket start and end dates (when defining forecast assumptions). Add or edit data in the columns that would be editable only in the UI itself.

Data Input Helper:

Use the Data Input Helper feature to copy from a row where you have already defined the interest rate definition or apply a fixed value down the page. This is an optional step. To use data input helper, follow these steps:

- 1.** Select the check box next to the rows that you want to work with or use the Select All option by selecting the check box on the header row.
- 2.** Select **Data Input Helper**.
- 3.** From the **Data Input Helper** window, select method - **Grow by Amount** or some other appropriate method.
- 4.** Select the term points from the **Available Columns** list and click **Add** or **Add All** to move the data to the **Selected Columns** list.

Figure 5-7 Data Input Helper window

Based on the selected method, the list of Available Columns will vary. If Method is selected as Increment By Months, Increment By Days, or Increment By Years, then only the Effective Date option is displayed in the Available Columns list.

5. Click **Apply** to modify the Start date and enter the Incremental Value.

5.2.2.2 Parameters Tab

Fixed income instruments are used for forecasting and simulating the Cash Flows. The Cash Flow Engine needs interest rate models to simulate the evolution of interest rates. The Cash Flow Engine uses these models as part of the stochastic engine. You can enter the parameters for these models in the following ways:

- System-generated calculations through Parameter Estimation
- Direct input into the UI
- Excel Import
- UI entry through Data Input Helper methods
- Data Loader

The following interest rate models are available:

- Extended Vasicek
- Ho and Lee
- Merton
- Vasicek

5.2.2.2.1 Parameter Estimation

This section explains the procedure to calculate the estimated parameters.

Prerequisites

Installation of R and Oracle R Enterprise (ORE) is required to use the Term Structure Parameter Estimation functionality under Rate Management - Interest Rates, for computing term structure parameters.

For more information, see the OFS Advanced Analytical Applications Infrastructure Installation and Configuration Guide.

Conditions for Parameter Estimation: If the following conditions are met, you can calculate parameters for any Term Structure Model for a given Effective Date, based on your relative look back term and a sufficient number of observations (available historical rates) for the IRC. If you rerun with a different look-back term, it will overwrite the existing parameters for the selected Term Structure Model on that IRC's Effective Date.

- **Term point:** Underlying historical rates must be available for a 30-Day or 1-Month term point.
- **Minimum Number of historical rates:** A total of at least 10 historical rates (observations) are required, on appropriate look-back dates.
- **Lookback Dates:** Historical rates must be available on dates looking back from the Parameter's Effective Date (the End Date), in 30-day intervals moving backward from End Date to Start Date, for a minimum of 10 intervals.
For example: If the first rate's Effective Date is 1 Jan. 2013, then the second rate's date must be 2 Dec. 2012 (1 Jan. 2013, 30 days = 2 Dec. 2012), and so on. If a rate is not found for the required date, the engine looks for a rate within the neighborhood of 5 days up or down (therefore a total range of 10 days), searching iteratively starting with Date -1, then Date +1, through Date +5, then Date -5. The next rate lookup would be 60 days before the End Date, and so on.

The minimum relative term for all lookbacks must be at least 300 Days (that is, to accommodate a minimum of ten 30-day intervals). Using the above logic, if a rate is not found for the lookup date (or date within the neighboring range), an error will be logged in FSI_PROCESS_ERRORS with ID_Number to identify the Interest Rate Code, and the parameter estimation Engine will exit.

To define the Parameter Estimation, follow these steps:

Figure 5-8 Parameters Tab on Interest Rate Code window

The screenshot shows the 'Parameters' tab in the 'Interest Rate Code' window. The window has a header with tabs: 'Attributes', 'Terms', 'Historical Rates', 'Parameters' (selected), and 'Hybrid Term Structure'. Below the header, there is a 'Parameters' section with a title bar and a toolbar. The main area contains a table with the following data:

Effective Date	Term Structure Model	Mean Reversion Speed	Long Run Rate	Volatility	Rate Data Source
08/25/2020	Extended Vasicek	0.000000	0.000000	0.01	UI

At the bottom of the window, there are buttons for 'Apply', 'Save', and 'Cancel'.

To edit or recalculate the existing Parameters, enter the Effective Date Range filter.

1. The following icons are available here:
 - Add
 - Delete
 - Data Input Helper
 - Refresh
 - Excel Export or Import
2. Default parameters for the **Extended Vasicek Model** are displayed for one Effective Date (the System Date on which the Interest Rate Code was created). You can edit these parameters or add new parameters using **Add**. Use the **Refresh** to return to existing Parameters.

 **Note:**

Steps 3 and 4 are applicable only if you are Adding or Editing Parameters.

To add or edit the parameters, use the **Data Input Helper** or **Excel Import** or **Export**. For more information, see the Excel Import or Export and Data Loader sections.

3. Enter the **Effective Date**. Note that the **Effective Date** cannot be greater than the **Current System Date**.
4. Select the Model from the Term Structure Model drop-down list. Effective Date and Term Structure Model combination must be unique within this IRC.
5. The following term structure models are utilized in stochastic modeling of interest rates in OFS FTP and OFS ALM:
 - Extended Vasicek
 - Ho and Lee
 - Merton
 - Vasicek
6. The following parameters needed by the models:

Table 5-1 List of supported parameters for Models Term structure models in Interest Rate

Model	Parameter 1	Parameter 2	Parameter 3
Extended Vasicek	Volatility	Mean Reversion Speed	
Ho and Lee	Volatility		
Merton	Volatility		
Vasicek	Volatility	Mean Reversion Speed	Long Run Rate

7. Values for Long Run Rate and Volatility are in percentages.

For example, a Long Run Rate of 5% is displayed as 5.000. To maintain the integrity of data, Rate Management restricts the accepted input values. The valid range and the default setting for each parameter.

Table 5-2 Valid Range and Default Values of Interest Rate Parameters

Parameter	Valid Range	Default Value
Volatility	0% to 500%	0.01
Mean reversion speed	0.00 to 500	0.0
Long run rate	0.00% to 500%	0.0

8. The **Rate Data Source** indicates if you have directly entered Parameters through the UI. You can calculate the Parameters to display system-generated values.
9. Select Calculate to view the Term Structures Parameter Estimation window.
10. If you are directly entering the Parameters, then enter values appropriate to the Model, then click **Apply** else click **Calculate**.
11. The End Date is auto-populated with the Effective Date. Enter the Relative Term with Multiplier to define the rate look-back period.
12. The Term or Multiplier value must be at least 300 Days.
13. The Start Date is automatically updated after entering a Relative Term.
14. Click **Calculate Number of Observations** to confirm the number of rates found for appropriate dates within the Relative Term. If there are at least 10 observations, then the **Estimate** option will become active.
15. Click **Estimate** to calculate the parameters and store them in the Historical Parameters table (FSI_IRC_TS_PARAM_HIST). A confirmation message is displayed. Click **Ok**. The calculation will complete and you will be directed back to the Parameters tab.
16. Similar to the validation used for direct input from the UI, if any of the calculated parameters are outside of the valid range, the Engine displays an error message.

Delete parameters by selecting one or more rows and then clicking Delete. For more information on term structure models and stochastic processing, see the OFS Funds Transfer Pricing User Guide, OFS Asset Liability Management User Guide, and OFS Cash Flow Engine Reference Guide.

5.2.2.3 Hybrid Term Structure Tab

Hybrid Term Structures allows you to specify the following three types of Hybrid yield curves:

- Spread
- Moving Average
- Merge

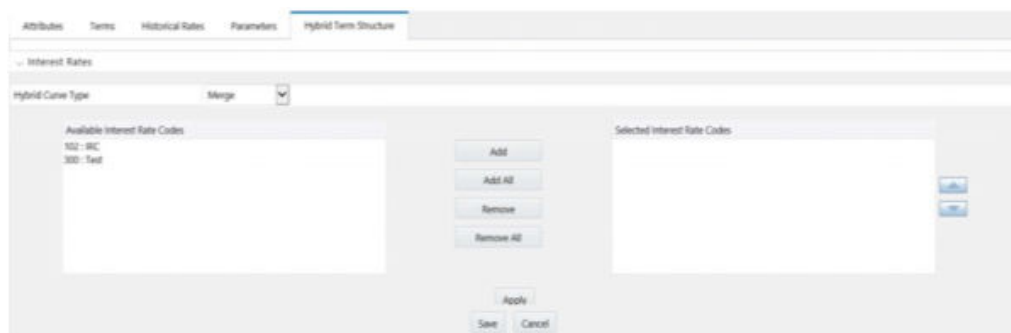
 **Note:**

Minimum and Maximum Hybrid IRC types from the Hybrid IRC type selection are intended for future enhancement and must be ignored in the current release.

The Parameters and Hybrid Term Structure tabs are disabled if the Volatility Curve is checked.

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 OFSAA application business rules that allow the selection of an Interest Rate Code.

Figure 5-9 Hybrid Curve tab on Interest Rate Code window



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.

- **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.
- **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.

5.2.2.3.1 Define a Hybrid Curve

To define a hybrid curve, follow these steps:

1. Select the **Source Type** as **Hybrid** in the **Hybrid Term Structure** tab, and then select the **Hybrid Curve Type** (Spread, Moving Average, or Merge).
2. Select the Interest Rate Codes for the hybrid type and click **Apply**.

5.2.2.3.2 Generate Historical 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.

To generate the rates, follow these steps:

1. Select the interpolation method as **Linear**, **Cubic**, or **Quartic**.
2. Select the **Generate Frequency** (Daily, Weekly, Bi-Weekly, or Monthly) and enter the **Specific Date Range** (From Date and To Date).
3. Click **Generate**. The rates will be populated and you will be directed to the Historical Rates tab to view the results.
If **Hybrid Curve Type** is selected as **Moving Average**, then select the **Moving Average Term** in Days, Months, or Years.

5.2.2.3.3 Automate (Schedule) the Generate Rates Action in Hybrid IRCs

The generation of the Hybrid IRC rates is available within the Hybrid IRC of Rate Management UI. As a manual process, you can additionally schedule a Run thorough an ICC Batch process or a Simplified Batch process. If you are running Generate Rates through the UI, then provide the following three parameters:

- **Interest Rate Code:** For example, you are in edit mode for a particular Hybrid IRC, execute the Generate Rates option. So, the IRC is implied.
- **FROM DATE:** this is the start date of the generate rates process.
- **TO DATE:** this is the date to which hybrid rates will be computed.

When generating Hybrid Rates through a batch (ICC or Simplified), specify ALL in the Parameter list to generate rates for all Hybrid IRCs. Or, a list of IRCs can be specified with comma-separated values within quotes.

'IRC_Code1, IRC_Code2, IRC_Code3' and so on.

 **Note:**

Use ALL in the Parameter list for all IRCs.

The **TO DATE** is determined based on the Effective Date specified for the Batch and the **FROM DATE** for each IRC is determined by referring to the last (maximum) effective date in the current historical rates table +1 day.

There is one exception to the calculated FROM DATE. In cases where a new Hybrid IRC is generating rates for the first time, the minimum Effective Date from the Parent IRC is used as the FROM DATE.

 **Note:**

Hybrid Rates generated by the Generate Rates procedure are written to the FSI_IRC_RATE_HIST table. Outputs from the procedure can be verified within the Interest Rates UI or by querying this table directly.

Dependent Tables: The following list describes the details of the Dependent Tables.

- **FSI_IRCS:** Holds header information of all Interest Rate Codes.
- **FSI_IRC_HYBRID_STRUCT_WEIGHT:** Holds the Hybrid IRCs' - Interest Rate Term, Interest Rate Term Mult, and Rate Weightage. It is the child Table of FSI_IRCS.
- **FSI_IRC_RATE_HIST:** This Output table holds calculated rates for the Hybrid IRCs, as well as all historical rates for non-hybrid IRCs input through the Interest Rates UI or loaded directly using the interest rates data loader program.
- **FSI_MESSAGE_LOG:** Holds error log information.
- **DATE_TASK_MASTER:** Located in the Config Schema. This table must have a seeded date for IRC_HYBRID_SCHEDULER DT.
- **DATE_TASK_STEP_PRECEDENCE:** Similar to DATE_TASK_MASTER, this table must also have an entry for IRC_HYBRID_SCHEDULER DT.

Prerequisites to Running Hybrid IRC Batches:

- The function FN_FSI_IRC_HYBRID_SCHEDULER must be in Compiled status in the Atomic schema. Sometimes, the functions created in the Database can be in an invalid state due to some issues (by the installer), so use the Compile option in the Database to get them in a valid state.
- You can create the ICC batch using the IRC_HYBRID_SCHEDULER rule name, which is seeded with the installation.
- Hybrid IRC rates are calculated based on their underlying standard IRC rates, which are also stored in the FSI_IRC_RATE_HIST table. Historical Rates must already exist for all parent and dependent IRCs for the relevant effective date range.

 **Note:**

Seeded data related to Batch information must be present in the DATE_TASK_MASTER and DATE_TASK_STEP_PRECEDENCE tables in the Config schema.

5.2.3 Batch Creation

There are two methods for creating and running the batch processes, ICC Batch and Simplified Batch. The following section describes how to set up and run the Hybrid Rate Generation using both approaches. For more information, see the OFS Analytical Applications Infrastructure User Guide.

Running Hybrid Rate Generation using ICC Batch:

1. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Batch Maintenance**. Click **Create Batch**.
2. Enter the following details in the Batch Maintenance window:
 - Component = "Transform Data"
 - Rule Name = "IRC_HYBRID_SCHEDULER"
 - Parameter List = 'IRC_Code'Use ALL in the Parameter list to use all IRCs.
3. Save the batch.
4. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Batch Execution**.
5. Search the **Batch** created under **Batch Maintenance** and select it.
6. Enter the **Information Date** for the batch.
7. Click **Execute Batch**.

To schedule a future Hybrid Rate Generation Batch Process, or to schedule the Hybrid Rate Generation Batch Process on a recurring basis, do the following:
8. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Batch Scheduler**.
9. Search the **Batch** to schedule and select it.
10. Click **New Schedule** or **Existing Schedule**:

An Existing Schedule can be selected only if there are existing scheduled batches to view.
11. If New Schedule is selected, the New Schedule details appear. Enter the Scheduled Task Name. To schedule the Hybrid Rate Generation on a recurring basis, select Daily, Weekly, Monthly, or Adhoc.
12. In the Schedule Task pane, enter **Start Date** and **End Date** in the Date field.
13. In the Run Time field, enter the time for the next validation to be run.
14. Click Save to set the schedule as specified or Cancel to drop your changes.

Any error messages or warnings generated during the Hybrid Rate Generation process that is displayed in the View Log.

For more information, see the OFS Analytical Applications Infrastructure User Guide.

5.2.3.1 Running Hybrid Rate Generation using Simplified Batch

To run Hybrid Rate Generation using Simplified Batch, follow these steps:

1. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Simplified Batch**.

(Optional) <Enter a step example.>
2. Click **Add**.
3. From the **Task Details** pane, click **Select Task**. In the **Task Selection** window, select **Task Type** as **Transform Data**. Click **Search**. In the **Task Selector**, select the **IRC_HYBRID_SCHEDULER** and click **Ok**.
4. Enter the Parameters and click **Save**.

5. In the **Simplified Batch Summary** page, search the Hybrid Rate Generation batch, and select it. Click the **Run** icon.
6. Click **Yes** to confirm you want to continue, enter a date (this will be your TO DATE), and click **Ok** to continue. A confirmation message is displayed.
7. Click **Ok**. When the batch is complete, navigate to Operations and select View Log to view the processing log.

Any error messages or warnings are accessible from the View Log window.

Simplified Batch does not provide access to logs for Transform Data tasks.

For more information, see the OFS Analytical Applications Infrastructure User Guide.

5.2.3.2 Viewing Log Messages

Any error messages or warnings generated during the rate generation batch are displayed in the Log Information window.

To access this window, follow these steps:

1. Navigate to the Operations menu and select View Log.
2. Enter search criteria as Data Transformation and related Batch ID.
3. Select the Task ID to view the log information.

You can additionally query the FSI_MESSAGE_LOG table directly to view the error log details.

For more information, see the OFS Analytical Applications Infrastructure User Guide.

5.3 Currency

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.

OFSAA Rate Management's 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. OFSAA Rate Management provides a comprehensive list of ISO-defined currencies; you can also define and add your user-defined currencies.

To view the Interest Rate Code Summary page, navigate to **Common Object Maintenance**, select **Rate Management**, and then select **Currency**. This page displays a comprehensive list of more than 170 seeded ISO currency codes.

5.3.1 Searching for Currency

A Search pane is provided to search for currencies by Name, Currency (by ISO currency code), Status, or Reporting Currency.

To search the currency, follow these steps:

1. Enter the search criteria and click **Search**.
2. Click the **Reset** to remove the search criteria you have specified and refresh the window.
3. The search results are displayed in a tabular format containing all of the currencies that meet to search criteria. The Currency summary pane offers several icons as follows to perform different functions when a currency is selected.
 - **Add**: Click **Add** to begin the process of adding a new currency. The **Add** icon is disabled if any rows in the pane are selected.
 - **Edit**: Select a single row out of the pane to enable the **Edit**. Click the **Edit** icon to modify an existing currency. The **Edit** icon is only enabled when a single currency has been selected.
You can control the number of rows to display on the page by selecting the Pagination Options icon from the action bar.
 - **Delete**: Select one or more rows out of the pane to enable the **Delete** icon. Click the **Delete** icon to delete the currency or currencies you have selected.
 - **Check Dependencies**: Select a currency and then click the **Check Dependencies** icon to generate a report on all rules that utilize your selected currency. The Check Dependencies icon is only enabled when a single currency has been selected.
4. The **Currencies** window contains all of the currencies that meet the search criteria. The Currencies Summary page has several icons to perform different functions when a currency is selected.

To select a currency, select the check box in the first column of the pane. More than one currency can be selected at a time but this will cause some of the icons to become disabled. Select a check box a second time deselects the currency.

Select or deselect all of the currencies in the Summary page by selecting the check box in the upper left-hand corner of the Summary page directly to the left of the Code column header.

The following list provides the currency details based on the search criteria:

- **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.
- **Reference Interest Rate Code**: Reference Interest Rate Code is the Interest Rate Code with which currency is associated with forecasting purposes. Define multiple yield curves each of which has the same Reference Currency, but a currency can only have one Reference Interest Rate Code.
- **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 following:

Define that currency as a Reference Currency for a yield curve (For more information, see the **Reference Currency** section in the Interest Rates Details window.)

Enter Exchange Rate data for a currency (For more information, see the Currency Rates section.)

Define Forecast Rates for that currency within OFS ALM (For more information, see the Forecast Rates section).

5.3.2 Editing Currencies

To edit a currency, select a currency, click Edit. You cannot modify any currency Code value. You can modify the Currency Name, Reference Interest Rate Code, Reporting Currency value (Yes or No), and the currency's Status (Active or Inactive).

You cannot inactivate any currency that is:

- Defined as the Reference Currency for any yield curve
- Associated with any exchange rate data
- Utilized within any Forecast Rates rule within OFSAA Asset/Liability Management

After completing the edits, click **Save**.

5.3.3 Adding Currencies

To add a currency, follow these steps:

The first row in the Currencies window is an empty row that is ready for you to edit as a new currency. Select this empty row, click **Edit**, and generate the new currency.

or

Generate a new currency by clicking **Add**. This generates another empty row at the top of the Currencies window to edit purpose.

5.3.4 Deleting Currencies

Select one or more currencies and then click **Delete**. You cannot delete any currencies that are utilized elsewhere in the system.

5.4 Currency Rates

OFSAA Rate Management's Currency Rates module uses the currencies defined and activated in the Currency module to support the creation and maintenance of historical exchange rates. Currency exchange rates are utilized in:

- OFS Funds Transfer Pricing (OFS FTP) Ledger Migration processes
- OFS Asset Liability Management (OFS ALM) Currency Consolidation process (see the OFS Asset Liability Management User Guide)
- OFS Profitability Management multi-currency allocations.
- OFS Hedge Management and IFRS Valuations (see the Oracle Hedge Management and IFRS Valuations User Guide)

To view the Currency Rate, navigate to Common Object Maintenance, select Rate Management, and then select Currency Rates. In this window, you can manage historical exchange rates between currencies.

For ALM, FTP, and PFT, From Currency defaults to the Initial Currency selection from the Assumption Management defaults in the active Application Preferences window. You can select another From Currency from the drop-down list that displays all Active currencies.

5.4.1 Preparing to Work with Exchange Rate Data

To view, edit, or delete the exchange rate data, you must enter the To Currency value. With the From Currency, the To Currency drop-down list displays only Active currencies.

Figure 5-10 Currency Rates Summary page

The screenshot shows the 'Currency Rates Summary' page. At the top, there is a 'Currency Selection' section with several dropdown menus and date pickers. 'From Currency' is set to 'US Dollar', 'To Currency' is 'Bermudian Dollar', 'Rate Type' is 'Floating Rate', 'From Date' is '06/27/2021', and 'To Date' is '07/27/2021'. Below this is the 'Floating Currency Rates' section, which displays a table with the following columns: 'Effective Date', 'USD', 'Status', and 'Data Source Code'. The table contains one blank row. Below the table are 'Save' and 'Cancel' buttons.

After selecting a To Currency value, select a value for Rate Type as Floating Rate or Fixed Rate (the default selection is Floating Rate). After selecting a To Currency value, a second pane is displayed as Floating Currency Rates (if you have chosen a Rate Type of Floating Rate) or Fixed Currency Rates (if you have chosen a Rate Type of Fixed Rate).

- **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.

5.4.2 Adding Exchange Rate Data

After you have specified a value for To Currency, the Floating Currency Rates section appears. To define a Fixed Rate relationship, select the Fixed Rate Type and replace the Floating Currency Rates with the Fixed Currency Rates.

Both Currency Rates panes initially display 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, and click **Save**.

Figure 5-11 Defining a Currency Rate

The following list describes the columns in the Currency Rate window:

- 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. For more information regarding rate forecasts and the relationship between historical exchange rates for forecasted exchange rates, see the Forecast Rate Scenarios. If you have gaps in the historical exchange rate data, any OFS Analytical Application that needs to perform a rate translation function will fall back to the most recent date for which exchange rate data exists. For example, if an OFS Analytical Application needs to translate a rate from USD to EUR for February 22, 2010, and the latest available USD to EUR rate data in the Rate Management database is February 11, 2010, then the application will utilize the exchange rate for February 11, 2010.
- Status:** Status is a read-only display that is updated after the Currency Rates Validation has been run.
- Data Source Code:** The Data Source Code is displayed read-only and indicates whether the rates were input through the UI or the data loader.
- Currency Exchange Rate:** For both Floating Rates and Fixed Rates, units of the From Currency are converted to one unit of the To Currency. See Table 12 for example.

Table 5-3 Example of one Currency to another Currency Conversion

From Currency	To Currency	Approximate Rate
USD - US Dollar	GBP-Pound Sterling	1.50
USD - US Dollar	EUR - Euro	1.36
USD - US Dollar	JPY - Japanese Yen	0.01105

5.4.3 Adding Multiple Exchange Rates

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**.

5.4.4 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.

5.4.5 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.

Click the **View** icon to a specific range of effective dates by modifying the From Date, To Date, or both dates within the Currency Rates window.

5.4.6 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**.

5.4.7 Data Loader

The Data Loader icon executes a function to import historical Currency rates for all defined Currencies. For more information on setting up the automated process, see the OFS Data Model Utilities User Guide.

To execute a data load, click the **Data Loader** icon. A warning message is displayed *Upload all available Currency Rates?*

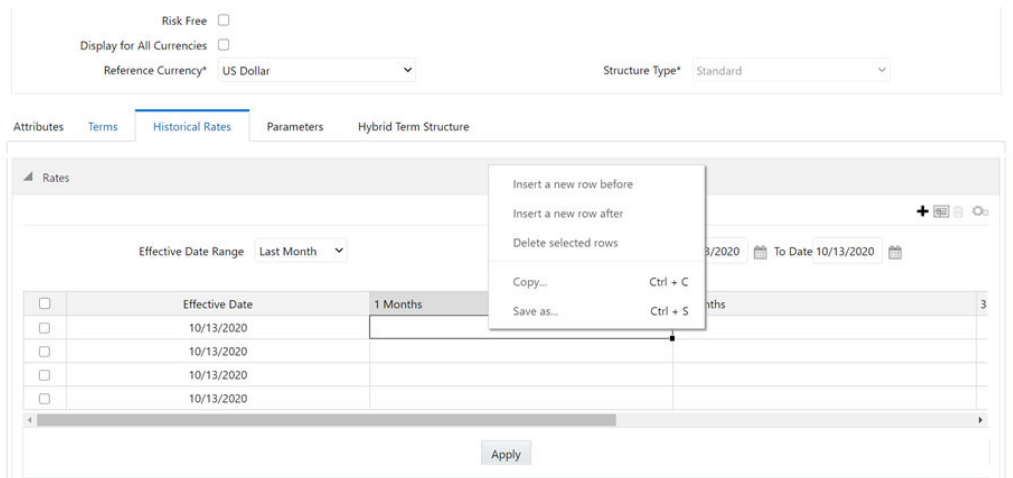
Click the **Data Loader** icon to execute all the currency rates.

5.4.8 Excel Compatibility

This functionality is used for adding or editing historical exchange rates from an Excel sheet. You can right-click on any cell in the table and perform the following actions:

- Delete or Insert multiple rows.
- Apply a Formula on a particular column.
- Export the data to excel using the **Save As** option.
- You can copy data from excel and paste the same using standard copy, paste shortcuts **Ctrl+C** and **Ctrl+V**.

Figure 5-12 Historical Rates Tab



5.5 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.



Note:

This feature is equivalent to the Rate Validation capability in OFSA 4.5 Rate Manager.

5.5.1 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 in the OFSAA applications. 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.

5.5.2 Currency Rate Validation

Load currency rates through the Rate Management or using the Historical Rate Data Loader. The initial status is Not Yet Validated.

1. Execute the Currency Rate Validation engine.

2. Navigate to **Operations**, select **Batch Maintenance**, and then click **Create Batch**.
Component = "Transform Data"
Rule Name = "Rate_Validation"
Parameter List (Required) = FROM_DATE and TO_DATE, for example, '20110101', '20110131'
After completion of the validation process, the status in the Currency Rates window changes to Valid or Invalid (in case there is an issue).
3. View both input and calculated results in the FSI_EXCHNG_RATE_DIRECT_ACCESS table. The OFSAA processing engine reads this table for sourcing historical exchange rates.

 **Note:**

Executing Rate Validation is a required step when a multi-currency setup is enabled. All of the OFSAA processing engines require exchange rates to be validated through this process to convert results from base currency to a selected reporting currency. If exchange rate validation is not run or required exchange rates are not available, the engines will use default exchange rates = 1.

5.5.3 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:

- **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. For more information, see the Viewing Log Messages.

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 period.

- A Child currency within a fixed relationship must not be a Child currency in any other fixed relationship during the same 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 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 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 or To or Both currency or currencies in the new exchange rate already exist in a fixed relationship for the same period.
- If any exchange rate is equal to 0, then a warning message is displayed. 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.

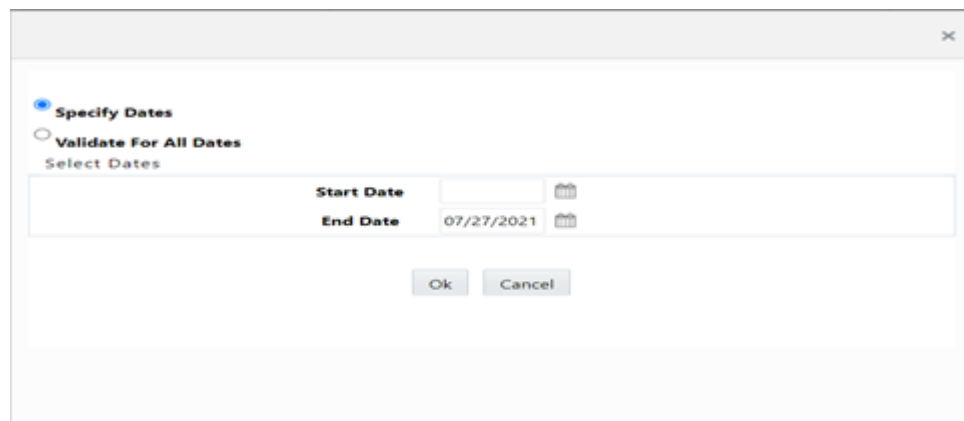
5.5.4 Running an Exchange Rate Validation

You can run a validation immediately or schedule one or more for later. The validation status is displayed in the Currency Rates window of the Rate Management.

5.5.4.1 Running a Validation Immediately

Execute the exchange rate validation using the Currency Rates Validation option.

Figure 5-13 Currency Rate Validation window



To execute the exchange rate validation, follow these steps:

1. Select a check box on the left-hand side of any row to enable the **Currency Rates Validation** icon.

2. Click **Currency Rates Validation**.
3. To execute exchange rate validation from the Currency Rates window, the following two options are available:
 - **Specify Dates:** After selecting this option, a Select Dates pane is displayed to enter or verify the FROM_DATE and TO_DATE parameters. These dates will be passed to the batch for execution.
 - **FROM_DATE:** This defaults to the date of last rate validation.
 - **TO_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.

You can execute rate validation using a Simplified Batch or the ICC Batch window. You can also launch it from the Currency Rates UI (Currency Rates Validation toolbar).

To run the validation using the Simplified Batch, follow these steps:

1. Click **Common Object Maintenance**, select **Operations**, and then select **Simplified Batch**, and then click **Add**.
2. From the **Task Details** pane, click **Select Task**. In the **Task Selection** window, choose **Task Type** as **Transform Data**. Click **Search**. In the **Task Selector** window, select **Rate_Validation** and click **Ok**.
3. Back in the **Simplified Batch Definition** window, enter the optional parameters to specify the From and To dates, using the format YYYYMMDD, YYYYMMDD. From_Date and To_Date must not be the same value. Set From_Date equal to the last rate validation date and To_Date to the current date. This will ensure that the Effective To Date for the prior record is set correctly.
4. Click **Save**.
5. In the **Simplified Batch Summary** page, search for and select your batch, then click **Run**.
6. Click **Yes** to confirm you want to continue, enter a Date and click **Ok** to continue. You will receive a message that it has been successfully launched.
7. Click **Ok**.
When the batch is complete, optionally navigate to Operations and select View Log to view the processing log.

Any error messages or warnings are displayed in View Log. For more information, see [Viewing the Messages](#).

Simplified Batch does not yet provide access to logs for Transform Data tasks.

For more information, see the OFS Analytical Applications Infrastructure User Guide.

To run the validation using the ICC Batch Framework, follow these steps:

1. Navigate to **Operations**, select **Batch Maintenance**, and then click **Add** to create a new batch.
2. Search for the above batch, and select it.
3. In the **Task Details** pane (tool-bar), click **Add**. In the **Task Selection** window, choose the **Task Type** as **Transform Data**. Click **Search**. In the Task Selector, select the **Rate_Validation** task and click **Ok**.
4. Back in the **Task Definition** window, select the **Rule Name** as **Rate_Validation** and enter the optional parameters to specify the From and To dates, using the format YYYYMMDD, YYYYMMDD.
From_Date and **To_Date** must not be the same value. Set **From_Date** equal to the last rate validation date and **To_Date** to the current date. This will ensure that the Effective To Date for the prior record is set correctly.
5. Click **Save**.
6. Navigate to **Operations**, and select **Batch Execution**. Search your batch and select it. Enter Information Date and click **Execute Batch**.
7. Click **Ok**. A message is displayed stating Batch triggered successfully, also displaying the Batch Run ID.
8. Click **Ok**.
9. To view rates, query the database table FSI_EXCHNG_RATE_DIRECT_ACCESS after the run is complete.
FSI_EXCHNG_RATE_DIRECT_ACCESS: This output table holds the valid currency codes and their exchange rate with respect to the reporting currency for some time say From Date value to optional To Date value. When Exchange Rate Validation runs, if data already exists for the selected date range, the Rate Validation package will overwrite the existing values. If no dates are given, the Rate Validation package truncates this table and re-loads data for the entire historical date range. The following describes the structure of the FSI_EXCHNG_RATE_DIRECT_ACCESS table:

Table 5-4 Column details of FSI_EXCHNG_RATE_DIRECT_ACCESS table

Column Name	Nullable	Data Type
FROM_CURRENCY_CD	Not Null	varchar2(15)
TO_CURRENCY_CD	Not Null	varchar2(15)
EFFECTIVE_FROM_DATE	Not Null	Date
EFFECTIVE_TO_DATE	Not Null	Date
EXCHANGE_RATE	Not Null	Number(15,9)
EXCHANGE_RATE_CONVE RT_TYPE_CD	Not Null	Number(5)
EXCHANGE_RATE_CONV_ FORMULA	Not Null	Number(15)

10. When the batch is complete, navigate to Operations and select View Log to view the processing log. Any error messages or warnings are displayed in View Log. For more information, see [Viewing the Messages](#).
For more information, see the OFS Analytical Applications Infrastructure User Guide.

5.5.5 Scheduling One or More Validations

To schedule a future validation, or to schedule validations on a recurring basis, follow these steps:

1. Navigate to **Operations** and select **Batch Scheduler**. The **Batch Scheduler** window appears.
2. In the **Batch Name** pane, select the **Scheduled Batch ID**. An unchecked box means that no validation is scheduled to run.
3. Select **New Schedule** or **Existing Schedule**.

The Existing Schedule can be selected only if there are existing schedule batches to view.

If New Schedule is selected, the New Schedule pane appears. Enter the Scheduled Task Name.

To schedule the validation on a recurring basis, select Daily, Weekly, Monthly, or Adhoc.

4. In the **Schedule Task** pane, enter the **Start Date** and **End Date** in the **Date** field.
5. In the **Run Time** field, enter the time for the next validation to be run.
6. Click **Save** to set the schedule as specified or **Cancel** to drop your changes.

Any error messages or warnings generated during the validation process are displayed in the View Log. For more information, see [Viewing the Messages](#).

For more information, see the OFS Analytical Applications Infrastructure User Guide.

5.5.6 Viewing the Messages

Any error messages or warnings generated during the exchange rate validation process are displayed in the Log Information window.

To view the messages, follow these steps:

1. Navigate to **Operations** and select **View Log**.
2. Click the **Task ID**. The Log Information window will display.

These exception messages can also be seen in the FSI_MESSAGE_LOG table with the help of the batch_id which was used during execution.

5.6 Economic Indicators Summary Page

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.

OFSAA Rate Management's Economic Indicators module allows you to define and store such historical indicators. Economic Indicators provide baselines from which OFSAA Asset Liability Management can generate forecasts of future values of economic statistics that can affect new business or other modeling assumptions.

To view the Economic Indicators, navigate to Common Object Maintenance and select the Rate Management, 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 built.

Figure 5-14 Economic Indicators Summary page

Name	Country	Creation Date	Created By	Last Modification Date	Last Modified By
EI1	USA	08/25/2020 18:40:03	FTPUSER		

5.6.1 Searching for Economic Indicator

A Search pane is provided in which you can search for Economic Indicators by Name or Country. Each Economic Indicators rule is specific to one country.

To search the Economic Indicator, follow these steps:

1. Enter search criteria and click the **Search** icon.
2. Click the **Reset** icon to remove any Name or Country search criteria and refreshes the window.

The search results are displayed in a tabular format containing all of the Economic Indicators that meet search criteria. The Economic Indicators Summary page offers several icons to perform different functions when an Economic Indicator is selected.

- **Add:** Click Add to begin the process of building a new Economic Indicator. The Add icon is disabled if any rows in the pane are selected.
- **View:** Select a single row out of the pane to enable the View. Click the View icon to view the contents of an Economic Indicator on a read-only basis. The View icon is only enabled when a row is selected.
- **Edit:** Select a single row out of the pane to enable the Edit. Click the Edit icon allows you to modify a previously saved Economic Indicator. The Edit icon is only enabled when a single row is selected.
- **Delete:** Select one or more rows out of the pane to enable the Delete. Clicking on the Delete deletes the Economic Indicators you have selected.
- **Copy:** Select a single row out of the pane to enable the Copy. Click the Copy icon to create a copy of an existing economic indicator. The Copy icon is only enabled when a single economic indicator is selected.
- **Check Dependencies:** Select an Economic Indicator and then click the Check Dependencies icon to generate a report on all rules that utilize your selected economic indicator. The Check Dependencies is only enabled when a single economic indicator is selected.

- **Data Loader:** The Data Loader option executes a function to import historical economic indices for all defined Economic Indicators. For more information on setting up the automated process, see the OFS Data Model Utilities User Guide. To execute a data load, click on the **Data Loader**.

A warning message will appear Upload all available Economic Indicators? Click Ok, and all historical indices will be loaded.

To select an Economic Indicator, select a check box in the first column of the pane. More than one Economic Indicators can be selected at a time but this will cause some of the icons to become disabled.

Select or deselect all of the Economic Indicators in the Economic Indicators Summary page by selecting the check box in the upper left-hand corner of the Summary page directly to the left of the Name column header.

The following columns categorize each Economic Indicator on the Summary page:

- **Name:** Displays the Economic Indicator's short name. Performing a mouse-over on a row within the pane displays the Economic Indicator's detailed description.
- **Country:** Displays the Country to which an Economic Indicator applies.
- **Creation Date:** Displays the Date and Time at which an Economic Indicator was created.
- **Created By:** Displays the Name of the user who created an Economic Indicator.
- **Last Modification Date:** Displays the Date and Time at which an Economic Indicator was last modified.
- **Modified By:** Displays the Name of the user who last modified an Economic Indicator.

5.6.2 Economic Indicators Details

When you **Add**, **Edit**, or **View** an Economic Indicator, the Economic Indicator Details window is displayed. The **Economic Indicator Detail** window includes an **Economic Indicator Details** pane, the **Economic Indicators - Historical Data** pane, and an **Audit Trail** pane.

The **Audit Trail** pane is a standard footer pane for every OFSAA rule type. The **Audit Trail** pane displays Created By, Creation Date, Last Modified By, and Modification Date. The **User Comments** tab can be used to add comments to any rule, subject to a maximum of 4000 characters.

5.6.3 Adding an Economic Indicator

To add an Economic Indicator, follow these steps:

1. Click **Add** from the Economic Indicator Summary page.
2. Enter the following information in the Economic Indicator Details window as tabulated.
 - **Name:** The name of your Economic Indicator is how you will subsequently refer to your rule within the OFS Analytical Applications. You cannot rename existing Economic Indicators.
 - **Frequency:** The frequency of your Economic Indicator must match the frequency with which the indicator's data is made public. Unemployment statistics, for example, are normally 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
 - **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. OFSAA is seeded with over 70 country values, and you can add user-defined countries.
3. Click **Save**. To build out your historical data, enter data within the Economic Indicators - Historical Data pane. The Economic Indicators - Historical Data pane displays a single blank row followed by the most recent period's data (if data has previously been stored in the database).

Figure 5-15 Economic Indicators - Historical Data section on Economic Indicator window

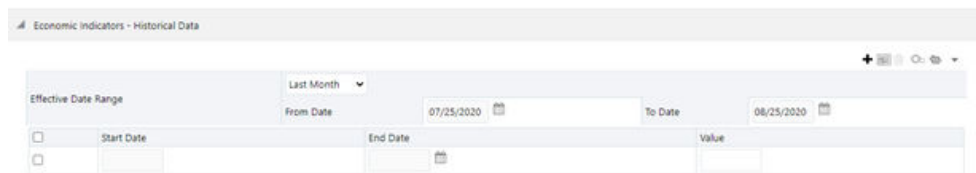


Table 5-5 Economic Indicators - Historical Data section - Fields and Descriptions

Fields	Description
Start Date and End Date	Select the Calendar icon immediately adjacent to the End Date to choose an ending date for your Economic Indicator data point. The application will automatically populate the Start 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 end date that is the last day of the month that the unemployment rate describes. In this example, the application will automatically populate the Start Date with the first day of the month you have selected.
Value	Enter the value for your Economic Indicator (such as the unemployment rate).
Adding Multiple Data Points	Click Add to add additional blank rows into which you can enter additional Economic Indicator data. When you have finished adding data, click Save .
Editing Economic Indicators - Historical Data	Select a single check box on the left-hand side of any row to enable the Edit. Clicking Edit to become the row active. You can edit this row and subsequently save the changes.

Table 5-5 (Cont.) Economic Indicators - Historical Data section - Fields and Descriptions

Fields	Description
Viewing Economic Indicators - Historical Data	<p>By default, the Economic Indicators - Historical Data pane displays the most recent month of historical data. You can restrict the amount of data displayed by selecting a different value from the Effective Date Range drop-down list.</p> <p>You can also choose to view a specific date range by modifying the From Date, To Date, or both dates within the Economic Indicators - Historical Data pane.</p>
Deleting Economic Indicators - Historical Data	<p>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.</p>
Data Loader	<p>The Data Loader option executes a function to import historical economic indicators for all defined economic indicators. For more information on setting up the automated process, see the OFS Data Model Utilities User Guide.</p> <p>To execute a data load, click the Data Loader. A warning message will appear Upload all available Economic Indicators?</p> <p>Click Data Loader to execute all the Economic Indicators.</p>
Excel Import and Export	<p>Use Excel Import or Export functionality to add or edit Historical Economic Indicators.</p>

6

Holiday Calendar

This chapter discusses the procedure to create a Holiday Calendar and generate a list of the weekend and holiday dates. Individual applications may consume the Holiday Calendar events in different ways. For more information, see the application-specific User Guides and the OFS Cash Flow Engine Reference Guide.

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

The procedure for working with and managing a Holiday Calendar is similar to that of other OFSAA business rules.

Topics:

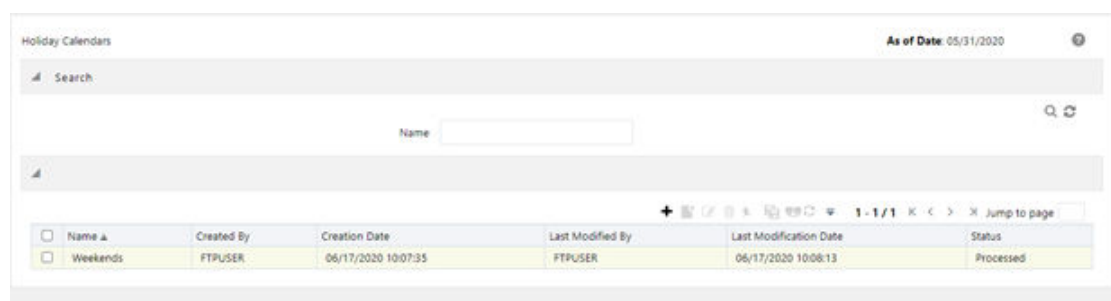
- [Searching for a Holiday Calendar](#)
- [Creating a Holiday Calendar](#)
- [Executing Holiday Calendar](#)
- [Holiday Exceptions](#)

6.1 Searching for a Holiday Calendar

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

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

Figure 6-1 Holiday Calendars



The screenshot shows the Oracle Holiday Calendars interface. At the top right, it says "As of Date: 05/31/2020". Below that is a search bar with the text "Search:" and a search icon. Underneath the search bar is a text input field labeled "Name". Below the search bar is a table with the following columns: Name, Created By, Creation Date, Last Modified By, Last Modification Date, and Status. The table contains one row with the following data: Name: Weekends, Created By: FTPUSER, Creation Date: 06/17/2020 10:07:35, Last Modified By: FTPUSER, Last Modification Date: 06/17/2020 10:08:13, Status: Processed.

<input type="checkbox"/>	Name	Created By	Creation Date	Last Modified By	Last Modification Date	Status
<input type="checkbox"/>	Weekends	FTPUSER	06/17/2020 10:07:35	FTPUSER	06/17/2020 10:08:13	Processed

You must have created a Holiday calendar to be able to search for Holiday Calendar rules.

To search for a new Holiday Calendar rule, follow these steps:

1. From the LHS menu, select **Common Object Maintenance**, and then select **Holiday Calendar** to display the **Holiday Calendars** Summary page. This page holds all Holiday Calendars and related functionality. You can navigate to other pages relating to the Holiday Calendar from this page.
2. Enter the name of the Holiday Calendar and click **Search**. Only Holiday Calendars that match the search criteria are displayed.

**Note:**

You can control the number of rows to display on the screen by selecting the Pagination icons from the action bar.

6.2 Creating a Holiday Calendar

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

The Holiday Calendar functionality allows you to define two types of holidays: 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. For a fixed holiday, the Holiday Calendar procedure will populate entries in the holiday list table for the selected date range.
- 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.
- A HOLIDAY_TYPE code:
 - 0: Fixed type
 - 1: Moving type
 - 2: 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.

To create a new Holiday Calendar rule, follow these steps:

1. From the LHS menu, select **Common Object Maintenance**, and then select **Holiday Calendar** to display the **Holiday Calendars** summary page.
2. Click the **Add** icon. The Holiday Calendar Details page is displayed.

Figure 6-2 Holiday Calendar Definition

3. 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 unique number between and must be between 1 and 99999.
4. 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.
5. In the Holiday Properties grid, select not more than two weekend days. Then choose the Holiday Period. The Holiday Period can be defined for a range of up to 40 years less than the current date and 40 years greater than the current date, totally spanning a maximum of 80 years.
6. In the Holiday Details grid, define the Holiday details for any period within the holiday range defined in the previous step.

 **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).

7. Click **Save**. Once the Holiday Calendar definition is saved, its status in the Holiday Calendar Summary page is marked as defined.
8. A Holiday Calendar created can also be deleted. Select one or more check boxes of Holiday Calendar definitions and click **Delete**.

6.3 Executing Holiday Calendar

Execute a Holiday Calendar definition to generate calendar dates listing the various types of holidays for a given holiday period.

Predefined rules are a prerequisite to execute the Holiday Calendar.

To execute the Holiday Calendar, follow these steps:

1. Navigate to the Holiday Calendar Summary page.
2. Search for a rule.
3. Select a Holiday Calendar and Click the Generate Calendar Dates icon to execute the selected Holiday Calendar.

Holiday list for holiday ID #1 generated successfully message appears (where #1 is the Holiday Calendar code). The holiday list can be confirmed by querying the FSI_HOLIDAY_LIST table.

4. The status of a Holiday Calendar where holiday dates are generated displays as Processed in the status column on the summary page.

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

5. The generated holiday list is no longer valid if:
 - a. There is a change in the definition of the Holiday Calendar.
 - b. There is an 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 a new definition.

6.4 Holiday Exceptions

You can specify exceptions to the holidays.

As a prerequisite, a Holiday Calendar must be properly defined and the status of the Holiday Calendar in the summary page must be processed. Generating the holiday list will populate the holidays (weekends, fixed, and moving) along with the working days. Then the Show Exceptions button is enabled on the detail page. Any changes in the holiday definition will disable the "Show Exceptions" button. The user must generate the holiday list again to define or view the exceptions.

1. Click **Show Exceptions** in the Holiday Exceptions pane. The Holiday Exceptions window opens.
2. The search block in the Exceptions page 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.
 4. In the Holiday Exceptions pane, there are two types of exceptions that can be defined: Not a holiday and Shift to.
 5. 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.
 6. 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.
 7. Any holiday can be shifted to another day, in which case the earlier declared holiday is removed from the Holiday List, while the shifted day is included as a holiday.

7

Application Preferences

This chapter discusses the procedure to define and maintain the CFE Application Preference settings.

Application Preferences 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 the Cash Flow Application Preferences page.
2. Input values for all the Cash Flow Engine Application Preference items as described in Table.

If you are the application administrator, define default values for the **All User** group by making the appropriate selection from the **Show Preference For**, drop list at the top of the page. Pay particular attention to the **Is Editable** status and determine which items require administrative control and which items non-administrative users can set for themselves.

Figure 7-1 Application Preferences

The screenshot shows the 'Application Preferences' page with the following sections and data:

Select Preferences For

Show Preferences For	CFEUSER	
Active for Master Maintenance	<input type="checkbox"/>	

Parameters - General

Property Name	Property Value	Is Editable
As of Date	06/25/2014	<input checked="" type="checkbox"/>
Show Execution Parameters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Runtime Parameters	Leaf Description	
Legal Entity		<input type="checkbox"/> Disable Legal Entity

Assumption Management Defaults

Property Name	Property Value	Is Editable
Folder Name	CFESEG	<input checked="" type="checkbox"/>
Access Type	<input type="radio"/> Read Only <input checked="" type="radio"/> Read/Write	<input checked="" type="checkbox"/>
Initial Currency Selection ["Business Rule Currency"]	US Dollar	<input checked="" type="checkbox"/>

Dimensions and Hierarchies

Property Name	Property Value	Is Editable
Product Dimension	Product	<input type="checkbox"/>
Default Product Hierarchy		<input checked="" type="checkbox"/>
Hierarchy Members Navigation Size	100	<input checked="" type="checkbox"/>

The following table describes each of the Cash Flow Engine Preference items

Table 7-1 Form fields to define the Application Preference settings for CFE application

Term	Description
Show Preferences For	<ul style="list-style-type: none"> • Administrator: 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.
Active for Master Maintenance	<p>If you have more than one application available on their LHS menu, then you must designate Application Preferences from one of the applications as Active for Master Maintenance. Certain preferences such as the default folder and read/write access setting are referenced by items within Master Maintenance based on this selection.</p>
As of Date	<p>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.</p>
Show Execution Parameters	<p>If this option is selected, a pop-up window appears whenever you execute a process interactively from a Summary window. Within this pop-up window, you may confirm or modify your run execution parameters (As-of-Date and Legal Entity).</p>
Runtime Parameters	<p>Displays the Runtime parameter details.</p>

Table 7-1 (Cont.) Form fields to define the Application Preference settings for CFE application


Term	Description
Legal Entity	<p>Similar to As-of-Date, all processes reference Legal Entity at run time 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.</p> <div data-bbox="909 596 1377 966" style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</p> <p>Legal Entity is designed to support implementations that require multi-entity or multi-tenant functionality. For details, see Appendix: Multi-Entity. If your implementation does not require this functionality, you may utilize the Default Legal Entity in all your processes.</p> </div> <p>Default implies -1 code. The default value for the Legal Entity dimension column in the instrument table is -1</p>
Disable Legal Entity	<p>If the Disable Legal Entity check box in the application preferences screen is checked, then Legal Entity is no longer a run-time parameter. On disabling Legal Entity, the user should edit the already defined Variable Allocation rules and modify the value of Legal Entity dimension in all applicable tabs (Source, Driver, and Outputs) in the allocation specification screen. This is an optional parameter.</p>
Folder Name	<p>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.</p>
Access Type	<p>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.</p>

Table 7-1 (Cont.) Form fields to define the Application Preference settings for CFE application

Term	Description
Initial Currency Selection (Business Rule 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.
Product Dimension	<p>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:</p> <ul style="list-style-type: none"> • Product • Common COA • GL Account <p>Users must always select 'Product' in CFE preferences. Common COA and GL Account are not used by CFE but by other EPM applications. It is suggested that Admin may select 'Product' and make this field non-editable so that individual users cannot modify it.</p>
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	<p>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.</p> <p>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.</p>

3. Select **Apply** to confirm the changes.
4. Select the **Reset** to default option if you would like to clear all previously applied inputs and return to the original default state.

8

Global Preferences

Clicking Global Preferences invokes the Global Preferences screen. Global Preferences items are used to configure your user interface. Here, you set your default application language and date format, and your desired Pagination Records. Pagination Records determine how many rows are displayed on summary 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. To see the next set of 25 records, you can use the Next VCR button.

Figure 8-1 Global Preferences

The screenshot shows the 'Global Preferences' interface for user 'CFEUSER'. It is divided into two main sections: 'Display' and 'Ledger'. The 'Display' section includes a dropdown for 'Show Preferences for' (set to CFEUSER) and a table of preferences. The 'Ledger' section includes a table for ledger-related preferences. At the bottom are 'Apply', 'Cancel', and 'Reset to Default' buttons.

Property Name	Property Value	Is Editable
Default Application Language	US-English	<input checked="" type="checkbox"/>
Date Format	MM/dd/yyyy	<input checked="" type="checkbox"/>
Pagination Records	5	<input checked="" type="checkbox"/>

Property Name	Property Value
Functional Currency	US Dollar
Signage	Natural Signage

Functional Currency and Signage are installation-time parameters that may not be reset in Global Preferences. Cash Flow Engine does not use these two parameters.

Functional Currency is **the currency of the primary economic environment in which an entity conducts its business**. For details on signage, see the [Oracle Financial Services Analytical Applications Profitability Management User Guide](#).

Normally, you can set preferences for yourself, but if you are logged in as an Administrator, you can set Global Preferences for All Users. When setting preferences for All Users, you can restrict the non-Administrators to change a Global Preference item by deselecting the **Is Editable** check box. If a preference item is defined as **not editable**, a user who is not an Administrator inherits the value of the preference item that his Administrator has set for him and he does not have the permission to change it for himself.

9

Common Rule Management Tasks

The rule management tasks that are common to business rules in this and other OFSAA applications are as follows.

This section focuses on the rule management tasks that are common across all rules in this application.

The procedures for carrying out these tasks are the same for each rule type, except for rule-specific steps explicitly stated in the rule-specific documentation.



Note:

You can perform these tasks from the Summary page for the rule type with which you are working. Depending on the rule type, some tasks might not be available.

Topics

- [Rule Summary Page](#)
- [Searching for Rules](#)
- [Creating Rules](#)
- [Viewing and Editing Rules](#)
- [Copying Rules](#)
- [Deleting Rules](#)
- [Dependency Checking](#)

9.1 Rule Summary Page

The Rule summary page is the gateway to all rules and related functionality of the application. From there, you can navigate to other related pages. On the header of the Rule summary page, you can perform simple queries on Folder, Rule Name, and in many cases, the dimension upon which the rule is based.

For example, the following table shows the Rule Summary page components of the Payment Pattern Rule.

Table 9-1 List of key terms used in Common Rule Summary page

Name	Description
Folder	Filter the rules under the folder. The default value must be set in Application Preferences.

Table 9-1 (Cont.) List of key terms used in Common Rule Summary page

Name	Description
(Rule) Name	You can specify all or part of a rule name. For example, if you want to see only those Rules which start with 'A' – Enter A in the text field.
Dimension	The default value must be set in Application Preferences.
Search	Initiates rule search based on specified criteria.
Reset	Restores default search criteria.
Add	Initiates the Data or Ledger Loader rule creation process
(Rule) Name	Hover over this to show the rule description and in some cases also displays the unique system ID number.
Created By	Shows who created the Rule version.
Creation Date	Shows when the Rule was created.
Last Modified By	Shows who last modified the rule.
Last Modified Date	Shows when the rule was last modified.
View	Opens the selected rule in read-only mode.
Edit	Opens the selected rule in edit mode.
Delete	Deletes the selected Rule.
Copy	Initiates the process for copying rules.
Run	Initiates the process for running Rules.
Pagination Options	Indicates the number of rows to display per page in the summary table. The default value must be set in Global Preferences.

9.2 Searching for Rules

Search for a business rule to perform any of the following tasks:

- **Update, Copy, Delete, or Run** existing rules.
- Define methodologies for products or define other processing assumptions

To search for a rule, follow these steps:

1. Navigate to the **Rule Summary** page for the appropriate rule type.
2. Select the folder from the **Rule Summary** page in which the rule is stored.
3. (Optional) Enter the name of the rule.
4. Click **Search** button.
Only rules that match the search criteria are displayed.

To search for a rule in Cash Flow Edit, follow these steps:

1. Navigate to the **Rule Summary** page for the appropriate rule type.
2. Click Search button in the Search area .
3. Enter Rule name, description, or select folder, and then click Search.

4. When you click Search, depending upon the search criteria, this filters, and displays the relevant search combination parameters under the Rule Summary as a list.

9.3 Creating Rules

You create a rule to specify the way you want a particular task or business process to be carried out by the application. Creating a rule is a process in which you specify the properties for the rule itself.

To create a new rule, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to create. Every rule has a separate Summary page.
2. Click **Add** to display the **Rule Definition** page.
3. Enter a name for the rule.
The name of a rule must be unique within the selected folder for each rule type.
4. Select the folder in which you want to store the rule.
(Optional) Enter a description for the rule.
5. Select the required access for other users.
6. Click **Apply** or **Save**, depending on the rule type.
7. Specify any other properties or options that may apply for the rule that you are creating.

To create a new rule/process in Cash Flow Edit window, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to create. Every rule has a separate Summary page.
2. Click **Add** to display the Rule Definition page.
3. Enter a name for the rule.
The name of a rule must be unique within the selected folder for each rule type.
4. Select the folder in which you want to store the rule.
5. (Optional) Enter a description for the rule.
6. Select the required access for other users.
7. Click **Apply** or **Save**, depending on the rule type.
8. Specify any other properties or options that may apply to the rule that you are creating.

9.4 Viewing and Editing Rules

You can view existing rules, and you can edit existing rules, provided you have read/write privileges.

To view and edit a rule, follow these steps:

1. Navigate to the **Rule Summary** page of the rule you want to update.
2. Search for a Rule. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate rule and click **Edit** to open the rule you want to update.
4. Update the Name or Description.
5. Click **Apply** or **Save**, depending on the rule type.

To view and edit a rule in Cash Flow Edit window, follow these steps:

1. Navigate to the **Rule Summary** page of the rule you want to update.
2. Search for a Rule. For further information, see the [Searching for Rules](#) section.
3. Click in the **Action** column and select **View/Edit** to open the rule you want to update.
4. Update the rule details.
5. Click **Apply** or **Save**, depending on the rule type.

9.5 Copying Rules

You can copy rules to avoid having to enter data multiple times. This saves time and effort and also reduces mistakes.

To copy a rule, follow these steps:

1. Navigate to the **Rule Summary** page of the rule you want to copy.
2. Search for a Rule. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate rule and click **Copy** to duplicate the rule.
4. Select a folder where you want to save the rule copy.
5. Enter a unique name for the new rule.
6. (Optional) Enter a brief description of the rule.
7. Select the access type.
8. Click **Save** button.

To copy a rule in Cash Flow Edit window, follow these steps:

1. Navigate to the **Rule Summary** page of the rule you want to copy.
2. Search for a Rule.
For more information, see the [Searching for Rules](#) section.
3. Click in the **Action** column and select **Save As** to duplicate the rule.
4. Select a folder where you want to save the rule copy.
5. Enter a unique name for the new rule.
Optional) Enter a brief description of the rule.
6. Select the access type.
7. Click the **Save** button.

9.6 Deleting Rules

You can delete rules that are no longer required.



Note:

A rule cannot be retrieved after deletion.

Restrictions on deleting rules are:

- You cannot delete rules if you have only Read privileges. Only users with read/write privilege and rule owners can delete rules.
- You cannot delete a rule that has a dependency.

To delete a rule, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to delete.
2. Search for a Rule. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate Rule and click **Delete**.
For more information, see the Overview of Common Rule Management Tasks section.

To delete a rule in Cash Flow Edit window, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to delete.
2. Search for a Rule.
For more information, see the [Searching for Rules](#) section.
3. Click in the **Action** column and select **Delete**.

9.7 Dependency Checking

You can check dependencies for rules to know where a particular rule, dimension, member, attribute, IRC has been used. This also prevents accidental deletion of rules having dependencies.

To check the dependency of a rule, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to check dependencies.
2. Search for a rule. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate rule or rules and click **Check Dependencies** corresponding to the rule that you want to check for.

 **Note:**

You can select more than one rule at a time to check dependencies.

The Dependency Information window opens containing the following information: Child Object Name, Child Object Type, Folder, Parent Object Name, Parent Object Type, and Folder.

For example, if a Product Characteristics rule 'A' which has been used in a static deterministic process 'P' is checked for dependencies, then the following information is displayed in the Dependency Information window.

Child object Name –A

Child Object Type – Product Characteristics

Folder – The folder name in which A resides

Parent Object Name - P

Parent Object Type – Static Deterministic Process

Folder - The folder name in which P resides

 **Note:**

You cannot delete a child object which has dependencies. You will get a message: *Dependencies found. Cannot delete.*

To delete the child, you must first delete the outermost parent object which uses the child.

To check the dependency of a rule in Cash Flow Edit window, follow these steps:

1. Navigate to the **Rule Summary** page of the Rule you want to check dependencies.
2. Search for a rule. For further information, see the [Searching for Rules](#) section.
3. Click in the **Action** column and select **Dependency Check** to the rule that you want to check for.

10

User Defined Behavior Patterns

User defined behavior patterns allow you to define principal amortization schedules and replicating portfolio characteristics for non-maturity products in your portfolio. You can utilize a behavior pattern while generating cash flows (for use in ALM and Liquidity Risk Management) by entering the behavior pattern code as the amortization type code (AMRT_TYPE_CD) for the relevant instrument records. In Funds Transfer Pricing, for certain TP Methods, you can select a Behavior Pattern to support your Transfer Pricing assumptions. In many cases, particularly for ALM processing, the "non-maturity" instruments will be aggregated or summarized balances.

The Behavior Pattern codes can range from 70000 to 99999

The procedure for working with and managing Behavior Patterns includes the following steps:

- [Searching for Behavior Pattern](#)
- [Creating a Behavior Pattern](#)
- [Viewing and Editing Behavior Patterns](#)
- [Copying Behavior Patterns](#)
- [Deleting Behavior Patterns](#)

10.1 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 10-1 Behavior Patterns Details Page

Non-Maturity					
	Tenor	Multiplier	Allocation Input Type	Percentage	Type
<input type="checkbox"/>		Months			Volatile

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.

10.1.1 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.
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.

10.1.2 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**.

The Behavior Pattern is saved and the Behavior Pattern Summary Page is displayed.

10.1.3 Defining Non-Maturity Behavior Patterns (for Tractor TP Method use)

 **Note:**

This is applicable only for FTP application.

The Tractor Transfer Pricing Method, utilizes a replicating portfolio concept. Replicating Portfolio's are a special type of Non-Maturity Behavior Pattern and are created and managed through the Non-Maturity Behavior Pattern UI.

Through the replicating portfolio UI, users can define one or more core balance amounts. Users assign a term to each core and generate balance strips at any granularity (e.g. typically daily or monthly, depending on the frequency of the transfer pricing process). To maintain the portfolio over time, users must roll and re-balance the portfolio to update the volatile plug amount and if needed re-balance the core amount.

To define a non-maturity behavior pattern for Tractor TP method use, follow these steps:

1. In the Behavior Pattern details page, select Non Maturity as the Behavior Pattern Type.
2. Enter the following details:

Table 10-1 Key Terms used in the Behavior Pattern Details page

Term	Description
Core Allocation Input	This drop-down is a mandatory selection. The drop-down values are Amount and Percentage. If the Non-Maturity profile method is selected as the Non-Maturity Products Model, then allocation will always be in percentage.
Core Allocation	The amount that is apportioned to each core. The Allocation amount in absolute or percentage for each strip is automatically determined (when Strip Tenor is "Days", or "Months") by evenly spreading the defined Core Amount across the number of strips for the portfolio. When Strip Tenor is "At Maturity", the entire amount is placed at the maximum term, determined by the inputs for "Term " and "Multiplier". If the user selects 'Amount' in the Core Allocation Input drop-down , then the 'Core Allocation' text box accepts values from 0.0000 to 9,999,999,999.9999. If the user selects 'Percentage' in the Core Allocation Input drop-down , then the 'Core Allocation' text box accepts only a percentage value between 0.0000 and 100.0000.
Tenor	Used to specify the maturity term for the portfolio. This term defines the maximum term for the initial strip balance and the rollover term for each rollover strip. When you manually select or schedule the replicating portfolio process, the Org term of the volatile strip is calculated. Replicating Portfolio generates the volatile strips that sets the ORG_TERM equal to the Period between Maturity date and Origination date.
Multiplier	The unit of time applied to the Tenor. The choices are: <ul style="list-style-type: none"> • Days • Months • Years
Type	For replicating portfolio, type is defaulted to core. The Volatile strip is generated automatically as a reconciling plug entry to balance the portfolio. The term of the plug entry is defaulted to 1 Day, unless a holiday calendar is used, in which case the volatile amount maturity can be extended to the next business day.

Table 10-1 (Cont.) Key Terms used in the Behavior Pattern Details page

Term	Description
Strip Tenor	Indicates the frequency of the strips generated for the portfolio. Available options are "Days", "Months" or "At Maturity". For example, if "Days" is selected, strips will be generated for each day from the as-of-date to the maturity term. If "At Maturity" is selected, a single strip will be generated and the balance will be placed at the maturity term.
Source Balance Selection	The source balance selection allows the user to define the source Instrument Table (or Ledger Table) and product / currency against which the core balance will be reconciled. The difference between the core balance and the actual instrument balance will determine the amount of the Volatile Plug strip for the current period.
Balance Type	The Balance type allows you to select the type of the Balance. It can be either Average Balance or Ending Balance. This option will be enable if the Source Balance is selected as Management Ledger.
Enable Holiday Calendar	Replicating Portfolio's allow users to enable a holiday calendar. If this option is selected, portfolio strips will not be generated on weekends or holidays. In addition, during rollover of maturing strips new maturity dates will be adjusted to ensure maturities fall only on working days.
Holiday Calendar Code	The holiday calendar code allows users to select the applicable holiday calendar.
Holiday Calendar Rolling Convention	The rolling convention within replicating portfolios is defaulted to next business day. Related to this method is an additional date adjustment to ensure that only one core strip falls on a single date. We refer to this secondary adjustment as an exclusive business day convention.
Default Portfolio Roll Frequency	The default portfolio roll frequency option allows you to set default rolling frequency of replicating portfolio.
Merge Delta Strips on Re-balancing	If Merge Delta Strips on Re-balancing option is enabled, then the core strips will be merged during the rebalancing.

Table 10-1 (Cont.) Key Terms used in the Behavior Pattern Details page

Term	Description
Generate the Portfolio	<p>After initially creating (and saving) the replicating portfolio definition, users should Generate the Portfolio. This action launches a background process which generates the strip records for the portfolio. Prior to running this process be mindful of the As-of-date defined in your Application Preferences, as this date will be used as the initial Origination Date for the newly created strips.</p> <p>If % is selected as the Core Allocation Input type, the procedure will read the current period balance (CUR_BOOK_BAL or Ending Balance), for the selected "Product Member" (from Source Balance selection) and determine the Required Core Amount based on the resulting Balance x Core %. This applies to both Management Ledger (Ending Balance) and Instrument table (CUR_BOOK_BAL).</p>
Roll the Portfolio	<p>Each period (day or month), users will need to roll the portfolio forward. The new as-of-date for the portfolio will be determined based on the existing as-of-date plus the default roll frequency. As a general rule, users should update their as-of-date in application preferences prior to running the Roll Portfolio Process.</p>
Re-balance the Portfolio	<p>After rolling the portfolio, users will need to re-balance the portfolio. There are two options provided for re-balancing:</p> <ul style="list-style-type: none"> • Plug to Volatile Strip: This option should be selected when no changes to the core allocation have been made. This process will compare the current period source balance with the current portfolio strip balance. The difference will be posted to the new volatile strip. <p>The Plug to Volatile Strip Re-balance method will not be relevant when the Core input type is % as the portfolio balance will change with every new as-of-date and new balancing/delta strips will be required to re-balance the portfolio.</p> <ul style="list-style-type: none"> • Rebalance Core Strips: This option should be selected only when users have modified the Core Allocation or when the Core input type is %. If the Core Allocation has increased or decreased, balancing strips will be generated for each tenor to bring the core strip balance back in line with the Core Allocation Balance. This process will additionally run the Plug to Volatile process to create the plug strip.
View the Portfolio	<p>This option allows you to view the portfolio strips.</p>

This table describes various fields in the Behavior Pattern Details page. You can enter or select the relevant details to populate the screen to define the Non-maturity Behavior Patterns for the Tractor TP Method use.

3. Make your required selections in the Source Balance Selection section.
4. Click Add Core (one or more) to input the core amount, associated maturity term and strip frequency.
5. To delete a row, select the check box corresponding to the row you want to remove and click Delete.
6. Click Save.
The Behavior Pattern is saved and the Behavior Pattern summary page is displayed.
7. Return to the Behavior Pattern / Replicating Portfolio in EDIT mode and execute the portfolio maintenance activities, including:
 - Generate Portfolio
 - Roll Portfolio
 - Rebalance Portfolio
 - View Portfolio

 **Note:**

Once the Replicating Portfolio is generated and the volatile plug has been updated for the current period, it is ready for processing by the FTP Engine. FTP Processes utilizing the Tractor TP Method should not be run until all Replicating Portfolio's have been updated.

10.1.4 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.
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.

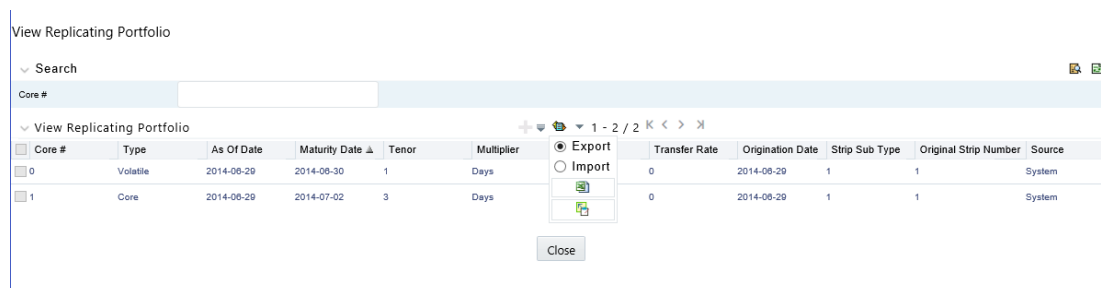
4. Click the **Add** icon to add additional payment strips to the Pattern and define appropriate assumptions for each strip.
5. To delete a row, select the check box corresponding to the row(s) you want to remove and click the **Delete** icon.
6. Click **Save**.

The Behavior Pattern is saved and the **Behavior Pattern Summary** Page is displayed.

10.1.4.1 Export and Import Replicating Portfolio Data in Excel

There is an option through the Replicating Portfolio > View Portfolio UI to manually edit existing portfolio strips through Export and Import of the active Strip Data.

Figure 10-2 Export and Import Replicating Portfolio Data in Excel



The following screen shot illustrates the functionality:

- The Export option works against the entire active portfolio. For example, a user can currently filter on a specific CORE # or look at results for all Core's. Additionally, the selection of Strips can span multiple pages, for example - as seen in the preceding screen shot, 1-20 of 71. In this example, all 71 active strips are exported to Excel.

- The import function will replace ALL existing “Active” strips.
- The strip data being imported is validated to confirm that all required data is included. If the data is not complete, for example, it does not provide information for Core #, Strip Type, As of Date, Maturity Date, Tenor, Multiplier, Allocation (or Amount), then a warning message is given indicating that “The selected data is incomplete and cannot be imported. Please re-check the data and try again.” The portfolio can also be edited directly on the view portfolio screen after new strips have been imported.
- When you click Strip Source option, the status column in the summary table shows the tagged strip records that have been created by system or manually. You can edit these tags for strips that are manually created or existing strips after exporting them into Excel.

Figure 10-3 Excel Sheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Core	Type	As of Date	Maturity Date	Tenor	Multiplier	Allocation	Transfer Rate	Origination Date	Strip Sub Type	Original Strip Number	Strip Source				
2	1	Core	29-Jun-2014	02-Jul-2014	3	D	4	0	29-Jun-2014	1	1	System				
3	0	Volatile	29-Jun-2014	30-Jun-2014	1	D	4	0	29-Jun-2014	1	1	System				
4																
5																

10.1.4.2 Scheduling Replicating Portfolio Actions

In addition to using the “Roll Portfolio” and “Re-balance Portfolio” button options in the Replicating Portfolio UI or the “Merge Portfolio” option, users have the ability to batch and schedule these functions through a Simplified Batch or ICC Batch process.

There are three seeded tasks listed under the Transform Data task type for scheduling these actions:

- Roll_Portfolio
- Rebalance_Portfolio
- Merge_Portfolio

To open the Simplified Batch process screen, from the LHS menu, select Common Object Maintenance, select Operations, and then select Simplified Batch to open the Simplified Batch process page. This page is the gateway for defining the batch processes for behavior pattern batch process and related functionality.

The following screen shot illustrates these tasks selected within a Simplified Batch process.

The following parameters are required for each task:

Roll Portfolio

- **Run ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Process ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Execution ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "

- **Run Surrogate Key:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
 - **Pattern Code:** for example, '70001'
 - **Application ID:** for example, 'TP' (this is a static value)
 - **FTP User:** for example, 'TP USER 1'
- These parameters would appear as follows in the simplified batch parameter input block:
- ```
","",", '70001', 'TP', 'TP USER 1'
```

When executing from the Run Rule Framework, the user does not have to pass the Run ID, Process ID, Execution ID, and Run Surrogate Key, as the framework itself passes these values along with the Batch ID and MISDATE. The parameters would appear as follows:

```
"70001", "TP", "TP USER 1"
```

### Re-balance Portfolio

- **Run ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
  - **Process ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
  - **Execution ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
  - **Run Surrogate Key:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
  - **Pattern Code:** for example, '70001'  
Re-balance type: for example, '1' (plug to volatile) or '2' (rebalance core strips)
  - **FTP User:** for example, 'TP USER 1'
  - **Application ID:** for example, 'TP' (this is a static value)
- These parameters would appear as follows in the simplified batch parameter input block:
- ```
","",", '70001', '1', 'TP USER 1', 'TP'
```

When executing from the Run Rule Framework, the user does not have to pass the Run ID, Process ID, Execution ID, and Run Surrogate Key, as the framework itself passes these values along with the Batch ID and MISDATE. The parameters would appear as follows:

```
"70001", "1", "TP USER 1", "TP"
```

Merge Portfolio

- **Run ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Process ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Execution ID:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Run Surrogate Key:** when running via ICC batch and Simplified batch process, this parameter can be passed as "
- **Pattern Code:** for example, '70001'
- **FTP User:** for example, 'TP USER 1'

- **Application ID:** for example, 'TP' (this is a static value)
When to merge (roll versus rebalance): when running via ICC batch and Simplified batch process, this parameter should always be 'N'

Maturity date identifying maturing strips to be merged on roll : when running via ICC batch and Simplified batch process, this parameter should always be "

These parameters would appear as follows in the simplified batch parameter input block:

```
",";",";','70001', 'TP USER 1', 'TP', 'N', "
```

When executing from the Run Rule Framework, the user does not have to pass the Run ID, Process ID, Execution ID, and Run Surrogate Key, as the framework itself passes these values along with the Batch ID and MISDATE. The parameters would appear as follows:

```
"70001","TP USER 1","TP","N",""
```

10.2 Viewing and Editing Behavior Patterns

You can view existing Behavior Pattern, and you can edit existing rules, provided you have read/write privileges.

To view and edit a Behavior Pattern, follow these steps:

1. Navigate to the **Behavior Pattern Summary** page of the pattern you want to update.
2. Search for a pattern. For further information, see the [Searching for Rule](#) section.
3. Select the appropriate pattern and click **Edit** to open the pattern you want to update.
4. Update the Name or Description.
5. Click **Apply** or **Save**, depending on the pattern type.

10.3 Copying Behavior Patterns

You can copy patterns to avoid having to enter data multiple times. This saves time and effort and also reduces mistakes.

To copy a Behavior Pattern, follow these steps:

- Navigate to the **Behavior Pattern Summary** page of the pattern you want to copy.
- Search for a pattern
For more information, see the [Searching for Rule](#) section.
- Select the appropriate pattern and click **Copy** to duplicate the pattern.
- Select a folder where you want to save the pattern copy.
- Enter a unique name for the new pattern.
(Optional) Enter a brief description of the pattern.
- Select the access type.
- Click the **Save** button.

10.4 Deleting Behavior Patterns

You can delete patterns that are no longer required.

 **Note:**

A rule cannot be retrieved after deletion.
Restrictions on deleting patterns are:

- You cannot delete patterns if you have only Read privileges. Only users with read/write privileges and pattern owners can delete rules.
- You cannot delete a pattern that has a dependency.

To delete a Behavior Pattern, follow these steps:

1. Navigate to the **Behavior Pattern Summary** page of the pattern you want to delete.
2. Search for a pattern. For more information, see the [Searching for Rule](#) section.
3. Select the appropriate pattern and click **Delete**

11

User Defined 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.

Topics

- [Searching for Rules](#)
- [Creating Payment Patterns](#)
- [Viewing and Editing Payment Patterns](#)
- [Copying Payment Patterns](#)
- [Deleting Payment Patterns](#)

11.1 Search for Payment Patterns

Search for a payment pattern to perform any of the following tasks:

- View
- Edit
- Copy
- Delete
- Check Dependencies

Prerequisites

- Predefined Payment Patterns

Procedure

To search for payment patterns, do the following:

1. Navigate to the **Payment Pattern** summary page.

Figure 11-1 Payment Pattern Summary Page

Code	Description	Pattern Type	Creation Date	Created By	Last Modification Date	Last Modified By
<input type="checkbox"/> 1111	hmgf	Absolute	04/25/2018 17:43:14	AUTOUSER	04/25/2018 17:43:14	AUTOUSER
<input type="checkbox"/> 1125	gfbhf	Absolute	04/30/2018 15:03:53	AUTOUSER	04/30/2018 15:06:53	AUTOUSER
<input type="checkbox"/> 1126	hgfx	Absolute	04/30/2018 15:11:34	ALMUSER	04/30/2018 15:11:34	ALMUSER
<input type="checkbox"/> 1127	gfhxf	Split	05/03/2018 12:57:21	AUTOUSER	05/03/2018 12:57:19	AUTOUSER
<input type="checkbox"/> 1128	hsf	Absolute	04/30/2018 15:04:44	AUTOUSER	04/30/2018 15:04:44	AUTOUSER
<input type="checkbox"/> 2135	kigh	Absolute	04/25/2018 17:43:38	AUTOUSER	04/25/2018 17:43:38	AUTOUSER
<input type="checkbox"/> 2136	kgb	Absolute	04/25/2018 17:43:53	AUTOUSER	04/25/2018 17:43:53	AUTOUSER
<input type="checkbox"/> 2156	ukgkj	Absolute	04/25/2018 17:44:28	AUTOUSER	04/25/2018 17:48:08	AUTOUSER

2. Enter the Code or Description of the pattern in Search Criteria.
3. Click the **Search** icon.

Only patterns that match the search criteria are displayed.

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

11.2 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, also known as an amortization type code, is a numeric internal identifier for the payment pattern. The code value must be a number between 1000 and 69999. The code value you assign to the new pattern must be unique. In addition, the code must be mapped to the appropriate instrument records (AMRT_TYPE_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**.

Note:

The Payment Pattern Details page displays the specifications associated with the Absolute Payment Pattern Type, which is the default Payment Pattern Type value. Should you decide to change this value for any of the other two alternatives, Relative or Split, the system will refresh the payment specifications corresponding to the new Pattern Type. Although you can change your selection of the Pattern Type at any point in this procedure, sometimes this might cause loss of data related to any prior selection

11.2.1 Define Absolute Payment Patterns

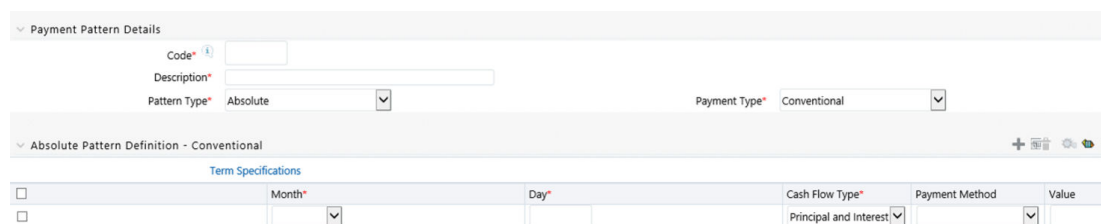
Absolute payment patterns are commonly used for instruments that are on a seasonal schedule, such as agricultural or construction loans that require special payment handling based on months or seasons.

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 11-2 Absolute Payment Patterns



Payment Pattern Details					
Code*	<input type="text"/>				
Description*	<input type="text"/>				
Pattern Type*	Absolute				▼
Payment Type*	Conventional				
▼ Absolute Pattern Definition - Conventional					
Term Specifications					
<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.

Table 11-1 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

Table 11-1 (Cont.) Relationship between Payment Phase Properties and Payment Types

	Level Principal	Non-Amortizing	Conventional
Value	Yes		Yes

The following table describes the relationship between Payment Method and Payment Types.

Table 11-2 Relationship between Payment Methods and Payment Types

Payment Method	Level Principal	Non-Amortizing	Conventional
Percentage of Original Balance	Yes		
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

11.2.2 Define Relative Payment Patterns

You create Relative Payment patterns for instruments that have irregular scheduled payments.

Prerequisites

Selecting Relative as the pattern type.

Figure 11-3 Relative Payment Patterns

The screenshot shows the 'Payment Pattern Details' form. The 'Code' is 1001 and the 'Description' is 'Relative Pattern'. The 'Pattern Type' is set to 'Relative' and the 'Payment Type' is 'Conventional'. Below this, the 'Relative Pattern Definition - Conventional' table is visible, containing three rows of payment details:

	Frequency*	Multiplier*	Repeat*	Cash Flow Type*	Payment Method	Value
<input type="checkbox"/>	1	Months	1	Principal and Interest		10.00
<input type="checkbox"/>	1	Months	1	Principal and Interest		10.00
<input type="checkbox"/>	1	Months	1	Interest Only		0.00

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 11-3 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.

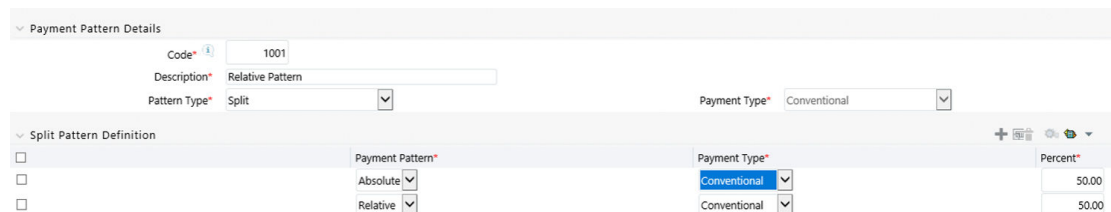
Table 11-4 Relationship between Payment Phases and Payment Types

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

11.2.3 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 11-4 Split Payment Patterns



The screenshot shows the Oracle Financials interface for defining a split payment pattern. The 'Payment Pattern Details' section includes fields for Code (1001), Description (Relative Pattern), Pattern Type (Split), and Payment Type (Conventional). The 'Split Pattern Definition' section is a table with columns for Payment Pattern, Payment Type, and Percent.

Payment Pattern*	Payment Type*	Percent*
Absolute	Conventional	50.00
Relative	Conventional	50.00

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.

11.3 Viewing and Editing Payment Pattern

You can view existing Payment patterns, and you can edit existing rules, provided you have read/write privileges.

To view and edit a Payment pattern, follow these steps:

1. Navigate to the **Payment Pattern Rule Summary** page of the pattern you want to update.
2. Search for a pattern. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate rule and click **Edit** to open the pattern you want to update.
4. Update the Name or Description.
5. Click **Apply** or **Save**, depending on the pattern type.

11.4 Copying Payment Pattern

You can copy patterns to avoid having to enter data multiple times. This saves time and effort and also reduces mistakes.

To copy a Payment pattern, follow these steps:

- Navigate to the **Payment Pattern Rule Summary** page of the pattern you want to copy.
- Search for a pattern.
For more information, see the [Searching for Rules](#) section.
- Select the appropriate rule and click **Copy** to duplicate the pattern.
- Select a folder where you want to save the rule copy.
- Enter a unique name for the new pattern.
(Optional) Enter a brief description of the rule.
- Select the access type.
- Click the **Save** button.

11.5 Deleting Payment Pattern

You can delete patterns that are no longer required.



Note:

A pattern cannot be retrieved after deletion.

Restrictions on deleting patterns are:

- You cannot delete patterns if you have only Read privileges. Only users with read/write privileges and pattern owners can delete patterns.
- You cannot delete a pattern that has a dependency.

To delete a Payment Pattern, follow these steps:

1. Navigate to the **Payment Pattern Rule Summary** page of the pattern you want to delete.
2. Search for a pattern.
For more information, see the [Searching for Rules](#) section.
3. Select the appropriate pattern and click **Delete**

12

User Defined 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.

Topics

- [Search Repricing Patterns](#)
- [Create a Repricing Pattern](#)
- [View and Edit Repricing Patterns](#)
- [Copy Repricing Patterns](#)
- [Delete Repricing Patterns](#)

12.1 Search Repricing Pattern

Search for a Repricing Pattern to perform any of the following tasks:

- View
- Edit
- Copy
- Delete

Prerequisites

Predefined Repricing Patterns

Procedure

To search the repricing patterns, follow these steps:

- Navigate to the **Repricing Pattern Summary** Page.

Figure 12-1 Repricing Pattern Summary Page

Repricing Patterns As of Date: 06/25/2014

Search Code Description

Code	Description	Pattern Type	Creation Date	Created By	Last Modification Date	Last Modified By
<input type="checkbox"/> 556	egre	Absolute	04/25/2018 17:51:45	AUTOUSER	04/25/2018 17:51:45	AUTOUSER
<input type="checkbox"/> 500	dxhf	Absolute	04/25/2018 17:50:27	AUTOUSER	04/25/2018 17:51:47	AUTOUSER
<input type="checkbox"/> 568	zdfbf	Absolute	04/25/2018 17:51:58	AUTOUSER	04/25/2018 17:51:58	AUTOUSER
<input type="checkbox"/> 501	gsdb	Absolute	04/30/2018 14:43:20	AUTOUSER	04/30/2018 14:43:39	AUTOUSER
<input type="checkbox"/> 503	ghf	Absolute	04/30/2018 14:47:01	AUTOUSER	04/30/2018 14:47:01	AUTOUSER
<input type="checkbox"/> 502	sdg	Absolute	04/30/2018 14:53:32	ALMUSER	04/30/2018 14:53:32	ALMUSER
<input type="checkbox"/> 504	dxghfhtg	Absolute	04/30/2018 14:53:35	ALMUSER	04/30/2018 14:53:35	ALMUSER

- Enter the Code or Description of the pattern in Search Criteria.
- Click the **Search** .
Only patterns that match the search criteria are displayed.

12.2 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**.

12.2.1 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 12-2 Define Absolute Repricing Pattern

Repricing Pattern Details			
Code*	570		
Description*	UDR 570		
Pattern Type*	Absolute		
Repricing Events - Absolute			
	Month*	Day*	Repricing Type*
<input type="checkbox"/>	Initial		Indexed
<input type="checkbox"/>	January	12	Indexed
<input type="checkbox"/>	February	12	Indexed
<input type="checkbox"/>	March	12	Flat
Define			

Prerequisites

Selecting Absolute as the pattern type.

Procedure

This table describes key terms used for this procedure.

Table 12-1 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:

Figure 12-3 Flat Repricing Pattern Detail Pane

From	Balance Tiers	To	Mix Percentage	Net Rate	Gross Rate	Transfer Rate
0	And Above			0.000000	0.000000	0.000000

Total Mix Percentage Total Net Rate Total Gross Rate Total Transfer Rate

Apply Cancel

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:

Figure 12-4 Indexed Repricing Event Detail

<input type="checkbox"/>	Balance Tiers From	Balance Tiers To	<input checked="" type="checkbox"/> Mix Percentage	Interest Rate Code*	Transfer Interest Rate Code*	<input checked="" type="checkbox"/> Yield Curve Term	<input type="checkbox"/> Net Margin	<input type="checkbox"/> Gross Margin	<input type="checkbox"/> FTP Margin	<input type="checkbox"/> Rate Cap Life	<input type="checkbox"/> Rate Floor Life	<input type="checkbox"/> Rate Set Lag
<input type="checkbox"/>	0	0	0	[USD] 21025352 (7777)	[USD] 21025352 (7777)	2 Months						0 Months

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.

12.2.2 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 12-5 Define Relative Repricing Pattern

Frequency*	Multiplier*	Repeat*	Repricing Type*
Initial			Flat
1	Months	1	Indexed
2	Months	1	Flat

Prerequisites

Selecting Relative as the pattern type.

Procedure:

This table describes key terms used for this procedure.

Table 12-2 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 [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.

12.3 Viewing and Editing Repricing Pattern

You can view existing Repricing Pattern, and you can edit existing patterns, provided you have read/write privileges.

To view and edit a Repricing Pattern, follow these steps:

1. Navigate to the **Repricing Pattern Summary** page of the pattern you want to update.
2. Search for a pattern. For further information, see the [Searching for Rules](#) section.
3. Select the appropriate pattern and click **Edit** to open the pattern you want to update.
4. Update the Name or Description.
5. Click **Apply** or **Save**, depending on the pattern type.

12.4 Copying Repricing Pattern

You can copy patterns to avoid having to enter data multiple times. This saves time and effort and also reduces mistakes.

To copy a Repricing Pattern, follow these steps:

1. Navigate to the **Repricing Pattern Summary** page of the pattern you want to copy.
2. Search for a pattern.
For more information, see the [Searching for Rules](#) section.
3. Select the appropriate pattern and click **Copy** to duplicate the pattern.
4. Select a folder where you want to save the pattern copy.
5. Enter a unique name for the new pattern.
(Optional) Enter a brief description of the pattern.
6. Select the access type.
7. Click the **Save** button.

12.5 Deleting Repricing Pattern

You can delete patterns that are no longer required.



Note:

A pattern cannot be retrieved after deletion.

Restrictions on deleting patterns are:

- You cannot delete patterns if you have only Read privileges. Only users with read/write privileges and pattern owners can delete patterns.
- You cannot delete a pattern that has a dependency.

To delete a Repricing Pattern, follow these steps:

1. Navigate to the **Repricing Pattern Summary** page of the pattern you want to delete.

2. Search for a pattern.
For more information, see the [Searching for Rules](#) section.
3. Select the appropriate pattern and click **Delete**

13

Behavior Pattern Rule

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

This chapter describes the procedure for working with and managing the Behavior Pattern rules.

Topics

- Search Behavior Pattern Rule. For more information, see the [Searching for Rules](#) section.
- [Create Behavior Pattern Rule](#)
- View and Edit Behavior Pattern Rule. For more information, see the [View and Edit the Rule](#) section.
- Copy Behavior Pattern Rule. For more information, see the [Copy the Rule](#) section
- Delete Behavior Pattern Rule. For more information, see the [Delete the Rule](#) section

13.1 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.

To create a Behavior Pattern rule, follow these steps:

1. Click **Add** icon from the top of the **Behavior Pattern Rule Summary** Page.

Figure 13-1 Creating Behavior Pattern Rule

2. Complete standard steps for this procedure. For more information, see the Overview of Common Rule Management Tasks section.

Note:

In addition to the standard steps for creating Rules, the procedure for creating a Behavior Pattern Rule involves one extra step. After Standard Step, you need to select a product hierarchy. For more information, see the Overview of Common Rule Management Tasks section. You can define methodologies at any level of the hierarchical product dimension. The Hierarchical Relationship between nodes allows the inheritance of methodologies from parent nodes to child nodes.

Oracle Asset Liability Management provides you with the option to copy, in total or selectively, the product assumptions contained within ALM business Rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

13.2 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.

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.

Prerequisites

Performing basic steps for creating or editing a Behavior Pattern rule

Procedure

From the Assumption Browser screen, select the product or products and the currency for which you want to define a Behavior Pattern or Patterns and select Add to launch the Behavior Pattern Details window.



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.

13.3 Defining a Behavior Pattern Rule: An Example

To create a Behavior Pattern rule, enter the following details in the Behavior Pattern Rule window:

1. From the Behavior Pattern Rule window, select the following.
 - Currency (US Dollar)
 - Name
 - Description
 - Folder
 - Access Type
2. From the **Assumption Browser**, select a product from the **Hierarchy Browser**. Select **Add** icon to open the **Assumption Details** page.
3. Select a pattern from the **Behavior Pattern Selector**. Here, the **Behavior Pattern** drop-down list shows the list of existing Behavior Patterns.

Figure 13-2 Behavior Pattern Rule

Behavior Pattern Rule Details

Name: New

Description:

Product and Currency Details

Product: Asset1

Currency: US Dollar

Behavior Pattern Selector

Behavior Pattern:

Apply Cancel

 **Note:**

Only Non-Maturing Behavior Pattern types are available. For more information, see the User Defined Behavior Patterns.

For more information, see the User Defined Behavior Patterns section. You can select only one Behavior Pattern at a time.

4. Click **Apply**.

14

Prepayment Rules

This module describes the procedure for working with and managing 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 quantify the associated Prepayment Risk.

Topics:

- Search Prepayment Rule. For more information, see the [Searching for Rules](#) section.
- [Create Prepayment Rules](#)
- View and Edit Prepayment Rule. For more information, see the [View and Edit the Rule](#) section.
- Copy Prepayment Rule. For more information, see the [Copy the Rule](#) section
- Delete Prepayment Rule. For more information, see the [Delete the Rule](#) section

14.1 Create Prepayment Rules

You create a Prepayment Rule to define prepayment assumptions for new products.

Figure 14-1 Prepayment Rule Page

Product	Calculation Method	Conditional Assumption	Status
<input type="checkbox"/> test_1	Arctangent	Yes	Defined
<input type="checkbox"/> Orphan Branch			
<input type="checkbox"/> dtd			
<input type="checkbox"/> dtdf			
<input type="checkbox"/> test1013			
<input type="checkbox"/> test_2008			

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.

Table 14-1 Create Prepayment Rule

Fields	Description
Name	Enter the name of the Prepayment Rule.
Description	Enter the description of the Prepayment Rule. This is an optional field.
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 a **Product Hierarchy**. You can define methodologies at any level of the Hierarchical Product Dimension. The Hierarchical Relationship between the nodes allows the inheritance of methodologies from Parent nodes to Child nodes.
- Select Product(s) from **Assumption Browser**.
- Click **Add** from **Assumption Browser** Section. For more information, see the Defining Prepayment Methodologies.

14.2 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.

14.2.1 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 14-2 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 Arc tangent.
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. • Curtailment: Select curtailment 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.
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.

Table 14-2 (Cont.) Key Terms used for Prepayment Rules

Terms	Description
Seasonality	<p>This table allows you to specify seasonality adjustments. Seasonality refers to changes in prepayments that occur predictably at given times of the year.</p> <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 **Curtailement**.
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.

14.2.2 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.

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 rate 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.

14.2.3 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.

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.

14.2.4 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.

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.

14.2.5 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.

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.

14.3 Defining Early Redemption Assumptions

If you are working with deposit products, it is possible to define Early Redemption assumptions within the Prepayment Rule. While defining assumptions, the Prepayment rule will consider whether or not the product is an asset or liability (based on the account type attribute defined in dimension member management). If the product is an asset, then the Prepayments tab will be active in the prepayment assumption detail page. If the product is a liability, then the Early Redemption tab will be active.

Prerequisites

- Performing basic steps for creating or updating a Prepayment rule.
- To define Early Redemption assumptions, the account type for the selected product must be a Liability.

Procedure

The procedure for defining Early Redemptions is the same as noted above for prepayments, with two exceptions:

- The list of Calculation Methods is limited to Constant and Prepayment Models
- The range definitions are based on Maturity Date ranges of the instruments rather than Origination Date ranges

Users also have two options for determining the timing of the early redemption assumption. Options include:

- Use Payment Dates: This is the default option. If selected early redemption runoff will occur on scheduled payment dates only.

- **User Defined Redemption Tenors:** If selected, users can specify any runoff timing. For example, users might choose to define the early redemption to runoff on the first day of the forecast.

To define Early Redemptions within the Prepayment Rule, follow the steps given below:

Use Payment Dates

1. Select the Use Payment Dates option.
2. Enter the Start Maturity and End Maturity Dates.
3. The first cell in the Start Maturity Date column and all of the cells in the End Maturity Date column are read only. This ensures that all possible Maturity dates have supporting reference values when Prepayment assumption lookups occur. Each row in the End Maturity Date column is filled in by the system when you click Add Row or save the rule. The first Start Maturity Date (in row 1) has a default value of January 1, 1900. When you enter a Start Maturity Date in the next row, the system inserts a date that is a day prior to the previous End Maturity Date field.
4. Enter the annual prepayment rate percent that you want to apply to the instruments having origination dates in a particular Start Maturity-End Maturity 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 icon to delete a row.
7. You can add as many rows in this table as you require. However you need to enter relevant parameters for each new row.
8. You can use Data Input Helper feature. For more information, see Data Loader section.
9. You can also use the Excel import/export feature to add the Prepayment rate information. For more details, see Excel Import/Export section.

User Defined Redemption Tenors

1. Select the User Defined Redemption Tenors option. This option allows you to specify the term to runoff for the particular row.
2. Enter the Start Maturity and End Maturity date ranges, add additional ranges as required using the Add Row button.
3. You can calculate the prepayment rate based on Current/Reducing Balance and Annual/De-annual Prepayment Rate. Select the Balance Type as Current Balance or Reducing Balance.
4. 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 date and prepayment date.
5. 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.
6. Select the Prepayment Rate Type as Annual Prepayment Rate Or De-annual Prepayment Rate.

7. When Annual Prepayment Rate is selected then prepayment rate entered in screen is directly used. In the other case, rate entered in screen is de-annualised before calculating prepayment amount.
8. Enter the Start Origination Date and End Origination Date ranges, add additional ranges as required using the Add Row button.
9. Enter the term to runoff tenor and multiplier for each of the date ranges.
10. Enter the early redemption runoff percentage for each of the date ranges.
11. Enter 'Repeat' if you want same prepayment to occurs multiple times. By default it is set to 1.
12. Click Add Row Delete.
13. Define Seasonality assumptions as required to model date specific adjustments to the annual prepayment rate or early redemption rate. Inputs act as multiplier, for example an input of 2 will double the runoff rate in the indicated month.

The manner in which prepayment / redemption tenor is interpreted has changed from ALM 8.0.7.0.0 onwards in case of user defined prepayment and user defined early redemption. Earlier runoff occurred on "As of date + Prepayment / early redemption tenor". From ALM 8.0.7.0.0 onwards only first runoff occurs on "As of date + Prepayment / early redemption tenor". Subsequent runoff occur on "Previous prepayment / early redemption date + Prepayment / early redemption tenor". Thus customers who are upgrading or migrating to ALM 8.0.7.0.0 from a previous release must appropriately modify tenors in prepayment rules where user defined prepayment tenor and user defined early redemption tenor have been used.

14.4 Associating Conditional Assumptions with Prepayment Rules

Oracle Asset Liability Management extends setup and maintenance of assumptions by allowing users to integrate conditional logic (optional) into the setup of, prepayment methods. You can define prepayment methodologies using IF-THEN-ELSE logic based on the underlying characteristics of your financial instruments, such as dates, rates, balances, and code values. The Conditional Assumption UI is accessed from the Assumption Browser by selecting the Conditional Assumption icon.

The conditional logic is defined through use of Data Filters and/or Maps. These existing objects provide the building blocks for defining Conditional logic. For example, each Data Filter can provide the logic for a specific condition. In the example below, the where clause is "Adjustable Type Code = 'Adjustable Rate'". This type of Data Filter can be selected within the Conditional Assumption UI.

Similarly, a Mapper object provides the necessary reference to one or more hierarchies, when dimension / hierarchy data is needed to define conditional logic. In the example below, this map refers to a hierarchy created on the Organization Unit dimension.

 **Note:**

Maps are accessed from the Infrastructure (HOME) page. You can find them at the following path:

Navigate to Common Object Maintenance, select Unified Analytical Metadata, then select Map Maintenance.

To create a map, use the following steps:

1. Navigate to Map Maintenance.
2. Select Add icon to create new Map.
3. On the left hand side, select one or more hierarchies that were enabled in the initial step.
4. Fill in required information, that is Name, Effective Dates, and Entity Name.
5. Click Save button.
6. From the Map Maintenance Summary page, select the Map and the icon for "Mapper Maintenance".
Here, you will see the hierarchy and all parent/child relationships.

The range of product attributes supported for conditional assumptions and available for use within Data Filters is determined by columns which are part of the "Portfolio" definition. The "Portfolio" table class is seeded with the installation, and can be extended to include user defined columns.

For more information on adding user defined columns to the Portfolio table class, see [Data Model Utilities Guide](#).

When using mappers, Conditional Assumptions can be attached to any level of the hierarchy, allowing assumptions to be inherited from parent nodes by child nodes.

For example, you can use the Org Unit column to drive the assignment of Transfer Pricing Methods for all members of a particular Organization. You can create one Conditional Assumption to convey the entire Transfer Pricing Methodology logic and attach it to the top-level node of the Org Unit hierarchy. All nodes below the top-level node will inherit the same Transfer Pricing assumption.

The logic included in a Conditional Assumption determines the specific Transfer Pricing method, Prepayment assumption or Adjustment Rule that the system will assign to each individual instrument record at run time.

The Conditional Assumption screen allows users to select explicit conditions (from Data Filters and/or Maps) and apply methods and rule selections to each condition directly. The Filter Conditions are processed by the engine in the order that they appear on the screen. As soon as a condition is satisfied, the related assumption is applied.

If an instrument record does not meet any of the conditions, then the rule logic reverts to the standard assumption that is directly assigned to the Product / Currency combination. In the example below, you can see that Fed Funds has both a direct assignment and a conditional assumption. If the condition is not met, the "Fixed Rate" assumption (ELSE condition) will be applied. In the case of Reverse Repo's, there is only a Conditional Assumption. In the absence of an ELSE assumption, the engine will

use the conditional assumption in all cases for the Product/Currency pair. To avoid this, users should define the Standard/Else assumption with an appropriate input.

Conditional Assumptions can be applied only to detailed account records (data stored in the Instrument Tables).

15

Prepayment Models

This module describes the procedure to build Prepayment Models. These Prepayment Models can be referenced by a Prepayment 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.

The procedure for working with and managing Prepayment Models is similar to that of other Oracle Asset Liability Management business rules.

Topics:

- Search Prepayment Model Rule. For more information, see the [Searching for Rules](#) section.
- [Create Prepayment Models](#)
- View and Edit Prepayment Model Rule. For more information, see the [View and Edit the Rule](#) section.
- Copy Prepayment Model Rule. For more information, see the [Copy the Rule](#) section
- Delete Prepayment Model Rule. For more information, see the [Delete the Rule](#) section

15.1 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:

- [Manual](#)
- [External Model](#)
- [Integrated Model](#)

15.1.1 Procedure to Define the Structure of the Prepayment Model

The Prepayment Model 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. Once the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

15.1.2 Prepayment Rate Calculation

Select Manual, Integrated Model, or external models. For Manual mode, You can choose any Prepayment dimension (max. three), define buckets, bucket values and finally explicitly populate prepayment rate matrix. For Integrated Model, prepayment dimension, used in Model would be auto populated as per the selected model. For external mode, you need to define the equation which would later be used for prepayment rate calculations.

15.1.2.1 Prerequisites

To enable the Prepayment Rate Calculation, follow these steps:

1. Log in to OFS AAI as System Administrator.
2. Under the OFS AAI Home Page, navigate to Administration and select **Security Management**.
3. Expand **System Administrator** and select **Function – Role Map**.
4. Associate the SMS-Function of **Prepayment Rate Calculation Process for Add, Edit, View, Delete, Copy, and Run** with the required roles.

15.1.2.2 Manual

Using Manual method, you can select maximum of three prepayment dimension and assign prepayment rates manually to selected dimension.



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).

Below are the steps for Manual method

1. Select the first Dimension.
2. Select a lookup method for that Dimension.
3. Enter the number of Buckets for the Dimension
4. This number may vary from dimension to dimension.
5. If required, repeat the previous three steps for up to two additional Dimensions.
6. Click **Apply**.
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.

Modifying the Table Structure

- 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**.

 **Note:**

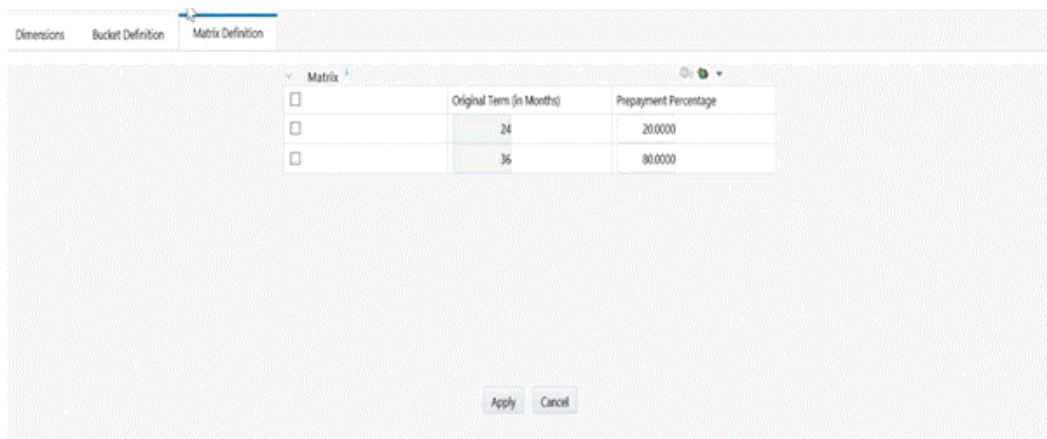
There are certain restrictions while defining Dimensions:

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.

- Assign values for each of the buckets.
- Click **Apply**.
The Prepayment Model, Prepayment Dimensions, and Buckets are saved.
- 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 15-1 Manual Prepayment Model



	Original Term (in Months)	Prepayment Percentage
<input type="checkbox"/>	24	20.0000
<input type="checkbox"/>	36	80.0000

Repeat the process for all bucket values of the page driver. To change the bucket value along the page driver, select the required value from the drop-down list.

 **Note:**

Bucket values will be displayed in the drop-down list only if you selected three drivers.

- Click **Apply**. The Prepayment Rates are saved and the Prepayment Model Rule summary page is displayed.

15.1.2.3 Integrated Model

In Integrated Model option, User has the option to select one of the already saved/ confirmed Models. For more information on how Model is defined.

Below steps details how Integrated Model can be used.

1. Select Integrated Model name from Model drop-down list. You can click on Model Search to search an Integrated Model based on certain product and currency combination.
2. Click Apply after selecting Model.
3. Model dimensions would be locked out based on the selected model. Still you need to select lookup method and buckets for each dimension.
4. Define the bucket values for each model dimension.
5. In this mode, prepayment rates would be auto calculated based on the selected model and buckets definition for each dimension. As shown in below screen, click 'Apply' to populate prepayment rate matrix. If user would like, one can still edit the values for few cells in prepayment matrix and 'Save'.
User needs to click on Apply on each page level to save Prepayment rates displayed on that page.
6. In case, model has calculated negative prepayment rate for few cells based on bucket values, you would not be able save the prepayment matrix until all the negative values has been manually updated by the user; as only zero or positive prepayment rates are allowed.
7. A 'Reset' button is given, in case user has changed prepayment rates for few cells. You can still get the model calculated prepayment rates back by pressing 'Reset'.

15.1.2.4 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 modelling outside OFSAA and use the model equation to calculate prepayment rates.

1. Define the Dimensions and click Define Equation.

Figure 15-2 Equation

Operator	Coefficient	Dimension	Power
+	2	Intercept	Disabled
+	1.5	Original Term	2
+	3	Rate Diff	2

Figure 15-3 External Model

The screenshot shows a 'Define Equation' window with the following details:

- Active Time Bucket: BBL_Time_Bucket2
- Prepayment Models
- As Of Date: 04/30/2019
- Assumption Specification > Prepayment Models
- Define Equation section with a '+' icon to add rows.
- Table with columns: Operator, Coefficient, Dimension, Power.

Operator	Coefficient	Dimension	Power
+		Intercept	
- Equation field (empty)
- Buttons: Equation, Apply, Cancel

- Define the Equation.

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

Following mathematical operators are available: +, -, /and *. After defining all coefficients, Power, operators, click Equation to get the model equation. A confirmation message is displayed. Click Ok to use the same for prepayment rate calculations.

You can add new row for each term using Add +. Multiple rows can be added using Add Multiple Rows

- Click Apply on Define Equation window. Click Cancel to navigate back to Prepayment Matrix Screen window.
- Once buckets are defined for final prepayment matrix, matrix would be auto populated.
- Click Apply to save the final prepayment rates matrix as per defined buckets.
Note: User needs to click on Apply on each page level to save Prepayment rates displayed on that page.
- In case, model has calculated negative prepayment rate for few cells based on bucket values, you would not be able save the prepayment matrix until all the negative values

has been manually updated by the user; as only zero or positive prepayment rates are allowed.

7. A 'Reset' button is given, in case user changed a few cells. You can still get the model calculated prepayment rates back again by pressing 'Reset'

15.2 Editing Prepayment Models

As part of editing Prepayment models, you can modify Prepayment rates and the structure of the Prepayment Model. You can also modify the lookup methods (Range or Interpolation), the number of Buckets, and the actual values of the Buckets. However, if you update the dimensions your previously entered prepayment rate data may be lost.

Prerequisites

Predefined Prepayment Models.

Procedure

1. Search for the Prepayment Model, which you want to edit. For more information, refer to [Searching for Rules](#) section.
2. Select the check box next to the Prepayment Model and select the **Edit**. The Prepayment Model opens in Edit mode.

Procedure to Update Rates

Modify the Prepayment Rates in the table as required. For more information, see the [Editing Prepayment Rates in a Prepayment Model](#).

Procedure to Update Dimensions Values

1. Click Update Dimensions Values.
The Update Dimensions page is displayed.
2. Update the structure as required.
 - To add more Nodes to a particular Dimension, update the number of Nodes for the Dimension and click Go.
 - To delete Nodes from a particular Dimension, click the delete icon corresponding to the Node.

Note:

Nodes cannot be deleted by reducing their numbers. Also, all Nodes cannot be deleted and at least one Node must exist in each Dimension.

- To change the method of a particular Dimension, select the required method from the corresponding list.
 - To change the value of a Node, update the value in the corresponding field.
3. Click **Apply**.
The Prepayment Model summary page is displayed.

15.3 Editing Prepayment Rates in a Prepayment Model

Once the basic structure of the prepayment model has been created, prepayment rates can be added to, or modified for, each of the bucket values along the chosen dimensions. Use this procedure to add or edit annual prepayment rates in the prepayment model.

Procedure

1. Search for the Prepayment Model, for which you want to define prepayment rates. For more information, see the [Searching for Rules](#) section.
2. Select the check box next to the Prepayment Model and select the **Edit** icon. The Prepayment rate input page is displayed.
3. Enter the Prepayment Rates in the Prepayment Model for the required dimensions. Node values for the row and column dimension are displayed as a table on the Prepayment rate input, while the node values for page dimension (if selected) are shown in the drop down list.
4. Repeat the process for all node values of the page dimension. To change the node value along the page dimension, select the required node value from the drop-down list.

 **Note:**

Node values will be displayed in the drop-down list only if you selected three dimensions. If prepayment rates are left blank for any of the dimensions, prepayment rates are assumed to be zero.

5. Click **Apply**.
The table with updated prepayment rates is saved.
6. Click Save.
All updates to the Prepayment Model are saved and the Prepayment Model summary page is displayed.

Editing Prepayment Rate Calculation

As part of editing Prepayment Rate Calculation, you can change the Prepayment Rate Calculation and the structure of the Prepayment Model. When you change the Prepayment Rate Calculation, a confirmation message is displayed.

Select the Prepayment Rate Calculation model from Prepayment Rate Calculation drop-down list.

- If you select Prepayment Rate Calculation as Manual, you can edit Dimensions, Bucket Definition, and Market Definition.
- If you select Prepayment Rate Calculation as Integrated, follow the instructions mentioned in Using [Integrated Model](#) section.
- If you select Prepayment Rate Calculation as External, follow the instructions mentioned in Using [External Model](#) section.

Excel Import/Export

Excel import/export functionality is used for adding/editing prepayment rate information. For more details, refer Excel Import/Export.

15.4 Prepayment Rate Data Loader

The Prepayment Rate Loader procedure populates prepayment model rates in OFSAA metadata tables from staging tables. This loader program can be used to update the prepayment model rates on a periodic basis. For more information on setting up the automated process, see [Data Model Utilities User Guide](#).

To execute the Data loader process, click the Data Loader icon on the Prepayment Models rule bar. The process will load all of the data included in the staging tables as defined in the [Data Model Utilities User Guide](#)

16

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, repricing existing business, calculating prepayments, and determining discount methods. Use Economic Indicator forecasts to include in behavioral modeling and scenario or stress analysis. Use currency exchange rate forecasts to account for the effects of currency fluctuations on income.

The Forecast Rate assumptions use interest rate, economic indicator, and currency codes defined in Rate Management, including all the Active and Reporting currencies and the primary, or functional, currency at your institution. For information on how to define Interest Rates, Economic Indicators, and Currency Exchange Rates, see the OFSAA Rate Management section.

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.

Topics:

- [Creating a Forecast Rates Assumption Rule](#)
- [Currency Forecast Methods](#)
- [Economic Indicator Forecast Methods](#)
- [Interest Rate Forecast Methods](#)
- [ALM Volatility Codes](#)
- [Behavior Pattern Rule Mapping](#)
- [Data Loader Procedure](#)

16.1 Creating Forecast Rate Rule

1. From the **Forecast Rates Summary** page, click **Add**.
2. Enter a name for the rule.
3. Enter a description for the rule. This is an optional field.
4. Select the **Reporting Currency**.
5. Select a **Folder**.
6. Select the **Access Type** option.
7. Click **Save**.

The **Apply defined method to all IRCs** check box is only supported for flat rates method. Other IRC methods do not support Apply to all.

Features of Forecast Rates

The selected reporting currency that you created appears in the Forecast Rates assumption rule window. Each Forecast Rate Scenario you create, up to ninety-nine, will appear under Current Scenarios. Forecast scenarios use the date buckets specified in the active Time Bucket Rule. You can also set minimum rates (or floors) on any rule created for Currency, Economic, or Interest Rate. For example, if you want to run a -200bp rate scenario, with short term rates less than 2%, then set the minimum rate to the floor at 0%, although negative rates are allowed if required.

The following options are available for defining Forecast Rate Scenario:

- Standardized Approach
- Enhanced Approach

IRRBB Standardized Approach Shocks allows you to select one of the six Standardized Approach Shocks (SAS) in a forecast rate scenario for certain currency IRCs. 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

These options are available for supported currencies. If an IRC is for a non-supported currency, then these options will not display.

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

The Active currencies defined under the **Currencies** section of the **Rate Management** are listed under the **Currency Codes** pane. The selection under **Currency Codes** defaults to the reporting currency when you are not forecasting exchange rates. The list of IRCs under the **Interest Rate Codes** pane is dependent on the selected currency. The IRCs, including a reference IRC for each currency, are loaded from the **Rate Management**. When you select a currency other than the reporting currency, the options under **Currency Forecast Method** pane provide several ways to model relationships between the Exchange Rates and Interest Rates.

The Economic Indicators for all active indices are listed in the **Economic Indicator** section. These indices are not dependent on the currency selected. Use these indicators to set up scenarios around changing the economic conditions that will affect the forecast outcome of another variable. For example, if you forecast a higher GDP, then use a scenario where new business volume is tied to that GDP outcome, which could be different than a lower GDP scenario. The Economic Indicators are created and maintained from the **Rate Management**.

The IRCs for all active currencies (and reporting currencies, a subset of the active currencies) are listed under the Interest Rate Codes. The options under the **Interest Rate Code Forecast method** pane provide several ways to model the effects on portfolio cash flows due to interest rate changes.

You can map your forecast scenario with the Behavior Pattern Rule. For more information, see the Behavior Pattern Rule Mapping section.

16.2 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.

Table 16-1 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 interest rate forecasts for the reference IRC associated with each of the currencies.
No Arbitrage *	Forecast the exchange rate required to maintain a no-arbitrage condition between two currencies.

* The above methods are available when the selected currency has an associated reference IRC as defined in the Rate Management.

You can map your forecast scenario with Behavior Pattern Rule. For more information, see the Behavior Pattern Rule Mapping section.

Examples of Currency Forecasting

The following examples use the data to demonstrate currency forecast methods:

- Reporting currency = U. S. dollars (USD is shown in the title bar)
- Local currency = Australian dollars – (converting from Australian dollars (AUD) to USD)
- Exchange rate loaded from Rate Manager = 1.108 AUD to 1 USD (rate in effect on the as-of date, 06/30/09)
- Modeling period = 07/01/2009 to 06/30/2010

For all the examples, start with the following:

1. Create a new Forecast Rates Assumption Rule with USD as the Reporting Currency.
2. In the **Forecast Rates** window, add a scenario:
 - a. Click **Add**.
 - b. Type a **Name** for the scenario.
3. Click **Apply**.

Flat Method: Calculate the exchange rate of Australian dollars to \$1 U. S., modeling **NO change** in the exchange rate during the modeling period.

In the **Forecast Rates** window, follow these steps:

1. From **Currency Codes**, select **AUD: Australian Dollar**
2. From **Currency Forecast Method**, click **Flat**.

3. Click **View**.
Under **Rate Value**, see the exchange rate: \$1.108 AUD s equal \$1 USD. This rate is applied uniformly to all date buckets, based on the rate in effect at the As Of Date in the **Application Preferences**.
4. Click **OK**.
5. Click **Save** in **Forecast Rates** window.

Structured Change: Model a change in the exchange rate so that the rate increases by a total of 0.5% over four months, levels off for four months, and then drops a total of 0.25% over three months.

In the **Forecast Rates** window, follow these steps:

1. From **Currency Codes**, select **AUD: Australian Dollar**.
2. From **Currency Forecast Method**, select **Structured Change**.
3. Click **Define**.
4. Add rows using **Add** and enter bucket numbers and rate changes.
5. Use the **Excel Import or Export** feature to add the rate changes. For more information, see the Excel Import or Export section.
6. Click **Apply**.
7. Click **View** to see the output table.
8. After viewing the **Currency Codes** in **Currency Codes Structured Change** window, click **OK**.
9. Click **Save** in **Forecast Rates** window.

Direct Input: Model a change in the exchange rate so that rates reflect a stronger U. S. dollar during the spring of 2010.

In the **Forecast Rates** window, follow these steps:

1. From **Currency Codes**, select **AUD: Australian Dollar**.
2. From **Currency Forecast Method**, select **Direct Input**.
3. Click **Define**.
4. Click **Apply**.
5. Click **View** to see the output table.
6. Use the **Excel Import or Export** feature to add the rate values. For more information, see the Excel Import or Export section.
7. After viewing the Currency Codes in **Currency Codes Structured Change** window, click **OK**.
8. Click **Save** in **Forecast Rates** window.

Parity: Model a period of rising interest rates for the U. S. and Australian dollars. Use the parity method to forecast the exchange rate of Australian dollars to \$1 U. S. Parity is calculated based on the forecast interest rates of the reference IRCs of the Australian dollar and the U. S. dollar.

1. In the **Forecast Rates** window, forecast changes in the U. S. dollar interest rate:
2. From **Currency Codes**, select **USD: US Dollar**
3. From **Interest Rate Codes**, select **Treasury Index**.

4. From **Rate Forecast Method**, click **Direct Input**.
5. Click **Define**. Enter interest rate changes for 02/01/2010 through 04/30/2010 in **Currency Codes Structured Change** window.
6. Click **Apply**.
7. In the **Forecast Rates** window, forecast changes in the Australian dollar reference interest rate.
8. From **Currency Codes**, select **AUD: Australian Dollar**
9. From **Interest Rate Codes**, select **IRC AUD**.
10. From **Rate Forecast Method**, select **Direct Input**
11. Click **Define**. Enter interest rate changes for 02/01/2010 through 04/30/2010 in **Currency Codes Structured Change** window.
12. Click **Apply**.
13. Click **Save** in **Forecast Rates** window.

The **View** option is not available for the parity feature. To view the results, enable the **Forecast Rate** option in the **Audit** block of **ALM process** window for the relevant interest rate codes. Audit results are written to the FSI_INTEREST_RATES_AUDIT table.

No Arbitrage: Forecast the exchange rates required to maintain equilibrium between the U. S. and Australian dollars. This forecast is based on the historical interest rates from the reference IRC of each currency. This example assumes that the following reference IRCs are assigned in Rate Management:

- U. S. dollar: Treasury Index
- Australian dollar: IRC AUD

In the **Forecast Rates ID** window, follow these steps:

1. From **Currency Codes**, select **AUD: Australian Dollar**
2. From **Currency Forecast Method**, select **No Arbitrage**.
3. Click **Save**.

The **View** button is not available for the **No Arbitrage** feature. To view the results, enable the **Forecast Rate** option in the **Audit** block of the **ALM Process** window for the relevant Interest Rate Codes. Audit results are written to the FSI_INTEREST_RATES_AUDIT table.

16.3 Economic Indicator Forecast Methods

The following Economic Indicator methods are available.

Table 16-2 Economic Indicator Forecast Methods

Method	Description
Flat	Forecast no change in the economic index for all dates beginning with the as-of date.
Structured Change	Forecast the economic index as an incremental change from the previous period.
Direct Input	Type-specific economic index rates to use in forecasting.

Examples of Economic Index Forecasting

Flat: Viewing an economic index forecasted for New Residential Sales.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Economic Indicators**, select **New Residential Sales**.
3. From **Economic Indicator Forecast Method**, select **Flat**
4. Click **View**.

The **Economic Indicator View** window displays the rates forecasted for **the New Residential Sales**.

Here, the **Total Rate Change** field will be consistent with the **Value** field of the **Economic Indicator** window.

Structured Change: Model a gradual increase for six months in New Residential Sales.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Economic Indicators**, select **New Residential Sales**.
3. From **Economic Indicator Forecast Method**, select **Structured Change**.
4. Click **Define**. Enter the interest rate change.
5. Click **Apply** in the **Economic Indicator View Structured Changes** window
6. Click **View** in the **Forecast Rates** window
7. You can see the incremental increase over the six months ($150 = 25 \text{ per month} * 6 \text{ months}$)

Direct Input: To use the Direct Input method, see the Structured Change section with the following steps:

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Economic Indicators**, select **New Residential Sales**
3. From **Economic Indicator Forecast Method**, select **Direct Input**.
4. Click **Define**. Enter the interest rate change. Enter New Residential Sales data (forecasted values for each bucket rather than forecasted values changes over a period of one or more buckets).

After defining the forecast method for an Economic Indicator, you can undo the definition by selecting the relevant Economic Indicator (green color check-box) and click **Un-Define**. This will bring the Economic Indicator to its original undefined state indicated by the Red Color check box. Use this if you want to delete an Economic Indicator from the Economic Indicator of the Rate Management after defining the forecast method for it.

16.4 Interest Rate Forecast Methods

The following Interest Rate Forecast methods are available.

Table 16-3 Interest Rate Forecast Methods

Method	Description
Flat	Forecast no change in the interest rate for all dates beginning with the as-of date.
Structured Change	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)
Direct Input	Type interest rates directly for any modeling period or interest rate term.
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.
Change from Base	Make incremental changes to an existing forecast scenario.
Yield Curve Twist	Flatten or steepen the yield curve around a specific point on the curve.
Standardized Approach Shocks	Forecast an interest rate shock according to one of the BSCB Standardized Approach shock specifications (Scenario-level specification).
Enhanced Approach Shocks	Forecast an interest rate shock according to user specifications that will flow into IRRBB Table B reporting.

The following Interpolation Methods are available.

Table 16-4 Interpolation Methods

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.

Table 16-4 (Cont.) Interpolation Methods

Method	Description
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> $Y = a + b X^1 + c X^2 + d X^3 + e X^4$ <p>The end knot points satisfy equations for one curve and all intermediate points satisfy two curves. Hence in a scenario with a minimum number of knot points, there will be 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 will (where necessary) perform 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 will perform 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.

Note

You must supply the input data for all term points of an IRC. This applies to historical rate and direct input forecast method. If data of one or more terms points is not given, then it can lead to errors during calculation.

Examples of Interest Rate Forecasting

You can generate the forecast rates for 360 calendar months, Moody's structured cashflow library's integration is done with ALM. The first month corresponds to the first calendar month of As of Date. The subsequent months are full calendar months. For example, if As of Date is 30 APR 2013, then the first month is April 2013. The second month will be May 2013 and so on. ADCo model requires two IRCs for an ARM instrument (First is 2 Yr, 10 Yr IRC and second is the Prepayment Index IRC). For a fixed-rate instrument, 2 Yr, 10 Yr IRC will only be passed.

You can forecast an IRC which has various term points including 2 Year and 10 Year term points. The term points 2 Year (or 24 Months) and 10 Year (or 120 Months) are available. The engine will identify 24 Months term point as 2 Years and 120 Months as 10 Years. If the term point (or points) are unavailable, then the engine will be unable to send the forecast rates for the IRC.

The engine will match the last day of the calendar month with the income simulation bucket (ISB) dates and fetch the rate corresponding to the term point to pass to the ADCo model while converting from ISB to 360 months. While converting from ISB to 360 months, if the total ISB size is less than 360 months, then the last available rate must be extended till the 360th month. For example, if the ISB covers only 240 months, then the 240th month rate will be applied from the 241st to 360th months.

When **Show 360 months Buckets** check box is enabled, 2-year (24 months) and 10-year (240 months) term points will be highlighted in red color.

The **Show 360 months Buckets** check box is displayed only if the Curve Identifier is defined for base IRC.

Flat: Viewing U. S. dollar interest rates forecasted for the Treasury Index.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Interest Rate Codes**, select **US Treasury Curve**.
3. From **Rate Forecast Method**, select **Flat**.
4. Select the **Interpolation** method.
5. Click **View**.

After clicking **View**, the **Interest Rate View** window displays the rates forecasted for the Treasury Index in the ISB view. Here, Show Rates for **Show 360 Months Buckets** check box is not selected by default. On selecting this check box, the results will be displayed for the 360 months view. You can not enter the values against buckets for Flat method in 360 months or ISB view. The **Show 360 Months Buckets** check box is available by default if the ADCo LDM, Moody's structured cashflow library, or both functions are mapped to you.

Structured Change: Model a gradual increase for six months in U. S. dollar interest rates.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Interest Rate Codes**, select **US Treasury Curve**.
3. From **Rate Forecast Method**, select **Structured Change**.
4. Select the **Interpolation** method.
5. Click **Define** and enter a shock amount to apply to the IRC in absolute or percentage change. You can designate either absolute rate change or percent rate change.
6. Enter the Interest Rate changes.
Use the **Excel Import or Export** feature to add the interest rate changes. For more information, see the Excel Import or Export section.

7. Click **Apply**.
8. Click **View** in **Forecast Rates** window.
After clicking **View**, the **Interest Rate View** window displays the rates forecasted for the Treasury Index in the ISB view. Here, Show Rates for **Show 360 Months Buckets** check box is not selected by default. On selecting this check box, the results will be displayed for the 360 months view. You cannot enter the values against buckets for Flat method in 360 months or ISB view. The **Show 360 Months Buckets** check box is available by default if the ADCo LDM, Moody's structured cashflow library, or both functions are mapped to you.
9. The rate increases you entered in step 5 are apportioned equally over six months in this case August to January. Therefore, in monthly buckets 2-7, you will expect to see the following increments added to the Treasury Index Interest Rates.

Table 16-5 Example of Structured Change

3 month	6 month	1 year	2 year
$1/6 \text{ of } 1.00 = 0.1667$	$1/6 \text{ of } 1.25 = 0.2083$	$1/6 \text{ of } 1.50 = 0.25$	$1/6 \text{ of } 1.75 = 0.2917$

10. The interest rates in buckets 2-7 reflects the increases.

Direct Input: To use the Direct Input method, see the Structured Change sections with the following modifications:

1. In step 5, enter Interest Rates (forecasted rates for each bucket rather than forecasted rate changes over a period of one or more buckets).
2. In step 3, select **Direct Input**.
3. During defining the Direct Input, **Show 360 Months Buckets** check box is selected by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to you. If you enter the forecast rates against 360 months, the UI converts the same across the Income Simulation Buckets.
4. Similarly, you can enter the data for income simulation buckets after unchecking the **Show 360 Months Buckets**. Now, the UI converts the rates from ISB to 360 months view.

When you switch from the ISB to 360 months view or vice versa, you will get a message: *Switching the view will erase the existing definition. Do you want to continue?* . Click **YES** to erase the definition.

- Enter the data across ISB and select the **Show 360 Months Buckets** check box, it overrides that data for a few of the 360 months buckets.
- Enter the data across 360 months buckets and do not select the **Show 360 Months Buckets** check box, it overrides that data for a few of the ISB.

After defining the rates in 360 Months buckets and clicking **View**, the **Interest Rate View** window displays the result in 360 months view. Here, the **Show 360 Months Buckets** check box is selected by default.

If you have defined the rates in the ISB and click **View**, the **Interest Rate View** window displays the result in the ISB view. Here, the **Show 360 Months Buckets** check box is disabled by default. On selecting this check box, the results will be displayed for the 360 months view. You cannot enter the values against buckets for this method in 360 months or ISB view.

Use the **Excel Import or Export** feature to add the interest rates. For more information, see the Excel Import or Export section.

Implied Forward: View U. S. dollar interest rates forecasted from the Treasury Index rates and terms in effect at the as-of date and consistent with the modeling buckets.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Interest Rate Codes**, select **US Treasury Curve**.
3. From **Rate Forecast Method**, click **Implied Forward**.
4. Click **Define** and enter a shock amount to apply to the IRC in absolute or percentage change. You can designate either absolute rate change or percent rate change. If no change is required to the base curve, leave at 0.0, and click **Apply**.
Use the **Excel Import or Export** feature to add the absolute or percent rate changes. For more information, see the Excel Import or Export section.
5. Click **View** to view the Implied Forward Rates.

After clicking **View**, the **Interest Rate View** window displays the results in the ISB view. Here, **Show Rates for Show360 Months Buckets** check box is disabled by default. On selecting this check box, the results will be displayed for the 360 months view. You cannot enter the values against buckets for this method in 360 months view. The **Show 360 Months Buckets** check box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to you.

Change from Base: Select a Forecast Rate scenario that you have already defined and saved and change it by typing incremental changes to rates. For example, you might want to forecast for a scenario 1 based on incremental changes to the rates in scenario 2.

After clicking **View**, the **Interest Rate View** window displays the results in the ISB view. Here, **Show Rates for 360 Months Buckets** check box is disabled by default. On selecting this check box, the results will be displayed for the 360 months view. You cannot enter the values against buckets for this method in 360 months view. The **Show 360 Months Buckets** check box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to you.

Yield Curve Twist: Setting up a scenario to steepen or flatten a given yield curve.

1. From **Currency Codes**, select **USD: US Dollar**.
2. From **Interest Rate Codes**, select **US Treasury Curve**.
3. From **Rate Forecast Method**, select **Yield Curve Twist**.
4. Click **Define**.
 5. Enter the interest rate changes (flattening the curve around the three-month term point).
5. Click **Apply**.

After clicking **View**, the **Interest Rate View** window displays the results in the ISB view. Here, **Show Rates for Show 360 Months Buckets** check box is disabled by default. On selecting this check box, the results will be displayed for the 360 months view. You cannot enter the values against buckets for this method in 360 months view. The **Show 360 Months Buckets** check box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to you.

After you have defined the Forecast method for an Interest Rate Code, you can undo the definition by selecting the relevant Interest Rate Code (green color check box) and clicking the **Un-Define** option. This will bring the Interest Rate Code to its original undefined state

indicated by **Red Color** check box. This step is necessary if you want to delete an Interest Rate Code from the **Interest Rates** window of the **Rate Management** window after defining the Forecast method for it.

Standardized Approach Shocks

Note:

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 check box 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** window, select the **Scenario Type** to apply the scenario.
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 check box 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**.
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.

16.5 ALM Volatility Codes

This feature allows you to set a static shock percentage (positive or negative) to be applied to ALM Volatilities in a **Forecast Rates** window.

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

This pane displays the list of Interest Rate Codes that are defined as ALM Volatility Surface. To view or edit an ALM Volatility, following are the prerequisites:

- Interest Rate as an ALM Volatility Surface.
- Have a matching currency to the Forecast Rates Reporting Currency

For more information, see the Interest Rates Details section.

Following is an example to define the Shock Percentage for ALM Volatility Surface. These steps can be repeated for each new scenario.

1. From **Currency Codes**, select a **Currency**, for example, **USD: US Dollar**. Only ALM Volatility Surfaces of the same currency will be available.
2. In the **ALM Volatility** block, select a **Vol Surface**.
3. Enter shock percentage for respective ALM Volatility. You can enter positive or negative values here (between -99.9999 and 1,000).
4. Click **Apply**. A confirmation box is displayed.
5. To view the results of the shock, select an **ALM Volatility**, and then click **View**.
6. To remove the shock percentage, click **Un-Define**.

16.6 Behavior Pattern Rule Mapping

The **Behavior Pattern Rule Mapping** drop-down list shows the list of existing Behavior Pattern Rule. Select any behavior pattern 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. For more information about the Behavior Pattern Rule, see the Behavior Pattern Rule section.

16.7 Editing a Forecast Rate

To edit a Forecast rate, follow these steps:

1. From **Currency Codes**, select the **Currency Code** (for example, **IND: INDS**).
2. Here, initially the IRC is in Red color and after selection (that is, Editing of Currency Code) and clicking **Apply**, it turns to Green color.
3. Selecting a different IRC means the addition of an IRC and not the deletion or Deselection of the rest of the IRCs. After reopening the Forecast Rate, the lowest IRC code will be selected by default. If the scenario is defined as a **Standardized Approach** scenario, then this definition can be changed or removed.
4. Select the **Edit** for a **Standardized Approach** scenario.
5. To change the scenario from one SA shock to another SA shock, select the new definition. Do this to change all the qualifying SA IRCs to the new definition.

6. To remove a SA definition to the current scenario, select the **Scenario Type** as **NONE**. This will remove all Forecast Method definitions for all qualified SA IRCs.
7. To change the SA definition to an Enhanced Approach definition, select an available **Enhanced Approach** scenario type. This will remove all Forecast Method definitions for all qualified SA IRCs.
8. Click **Apply**.

If the scenario is defined as an **Enhanced Approach** scenario, this definition can be changed or removed.

1. Select the **Edit** for an **Enhanced Approach** scenario.
2. To change the scenario from one EA shock to another EA shock, select the new definition. Changing from one EA scenario to another EA scenario will not change the IRC Forecast Methods already defined.
3. To remove an Enhanced Approach definition to the current scenario, uncheck the check box **IRRBB Standardized Rate Shocks**. Changing from an **EA Scenario** type to **NONE** will not change the currently defined IRC Forecast Methods.
4. To change an existing Enhanced Approach definition to a Standardized Approach scenario, select a currently available Standardized Approach type in the **Scenario Type** drop-down list. This will change all relevant IRC Forecast Methods definitions.
5. Click **Apply**.

16.8 Data Loader Procedure

Stage Forecast Rate Loader procedure loads forecast rates definitions into the OFS ALM Forecast rates tables from the staging tables. Forecast rate parameters for Direct Input and Structured Change methods within a scenario for Exchange Rates, Interest Rates, and Economic Indicators are loaded from staging to the Financial Services Data Model. After loading the forecast rates, you can view the information in the Forecast Rate Summary page.

For more information on how to set up the procedure, see the Stage Forecast Rates Loader section of Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

To execute the **Data Loader** procedure, follow these steps:

1. Navigate to the **Forecast Rates Summary** page.
2. Click **Data Loader Execution**. This will execute all the available Forecast Rates set up in the data loader for Direct Input and Structured Change methods. A warning message is displayed: *Update all available Forecast Rates?*. Click **Yes**.

17

Cash Flow Processing

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.

Topics

- [Cash Flow Processing Summary Page](#)
- [Creating Cash Flow Process](#)
- [Executing Cash Flow Process](#)
- [View Cash Flow Process log](#)

17.1 Cash Flow Processing Summary Page

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 modelling horizon for which you want to calculate cash flows.
- Specify the prepayment rule, forecast rate, and other assumptions to be used in the process.
- Define the output preferences.
- Execute the Cash Flow process and generate results.

Figure 17-1 Cash Flow Process Summary page

The screenshot shows the 'Cash Flow Process Summary' page. At the top, there is a blue header with the title and three icons: a plus sign, a refresh sign, and a question mark. Below the header, there are filter buttons for 'Name', 'Description', and 'Folder: CFESEG'. To the right, there is a 'Sort By' dropdown menu set to 'Process Id' and several navigation icons. A search bar is located below the filters. Below the search bar, there is a 'Field Search' input field. 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
200006	CFE Process1	As of Date to Maturity Date	CFESEG	Read/Write	CFEUSER	2021.Feb.25	SUCCESS	...
200007	CFE Process2	As of Date to Maturity Date	CFESEG	Read/Write	CFEUSER	2021.Feb.24	SUCCESS	...
200011	CFE Process 3	As of Date to Maturity Date	CFESEG	Read/Write	CFEUSER	2021.Jan.16	SUCCESS	...

At the bottom of the table, there is a pagination bar showing 'Page 1 of 1 (1-3 of 3 items)' and navigation icons.

The definitions based on the search criteria are listed under the List of Cash Flow Process. This is the search section that contains multiple parameters. You can specify one or multiple

search criteria in this section. When you click Search, depending upon the search criteria, this filters and displays the relevant search combination parameters under the Cash Flow Process Summary as a list.

Figure 17-2 Searching a Cash Flow Process



The Cash Flow Process Summary window displays the following columns.

Table 17-1 Cash Flow Process rule – Fields and Descriptions

Column	Description
Process ID	Displays the Process ID of Cash Flow Process rule.
Name	Displays the Cash Flow Process rule'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 rule 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 Edit rule.
Last Run Date	Displays the Date and Time when Cash Flow Process was run last.
Status	Displays the status of the rule.
Action	Displays the list of actions that can be performed on the Cash Flow Process rule. For more information, see Cash Flow Process rule – Icons and Descriptions.

The Action column on the Cash Flow Process Summary page offers several actions that allow you to perform different functions. The following actions are available for the Cash Flow Process rule.

Table 17-2 Cash Flow Process rule – Icons and Descriptions

Fields	Description
Add	Click Add icon to build a new Cash Flow Process rule.
View/Edit	Click the Action column and select View/Edit to view or edit the contents of a Cash Flow Process rule in read/write format.

Table 17-2 (Cont.) Cash Flow Process rule – Icons and Descriptions

Save As	Click the Action column and select Save As to create a copy of an existing Cash Flow Process rule.
Delete	Click the Action column and select Delete to delete an existing Cash Flow Process rule.
Execute	Click the Action column and select Execute to execute an existing Cash Flow Process rule. After clicking Execute , the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run . For more information, see Executing Cash Flow Process section.
Execute Details	Click the Action column and select Execute Details to view execution details of the Cash Flow Process rule.

17.2 Creating 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.

Figure 17-3 Create Cash Flow Process page

The screenshot shows a multi-step wizard for creating a Cash Flow Process. The first step, 'Process Details', is currently active. The form contains the following fields and options:

- Name:** A text input field with a 'Required' label.
- Description:** A text input field.
- Folder:** A dropdown menu currently showing 'CFESEG'.
- Access Type:** Two radio button options: 'Read Only' and 'Read/Write'. The 'Read/Write' option is marked as 'Required'.

At the bottom of the form are 'Apply' and 'Cancel' buttons. A progress bar at the top indicates the current step (1) and the remaining steps (2-5).

3. Enter the details shown in the following table.

Table 17-3 List of process details used for Creating Cash Flow Process

Parameter	Description
Name	Enter the name of the Cash Flow Process rule.

Table 17-3 (Cont.) List of process details used for Creating Cash Flow Process

Description	Enter the description of the Cash Flow Process rule.
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 17-4 Creating Cash Flow Process

- Enter the Source Data details shown in the following table.

Table 17-4 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.
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 17-5 Creating Cash Flow Process

Progress: 1 Calculation Elements

Calculation Date Range Required Tenor Multiplier

Prepayment Rule Folder: CFSEEG Prepayment Rule

Forecast Rate Scenario Folder: CFSEEG Forecast Rate Scenario

Enable Holiday Calendar

Amortization of Premiums and Discounts Selected Dates

Product Hierarchy Folder: CFSEEG Product Hierarchy

Product	Currency	Include Accrued Interest?	Interest Credited	Model With Gross Rates	Holiday Calculation Option	Holiday Calendar	Holiday Rolling Convention
No data to display.							

> Audit Trail

> User Comments

7. Enter the Calculation Elements shown in the following table.

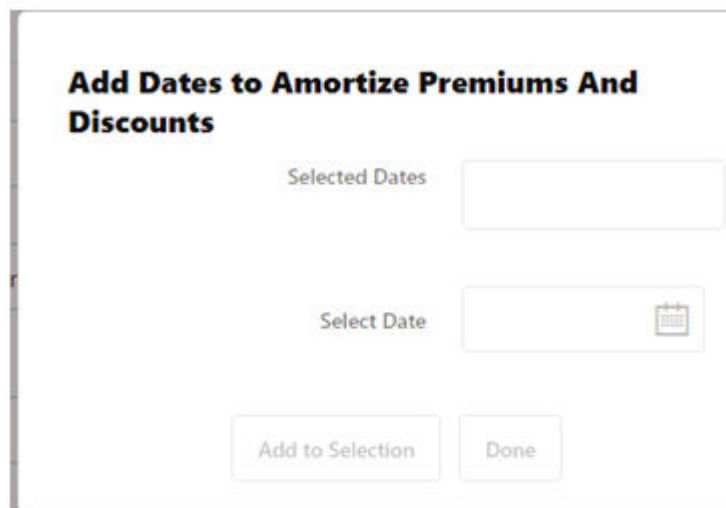
Table 17-5 List of Calculation Elements details used for Creating Cash Flow Process

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. <p>For more information, see the Cash Flow Engine Data Dictionary Guide.</p>
Prepayment Rule	<p>Select the Folder and Prepayment Rule you want to be applied during cash flow calculation. See Prepayment Rule, to set up prepayment methods. This is an optional step.</p>
Forecast Rate Scenario	<p>Select the Folder and Forecast Rates rule 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>
Enable Holiday Calendar	<p>Select Yes or No from Enable Holiday Calendar drop-down list. No is selected by default. If this is selected as Yes, then 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.</p>

Table 17-5 (Cont.) List of Calculation Elements details used for Creating Cash Flow Process

Parameter	Description
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: <ol style="list-style-type: none"> Click Add icon next to Selected Dates field.

Figure 17-6 Amortization of Premiums and Discounts

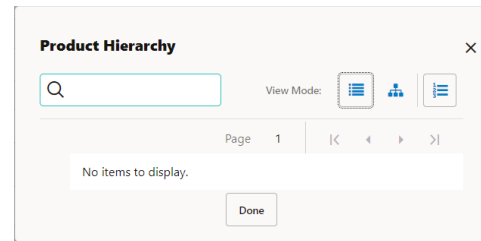


b. Add one or more dates on which you want to amortize premium/discount using Calendar icon and click Add to Selection.

Table 17-5 (Cont.) List of Calculation Elements details used for Creating Cash Flow Process

Parameter	Description
Product Hierarchy Folder	<p>You can specify some processing parameters at product-currency combination. To do product hierarchy is used.</p> <p>Select the Folder from the Product Hierarchy Folder list and Product Hierarchy on which you want to specify parameters:</p> <ol style="list-style-type: none"> 1. Click Add icon next to the Product Hierarchy field.

Figure 17-7 Product Hierarchy Folder



2. Select one or more products using the corresponding check-box and click **Done**.

8. Click Add to add the defined calculation elements for processing. The list of product is displayed with the following details:

Table 17-6 Product Hierarchy Selection

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.

Table 17-6 (Cont.) Product Hierarchy Selection

Parameter	Description
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.
Holiday Rolling Convention	The default value is Unadjusted and is enabled, only when Holiday Calendar is selected. This can have the following values: <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 • Many institutions have month-end accounting procedures to use this.

9. Click **Apply** to navigate to the Output Preferences section.

Figure 17-8 Output Preferences

10. Enter the Output Preferences details shown in the following table.

Table 17-7 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
Forecast Economic Indicators	Select the Economic Indicators for which you want the engine to write forecasted interest rates in the database table

11. Click Apply to navigate to the Freeze Process section.

Figure 17-9 Freeze Process

The screenshot shows the 'Freeze Process' configuration page. At the top, there is a progress bar with five steps: Process Details, Source Data, Calculation Elements, Output Preferences, and Freeze Process. The 'Process Details' section is expanded and contains the following fields: Name (New Forecast Rule), Description (aa), Folder (CFESEG), and Access Type (Read/Write). The 'Source Data' section is expanded and contains: Data Source (Cash Flow Engine Instrument), Data Filter (Folder CFESEG), and Data Filter. The 'Calculation Elements' section is expanded and contains: Calculation Date Range (As Of Date To Specified Future Date), Tenor (10), Multiplier (Days), Prepayment Rule (Folder CFESEG), Forecast Rate Scenario (Folder CFESEG), Amortization of Premiums and Discounts (Amortize on Payment Dates), and Product Hierarchy (Folder CFESEG). Below this is a table with columns for Product, Currency, Include Accrued Interest?, Interest Credited, Model With Gross Rates, Holiday Calculation Option, Holiday Calendar, and Holiday Rolling Convention. The table is currently empty with the message 'No data to display.' The 'Output Preferences' section is expanded and contains: Forecast Interest Rates and Forecast Economic Indicators. At the bottom, there are Save and Cancel buttons, and expandable sections for Audit Trail and User Comments.

12. Verify the changes and click **Save**.

17.3 Executing Cash Flow Process

The Execute option formulates and executes the CFE processing request and generates results.

Prerequisites

Predefined Cash Flow Process

You can execute Cash Flow process using following methods:

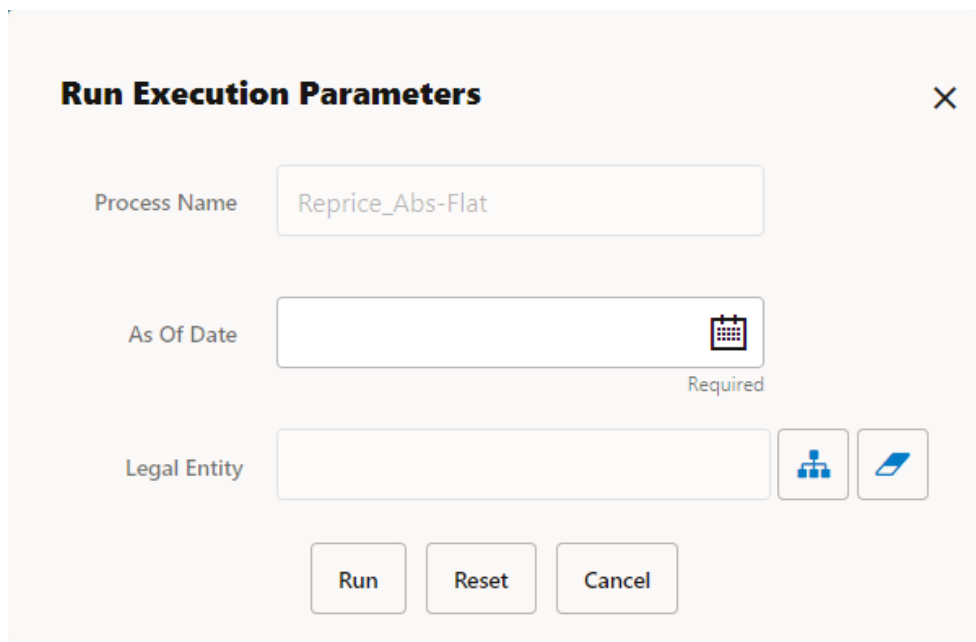
- Cash Flow Process UI
- Batch Maintenance

17.3.1 Using Cash Flow Process UI

To execute the cash flow process, follow these steps:

1. Navigate to the **Cash Flow Process** summary page.
2. Search for a rule.
3. Click the **Action** column and select Execute to execute an existing Cash Flow Process rule. The **Run Parameter Execution** window is displayed.

Figure 17-10 Execution using Cash Flow Process UI



Run Execution Parameters [X]

Process Name: Reprice_Abs-Flat

As Of Date: [Calendar Icon] Required

Legal Entity: [Tree Icon] [Document Icon]

[Run] [Reset] [Cancel]

Select the As of Date (Execution Date) and Legal Entity, and then click **Run**.

4. 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. From the **Execution Details**, you can access a report that provides details of any cash flow errors that were identified by the process.

17.3.2 Batch Based Procedure

Cash Flow Processes can also be executed as batch processes. The following approaches are available:

- ICC Batch

To execute the batch with ICC Batch, follow these steps:

1. From the LHS menu, select **Common Object Maintenance**, select **Operations**, and then select **Batch Maintenance**.
2. Create a new batch.
3. Enter the Batch Name and Description.
4. To add a task, click the Add button under the Task Details section.
5. Define the Task ID and Description
6. Select Components as "WORKFLOW_EXECUTION".
7. Do not change the default values populated for fields "Datastore Type", "Datastore Name", "Primary IP For Runtime processes".
8. Input the following required parameters:
 - **Object ID:** \$objectId
 - **Workflow:** "CASH_FLOW_PROCESS_EXEC"
 - **Optional Parameters:**
"RUN_P1_DATE:EXECDATE,RUN_P2_INFODOM:OFSCFEINFO,RUN_P3_ID:200023,RUN_P4_USERID:CFEUSER,RUN_P5_DATE_FORMAT:yyyyMMdd,RUN_P6_AS_OF_DATE:EXECDATE,RUN_P7_LEGAL_ENTITY_ID:-1".

The value for parameter "RUN_P3_ID" should be taken from column "PROCESS_ID" of table "FSI_M_CFE_PROCESS_DETAILS" for Cash Flow Process OR column "PROCESS_ID" of table "FSI_M_CFE_EDITS_DETAILS" for Cash Flow Edits. Replace the value 200023 given against "RUN_P3_ID" with the value available in the table for the respective Business Definition.

Replace the value CFEUSER given against "RUN_P4_USERID" with the logged in user id which will be used to audit the last executed by.

Replace the value -1 given against "RUN_P7_LEGAL_ENTITY_ID" with the actual legal entity id to process the instruments.

9. Save the rule and Execute the batch with Batch ID and MIS Date.

17.4 View Cash Flow Process Log

To view the cash flow edit errors, warnings, and info, navigate to ftpshare/logs folder and view CashFlowProcessExecution.log and ForecastRatesServicesExecution.log files.

You can view the log using Batch Monitor also. To view the logs from Batch Monitor, follow these steps:

1. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Batch Monitor**.
2. Select the Batch Run ID.

3. View the Task Details of Cash Flow Edits Execution.

Figure 17-11 View Cash Flow Process Log

Batch Run Details Start Monitoring Stop Monitoring

Information Date: 20210109 Monitor Refresh Rate (seconds): 5

Batch Run ID: OFSCFEINFO_1610181530031_20210109_1

Batch Status

Batch Run ID	Batch Status
OFSCFEINFO_1610181530031_20210109_1	Successful

Task Details

Task ID	Task Description	Metadata Value	Component ID	Task Status	Task Log
<input type="checkbox"/> Task1	CashFlowProcessExecution	CashFlowProcessExecution	TRANSFORM DATA	[13314] Successful	View Log

4. Click **View Log**.

18

Cash Flow Edits

This module discusses the procedure for validating and cleansing your Instrument table data before you process it to generate cash flow-based results.

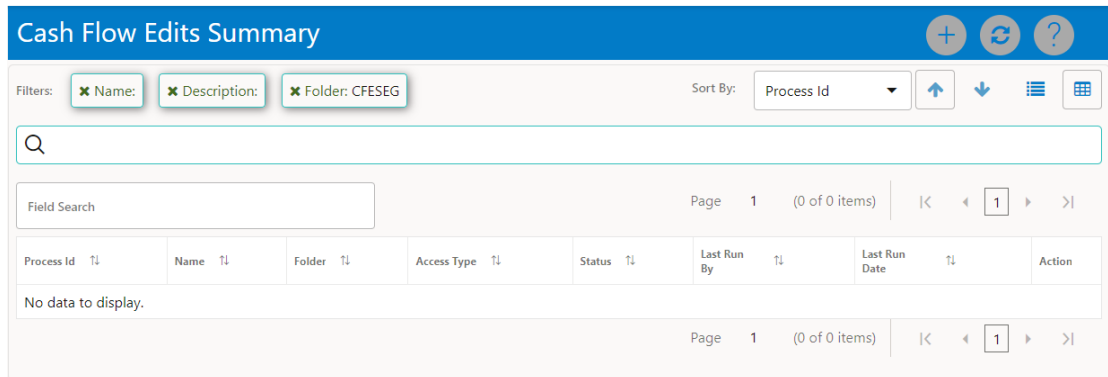
The cash Flow Edit process allows you to verify the accuracy and check the completeness of your Instrument table data.

The procedure for working with and managing a Cash Flow Edit process is similar to that of the Oracle Cash Flow Engine processes.

Topics

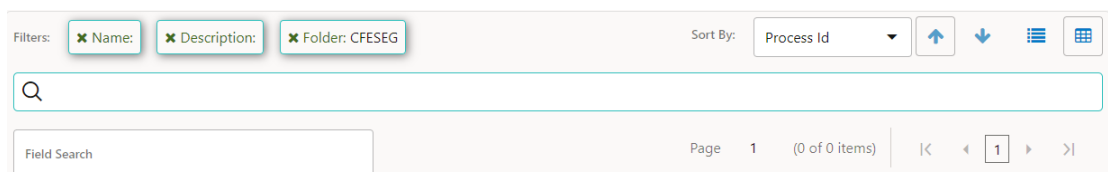
- [Creating Cash Flow Edit Process](#)
- [Executing Cash Flow Edit Process](#)
- [View Cash Flow Edit Process Execution Details](#)

Figure 18-1 Cash Flow Edit Summary page



The definitions based on the search criteria are listed under List of Cash Flow Edits. This is the search section that contains multiple parameters. You can specify one or multiple search criteria in this section. When you click Search, depending upon the search criteria, this filters and displays the relevant search combination parameters under the Cash Flow Edits Summary as a list.

Figure 18-2 Searching Cash Flow Edits



The Cash Flow Edits Summary window displays the following columns.

Table 18-1 Cash Flow Edits rule – Fields and Descriptions

Column	Description
Process ID	Displays the Process ID of Cash Flow Edit rule
Name	Displays the Cash Flow Edit rule's short name.
Folder	Displays the Folder name where Cash Flow Edit rule is saved.
Access Type	Displays the access type of rule. It can be Read-Only or Read/Write.
Status	Displays the status of the rule.
Last Run By	Displays the Name of the user who last runs the Cash Flow Edit rule.
Last Run Date	Displays the Date and Time when Cash Flow Edit was run last.
Action	Displays the list of actions that can be performed on the Cash Flow Edit rule. For more information, see Cash Flow Edit rule – Icons and Descriptions.

The Action column on Cash Flow Edits Summary page offers several actions that allow you to perform different functions. The following actions are available for the Cash Flow Edit rule.

Table 18-2 Cash Flow Edit rule – Icons and Descriptions

Fields	Description
Add	Click Add icon to build a new Cash Flow Edit rule.
View/Edit	Click on the Action icon against the Rule Name and select View/Edit to view or edit the contents of a Cash Flow Edit rule in read/write format.
Save As	Click on the Action icon against the Rule Name and select Save As to create a copy of an existing Cash Flow Edit rule.
Delete	Click on the Action icon against the Rule Name and select Delete to delete an existing Cash Flow Edit rule.
Execute	Click on the Action icon against the Rule Name and select Execute to execute an existing Cash Flow Edit rule. After clicking Execute , the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run . For more information, see Executing Cash Flow Edit Processes section.
Execute Details	Click on the Action icon against the Rule Name and select Execute Details to view execution details of the Cash Flow Edit rule.

You must create and run Cash Flow Edit processes on your Instrument table data before you submit cash flow engine based rules for processing.

18.1 Creating Cash Flow Edit Process

Creating a Cash Flow Edit process is a one-step process. You define both the attributes that uniquely describe a particular Cash Flow Edit process and the data to be validated or cleansed by that process on the Create Cash Flow Edit process page.

1. Navigate to the **Cash Flow Edits Summary** page.
2. Click **Add** . The Create Cash Flow Edits Process page is displayed.

Figure 18-3 Cash Flow Edit of CFE Processing

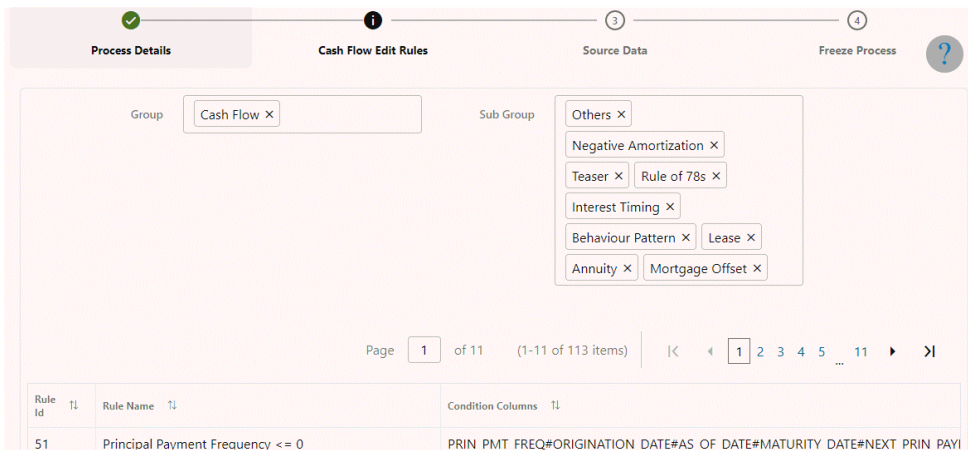
3. Enter the process details shown in the following table.

Table 18-3 List of process details used for Creating Cash Flow Edit Process

Parameter	Description
Name	Enter the name of the Cash Flow Edit rule.
Description	Enter the description of the Cash Flow Edit rule.
Preview Mode	Selecting this parameter allows you to view the results of running a Cash Flow Edit 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 Edit rule needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/Write.

4. Click **Apply** to navigate to Cash Flow Edit Rules section.

Figure 18-4 Creating Cash Flow Edits Rule



5. Enter the Cash Flow Edit details shown in the following table.

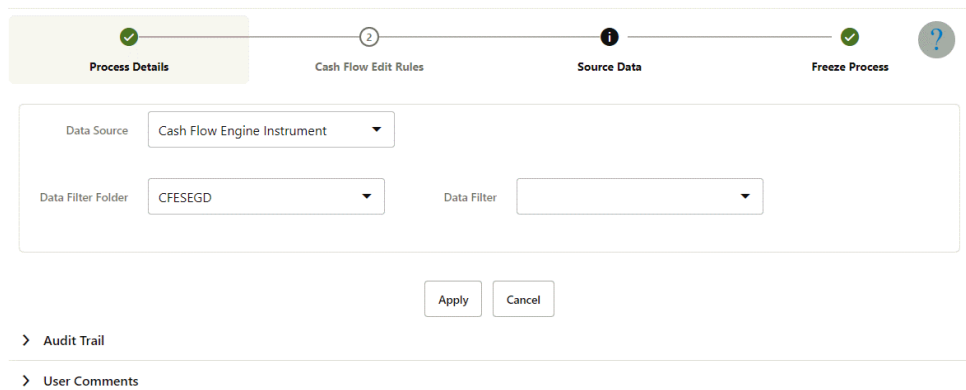
Table 18-4 List of Cash Flow Edit details used for Creating Cash Flow Edit Process

Parameter	Description
Group	Select the group of Cash Flow Edit Rules that you want to include in the process. For example, Cash Flow
Sub Group	Select the sub group of Cash Flow Edit Rules that you want to include in the process. The value of this field varies based on the selected Group. The list of Rule Ids with conditions is displayed.

Detail of rules for the selected group and sub-group are listed on the screen for reference.

6. Click **Apply** to navigate to the Source Data section.

Figure 18-5 Creating Cash Flow Edits Rule



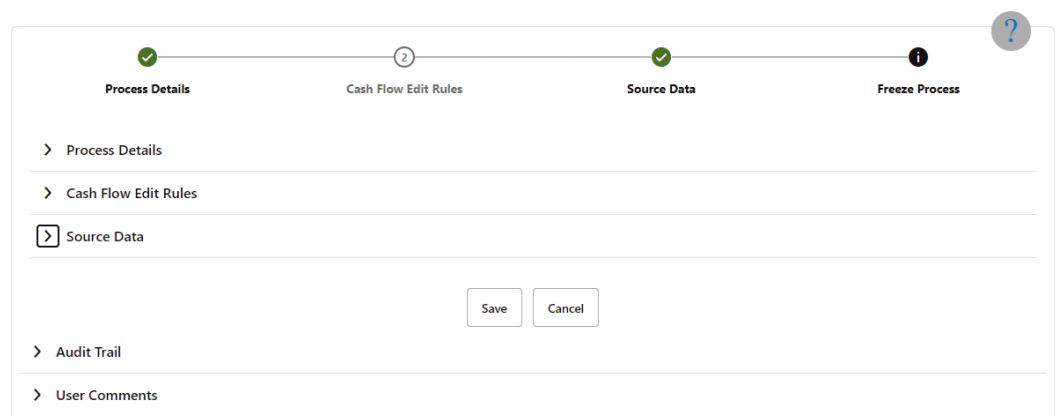
7. Enter the Source Data details shown in the following table.

Table 18-5 List of Source Data details used for Creating Cash Flow Edit Process

Parameter	Description
Data Source	This field allows you to select the Instrument tables that must be included in a Cash Flow Edit 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.

8. Click **Apply** to navigate to the Freeze Process section. Click Save on the Freeze Process window after verifying all the details.

Figure 18-6 Creating Cash Flow Edits Rule



The Cash Flow Edits process is saved and the Summary page is displayed.

18.2 Executing Cash Flow Edit Process

Execute a Cash Flow Edit 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_CFE_MESSAGES_MLS table for generated errors before the system updates the underlying records in the Instrument tables.

You can execute Cash Flow Edit process using following methods:

- [Cash Flow Edit UI](#)
- [Batch Maintenance](#)

18.2.1 Using Cash Flow Edit UI

To execute the cash flow edits process, follow these steps:

1. Navigate to the **Cash Flow Edits Summary** page.
2. Search for a rule.
3. Click in the **Action** column and select **Execute** to execute an existing Cash Flow Edit rule. The Run Parameter Execution window is displayed.

Figure 18-7 Using Cash Flow Edit UI

The screenshot shows a dialog box titled "Run Execution Parameters" with a close button (X) in the top right corner. It contains three input fields: "Process Name" with the value "Reprice_Abs-Flat", "As Of Date" with a calendar icon and a "Required" label below it, and "Legal Entity" with a tree icon and a document icon to its right. At the bottom are three buttons: "Run", "Reset", and "Cancel".

Select the As of Date (Execution Date) and Legal Entity, and then click Run.

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 rule before the system updates the underlying records in the Instrument tables, provided you selected Preview Mode while defining it. If the rule runs in Preview Mode, query the FSI_CFE_MESSAGES_MLS table for any generated errors.

18.2.2 Batch Based Procedure

Cash Flow Processes can also be executed as batch processes. The following approaches are available:

- ICC Batch

To execute the batch with ICC Batch, follow these steps:

1. From the LHS menu, select Common Object Maintenance, select Operations, and then select Batch Maintenance.
2. Create a new batch.
3. Enter the Batch Name and Description.
4. To add a task, click the Add button under the Task Details section.

5. Define the Task ID and Description.
 6. Select Components as "WORKFLOW_EXECUTION".
 7. Do not change the default values populated for fields "Datastore Type", "Datastore Name", "Primary IP For Runtime processes".
 8. Input the following required parameters:
 - Object ID: \$objectId
 - Workflow: "CASH_FLOW_PROCESS_EXEC"
 - Optional Parameters:
"RUN_P1_DATE:EXECDATE,RUN_P2_INFODOM:OFSCFEINFO,RUN_P3_ID:200023,
RUN_P4_USERID:CFEUSER,RUN_P5_DATE_FORMAT:yyyyMMdd,RUN_P6_AS_OF_DATE:EXECDATE,RUN_P7_LEGAL_ENTITY_ID:-1".
- The value for parameter "RUN_P3_ID" should be taken from column "PROCESS_ID" of table "FSI_M_CFE_PROCESS_DETAILS" for Cash Flow Process OR column "PROCESS_ID" of table "FSI_M_CFE_EDITS_DETAILS" for Cash Flow Edits. Replace the value 200023 given against "RUN_P3_ID" with the value available in the table for the respective Business Definition.
- Replace the value CFEUSER given against "RUN_P4_USERID" with the logged in user id which will be used to audit the last executed by.
- Replace the value -1 given against "RUN_P7_LEGAL_ENTITY_ID" with the actual legal entity id to process the instruments.
9. Save the rule and Execute the batch with Batch ID and MIS Date.

18.3 View Cash Flow Edit Process Log

To view the cash flow edit errors, warnings, and info, navigate to ftpshare/logs folder and view the CashFlowEditsProcessExecution.log file.

You can view the log using Batch Monitor also. To view the logs from Batch Monitor, follow these steps:

1. Navigate to **Common Object Maintenance**, select **Operations**, and then select **Batch Monitor**.
2. Select the Batch Run ID.
3. View the Task Details of Cash Flow Edits Execution.

Figure 18-8 View the Task Details

The screenshot shows the Batch Monitor interface. At the top, there are filters for 'Information Date' (20210113) and 'Monitor Refresh Rate (seconds)' (5). Below that, the 'Batch Run ID' is set to 'OFSCFEINFO_1610538617081_20210113_1'. The 'Batch Status' section shows a table with one row: 'OFSCFEINFO_1610538617081_20210113_1' with a status of 'Failed'. The 'Task Details' section shows a table with one row: 'Task1' with a status of '[10105] Failed'. The table has columns for Task ID, Task Description, Metadata Value, Component ID, Task Status, and Task Log. The 'Task Log' column contains a link 'View Log'. At the bottom, there is a pagination bar showing 'Page 1 of 1 (1-1 of 1 items)' and 'Records Per Page 15'.

Batch Run ID	Batch Status
OFSCFEINFO_1610538617081_20210113_1	Failed

Task ID	Task Description	Metadata Value	Component ID	Task Status	Task Log
Task1	CashFlowEditsExecution	CashFlowEditsExecution	TRANSFORM DATA	[10105] Failed	View Log

4. Click **View Log**.

19

Cash Flow Reports

This module discusses the procedure for viewing the Input and Output Report for an instrument.

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:

- Searching for Cash Flow Reports. For more information, see the Searching for Reports section.
- 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.

Figure 19-1 Cash Flow Report Summary Page

Account Number	As of Date	Legal Entity	Product	Currency
S90_TC023_NEGAMT_INFLA_ADV_AVA_ARR_SC2_YMMMD	10/09/2015	Default Member	Auto Loan	US Dollar
CFE_TC006_LEVEL_FK_A/360_ADV_SC1_D000	10/09/2015	Default Member	Home Loan	US Dollar
TC002_HCAL_CONVSCH_30/360_ARR_SC1	10/09/2015	Default Member	Home Loan	US Dollar
TC002_HCAL_NAMRT_30/360_ARR_SC1	10/09/2015	Default Member	Auto Loan	US Dollar
TC003_HCAL_NAMRT_A/365_ARR_SC1	10/09/2015	Default Member	Auto Loan	US Dollar
TC003_HCAL_NAMRTSCH_A/365_ARR_SC1	10/09/2015	Default Member	Auto Loan	US Dollar
TC004_HCAL_NAMRTSCH_A/365_ARR_SC1	10/09/2015	Default Member	Auto Loan	US Dollar
TC002_HCAL_VLPRNFK_AVA_ADV	10/09/2015	Default Member	Auto Loan	US Dollar
PP_IRC_S15_TC002_PRRCDNV_FK_30/A_ADV_SC1_DMMMD	10/09/2015	Default Member	Auto Loan	US Dollar

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

Figure 19-2 Cash Flow Report Search window

The Cash Flow Report Summary Window displays the following columns:

Table 19-1 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

Table 19-1 (Cont.) Cash Flow Process rule – Fields and Descriptions

Column	Description
Product	Displays the Product
Currency	Displays the Currency of the Instrument

Topics:

- [Viewing Cash Flow Report](#)
- [Downloading Cash Flow Report](#)

19.1 Viewing Cash Flow Report

To view Cash Flow Report of an account, perform the following steps:

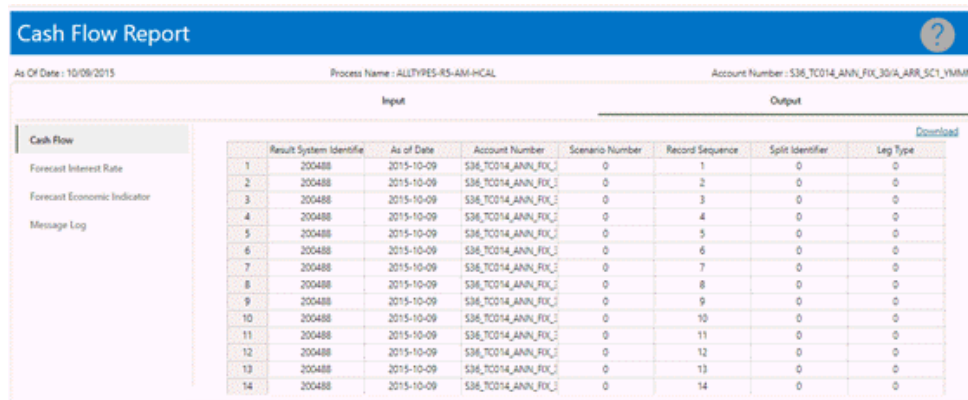
1. Navigate to the **Cash Flow Report Summary** Page.
2. Apply search criteria to get list of account numbers that are available. It is mandatory to select a Process and Execution Id to view the report. Click on an account number to view report.
The Cash Flow Report is displayed.
3. Select Input section. Here, you can view the Input information for the following fields:
 - Instrument Attributes
 - Payment Schedule
 - Rate Tiers
 - Embedded Options Schedule
 - Index History

 **Note:**

You can download the data in CSV or Excel format.

- **Instrument Attributes:** Displays the Input data from FSI_D_CFE_INSTRUMENTS 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_CFE_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_CFE_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_CFE_EMB_OPTS_SCHEDULE (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_CFE_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.

Figure 19-3 Cash Flow Report



	Result System Identifie	As of Date	Account Number	Scenario Number	Record Sequence	Split Identifier	Leg Type
Forecast Interest Rate	1	200488	2015-10-09	S36_T0014_ANN_FIX_	0	1	0
	2	200488	2015-10-09	S36_T0014_ANN_FIX_	0	2	0
Forecast Economic Indicator	3	200488	2015-10-09	S36_T0014_ANN_FIX_	0	3	0
	4	200488	2015-10-09	S36_T0014_ANN_FIX_	0	4	0
Message Log	5	200488	2015-10-09	S36_T0014_ANN_FIX_	0	5	0
	6	200488	2015-10-09	S36_T0014_ANN_FIX_	0	6	0
	7	200488	2015-10-09	S36_T0014_ANN_FIX_	0	7	0
	8	200488	2015-10-09	S36_T0014_ANN_FIX_	0	8	0
	9	200488	2015-10-09	S36_T0014_ANN_FIX_	0	9	0
	10	200488	2015-10-09	S36_T0014_ANN_FIX_	0	10	0
	11	200488	2015-10-09	S36_T0014_ANN_FIX_	0	11	0
	12	200488	2015-10-09	S36_T0014_ANN_FIX_	0	12	0
	13	200488	2015-10-09	S36_T0014_ANN_FIX_	0	13	0
	14	200488	2015-10-09	S36_T0014_ANN_FIX_	0	14	0

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 for selected ACCOUNT_NUMBER, AS_OF_DATE, and EXECUTION_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 for selected RESULT_SYS_ID and EXECUTION 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 for selected result_sys_id and execution 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 for selected account and Execution ID in table format.

19.2 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.

20

Cash Flow Configuration

Cash flow configuration is used to define parameters that control the working of Cash Flow Engine and some application User Interfaces. The following topics are covered here:

Topics:

- [List of Parameters](#)
- [Editing of Cash Flow Parameter](#)

20.1 List of Parameters

The following is the list of Cash Flow Parameters:

List of Cash Flow Parameters and Descriptions

Column	Description	Default Values
CFE_CALLABLES_SIZE	Callables Count to Execute the Cash Flow Process Generation. This is used by Cash Flow Engine for performance tuning	8
CFE_EDITS_TABLE	This is used to display source table name in Cash Flow Edits screen. V_COMPONENT_DESC contains logical name to be displayed in screen while V_COMPONENT_VALUE contains physical name of table in database. To add more than one table use "~" as separator. Example: V_COMPONENT_DESC can be "Cash Flow Engine Instrument~Custom Table" and V_COMPONENT_VALUE can be "FSI_D_CFE_INSTRUMENTS~FSI_D_CUSTOM_TABLE".	FSI_D_CFE_INSTRUMENTS

Column	Description	Default Values
CFE_PROCESS_TABLE	This is used to display source table name in Cash Flow Process screen. V_COMPONENT_DESC contains logical name to be displayed in screen while V_COMPONENT_VALUE contains physical name of table in database. To add more than one table use "~" as separator. Example: V_COMPONENT_DESC can be "Cash Flow Engine Instrument~Custom Table" and V_COMPONENT_VALUE can be "FSI_D_CFE_INSTRUMENTS~FSI_D_CUSTOM_TABLE".	FSI_D_CFE_INSTRUMENTS
CFE_GAAP	GAAP code is used when you are moving data from the Staging Table to the CFE Processing Table. This is used as filter by T2T's loading data from staging tables to processing tables	USGAAP
CFE_BATCH_SIZE	Instrument Count to Process in Single batch. This is used by Cash Flow Engine for performance tuning	1000
CFE_LEGAL_ENTITY_HIER	To define Legal Entity Hierarchy. This is used by T2T's loading data from staging tables to processing tables to identify internal customers	0
CFE_LOAD_RUN_ID	Load Run Id to be used by T2T's to transfer data from staging to CFE instrument table. This is used by T2T's as filter to select data from staging and load in FSI_D_CFE_INSTRUMENTS table	0
EXECUTE_CFE_NODE_LEAF_MAPPING	To set the mapping of the Node to the Leaf	Y
CFE_FLUSH_BATCH_SIZE	Save or Update Records Flush Batch Size. This is used by Cash Flow Engine for performance tuning	500
CFE_EDITS_BATCH_SIZE	Instrument Count to validate in Cash Flow Edits Single batch	1000
CFE_EDITS_FLUSH_BATCH_SIZE	Save or Update Records Flush Batch Size in Cash Flow Edits	500
CFE_EDITS_CALLABLES_SIZE	Callables Count to Execute the Cash Flow Edits	8

NOTE:

These default values are populated from SETUP_MASTER table of atomic schema.

20.2 Editing Cash Flow Parameter

To edit a Cash Flow parameter, perform the following steps:

1. Navigate to the Cash Flow Configuration Page.
2. Select Component Code Row and edit value in the Component Value Field.
3. Click Save .

21

Archive-Restore

This chapter describes the details of Command-line Migration.

Topics:

- [Command-line Migration](#)
- [Command-line Migration Utility](#)

21.1 Command-line Migration

Using the Command-line utility, you can migrate (export or import) CFE metadata objects to different OFSAA environments. You can specify one or more objects within an object type or multiple object types.

During the migration process, `FSI_IRCS.CREATED_DATE` and `FSI_IRCS.CREATED_BY` fields get overwritten with the migration date and the user respectively which runs the migration.

For the list of objects that can be migrated, see the [Table](#).

21.2 Command-line Migration Utility

CFE uses the same utility that is used by the OFSAA Infrastructure. For more details, see the *Migrate Objects* section in the [Oracle Financial Services Analytical Applications Infrastructure User Guide](#).

21.2.1 Supported Objects

[Table](#) describes each of the Cash Flow Engine Preference objects.

Table 21-1 List of Supported Objects in CFE Application for command-line migration utility

Object Name	Object Type ID	Support for the wild card (Select all option)	Support for implicit Dependency	Object Code	Remarks
Application Preferences	201	No	No	CONFIG	The entire data set is exported and replaced in the target. No validation and its dependency objects are not handled.
Holiday Calendar	815	Yes	Yes	User-defined unique code	

Table 21-1 (Cont.) List of Supported Objects in CFE Application for command-line migration utility

Object Name	Object Type ID	Support for the wild card (Select all option)	Support for implicit Dependency	Object Code	Remarks
Interest Rates	801	Yes	Yes	User-defined unique code	Historical rates from FSI_IR_C_RATE_HIST table are not migrated.
Economic Indicator	804	Yes	Yes	System generated code	Historical rates from FSI_ECONOMIC_COST_HIST are not migrated.
Currency rates	803	No	No		Historical Currency rates are not supported.
Currencies	802	Yes	No	User-defined currency code	
Filter	1	No	Yes	System generated code	
Payment patterns	809	Yes	Yes	User-defined unique code	
Repricing Patterns	808	Yes	Yes	User-defined unique code	
Behavior Patterns	807	Yes	Yes	User-defined unique code	
Behavior Pattern Rule	314	Yes	Yes	System generated code	
Prepayment Rules	300	Yes	Yes	System generated code	
Prepayment Models	312	Yes	Yes	System generated code	
Forecast Rate Scenarios	11003	Yes	Yes	System generated code	
Cash Flow Engine Process	11001	Yes	Yes	System generated code	
Cash Flow Edits	11002	Yes	Yes	System generated code	

NOTE

The following is the list of Desupported Objects in Archive- Restore:
Hierarchy Attribute
The Object must be explicitly exported before migrating any rule which uses Currencies.

21.3 Input Values for OBJECTMIGRATION.xml

Table shows the list of Input Attributes of the OBJECTMIGRATION.XML file.

Table 21-2 List of Input Attributes of OBJECTMIGRATION.XML file

Object Name	Object Type Id	Input value in OBJECTMIGRATION.XML for the wild card	Input value in OBJECT_MIGRATION.xml for Object Code
Application Preferences	201	<OBJECT Code="CONFIG" Type="201"/>	<OBJECT Code="CONFIG" Type="201"/>
Interest Rates	801		<OBJECT Code="User defined unique code" Type="801"/>
Currency Rates	803		<OBJECT Code="System generated code" Type="803"/>
Currencies	802		<OBJECT Code="User defined unique code" Type="802"/>
Economic Indicator	804		<OBJECT Code="System generated code" Type="804"/>
Filter	1		<OBJECT Code="System generated code" Type="1"/>
Payment Patterns	809		<OBJECT Code="User defined unique code" Type="809"/>
Repricing Patterns	808		<OBJECT Code="User defined unique code" Type="808"/>
Behavior Patterns	807		<OBJECT Code="User defined unique code" Type="807"/>
Prepayment Rules	300		<OBJECT Code="System generated code" Type="300"/>
Prepayment Models	312		<OBJECT Code="System generated code" Type="312"/>
Forecast Rate Scenarios	11003		<OBJECT Code="System generated code" Type="11003"/>

Table 21-2 (Cont.) List of Input Attributes of OBJECTMIGRATION.XML file

Object Name	Object Type Id	Input value in OBJECTMIGRATION.XML for the wild card	Input value in OBJECT_MIGRATION.xml for Object Code
Cash Flow Engine Process	11001		<OBJECT Code="System generated code" Type="11001"/>
Cash Flow Edits	11002		<OBJECT Code="System generated code" Type="11002"/>

 **Note:**

1. \$FIC_HOME /utility/Migration/logs/offline_migration.log
2. <War_deployed_location>/logs /FUSIONSUBSYSTEMSService.log

Standard Navigation Paths

This section provides information to navigate through the pages referred to in this guide. Oracle Financial Services Cash Flow navigation paths are displayed in the [List of Navigation Paths](#). Access all these pages through the CFE Administrator or CFE Analyst responsibility.

Table 22-1 List of Navigation Paths for Oracle Financial Services Cash Flow Application

Page	Navigation Path
Application Preferences	Select Cash Flow Engine menu and select Application Preferences
Behavior Pattern Home	Select Cash Flow Engine menu, and then select Patterns. Navigate to Behavior Patterns.
Payment Pattern Home	Select Cash Flow Engine menu, and then select Patterns. Navigate to Payment Patterns .
Repricing Pattern Home	Select Cash Flow Engine menu, and then select Patterns. Navigate to Repricing Patterns.
Interest Rate Code Home	Select Common Object Maintenance, select Rate Management, and then select Interest Rates.
Currency Rates Home	Select Common Object Maintenance, select Rate Management, and then select Currency Rates
Currencies Home	Select Common Object Maintenance, select Rate Management, and then select Currencies.
Economic Indicator Home	Select Common Object Maintenance, select Rate Management, and then select Economic Indicators
Prepayment Rule Home	Select Cash Flow Engine menu, select Assumption specification, and then select Prepayments
Prepayment Models Home	Select Cash Flow Engine, select Assumption specification, and then select Prepayment Models
Forecast Rates	Select Cash Flow Engine menu, select Assumption Specification, and then select Forecast Rates
Behavior Pattern Rule Home	Select Cash Flow Engine, select Assumption specification, and then select Behavior Pattern Rule
Cash Flow Process Home	Select Cash Flow Engine menu, select Processing, and then select Cash Flow Process
Cash Flow Edits Process	Select Cash Flow Engine menu, select Processing and then select Cash Flow Edits
Cash Flow Reports	Select Cash Flow Engine menu, select Reports and then select Cash Flow Report
Cash Flow Configuration	Select Cash Flow Engine menu, and then select Configuration