

# **Oracle Financial Services Balance Sheet Planning**

## **System Administrator User Guide**

**Release 8.1.0.0.0**

**Jun 2020**

**F33273-01**

**ORACLE**  
Financial Services

## OFS Balance Sheet Planning System Administrator User Guide

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## Document Control

Version Number	Revision Date	Change Log
1.0	26-Jun-2020	Created the User Guide for OFS Balance Sheet Planning (OFS BSP) application Release 8.1.

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# 1 Preface

This section provides information about the Oracle Financial Services Balance Sheet Planning Application Pack's (OFS BSP Pack) System Administrator User Guide.

Topics:

- [Audience](#)
- [Access to Oracle Support](#)
- [Related Information Sources](#)
- [Additional Documents to Read](#)
- [Conventions](#)
- [Abbreviations](#)

## 1.1 Audience

Oracle Financial Services Balance Sheet Planning Application Pack's (OFS BSP Pack) Planning Administrator and Planning Analyst User Guide describes all the features and functions of BSP's Planning user interfaces and primarily is intended for the use of Planning Administrators and Planning Users.

## 1.2 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> for the hearing impaired.

## 1.3 Related Information Sources

This section identifies additional documents related to the OFS BSP Application Pack. You can access the below documents online from the Oracle Help Center (OHC) Documentation Library for OFS BSP Application Pack Release 8.1.0.0.0:

- [Oracle Financial Services Balance Sheet Planning Application Pack Installation and Configuration Guide Release 8.1.0.0.0](#)
- [Oracle Financial Services Balance Sheet - Planning Administrator and Analyst User Guide Release 8.1.0.0.0](#)
- Oracle Financial Services Balance Sheet Planning Cloning Reference Guide
- Oracle Financial Services Balance Sheet Planning Security Guide

## 1.4 Additional Documents to Read

Oracle Financial Services Profitability Management Applications Pack is built on the Oracle Financial Services Advanced Analytical Applications Infrastructure (OFS AAI). See the following OFS AAI



documents as no separate documents are required at the pack or application level for Oracle Financial Services Profitability Management Applications Pack:

- [OFS Analytical Applications Infrastructure \(OFS AAAI\) Application Pack Installation and Configuration Guide Release 8.1.0.0.0](#)
- [OFS Analytical Applications Infrastructure Administration Guide Release 8.1.0.0.0](#)
- [OFS Analytical Applications Infrastructure Cloning Reference Guide Release 8.1.0.0.0](#)
- [OFS Analytical Applications Infrastructure Security Guide Release 8.1.0.0.0](#)
- [OFS Analytical Applications Infrastructure User Guide Release 8.1.0.0.0](#)

You can access the common document from the OHC Documentation Library:

- [OFS Analytical Applications 8.1.0.0.0 Technology Matrix](#)

## 1.5 Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	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, file names, text that appears on the screen, or text that you enter.
<a href="#">Hyperlink</a>	Hyperlink type indicates the links to external websites, internal document links to sections.

## 1.6 Abbreviations

The following table lists the abbreviations used in this document:

Abbreviation	Meaning
AIX	Advanced Interactive eXecutive
BDP	Big Data Processing
DBA	Database Administrator
DDL	Data Definition Language
DEFQ	Data Entry Forms and Queries
DML	Data Manipulation Language

Abbreviation	Meaning
EAR	Enterprise Archive
EJB	Enterprise JavaBean
EPBCS	Enterprise Planning and Budegeting Cloud Service
ERM	Enterprise Resource Management
FTP	File Transfer Protocol
HDFS	Hadoop Distributed File System
HTTPS	Hypertext Transfer Protocol Secure
J2C	J2EE Connector
J2EE	Java 2 Enterprise Edition
JCE	Java Cryptography Extension
JDBC	Java Database Connectivity
JDK	Java Development Kit
JNDI	Java Naming and Directory Interface
JRE	Java Runtime Environment
JVM	Java Virtual Machine
LDAP	Lightweight Directory Access Protoco
LHS	Left Hand Side
MFA	Multi-Factor Authentication
MOS	My Oracle Support
OFSA	Oracle Financial Services Analytical Applications
OFSAI	Oracle Financial Services Analytical Application Infrastructure
OFSAAI	Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack
OHC	Oracle Help Center
OLAP	On-Line Analytical Processing
OLH	Oracle Loader for Hadoop
ORAAH	Oracle R Advanced Analytics for Hadoop
OS	Operating System
RAM	Random Access Memory
RDBMS	Relational Database Management System
RHEL	Red Hat Enterprise Linux
SFTP	Secure File Transfer Protocol
SID	System Identifier
SSL	Secure Sockets Layer

Abbreviation	Meaning
TNS	Transparent Network Substrate
URL	Uniform Resource Locator
VM	Virtual Machine
WAR	Web Archive
XML	Extensible Markup Language

## 2 Introduction to Balance Sheet Planning

Oracle Financial Services Balance Sheet Planning is designed to help financial services institutions budget for a full balance sheet and the associated net interest margin. Banks have a number of very unique needs when looking ahead. They must be sensitive to economic conditions, and create plans that not only forecast future performance, but also the forward risks they are assuming. Most importantly, they require tools that accurately forecast net interest margin. By accurately modeling the detailed and complex events on a bank's balance sheet, for both the current book of business and forecasted new volumes, Oracle Financial Services Balance Sheet Planning enables the delivery of accurate margin forecast and comprehensive, meaningful budgets.

This module provides an introduction to Oracle Balance Sheet Planning and discusses its place in the Oracle Financial Services Analytical (OFSAA) group of applications.

### Topics:

- Roles in Balance Sheet Planning
- Oracle Balance Sheet Planning and Other Oracle Financial Services Applications
- Oracle Balance Sheet Planning Key Benefits
- Oracle Financial Services Enterprise Performance Management

### 2.1 Roles in Balance Sheet Planning

OFS Balance Sheet Planning functionality is divided into three distinct roles:

- System Administrator
- Planning Administrator
- Planning User
- Auditor

This User Guide is intended primarily for BSP System Administrators. See the OFS Balance Sheet Planning User Guide for details on the Planning Administrator and Planning User roles. For information on granting roles to OFSAA users, see the OFSAA Instructure User Guide.

There are four difference types of users who operate the Balance Sheet Planning application as follows:

Table 1: xxxx

Role	Description	Responsibilities
System Administrator	BSP System Administrators are super-users who have access to 100% of BSP's functionality.	<ul style="list-style-type: none"> <li>Loading, cleansing, and reconciling all business fact data</li> <li>Maintenance of metadata (dimensions, attributes, hierarchies, etc.)</li> <li>Building and maintaining all cash flow modelling assumptions including interest rate forecasts</li> <li>Processing and validating current position forecasts               <ul style="list-style-type: none"> <li>Once validated, BSP Planning Administrators import current position forecasts to load or "initialize" each new Forecast Set</li> <li>Once a Forecast Set has been loaded with an initial current position forecast, Planning Users can begin forecasting new business and processing their forecasts</li> </ul> </li> <li>As super-users, System Administrators also have access to all of the functionality provided within BSP's forecasting users interfaces</li> </ul> <p>The BSP System Administrator also:</p> <ul style="list-style-type: none"> <li>May share some of these responsibilities with other administrators who are responsible for other business areas/disciplines</li> <li>Can also fill the role of Planning Administrator</li> </ul> <p>Exports finished balance sheet and net interest margin forecasts to external planning systems</p>
Planning Administrator	Planning Administrators are responsible for overseeing the planning process	<ul style="list-style-type: none"> <li>Defining and maintaining Planning Center User Maps that control Planning User access to Forecast Sets</li> <li>Administering Forecast Sets through their lifecycle</li> <li>Oversight of the planning process</li> <li>Planning Administrators have unconstrained access to every Forecast Set but are not involved in the maintenance of any cash flow modeling assumptions.</li> </ul>
Planning User	Planning Users are granted access to the planning functionality documented in the BSP Planning Administrator and Planning Analyst User Guide.	<p>Within their assigned Planning Centers, their role includes:</p> <ul style="list-style-type: none"> <li>Forecasting new business volumes and pricing margins</li> <li>Processing new business forecasts</li> <li>Analyzing &amp; approving the results</li> </ul>
Auditor	The auditor has the Read Only access for review purpose.	

## **2.2 Oracle Balance Sheet Planning and Other Oracle Financial Services Applications**

Oracle Financial Services Balance Sheet Planning (BSP) operates on top of a common infrastructure layer: Oracle Financial Services Analytical Applications Infrastructure (OFSAAI). OFSAA applications form a comprehensive decision support solution that significantly enhances Enterprise Risk and Performance Management functions across a financial institution.

## **2.3 Oracle Balance Sheet Planning Key Benefits**

The key benefits of OFS BSP are given below.

### **2.3.1 Centralized Administration of Cash Flow Modelling Assumptions**

System Administrators build and maintain cash flow modelling assumption including:

- All rate management functions
- Interest rate curves and historical rates
- Currencies and historical currency exchange rates
- Rate Forecasts
- All modelling assumptions including
- Product Characteristics
- Behavior Patterns, Payment Patterns, and Repricing Patterns
- Prepayment Rules and Prepayment Models
- Transfer Pricing Rules
- Transfer Pricing Adjustment Rules

### **2.3.2 Rigorous Calculations**

Oracle BSP is designed to operate on transaction-level data using Oracle's highly accessible and flexible financial services data model. Each account, as well as all forecasted new-business activity, is modeled independently on a daily cash flow basis.

### **2.3.3 Decentralized collection and processing of balance sheet and margin forecasts**

- Collect and process forecasts across large numbers of distributed planning centers
- Planning Administrators build and maintain maps that assign planning users to planning centers
- Planning Administrators assign a Planning Center - User Map to each Forecast Set to control access

- These Planning Center - User Maps support one-to-one assignments or many-to-many assignments
- You can have as many maps as you need, but the same Planning Center - User Map can be used for multiple Forecast Sets
- As super-planning users, Planning Administrators can all Forecast Sets without constraint

### **2.3.4 Defined Workflows for Each Planning User**

A “Planning Point” represents a distinct Product/Org/Currency combination found on your balance sheet.

Upon logging into the system and after selecting a Forecast Set to work with, BSP utilizes Planning Center <- -> User Maps to present each Planning User with a set of Planning Points that he/she is responsible for forecasting.

Each Planning Point features a clear Yes or No status regarding the following key indicators:

- Are historical actuals available for the planning point?
- Does current position forecast data exist for the planning point?
- Is there a new business forecast for the planning point?
- Has the new business forecast been processed through the cash flow engine?
- Have the forecast results for the planning point been reviewed/approved?

Planning Users forecast new business volumes and margins for each planning point, process their forecasts, and review their results.

### **2.3.5 Distinct Forecast Sets**

A Forecast Set constitutes a discrete set of planning data. Examples might include 2022 Budget, 18-Month Rolling Forecast as of October, 2021, etc.

- Each Forecast Set represents a specific Scenario and Version of forecast data for a specified starting date and a specified duration
- You can have as many Forecast Sets as you need
- Only BSP System Administrators and BSP Planning Administrators can define and manage Forecast Sets

BSP allows you to work simultaneously with multiple forecast sets. Two different Forecast Sets could be for the same time period where one is for a Forecast scenario and the other is for Budget scenario. Each of these Forecast Sets might also have multiple versions. You may also have forecast sets for different time periods (e.g., one for October, one for November, and one for December).

Every Forecast Set having the same starting date will share the same underlying detailed instrument data and will share the same current position forecast results, but each Forecast Set stores its own forecasts of new business volumes and spreads as well as its own results for the new business forecasts.

### 2.3.6 Rolling Forecast Sets

Forecast Sets can reference other Forecast Sets. For example, when you are working on "Version 2" of a Forecast Set, the Administrator can configure the user interfaces to allow users to work on Version 2 while also giving them side-by-side views of data found in a previous Forecast Set (e.g., Version 1).

The same idea applies across time. For example, if you are working on a Forecast Set called "18 Month Rolling Forecast as of Jun, 2022", that Forecast Set could display results from a previous Forecast Set (e.g., "18 Month Rolling Forecast as of May, 2022").

### 2.3.7 Option to retain planning preferences from a previous Forecast Set

When building a new Forecast Set, BSP provides a number of options for recovering forecast data from previous Forecast Sets. One option is to retain the Forecast Balance Methods and/or Forecast Pricing Methods from a previous Forecast Set. Another option is to also retain the Forecast Balance drivers and/or Forecast Pricing drivers (i.e., the actual forecast data) from a previous Forecast Set. The usefulness of this functionality is clear in the simple example of building a new version of a working set (e.g., Version 2 vs. Version 1), but it is particularly useful over time. Any new Forecast Set can be almost 100% ready for total-bank processing as soon as it is "initialized" if it can reference and re-use data from a previous Forecast Set.

### 2.3.8 Forecast Set Lifecycle

Administrators manage the lifecycle of each Forecast Set from Defined to Deleted.

- Defined
  - Forecast Set is defined in outline
- Initialized
  - Forecast Set has been loaded with a current position runoff forecast provided by the System Administrator
  - Administrators can access all planning functions on Initialized Forecast Sets
  - Planning Users have no access to Initialized Forecast Sets
- Published
  - Planning User can access all planning functions on Published Forecast Sets
  - Administrators can revoke access by re-setting a Forecast Set's status to Initialized
- Locked
  - Locked Forecast Sets may not be updated but can be retained as required
  - Locked Forecast Sets can continue to serve as "Prior Forecast Set" or as "Initialization Forecast Set" for other Forecast Sets
- Deleted
  - The Forecast Set definition has been deleted
  - The Forecast Set's projected new business volumes and margins have been deleted



- All of the Forecast Set's result data have been deleted (both current book and new business results)
- All of the logging data from OFSAA Batch jobs associated with the Forecast Set have been deleted

## **2.4 Oracle Financial Services Enterprise Performance Management**

More than ever, financial institutions, their regulators as well as their shareholders are focused on the need to measure and meet risk-adjusted performance objectives, price products to reflect their true risk, and better understand how their institution is impacted by threats to liquidity, capital adequacy, and exposure to market rate volatility.

### **2.4.1 OFSAA Data Model**

OFSAA Data Model (OFSAADM) is shipped with optimized data structures and pre-packaged data elements developed specifically for the financial services industry. OFSAADM is the foundation for the OFS applications. It provides the database structures necessary to support the individual business applications.

### **2.4.2 OFSAA Infrastructure**

OFSAA Infrastructure is the foundation for OFSAA. It provides support for User Administration, Metadata Management, a Processing Framework, a Forms Framework and additional capabilities necessary to support the individual business applications.

### **2.4.3 OFSAA Funds Transfer Pricing**

Oracle Financial Services Funds Transfer Pricing is the industry's first and leading matched maturity funds transfer pricing application, enabling financial institutions to determine the spread earned on assets, from funding sources, and the spread earned as a result of interest rate exposure for each and every customer relationship. This enables accurate assessment of profitability along product, channel, and business lines, as well as the centralization of interest rate risk so it can be effectively managed. Oracle Financial Services Funds Transfer Pricing is fully integrated with Oracle's Financial Services Analytical Applications and shares a common customer account level data model.

The transfer pricing process isolates the four major sources of a bank's margin:

- The spread earned on assets
- The spread earned on liabilities
- The spread earned or lost as a result of interest rate exposure
- The spread earned or lost as a result of embedded options such as prepayments

Measuring and managing interest margin offers tremendous profit opportunities. By separating the components of net interest income, Oracle Funds Transfer Pricing isolates rate risk into your funding center where it can be centrally managed. In turn, business units are held accountable for what they can control: pricing and profitability. Armed with this highly accurate information, companies make solid, supportable decisions that lead to increased success in the marketplace.

## **2.4.4 OFSAA Profitability Management**

Oracle Financial Services Profitability Management enables financial services institutions to calculate profitability by products, channels, segments, and even individual customers. These profitability calculations are adjusted for risk, and they drive Risk-Adjusted Performance Management (RAPM), an imperative for financial services institutions operating in this rapidly evolving and complex industry.

Isolating and analyzing business unit profitability is only the first step in building effective profitability management. To hold operational managers truly accountable for profitability, senior management must give them the power to identify the products that are profitable in each market segment, for each customer.

Together with OFSAA Transfer Pricing, OFSAA Profitability Management is the tool that delivers this power. Profitability Management links general ledger, account-level, and statistical data together to produce detailed financial statements for individual business units, products, and customers. Combining powerful modeling and disciplined accounting, OFSAA Profitability Management delivers complete, accurate, and inclusive profiles of profitability.

## **2.4.5 OFSAA Price Creation and Discovery**

Oracle Financial Services Price Creation and Discovery is an interactive application that provides real-time transfer rates to support pricing loan transactions that reflect immediate market conditions. Risk-based pricing queries are directly integrated with the Oracle Financial Services Funds Transfer Pricing solution and leverage the same business rule logic. Query results incorporate all details of the underlying transfer price and include all elements of a product's profit and loss, including the allocated expense, expected loss, and capital charge.

## **2.4.6 OFSAA Asset Liability Management**

Volatile market conditions and increasing regulatory pressures are placing greater demands on the risk management function. These stresses are driving financial institutions to review their current risk modeling and measurement capabilities. Yet, these circumstances also provide institutions with the opportunity to update technology solutions to systems fully integrated across the risk and performance spectrum. Departmental, one-off solutions are no longer viable alternatives in an environment where all systems need to work together.

Oracle Financial Services Asset Liability Management (ALM) helps financial services institutions measure and manage interest rate risk and liquidity risk, perform balance sheet valuations, and forecast both net interest income and net income. The Oracle Financial Services ALM solution has the ability to measure and model every loan, deposit, investment, and off-balance sheet instrument individually, using both deterministic and stochastic methods. This helps institutions gain a better understanding of the risks they have assumed and their sensitivity to changes in economic conditions.

## **2.4.7 OFSAA Balance Sheet Planning**

Oracle Financial Services Balance Sheet Planning is designed to help financial services institutions budget for a full balance sheet and the associated profit and loss statement. Banks have a number of very unique needs when looking ahead. They must be sensitive to economic conditions, and create plans that not only forecast future performance, but also the forward risks they are assuming. Most importantly, they require tools that accurately forecast net interest margin. By accurately modeling the detailed and complex events on a bank's balance sheet, for both the current book of business and

forecasted new volumes, Oracle Financial Services Balance Sheet Planning enables the delivery of accurate margin forecasts and comprehensive, meaningful budgets.

## **2.4.8 OFSAA Business Intelligence Applications**

OFSAA Business Intelligence (BI) Applications are complete, prebuilt BI solutions that deliver intuitive, role-based intelligence for everyone in an organization—from front line employees to senior management—that enable better decisions, actions, and business processes.

## **2.4.9 Oracle Financial Services Analytical Overview**

For over 15 years, Oracle has set the standard for analytical applications in financial services. With our applications financial services organizations can achieve management excellence with a lower total cost of ownership, due to our integrated architecture, combining performance and risk applications into a single, seamlessly integrated framework.

In today's turbulent markets, financial institutions require a better understanding of the relationship between risk and return, while strengthening competitive advantage and enhancing long-term customer value. Oracle Financial Services Analytical Applications enable financial institutions to measure profitability and meet risk adjusted performance objectives, cultivate a risk management culture through transparency, lower the costs of compliance and regulation, and improve insight into customer behavior.

## 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:

Common rule objects include:

- Expressions
- Hierarchies
- Filters

The following chapters document how to navigate the OFSAA user interface to create and maintain dimensional reference data, interest rate & currency exchange rate data, and process tuning data; and to create and maintain OFSAA Infrastructure rules: Expressions, Hierarchies, and Filters.

For more information, refer to Oracle Financial Services Analytical Applications Infrastructure User guide.

The remainder of this chapter documents:

- [Overview of Dimensionality in OFSAA](#)
- [Overview of OFSAA Rules](#)
- [OFSAA Hierarchies](#)
- [OFSAA Filters](#)
- [OFSAA Expressions](#)

### 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 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. refer Oracle Financial Services Analytical Applications Data Model Utilities User Guide for details on loading dimensional data from external systems.
- **Combination:** You may also choose to maintain some Chart of Account values from an external source while maintaining other Chart of Account values internally.

### 3.1.1 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 Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) Installation and Configuration Guide.

### 3.1.2 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.

## 3.2 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). Refer Oracle Financial Services Analytical Applications Data Model Utilities User Guide for details on loading hierarchy data from external systems.
- **Combination:** You may also choose to maintain some hierarchies from an external source while maintaining other hierarchies internally.

### 3.2.1 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.

### 3.2.2 Dimension Types

OFSAA supports three fundamentally different kinds of dimensions

- Key Processing Dimensions
- Standard Dimensions
- Simple Dimensions

#### 3.2.2.1 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 is 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 (refer Oracle Financial Services Analytical Applications Infrastructure (OFSAI) Installation and Configuration Guide for details on multi-language support). 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).

### 3.2.2.2 Seeded Key Processing Dimensions

OFSAI 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 refer Oracle Financial Services Profitability Management (OFSPM 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.

### 3.2.2.3 User Defined Key Processing Dimensions

Refer Oracle Financial Services Analytical Applications Infrastructure (OFSAI) Installation and Configuration Guide for details on adding your own user-defined Key Processing dimensions.

## 3.2.3 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 on how it is configured. Within the OFSAI 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. Refer the Oracle Financial Services Analytical Applications Infrastructure (OFSAI) Installation and Configuration Guide and Oracle Financial Services Analytical Applications Data Model Data Dictionary for additional information.

- **Seeded Standard Dimensions:** OFSAI 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 the Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) Installation and Configuration Guide for details on adding user-defined Standard dimensions.

### 3.2.4 Simple Dimensions

Sometimes referred to as Code dimensions, Simple dimensions are "list of values" that support neither attributes nor hierarchies. Their three key uses are:

- Reserved for use within the analytical application engines
- Stratifying your data for process or report filtering purposes
- Serving as "list of values" when used as attributes

The 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)
- An Multi-Language Support or MLS table (For Example, AMRT\_TYPE\_MLS)

Again, see Oracle Financial Services Analytical Applications Infrastructure Installation and Configuration Guide for details on multi-language support.

Simple Dimension "Process Identifier Code" helps to improve BSP process execution performance by skipping VALIDATE\_NODE\_MAP\_BSP package execution incase there is no change in underlying metadata while running BSP Process everytime. There is no direct method to identify whether any change in underlying data at node level and one need execute VALIDATE\_NODE\_MAP\_BSP and thats where "Process Identifier Code" Simple Dimension takes place. This dimension should contain list of process Ids for which there is no change in underlying node level metadata hence no need to run VALIDATE\_NODE\_MAP\_BSP everytime the process is run. In turn whenever BSP Engine is run; it check the currently considred process id and checks its existance in FSI\_PROCESS\_IDENTIFIER\_CD table; if present then ignores VALIDATE\_NODE\_MAP\_BSP procedure run.

To open the Member maintenance window, navigate to Common Object Maintenance > Dimension Management > Members.



### 3.2.5 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.

### 3.2.6 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 US States and Canadian provinces, but you are free to completely redefine the list of geographic locations.

### 3.2.7 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.

Refer Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) Installation and Configuration Guide and Oracle Financial Services Analytical Applications Data Model Data Dictionary for additional information on which Simple Dimensions you may extend or modify and on how to add your own Simple Dimensions to the data model.

## 3.3 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

### 3.3.1 Unbounded and Bounded Attribute Data Types

Dimension attribute data types may be either bounded or unbounded. The Date, String, and Number type 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.

## 3.4 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, Asset/Liability Management 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
- Expressions

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

### 3.4.1 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.

## 3.5 OFSAA Filters

OFSAA Infrastructure supports three kinds of filtering:

- **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.

## 3.6 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).

## 3.7 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 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) in order 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

## 3.8 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.

## 3.9 OFSAA Data Entry Forms and Queries

Data entry Forms and Queries (DEFQ) within the Infrastructure system facilitates you to design web based user-friendly Data Entry windows with a choice of layouts for easy data view and data manipulation. An authorized user can enter new data and update the existing data in the shared database. Data entry Forms are primarily focused to create data entry systems which access the database and load the generated input data.

For more information, refer to Oracle Financial Services Analytical Applications Infrastructure User Guide Release 8.0.0.0.0.

### 3.10 Access Type

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

Access Type ★    ☒ Read/Write    ☐ Read Only

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 Analytical Applications Infrastructure (OFSAAI) Installation and Configuration Guide.

### 3.11 Global Preferences

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 (OFSPM) 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" checkbox. 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.

To open the Global Preference window, navigate to Balance Sheet Planning > Global Preferences.

Global Preferences
?

-- Display

Show Preferences for
BSPSYSADMIN ▼

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	25	<input checked="" type="checkbox"/>
-- Ledger		
Functional Currency	US Dollar	
Signage	Natural Signage	

Apply
Cancel
Reset to Default

## 3.12 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" checkbox. 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, & 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".

## 3.13 System Configuration

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 Infodom. 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 OFSAAI User Guide on OHC.

## 4 OFSAA Rate Management

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

**NOTE**

OFS BSP does not support Economic Indicators. Economic Indicators are used in OFSAA Asset Liability Management to affect new business volumes across interest rate and "economic indicator" scenarios.

Historical rate data obtained from OFSAA Rate Management is utilized within all of the Enterprise Performance Management (EPM) applications (OFSAA Funds Transfer Pricing, OFSAA Profitability Management, OFSAA Asset Liability Management, and OFSAA Balance Sheet Planning). Details regarding how each application draws upon Rate Management data are provided in the body of this chapter.

### 4.1.1.1 Rate Management Subject Areas

There are four primary subject areas or modules within Common Object Maintenance > Rate Management:

- Interest Rates
- Currency
- Currency Rates
- Economic Indicators

## 4.2 Interest Rates

The quality and availability of interest rate information varies 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 within 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 entry and maintenance of historical rate data for each yield curve you define.

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

## 4.3 Currency

Financial institutions commonly 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 may also define and add your own user-defined currencies.

## 4.4 Currency Rates

OFSAA Rate Management's Currency Rates module draws upon the currencies you have defined and activated in the Currency module to support the entry and maintenance of historical exchange rates. Currency exchange rates are utilized within:

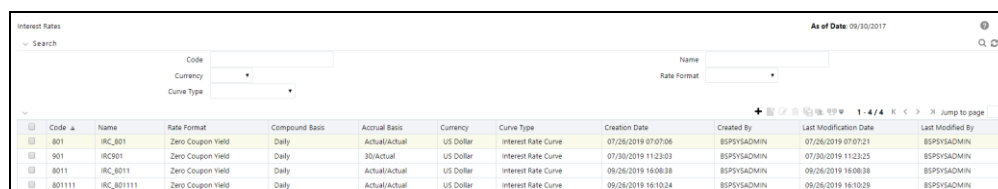
- OFSAA Funds Transfer Pricing “Ledger Migration” processes (see Oracle Financial Services Analytical Applications Funds Transfer Pricing User Guide)
- OFSAA Profitability Management multi-currency allocations (see Oracle Financial Services Analytical Applications Profitability Management (OFSPM) User Guide)
- OFSAA Hedge Management and IFRS Valuations (see Oracle Hedge Management and IFRS User Guide)

### NOTE

OFS Balance Sheet Planning does not utilize Currency Rate data..

### 4.4.1 Interest Rates Summary Screen

When you first navigate to Common Object Maintenance > Rate Management > Interest Rates, an empty screen will be displayed. After you have constructed one or more interest rate curves, navigating to Common Object Maintenance > Rate Management > Interest Rates will display a summary screen showing each of the interest rate curves that you have previously built.



The screenshot shows the 'Interest Rates' summary screen. At the top, there is a search bar and filters for Code, Name, Currency, and Rate Format. Below the filters is a table with columns: Code, Name, Rate Format, Compound Basis, Accrual Basis, Currency, Curve Type, Creation Date, Created By, Last Modification Date, and Last Modified By. The table contains four rows of data.

Code	Name	Rate Format	Compound Basis	Accrual Basis	Currency	Curve Type	Creation Date	Created By	Last Modification Date	Last Modified By
801	IRC_801	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	07/06/2019 07:07:06	BSPVSADMIN	07/06/2019 07:07:21	BSPVSADMIN
901	IRC901	Zero Coupon Yield	Daily	30/Actual	US Dollar	Interest Rate Curve	07/06/2019 11:23:03	BSPVSADMIN	07/06/2019 11:23:25	BSPVSADMIN
8011	IRC_8011	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	09/06/2019 16:08:38	BSPVSADMIN	09/06/2019 16:08:38	BSPVSADMIN
801111	IRC_801111	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	09/06/2019 16:10:24	BSPVSADMIN	09/06/2019 16:10:29	BSPVSADMIN

#### 4.4.1.1 Search Container

A Search container is provided in which you may search for interest rate curves by Code, Name, Currency, Rate Format or Curve Type.



### 4.4.1.2 Search Control

Enter your desired search criteria and click on the Search control.

### 4.4.1.3 Reset Control








Clicking on the Reset control removes any Code, Name, Currency, Rate Format or Curve Type constraint you may have specified and refreshes the screen.

### 4.4.1.4 Interest Rates Container

The Interest Rates container presents a grid containing all of the interest rate curves that meet your search criteria. The Interest Rates summary grid offers several controls that allow you to perform different functions when an interest rate curve is selected.

To select an interest rate curve, click on a check box in the first column of the grid. More than one interest rate curve can be selected at a time but this will cause some of the controls to become disabled. Clicking on a checkbox a second time de-selects the interest rate curve.

You may select or deselect all of the interest rate curves in the summary grid by clicking on the check box in the upper left hand corner of the summary grid directly to the left of the Name column header.

Icons	Description
Add (  )	Click <b>Add</b> to begin the process of building a new interest rate curve. The Add icon is disabled if any rows in the summary table are selected.
View (  )	Select a single row in the summary table to enable the View icon. The View control allows you to view the contents of an interest rate curve on a read-only basis. The View control is only enabled when a single interest rate curve is selected..
Edit (  )	Select a single row in the summary table enables the Edit icon. Click Edit to modify an existing interest rate curve. The Edit icon is only enabled when a single interest rate curve is selected.
Copy (  )	Select a single row in the summary table to enable the Copy icon. Click Copy 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 a Process rule and then click Check Dependencies to generate a report on all rules that utilize your selected interest rate curve. The Check Dependencies icon is only enabled when a interest rate curve is selected.
Delete (  )	Select one or more rows in the summary table to enable the Delete icon. Click Delete to deletes the interest rate curves that are selected.
Execute (  )	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 Oracle Financial Services Analytical Applications Data Model Utilities User Guide.  To execute a historical Interest Rate data load, click on the Execute the Historical Interest Rates Data Loader icon. A warning message will appear "Upload all available Interest Rates and Parameters?" Click ok, and all historical rates and parameters will be loaded.

## 4.4.2 Interest Rates Summary Grid

The following columns categorize each interest rate curve in the summary grid:

- Code
- Name
- Rate Format
- Compound Basis
- Accrual Basis
- Currency
- Curve Type
- Creation Date
- Created By
- Last Modification Date
- Last Modified By

### 4.4.2.1 Code

Displays the interest rate curve's code. Code is a number in the range 1 to 9999999. It is unique. Performing a “mouse-over” on a row within the grid displays the interest rate curve's detailed description.

### 4.4.2.2 Name

Displays the interest rate curve's short name.

### 4.4.2.3 Rate Format

Displays the interest rate curve's rate format (zero coupon or yield-to-maturity).

### 4.4.2.4 Compound Basis

Displays the interest rate curve's compounding basis (Annual, Semiannual, Monthly, or Simple).

### 4.4.2.5 Accrual Basis

Displays the interest rate curve's Accrual Basis (e.g., 30/360, Actual/Actual, etc).

### 4.4.2.6 Currency

Displays the currency (the Reference Currency) to which an interest rate curve is applicable.

### 4.4.2.7 Curve Type

Displays the curve type - Interest Rate Curve or Volatility Curve. OFS BSP does not support Volatility curves.

#### 4.4.2.8 Creation Date

Displays the date and time at which an interest rate curve was created.

#### 4.4.2.9 Created By

Displays the name of the user who created an interest rate curve.

#### 4.4.2.10 Last Modification Date

Displays the date and time at which an interest rate curve was last modified.

#### 4.4.2.11 Last Modified By

Displays the name of the user who last modified an interest rate curve.

## 4.5 Interest Rates Detail Screen

When you Add, Edit, or View an interest rate curve, the Interest Rate Code Detail Screen is displayed. The Interest Rate Code detail screen is comprised of an Interest Rate Code Details container, 5 Interest Rate Code tabs, and an Audit Trail container.

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

### 4.5.1 Interest Rate Code Details Container

This is explained in detail in the following sections.

#### 4.5.1.1 Interest Rate Code

When constructing a new yield curve, you must specify an Interest Rate Code between 1 and 99999999. Interest Rate Codes are used internally to uniquely identify yield curves. When working with Rate Manager or other OFS Analytical Applications, you generally reference yield curves by Name, not by Interest Rate Codes. Interest Rate Codes, however, are embedded within your instrument data (for example, the INTEREST\_RATE\_CD and T\_RATE\_INT\_RATE\_CD columns within your instrument data are populated with Interest Rate Codes). Once you have saved a yield curve, you may not renumber its Interest Rate Code.

The screenshot shows the 'Interest Rate Code' detail screen. The breadcrumb trail is 'Master Maintenance > Rate Management > Interest Rates'. The main heading is 'Interest Rate Code Details'. The form contains the following fields and controls:

- Interest Rate Code\***: A text input field.
- Name\***: A text input field.
- Description**: A text input field.
- Volatility Curve**: A dropdown menu.
- Risk Free**: A checkbox.
- Display for All Currencies**: A checkbox.
- Reference Currency\***: A dropdown menu showing 'US Dollar'.
- Structure Type\***: A dropdown menu showing 'Standard'.

#### 4.5.1.2 Name and Reference Currency

You must also provide a Name and Reference Currency for your yield curve. Unlike Interest Rate Codes, you may rename or change the Reference Currency for previously saved yield curves. While you may choose to rename a yield curve, however, it is very unlikely that you will chose 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 (e.g., US Dollar LIBOR, Euro LIBOR, etc). The drop-down list box for Reference Currencies displays only "Active" currencies. See the section below entitled Currency for a discussion of Active and Inactive currencies.

### 4.5.1.3 Description

You may optionally provide a description of your yield curve; you may modify a yield curve's description at any time.

### 4.5.1.4 Structure Type

Another required attribute for each yield curve is its Structure Type. 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 additional information, see Hybrid Term Structure Tab under Interest Rate Code Tabs below. Once you have saved the yield curve, you may not change the Structure Type selection.

### 4.5.1.5 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. Once you have saved the yield curve, you may not change the Volatility Curve selection.

#### NOTE

Volatility curves are used in Funds Transfer Pricing for calculating Rate Lock Option Costs. ALM Volatility is used to evaluate embedded options for Black 76 market valuation. Volatility Curves are not used in BSP.

### 4.5.1.6 Risk Free

This is for tagging IRC's as risk free. This field is an optional field. This flag is editable both in new and edit modes. It is available for non-hybrid curves and hybrid curves and not available for Volatility Curves.

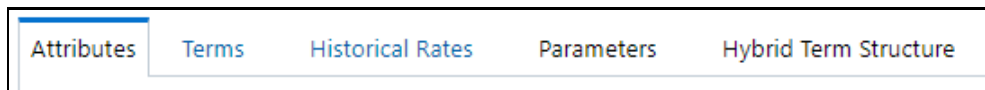
### 4.5.1.7 Display for all currencies

This option allows you to designate certain Interest Rate Curves that you would like to make available for assumption mapping to any currency. Typically, assumption rules will 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 will appear in assumption rules for all currencies.

## 4.5.2 Interest Rate Code Tabs

Interest Rate Code tabs are used to define your 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



### 4.5.2.1 Navigating Between Interest Rate Code Tabs

For new yield curves, you must begin with the Attributes tab. Once you have selected attributes for a yield curve, you will typically not change them. When you have finished assigning attributes, navigate to the Terms tab in order to establish a term structure for your yield curve or volatility curve, i.e., an overnight rate, a one month rate, a three month rate, etc. To navigate to the Terms tab, you may either select the Apply button on the Attribute tab or you may simply click the Terms tab.

#### NOTE

You must have specified an Interest Rate Code, a Name, and a Reference Currency in the Interest Rate Code Details container before you can navigate to the Terms tab.

As with your yield curve attributes, once you have established a term structure for your yield curve you will only rarely come back to change it. The first time you navigate to the Terms tab, an initial 1 month term point is provided, but even if this is the one and only term point you want for your curve, you must select the Apply button to tell the system that you have finished your term structure specification. In future revisions to your curve's definition, you may navigate directly to the Historical Rates tab simply by clicking on it, but if you modify your term structure in any way, you must always select the Apply button on the Term tab before you can navigate to the Historical Rates tab.

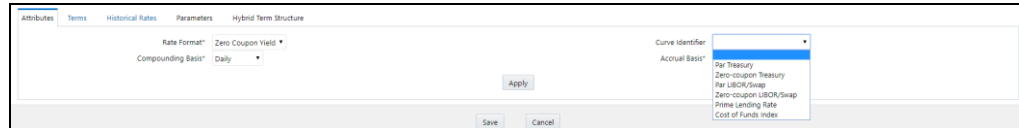
The Historical Rates tab is used to input interest rate or volatility data. This is the tab you will most often return to for maintaining your interest rates database over time. To navigate to the Historical Rates tab, you may either select the Apply button on the Terms tab or you may simply click the Historical Rates tab if you have already established your term structure.

#### NOTE

You must have specified (1) an Interest Rate Code, a Name, and a Reference Currency in the Interest Rate Code Details container and (2) a term structure in the Terms tab before you can navigate to the Historical Rates tab.

### 4.5.2.2 Attributes Tab

Yield curve attributes include Rate Format, Compounding Basis, Accrual Basis, and Curve Identifier. Once you have initially saved a yield curve, you typically will not change these attributes, but Rate Management will allow you to do so.



**NOTE** All Attribute fields will be disabled, if Volatility Curve is checked

### 4.5.2.3 Rate Format

As part of your yield curve definition, you must select either the Zero Coupon or Yield-to-Maturity rate format. Regardless of which format you select, rates entered into Rate Management (in the Historical Rates tab) are always entered in nominal form, e.g., 5.125% or 6.875%, not as discount factors. For details on how the two rate formats affect internal cash flow engine calculations, see the Oracle Financial Services Analytical Applications Cash Flow Engine Reference Guide.

### 4.5.2.4 Compounding Basis

You must also select a compounding basis for your 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 details on Compounding Basis and how different compounding bases affect cash flow calculations in OFSAA, see the Oracle Financial Services Analytical Applications Cash Flow Engine Reference Guide.

### 4.5.2.5 Accrual Basis

You must also select an accrual basis for your yield curve. The Accrual Basis list depends on 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 details on Accrual Basis and how different accrual bases affect cash flow calculations in OFSAA, see Oracle Financial Services Analytical Applications Cash Flow Engine Reference Guide.

#### 4.5.2.6 Curve Identifier

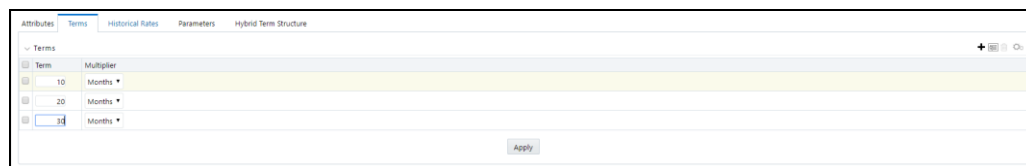
This is a drop-down list that contains the 6 curve identifier types, that is, Par Treasury, Zero-coupon Treasury, Par LIBOR/Swap, Zero-coupon LIBOR/Swap, Prime Lending Rate, and Cost of Funds Index. These curve identifiers can be mapped to the Adjustable Rate Mortgage (ARM) indices used for ADCO prepayment model processing. The Reference Currency for these indices is always US Dollar.

##### NOTE

This identifier is optional when the IRC is not being used for ADCO prepayment model processing. This is applicable only in BSP, BSP, and HM applications.

#### 4.5.2.7 Terms Tab

Use the Terms tab to construct your yield curve's term structure. You may specify as many yield curve terms as you wish ranging from 1 day to 100 years.



##### NOTE

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

#### 4.5.2.8 Adding New Term Points

Click the Add control to add new term points. After clicking the Add control, select a Term value and a Multiplier (e.g., 7 days, 2 months, 5 years, etc). You can also add term points using the Data Input Helper.

#### 4.5.2.9 Deleting Existing Term Points

If you wish to delete an existing term, select the term point (or terms) you wish to delete and click the Delete control, and confirm that you want to delete the term (or terms) you have selected.

#### 4.5.2.10 Historical Rates Tab

Use the Historical Rates tab to enter, modify, or view interest rate data. Data should be entered as simple percentages (e.g., 5.125, 4.875, etc). If you are entering historical rates for a volatility curve, you

will have to enter volatilities for the combination of contract term and expiration term. Select the desired expiration term from the drop list to complete the volatility matrix. Effective dates should be entered separately for each expiration term in the list.

Contract Term	Effective Date	10 Months	20 Months	30 Months	Rate Data Source
	11/12/2019	3.00	6.00	10.00	UI

By default, the Historical Rates tab will display interest rate data for the past month (i.e., for the 30 days leading up to the current date). Click the Effective Date Range drop-down list box to expand your view to the last 3 months, 6 months, one year, 3 years, 6 years or all rate data.

## NOTE

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

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

If you are entering historical rates for an FTP volatility curve, you will have to enter volatilities for the contract term. Select the desired expiration term from the drop-list to complete the volatility matrix. Effective dates should be entered for each expiration term.



Interest Rate Code  
Master Maintenance > Rate Management > Interest Rates

Interest Rate Code Details

Interest Rate Code \* 102  
(Hint: 1 - 9999999)

Name IRC

Description

Volatility Curve ALM Surface Volatility

Risk Free

Display for All Currencies

Reference Currency Australian Dollar

Structure Type Standard

Attributes Terms Historical Rates Parameters Hybrid Term Structure

Rates

Effective Date Range

From Date 03/13/2018 To Date 04/13/2018

Expiration Term

Contract Term

Save Cancel

Audit Trail User Comments

System ID:

Created By	ALMUSER	Creation Date	04/13/2018 13:50:44
Last Modified By	ALMUSER	Last Modification Date	04/13/2018 13:50:44

If you are entering rates for an BSP Volatility surface, you will have to enter volatilities based on two dimensions: Strike Rate (vertical axis) and Expiration Date (horizontal axis). For a new BSP Volatility surface, enter an as-of date and the number of breakpoints for Strike Rate and Expiration Date, then press the “Generate” button. 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 (i.e. 25 = 25%).

The Rate Data Source is a parameter that depicts from where the rates have been taken from, either they are entered through the UI or loaded through the data loader or generated using the Generate Rates of Hybrid IRC.

### 4.5.2.11 Generate Graph

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

To generate a graph, follow the steps given below:

1. Select the Effective Date Range for which you want to generate the graph.  
The From Date and To Date fields will be automatically updated after selecting the Effective Date Range.
2. Select the Effective Date using corresponding calendar options.
3. Enter the term points in respective fields and click Apply button.
4. Select the Terms using the corresponding check-boxes.
5. Click on Generate Graph icon.



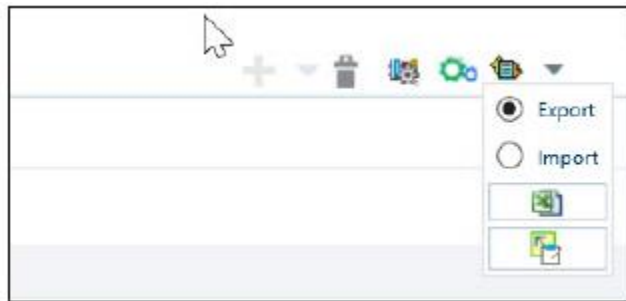
6. The graph will be generated. Here, you can view the graph for Interest Rate vs Effective Date or Interest Rate vs Term Point.

#### 4.5.2.12 Excel Import/Export

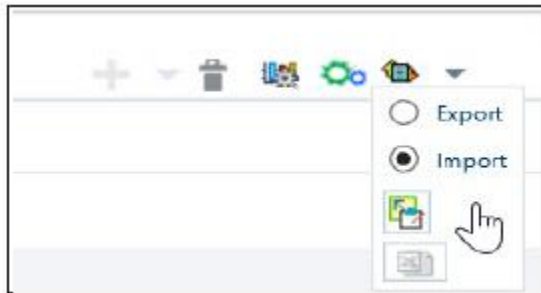
##### NOTE

Starting from 8.0.4 release, Excel Import feature will work only on Internet Explorer browser. Excel Export feature is supported by all browsers such as chrome/Firefox.

To aid in data entry, use the excel import/export functionality to add or edit rate data to historical rates. On the rates tool bar, click the excel icon. Click the 'export' toggle box to export data for the chosen selected effective date range. Within the same block, choose to export to excel. Doing so will launch the excel application and output the data grid, including headers.



You can add rows to the grid in the same format. After all data is input (or existing data is edited), copy the range of the grid you want to append, and go back to the rates screen. In the same block, click the 'import' toggle box, and directly below click the import from clipboard icon. The data copied from excel will appear in the rate history grid.



7. If appending data that preexisted for the same effective date, the import it will overwrite existing data.
8. In some cases, there are fields that will be output to the grid that are not editable, such as bucket start and end dates (when defining forecast assumptions). Be sure to only add or edit data in the columns that would be editable in the UI itself.

### 4.5.2.13 Deletion of Historical Rates

You can delete historical rates entered by selecting one or more rows and then clicking the delete control.

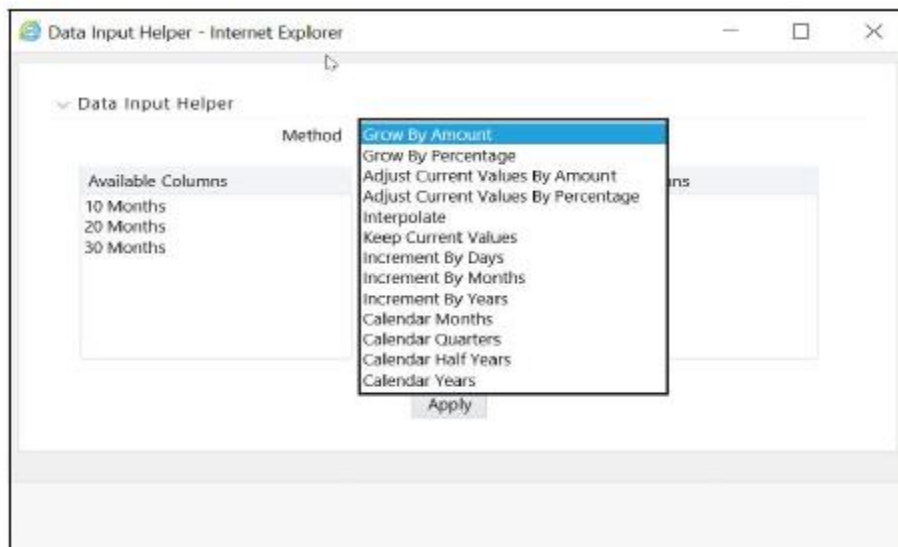
### 4.5.2.14 Data Input Helper

You may want to utilize the Data Input Helper to copy from a row where you have already defined the interest rate definition or apply a fixed value down the page. The following optional steps describe how to use this feature.

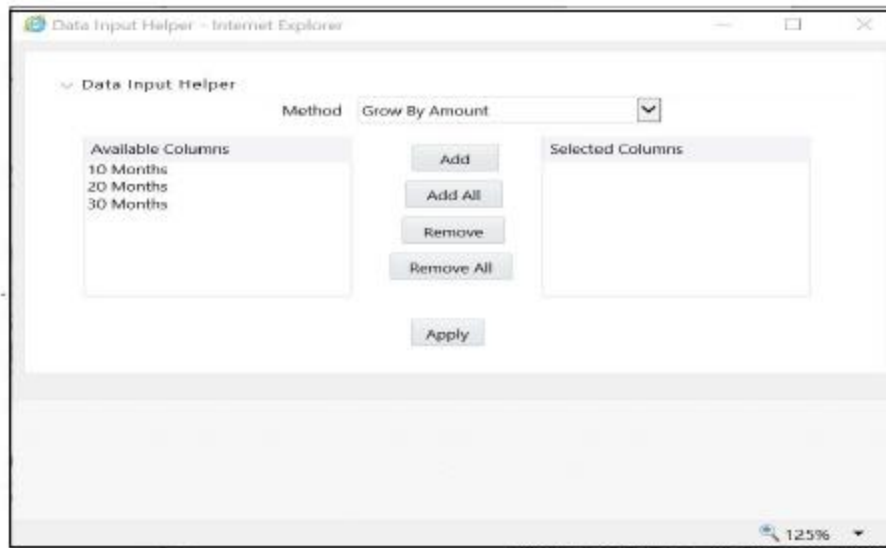
9. Select the checkbox next to the rows that you want to work with or use the “Select ALL” option by selecting the check-box on the header row.
10. Select the Data Input Helper icon.



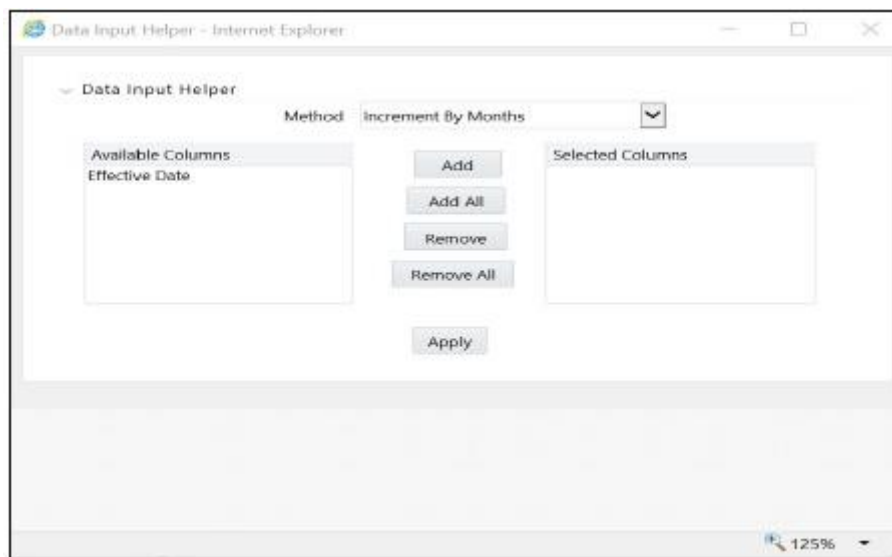
11. From the Data Input Helper – popup screen, select Method – “Grow by Amount” or some other appropriate method.



12. Select the term points from the left side (Available Columns) of the shuttle box.



Based on 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 Effective Date option will be displayed in Available Columns list.



After clicking on Apply button, you can modify the Start date and enter the Incremental Value.

13. Select APPLY.

#### 4.5.2.15 Rate Lookup Behavior Between Term Points

The OFSAA cash flow engine is common to OFSAA Funds Transfer Pricing, OFSAA Pricing Management (Transfer Pricing Component), OFSAA Balance Sheet Planning, and OFSAA Balance Sheet Planning. In looking up rates from OFSAA Rate Management, the cash flow engine will, where necessary, perform 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 may need to 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 will perform an interpolation to determine the implied three

month rate. While each of the above applications supports simple linear interpolation, OFSAA Transfer Pricing and OFSAA Balance Sheet Planning also support cubic and quartic spline interpolation methods. These more advanced methods will be supported for all OFS Analytical Applications in a future release.

#### 4.5.2.16 Rate Lookup Behavior Beyond Term Points

In cases where the cash flow engine needs to determine a rate from a yield curve for a term point smaller than the first term point of the yield curve, the engine will utilize the first term point of the yield curve. For example, if the engine needs to determine an overnight rate from a yield curve whose first term point is one month, the engine will utilize the one month rate. Similarly, in cases where the cash flow engine needs to determine a rate from a yield curve for a term point greater than the longest term point on the yield curve, the engine will utilize the last term point of the yield curve. For example, if the engine needs to determine a 30 year rate from a yield curve whose last term point is 10 years, the engine will utilize the 10 year rate.

#### 4.5.2.17 Rate Lookup Behavior Between Effective Dates

In looking up rates from OFSAA Rate Management for a business date, the cash flow engine may find that 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 prior to the business date of interest (May 31, 2010 in this case).

#### 4.5.2.18 Parameters Tab

**NOTE** Parameters and parameter estimation are not needed in BSP as it does not support stochastic processes.

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 several ways:

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

Following interest rate models are available:

- Extended Vasicek
- Ho and Lee
- Merton

- Vasicek

#### 4.5.2.19 Parameter Estimation

This section explains the procedure to calculate 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, refer to Oracle Financial Services Balance Sheet Planning Application Pack Installation and Configuration Guide 8 on [OHC](#).

##### 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 lookback term, it will overwrite the existing parameters for the selected Term Structure Model on that IRC's Effective Date.

##### Conditions:

- 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 lookback dates.
- Lookback dates: Historical rates must be available on dates looking back from the Parameter's Effective Date (the End Date), in roughly 30-day intervals moving backwards 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 should be 2 Dec. 2012 (1 Jan. 2013  $\pm$  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 prior to the End Date, and so on.

The minimum relative term for all lookbacks must be at least 300 Days (i.e., 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 there identifying the Interest Rate Code, then the parameter estimation engine will exit.

##### Procedure

Effective Date	Mean Reversion Speed	Long Run Rate	Volatility	Rate Data Source
04/13/2018	0.000000	0.000000	0.01	UI

14. If you wish to edit or recalculate existing Parameters, you can enter the Effective Date Range filter.

Following Standard toolbar buttons are available here:

- §Add
- §Delete
- §Data Input Helper
- §Refresh
- §Excel Export/Import

15. Initially, default parameters for the Extended Vasicek Model will be displayed for one Effective Date (the system date on which the Interest Rate Code was created). You can edit these parameters. You can also add new parameters using the Add button. Use the Refresh button to return to existing Parameters.

**NOTE**

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

If you are adding or editing parameters, you can use the Data Input Helper or Excel Import/Export. For more details, refer Excel Import/Export and Data Input Helper.

16. Enter the Effective Date. Here, Effective Date cannot be greater than Current System Date.
17. Select the Model from Term Structure Model drop-down list. Effective Date + Term Structure Model combination must be unique within this IRC.

The following term structure models are utilized in stochastic modeling of interest rates in OFSAA Transfer Pricing and OFSAA Asset Liability Management:

- §Extended Vasicek
- §Ho and Lee
- §Merton
- §Vasicek

18. The parameters needed by the models are as follows:

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

Values for Long Run Rate and Volatility are assumed to be percentages.

For example, a long run rate of 5% is displayed as 5.000. To maintain the integrity of your data, Rate Management restricts the input values it accepts. Note the valid range and default setting for each parameter.

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

19. Rate Data Source will indicate if you have directly entered Parameters through the UI. It will also allow you to Calculate the Parameters to display system-generated values.
20. When you select Calculate option, the following Term Structures Parameter Estimation window is displayed:  
  
If you are directly entering the Parameters, then enter values appropriate to the Model, as noted above, then click Apply else click Calculate.
21. End Date will be auto-populated with Effective Date. Enter the Relative Term with Multiplier to define the rate lookback period. The Term/Multiplier value should be at least 300 Days.
22. Start Date is automatically updated after entering Relative Term.
23. Click Calculate Number of Observations to confirm number of rates found for appropriate dates within the Relative Term. If there are at least 10 observations, the Estimate button will become active. For more information, refer to Conditions for Parameter Estimation section.
24. Click Estimate to Calculate the Parameters and store them in the historical parameters table (FSI\_IRC\_TS\_PARAM\_HIST). You will then see a confirmation box. Click Ok. The calculation will complete and you will be directed back to the Parameters screen.

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 will write an error message.

You can delete parameters by selecting one or more rows and then clicking Delete. For details on term structure models and stochastic processing, refer to Oracle Financial Services Funds Transfer Pricing User Guide, Oracle Financial Services Balance Sheet Planning (OFSP) User Guide, and Oracle Financial Services Analytical Applications Cash Flow Engine Reference Guide.

#### 4.5.2.20 Hybrid Term Structure Tab

Hybrid term structures will allow you to specify three types of hybrid yield curves:

- Spread
- Moving Average
- Merge



## NOTE

You will see Minimum and Maximum Hybrid IRC types from Hybrid IRC type drop-down. This selection is intended for a future enhancement and should be ignored in the current release.

The Parameters and Hybrid Term Structure tabs will be disabled, if 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 should also be updated (see Generate Historical Rates below). Once defined, Hybrid Yield Curves are used like any other interest rate curve in the system. You can reference these curves within OFSAA application business rules that allow selection of an Interest Rate Code.

### 4.5.2.21 Spread

A Spread hybrid yield curve is defined as the difference between two standard yield curves. The “spread” type of hybrid yield curve may be useful in establishing liquidity risk or basis risk yield curves.

### 4.5.2.22 Moving Average

Moving average hybrid yield curves represent moving average data of a single underlying standard yield curve. These curves are typically used in Funds Transfer Pricing.

### 4.5.2.23 Merge

Merge hybrid yield curves represent a blending of two or more underlying yield curves. In constructing a “merge” type of hybrid yield curve, you specify the percentage weighting applicable to each of the underlying standard hybrid yield curves.

### 4.5.2.24 Defining a Hybrid Curve

To define a hybrid curve select the Source Type: Hybrid, in the Hybrid Term Structure tab, select the Hybrid Curve Type (Spread, Moving Average., or Merge), and select the Interest Rate Codes) for the hybrid type. Click “Apply.”

#### 4.5.2.25 Generate Historical Rates

Once a hybrid curve is defined, you can generate 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 choose the generate frequency of monthly, it will generate month end values only. If you choose daily, it will generate the maximum number of historical values.

To generate the rates, select the interpolation method (Linear, Cubic or Quartic), select the Generate Frequency (Daily, Weekly, Bi-Weekly, or Monthly) and enter the specific date range (From Date / To Date), Click the "Generate" button. The rates will be populated and you will be directed to the Historical Rates tab to view the results.

If Hybrid Curve Type selected as Moving Average, then you can select the Moving Average Term in Days, Months, or Years.

#### 4.5.3 Automate (Schedule) the Generate Rates Action in Hybrid IRCs

The generation of the Hybrid IRC rates which is currently available within the Rate Management user interface > Hybrid IRC, as a manual process, can additionally be scheduled to run through an ICC Batch process or through a Simplified Batch process.

When running Generate Rates through the user interface, there are 3 parameters provided by the user.

- 25. Interest Rate Code: For example, the user is in edit mode for a particular Hybrid IRC when they execute the Generate Rates option, so the IRC is implied.
- 26. FROM DATE: this is the start date of the generate rates process
- 27. 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. On the other hand, a list of IRCs can be specified by means comma separated values within quotes.

'IRC\_Code1, IRC\_Code2, IRC\_Code3' and so on

**NOTE** If you want to use all IRCs, then use 'ALL' in the Parameter list.

Additionally, 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, then 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.

The following topics are covered in this section:

- Dependent Tables
- Prerequisites to running - Hybrid IRC batches
- Batch Creation and Running Batches
- Viewing Log Messages

### 4.5.3.1 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 should have a seeded date for IRC\_HYBRID\_SCHEDULER DT.

DATE\_TASK\_STEP\_PRECEDENCE : Similar to DATE\_TASK\_MASTER, this table should also have an entry for IRC\_HYBRID\_SCHEDULER DT

### 4.5.3.2 Prerequisites to Running Hybrid IRC Batches

- The Function FN\_FSI\_IRC\_HYBRID\_SCHEDULER should be in "compiled" status in the ATOMIC schema. Sometimes, the functions created in Database can be in invalid state due to some issues (by the installer), so you can use compile option in DB to get them in valid state.
- Users 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 should already exist for all parent and dependent IRCs for the relevant effective date range.

#### NOTE

Seeded data related to Batch information should be present in the DATE\_TASK\_MASTER and DATE\_TASK\_STEP\_PRECEDENCE tables in the Config schema.

#### Batch Creation

As mentioned earlier, there are two methods for creating and running batch processes, ICC Batch and Simplified Batch. The following section describes how to setup and run Hybrid Rate Generation using both approaches.

#### 4.5.3.2.1 Running Hybrid Rate Generation using ICC Batch:

28. Navigate to: Common Object Maintenance> Operations > Batch Maintenance > Create Batch

- Component = “Transform Data”
- Rule Name = “IRC\_HYBRID\_SCHEDULER”
- Parameter List = 'IRC\_Code'

**NOTE** If you want to use all IRCs, then use 'ALL' in the Parameter list.

29. Save the batch

30. Navigate to: Applications> Common Object Maintenance> Operations> Batch Execution

31. Search for and Select the Batch created under Batch Maintenance.

32. Input the “Information Date” for the batch.

33. Select “Execute Batch”

To schedule a future Hybrid Rate Generation Batch Process, or to schedule Hybrid Rate Generation Batch Process on a recurring basis, do the following:

34. Navigate to Applications> Common Object Maintenance> Operations> Batch Scheduler.

35. Search for and select the Batch to schedule.

36. Select New Schedule or Existing Schedule:

**NOTE** An Existing Schedule can be selected only if there are existing scheduled batches to view

37. If New Schedule is selected, the New Schedule grid appears. Enter the Scheduled task name.

- §To run the Hybrid Rate Generation process once, select once. Go to Step 6.
- §To schedule the Hybrid Rate Generation on a recurring basis, select Daily, Weekly, Monthly or Adhoc.

38. In the Schedule Task grid, in the Date field, enter the start date and end date.

39. In the Run Time field, input the time for the next validation to be run.

40. 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 are displayed in the View Log.

#### 4.5.3.2.2 Running Hybrid Rate Generation using Simplified Batch

To run Hybrid Rate Generation using Simplified Batch, use the following steps:

41. Under Financial Service Applications, click Applications> Common Object Maintenance> Operations> Simplified Batch> Add.
42. From the Task Details block, click Select Task. In the Task Selection window, choose Task Type as Transform Data. Then, click Search. In the Task Selector, Scroll down the left shuttle box (Available tasks) and select IRC\_HYBRID\_SCHEDULER (move to right shuttle box), then click Ok.
43. Enter the parameters and click Save.
44. In the Simplified Batch summary page, search for and select your Hybrid Rate Generation batch, then click the Run icon.
45. Click YES to confirm you want to continue, enter a date (this will be your “TO DATE”) and click Ok to continue.
46. You will receive a message that the batch has been successfully launched.
47. Click Ok. When the batch is complete, optionally navigate to Operations > View Log to view the processing log.  
Any error messages or warnings are accessible from the View Log screen.

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<b>NOTE</b>	Simplified Batch does not yet provide access to logs for Transform Data tasks.
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### 4.5.3.3 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:

48. Click Operations > View Log.
49. Enter search criteria: Data Transformation and related Batch ID
50. Select the Task ID hyperlink to view the log information

Users can additionally query the FSI\_MESSAGE\_LOG table directly to view the error log details.

### 4.5.3.4 Data Loader

The Data Loader Icon executes a function to import historical interest rates and parameters for all defined IRCs. For more information on setting up the automated process, refer to Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

**NOTE**

FusionApps.properties file should be present under Web Server  
<deployed path>/WEB-INF/props and  
\$FIC\_WEB\_HOME/webroot/WEB-INF/props directories.

Update the entry details of source name. It should be  
"infodom\_SOURCE\_NAME=Actual\_Source\_Name".

For example, if Infodom Name is "DEV6INFO" and source Name is  
"DEVETLSRC", then entry will be  
"DEV6INFO\_SOURCE\_NAME=DEVETLSRC".

Launch the Historical Interest Rates Data Loader from Interest  
rates screen after making this change.

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

To execute a data load, click the Data Loader icon. A warning message will appear Update all available interest rates and parameters?

**NOTE**

Upon clicking the data loader icon, the loader will execute all  
interest rates and parameters.

Interest Rates

As of Date: 08/30/2017

Code	Name	Rate Format	Compound Basis	Actual Basis	Currency	Curve Type	Creation Date	Created By	Last Modification Date	Last Modified By
801	RC801	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	07/26/2019 07:07:06	BSRVSADMIN	07/26/2019 07:07:21	BSRVSADMIN
8011	RC8011	Zero Coupon Yield	Daily	30/Actual	US Dollar	Interest Rate Curve	07/30/2019 11:23:03	BSRVSADMIN	07/30/2019 11:23:25	BSRVSADMIN
80101	RC80101	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	08/26/2019 16:08:08	BSRVSADMIN	08/26/2019 16:08:08	BSRVSADMIN
801001	RC801001	Zero Coupon Yield	Daily	30/Actual	US Dollar	Interest Rate Curve	11/12/2019 08:13:22	BSRVSADMIN	11/12/2019 08:13:22	BSRVSADMIN
801111	RC801111	Zero Coupon Yield	Daily	Actual/Actual	US Dollar	Interest Rate Curve	08/26/2019 16:10:24	BSRVSADMIN	08/26/2019 16:10:29	BSRVSADMIN

## 4.6 Currency

Upon initially navigating to Common Object Maintenance > Rate Management > Currency, a summary screen displays a comprehensive list of more than 170 seeded ISO currency codes.

Currencies

Code	Currency Name	Reference Interest Rate Code	Reporting Currency	Status
USD	US Dollar		No	Inactive
YTD	YTD		Yes	Active

### 4.6.1 Currencies Container

The Currencies container presents a grid containing all of the currencies that meet your search criteria. The Currencies summary grid offers several controls that allow you to perform different functions when a currency is selected.

To select a currency, click on a check box in the first column of the grid. More than one currency can be selected at a time but this will cause some of the controls to become disabled. Clicking on a check-box a second time de-selects the currency.

You may select or deselect all of the currencies in the summary grid by clicking on the check box in the upper left hand corner of the summary grid directly to the left of the Code column header.

#### 4.6.1.1 Add

Clicking on the Add control begins the process of adding a new currency. The Add control is disabled if any rows in the grid have been selected.

#### 4.6.1.2 Edit

Selecting a single row out of the grid enables the Edit control. Clicking on the Edit control allows you to modify an existing currency. The Edit control is only enabled when a single currency has been selected.

##### NOTE

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

#### 4.6.1.3 Delete

Selecting one or more rows out of the grid enables the Delete control. Clicking on the Delete control deletes the currency or currencies you have selected.

#### 4.6.1.4 Check Dependencies

Select a currency and then click the Check Dependencies control to generate a report on all rules that utilize your selected currency.

The Check Dependencies control is only enabled when a single currency has been selected.

### 4.6.2 Currencies Summary Grid

The following columns categorize each currency shown in the summary grid:

- Code
- Currency Name
- Reference Interest Rate Code
- Reporting Currency
- Status

#### 4.6.2.1 Code

For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these may be any pure character string (no numbers) up to a length of 3 characters.

#### 4.6.2.2 Currency Name

For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these may be any string up to a length of 40 characters.

### 4.6.2.3 Reference Interest Rate Code

Reference Interest Rate Code is the Interest Rate Code with which a currency is associated for forecasting purposes. You may define multiple yield curves each of which has the same Reference Currency, but a currency may only have one Reference Interest Rate Code.

### 4.6.2.4 Reporting Currency

A reporting currency is an active currency to which balances in other currencies may be consolidated in order to facilitate reporting. Balances in reporting currencies may 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).

### 4.6.2.5 Status

The status of any currency may be either Active or Inactive. You must “activate” a currency before you can:

- Define that currency as a Reference Currency for a yield curve (see Reference Currency above under the section entitled Interest Rates Detail Screen)
- Enter exchange rate data for a currency (see the section below entitled Currency Rates)
- Define Forecast Rates for that currency within OFSAA Balance Sheet Planning (see Forecast Rates in the Oracle Financial Services Balance Sheet Planning (OFSBSP) User Guide)

## 4.6.3 Editing Currencies

To edit a currency, select a currency and then click on the Edit control. You may not modify any currency Code value. You may, however, modify Currency Name, the Reference Interest Rate Code, the Reporting Currency value (limited to Yes or No), or the currency's Status (limited to Active or Inactive).

You may not 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

Once you have completed your edits, click Save.

## 4.6.4 Adding Currencies

The first row in the Currencies container is an empty row that is ready for you to edit as a new currency. You may select this empty row, click on the Edit control, and generate a new currency. You may also generate a new currency by clicking on the Add control. This will generate another empty row at the top of the Currencies container that is ready for you to edit.



## 4.6.5 Deleting Currencies

Click on one or more currencies and then select the Delete control. You may not delete any currencies that are utilized elsewhere in the system (see exclusions above under Editing Currencies).

## 4.7 Currency Rates

Upon navigating to Common Object Maintenance > Rate Management > Currency Rates, the Currency Rates screen is displayed. Within this screen, you may manage historical exchange rates between currencies.

For BSP, TP and PFT, From Currency is to be defaulted to the Initial Currency selection from the Assumption Management Defaults in the active Application Preferences UI. You may select another From Currency. The From Currency drop-down list displays all Active currencies.

### 4.7.1 Preparing to Work with Exchange Rate Data

In order to begin the process of viewing, entering, modifying, or deleting exchange rate data, you must supply a “To Currency” value. As with the From Currency, the To Currency drop-down list box displays only Active currencies.

After having selected a To Currency value, select a value for Rate Type: Floating Rate or Fixed Rate (the default selection is Floating Rate). Once you have selected a To Currency value, a second container is displayed: 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).

#### 4.7.1.1 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 may change from day-to-day, hour-to-hour, or minute-to-minute.

#### 4.7.1.2 Fixed Rates

Some countries, especially smaller countries or countries that have experienced significant inflation in the recent past, may wish to “peg” their currency to a larger, more stable currency such as the US Dollar, Japanese Yen, or Euro.

### 4.7.2 Adding Exchange Rate Data

Once you have specified a value for To Currency, the Floating Currency Rates container appears. If you wish to define a Fixed Rate relationship, select the “Fixed Rate” Rate Type and the Floating Currency Rates container will be replaced by the Fixed Currency Rates container.

Both Currency Rates containers 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 your data into the blank row and click Save.

### 4.7.2.1 Effective Date

Directly enter a date or select the calendar control to choose an effective date for your new exchange rate data point.

Rate Management stores historical exchange rate data. You may not 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 Forecast Rate Scenarios chapter. If you have gaps in your 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, the application will utilize the exchange rate for February 11, 2010.

### 4.7.2.2 Status

Status is a read-only display which is updated after the Currency Rates Validation has been run.

### 4.7.2.3 Data Source Code

The Data Source Code is displayed read only and indicates whether the rates were input through the UI or via the data loader.

### 4.7.2.4 Currency Exchange Rate

For both Floating Rates and Fixed Rates, units of the From Currency are converted to one unit of the To Currency. For example:

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

### 4.7.3 Editing Exchange Rate Data

Clicking on the check box on the left hand side of any row of data enables the Edit. After clicking Edit, the row becomes active and you may edit Effective Date and/or the Exchange Rate after which you may Save your changes.

### 4.7.4 Viewing Exchange Rate Data

By default, both the Floating Currency Rates container and the Fixed Currency Rates container 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 box in the Currency Selection container.

You may also choose to view a specific range of effective dates by modifying the From Date, the To Date, or both dates within the Currency Rates container.

### 4.7.5 Deleting Exchange Rate Data

Clicking on one or more check boxes on the left hand side of any row of data enables the Delete button. After clicking Delete, you will be asked to confirm that you wish to delete the rows you have selected.

#### 4.7.5.1.1 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 Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

To execute a data load, click on the Data Loader icon. A warning message will appear Upload all available Currency Rates?

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<b>NOTE</b>	Upon clicking on the data loader icon, the loader will execute all currency rates.
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### 4.7.6 Excel Import/Export

Excel import/export functionality is used for adding/editing historical exchange rates.

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<b>NOTE</b>	To export exchange rates, "Enable visual style buttons and controls in webpages" option in Internet Explorer should be enabled. Otherwise, it may show error message.
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### 4.7.7 Adding Multiple Exchange Rates

Click Add to add additional blank rows into which you may enter additional Effective Dates and Exchange Rates. When you have finished adding multiple new exchange rates, click Save.

## 4.8 Currency Exchange Rate Validation

### 4.8.1.1 Currency Rate Validation – Overview

Exchange Rate Validation contains 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.

### 4.8.2 Exchange Rate Validation – Feature Description

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 OFSAA applications. Some of these rates may 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 a conversion that needs to be triangulated. In addition, 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.

### 4.8.3 Currency Rate Validation – Procedure

51. Load currency rates through the Rate Management UI or by using the Historical Rate Data Loader. Notice the initial status is “Not Yet Validated”.
52. Execute the Currency Rate Validation engine.
53. Navigate to: Operations > Batch Maintenance > Create Batch
  - **Component** = “Transform Data”
  - **Rule Name** = “Rate\_Validation”
  - **Parameter List (Required)** = FROM\_DATE and TO\_DATE, for example, '20110101', '20110131'

Note: After completion of the validation process, notice the status in the Currency Rates UI changes to Valid or in case there is an issue, Invalid.
54. View both input and calculated results in the FSI\_EXCHNG\_RATE\_DIRECT\_ACCESS table.
55. All of the OFSAA processing engines read from this table for sourcing historical exchange rates.

**NOTE**

Executing Rate Validation is a required step when multi-currency setup is enabled. All of the OFSAA processing engines require exchange rates to be validated through this process in order 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.

## 4.8.4 Validating Exchange Rate Relationships

Users should run the exchange rate validation process after adding or modifying exchange rate data. You can run the process immediately or schedule one or more to be run in the future.

Each exchange rate is placed in one of the following statuses:

Status	Description
Not Yet Validated	The exchange rate has been input or loaded but not yet validated
Valid	The exchange rate has been validated.
Invalid	The exchange rate has violated one or more acceptance rules.

Only exchange rates in Valid status are available for processing and they are not subject to future validation unless you edit them.

The rate validation status is displayed in the Rate Management > Currency Rates UI.

### 4.8.4.1 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. (See Viewing the Messages section.)

- 56.** If a currency is defined as a Child in a fixed exchange relationship then it must not be in any floating (standard) exchange rate relationship at the same time. Consequently all floating exchange rates to or from the Child currency must be defined through the Parent currency. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child currency exists in a standard exchange rate within the same time period.
- 57.** A Child currency within a fixed relationship must not be a Child currency in any other fixed relationship during the same time period. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child currency already exists in a fixed relationship for same time period.
- 58.** A circular relationship must not exist. In other words, a Child currency cannot link back to its Parent in any other fixed rate relationship within the same time period. If it does, then the

following message is displayed: Invalid fixed relationship creates circular relationship with other fixed exchange rates.

59. Regarding new floating (standard) exchange rates, From and To currencies must not exist as Child currencies within any fixed exchange rate relationships. If this criterion is not met then the following message is displayed: From/To/Both currency(ies) in new exchange rate already exist in a fixed relationship for the same time period.
60. If any exchange rate is equal to 0, then a warning message is displayed. Generally speaking, 0 is a valid value. You can use it, for example, to designate an exchange rate with a currency of a country that no longer exists.

If two exchange rate relationships fail to meet these criteria then both of them will be labeled Invalid. (Exception: if one of the relationships is already in Valid status, then the other one will be labeled Invalid.) For example, if a currency is defined as a Child in a fixed rate relationship and is also defined as being in a floating relationship at the same time, then both fixed and floating rates for that currency will be labeled Invalid.

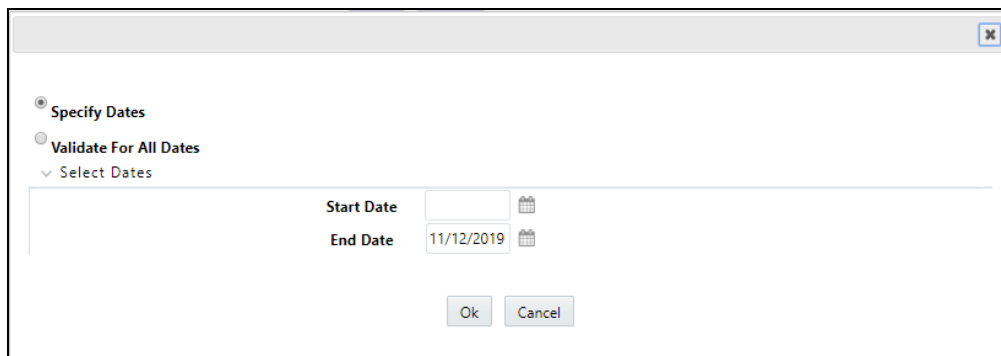
If there are both direct and inverse floating exchange rates defined for any two currencies (in other words, one currency is both a To and a From currency in relation to the other), then both relationships will be marked Valid.

## 4.8.5 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 Rate Management > Currency Rates UI.

### 4.8.5.1 Running a Validation Immediately

You can execute exchange rate validation using the "Currency Rates validation" option from the toolbar.



To execute exchange rate validation from the Currency Rates user interface, the following two options are available:

- **Specify Dates:** When you select this option, a Select Dates section will be displayed that allows you to input/verify the FROM\_DATE and TO\_DATE parameters and these dates will be passed to the batch for execution.
- **FROM\_DATE:** This is defaulted to the date of last rate validation.
- **TO\_DATE:** This is defaulted to the current date.
- **Validate For All Dates:** If you select this option, then it will validate all 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 history available to be processed.

You can execute rate validation using a Simplified Batch process or from the ICC Batch Screen, within the OFSAI framework. You can also launch it from the Currency Rates UI (Currency Rates Validation toolbar button).

To run the validation using Simplified Batch, perform the following steps:

61. Click Common Object Maintenance->Operations-> Simplified Batch -> Add.
  62. From the Task Details block, click Select Task. In the Task Selection window, choose Task Type as Transform Data. Then, click Search. In the Task Selector, Scroll down the left shuttle box (Available tasks) and select Rate\_Validation (move to right shuttle box), then click Ok.
  63. Back in the Simplified Batch definition window, enter the optional parameters to specify the From and To dates, using the format 'YYYYMMDD','YYYYMMDD'.
- Note: FROM\_DATE and TO\_DATE should 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. Then click Save.
64. In the Simplified Batch summary page, search for and select your batch, then click Run.
  65. 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.
  66. Click Ok. When the batch is complete, optionally navigate to Operations -> View Log to view the processing log.
  67. Any error messages or warnings are displayed in View Log. (See Viewing the Messages)

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

To run the validation using the ICC Batch Framework, perform the following steps:

68. Navigate to Operations -> Batch Maintenance -> Add, and create a new batch.
  69. Search for the above batch, and select it.
  70. In the Task Details block (toolbar), click Add. In the Task Selection window, choose Task Type as Transform Data. Then, click Search. In the Task Selector, Scroll down the left shuttle box (Available tasks) and select Rate\_Validation (move to right shuttle box), then click Ok.
  71. Back in the Task definition window, select the Rule Name Rate\_Validation and enter the optional parameters to specify the From and To dates, using the format 'YYYYMMDD','YYYYMMDD'.
- Note: FROM\_DATE and TO\_DATE should 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.
72. Click Save.
  73. Navigate to Operations -> Batch Execution. Search for and select your batch, enter Information Date, then click Execute Batch.

74. Click Ok to confirm you want to continue. A message is displayed stating Batch triggered successfully, also displaying the Batch Run ID.
75. Click Ok.
76. To view rates, query the database table FSI\_EXCHNG\_RATE\_DIRECT\_ACCESS after the run is complete.
77. FSI\_EXCHNG\_RATE\_DIRECT\_ACCESS: This output table holds the valid currency codes and their exchange rate with respect to the reporting currency for a period of 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:

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_CONVERT_TYPE_CD	Not Null	Number(5)
EXCHANGE_RATE_CONV_FORMULA	Not Null	Number(15)

78. When the batch is complete, optionally navigate to Operations -> View Log to view the processing log.

Any error messages or warnings are displayed in View Log. (See Viewing the Messages )

#### Scheduling One or More Validations

To schedule a future validation, or to schedule validations on a recurring basis, do the following:

79. Navigate to Operations -> Batch Scheduler. The Batch Scheduler window appears.
80. In the Batch Name block, select the Scheduled Batch ID. An unchecked box means that no validation is scheduled to run.
81. Select New Schedule or Existing Schedule:

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

If New Schedule is selected, the New Schedule grid appears. Enter the Scheduled task name.

To run the validation once, select once. Go to Step 5.

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



82. In the Schedule Task grid, in the Date field, enter the start date and end date.
83. In the Run Time field, input the time for the next validation to be run.
84. 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.

#### 4.8.5.2 Viewing the Messages

Any error messages or warnings generated during the exchange rate validation process are displayed in the Log Information window. To access this window: Click Operations -> View Log.

Click the Task ID. The Log Information window will display.

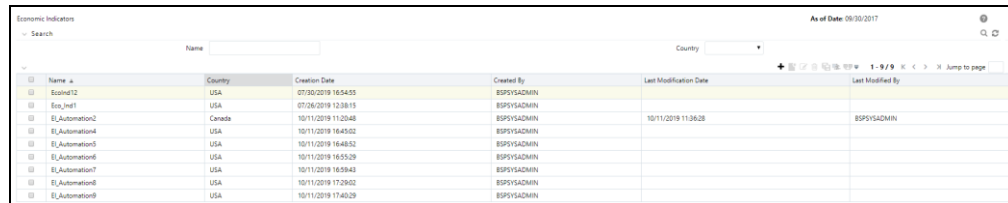
These exception messages could also be seen in FSI\_MESSAGE\_LOG table with the help of the batch\_id which was used during execution.

## 4.9 Economic Indicators Summary Screen

### NOTE

Economic Indicators are utilized in ALM but are not supported in Balance Sheet Planning.

When you first navigate to Common Object Maintenance > Rate Management > Economic Indicators, an empty screen will be displayed. After you have constructed one or more Economic Indicators, navigating to Common Object Maintenance > Rate Management > Economic Indicators will display a summary screen showing each of the Economic Indicators that you have previously built.



Name	Country	Creation Date	Created By	Last Modification Date	Last Modified By
EsqInd12	USA	07/30/2019 16:54:35	BSPSYADMIN		
Esa_Ind1	USA	07/26/2019 12:38:15	BSPSYADMIN		
ELAutomation2	Canada	10/11/2019 11:20:48	BSPSYADMIN	10/11/2019 11:36:28	BSPSYADMIN
ELAutomation4	USA	10/11/2019 16:49:02	BSPSYADMIN		
ELAutomation5	USA	10/11/2019 16:48:52	BSPSYADMIN		
ELAutomation6	USA	10/11/2019 16:55:29	BSPSYADMIN		
ELAutomation7	USA	10/11/2019 16:59:43	BSPSYADMIN		
ELAutomation8	USA	10/11/2019 17:29:02	BSPSYADMIN		
ELAutomation9	USA	10/11/2019 17:40:28	BSPSYADMIN		

### 4.9.1 Economic Indicators Container

The Economic Indicators container presents a grid containing all of the Economic Indicators that meet your search criteria. The Economic Indicators summary grid offers several controls that allow you to perform different functions when an Economic Indicators is selected.

To select an Economic Indicators, click on a check box in the first column of the grid. More than one Economic Indicators can be selected at a time but this will cause some of the controls to become disabled. Clicking on a checkbox a second time de-selects the row.

You may select or deselect all of the Economic Indicators in the summary grid by clicking on the check box in the upper left hand corner of the summary grid directly to the left of the Name column header.

#### **4.9.1.1 Add**

Clicking on the Add control begins the process of building a new Economic Indicator. The Add control is disabled if any rows in the grid have been selected.

#### **4.9.1.2 View**

Selecting a single row out of the grid enables the View control. Clicking on the View control allows you to view the contents of an Economic Indicator on a read-only basis. The View control is only enabled when a row has been selected.

#### **4.9.1.3 Edit**

Selecting a single row out of the grid enables the Edit control. Clicking on the Edit control allows you to modify a previously saved Economic Indicator. The Edit control is only enabled when a single row has been selected.

#### **4.9.1.4 Delete**

Selecting one or more rows out of the grid enables the Delete control. Clicking on the Delete control deletes the Economic Indicators you have selected.

#### **4.9.1.5 Copy**

Selecting a single row out of the grid enables the Copy control. Clicking the Copy control allows you to create a copy of an existing economic indicator. The Copy control is only enabled when a single economic indicator has been selected.

#### **4.9.1.6 Check Dependencies**

Select an interest rate curve and then click the Check Dependencies control to generate a report on all rules that utilize your selected economic indicator.

The Check Dependencies control is only enabled when a single economic indicator has been selected.

#### **4.9.1.7 Data Loader**

The Data Loader Icon executes a function to import historical economic indices for all defined Economic Indicators. For more information on setting up the automated process, see Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

To execute a data load, click on the Data Loader icon.

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

### **4.9.2 Economic Indicators Summary Grid**

The following columns categorize each Economic Indicator in the summary grid:

- Name
- Country

- Creation Date
- Created By
- Last Modification Date
- Last Modified By

Name

Displays the Economic Indicator's short name. Performing a “mouse-over” on a row within the grid displays the Economic Indicator's detailed description.

#### 4.9.2.1 Country

Displays the Country to which an Economic Indicator applies.

#### 4.9.2.2 Creation Date

Displays the date and time at which an Economic Indicator was created.

#### 4.9.2.3 Created By

Displays the name of the user who created an Economic Indicator.

#### 4.9.2.4 Last Modification Date

Displays the date and time at which an Economic Indicator was last modified.

#### 4.9.2.5 Modified By

Displays the name of the user who last modified an Economic Indicator.

### 4.9.3 Economic Indicators Detail Screen

#### 4.9.3.1 Economic Indicators Detail Screen

When you Add, Edit, or View an Economic Indicator, the Economic Indicator Detail Screen is displayed. The Economic Indicator detail screen is comprised of an Economic Indicator Details container, an Economic Indicators – Historical Data Container, and an Audit Trail container.

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

#### 4.9.3.2 Economic Indicator Details Container

When creating a new Economic Indicator, you must supply a Name, a Frequency, a Value Type, and a Country. You may optionally provide a Description.

#### 4.9.3.2.1 Name

The name you give to your Economic Indicator is the means by which you will subsequently refer to your rule within other OFS Analytical Applications. You may not rename existing Economic Indicators.

#### 4.9.3.2.2 Frequency

The frequency of your Economic Indicator should match the frequency which with the indicator's data is made public. Unemployment statistics, for example, are generally released on a monthly frequency. Select a frequency from the Frequency drop-down list box. Available frequencies are Weekly, Monthly, Quarterly, Semi-Annually, and Annually.

#### 4.9.3.2.3 Value Type

Select a Value Type from the Value Type drop-down list box. Available Value Types are Numeric, Percentage, and Amount.

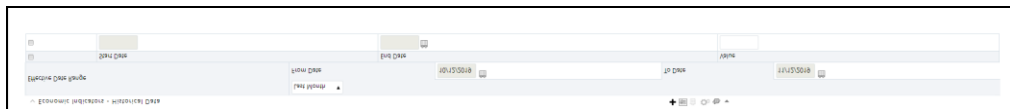
Value Type	Value Range
Numeric	0-999999
Percentage	-100 to +100
Amount	0-999999

#### 4.9.3.2.4 Country

Select a country to which your Economic Indicator applies from the Country drop-down list box. The value set of Countries is drawn from the seeded Country dimension. OFSAA is seeded with over 70 country values, and you may also add your own user-defined countries (see Chapter 6: OFSAA Dimension Members).

### 4.9.3.3 Economic Indicators – Historical Data Container

Once you have made your selections in the Economic Indicator Details container, you may save your new rule. To build out your historical data, you must enter data within the Economic Indicators – Historical Data container.



The Economic Indicators – Historical Data container initially displays a single blank row followed by the most recent period's data (if data has previously been stored in the database).

#### 4.9.3.3.1 Start Date and End Date

Select the calendar control 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 your 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 chosen.

#### 4.9.3.3.2 Value

Enter the value for your Economic Indicator (e.g., the unemployment rate).

#### 4.9.3.4 Adding Multiple Data Points

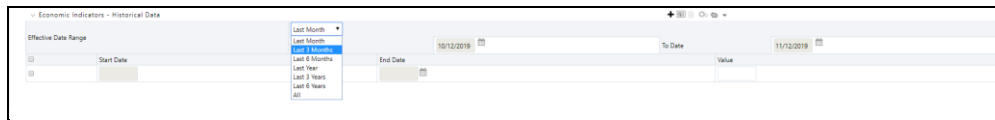
Click on the Add control to add additional blank rows into which you may enter additional Economic Indicator data. When you have finished adding data, click Save.

#### 4.9.3.5 Editing Economic Indicators – Historical Data

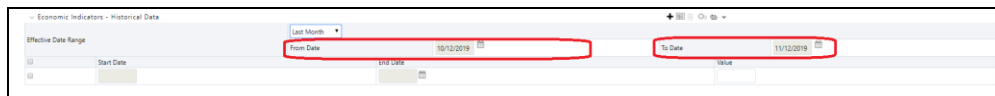
Clicking on a single check box on the left hand side of any row of data enables the Edit control. After clicking on the Edit control, the row you have selected becomes active. You may edit this row and subsequently save your changes.

#### 4.9.3.6 Viewing Economic Indicators – Historical Data

By default, the Economic Indicators – Historical Data container displays the most recent month of historical data. You can control the amount of data displayed by selecting a different value from the Effective Date Range drop-down list box.



You may also choose to view a specific date range by modifying the From Date, the To Date, or both dates within the Economic Indicators – Historical Data container.



#### 4.9.3.7 Deleting Economic Indicators – Historical Data

Clicking on one or more check boxes on the left hand side of any row of data enables the Delete control. After clicking on the Delete control, you will be asked to confirm that you wish to delete the rows you have selected.

#### 4.9.3.8 Excel Import/Export

Excel import/export functionality is used for adding/editing historical economic indicators.



## 5 Holiday Calendar

This chapter discusses the procedure for creating a Holiday Calendar and generating a list of weekend and holiday dates. Individual applications may consume the holiday calendar events in different ways, so please refer to application specific user guides and/or the Cash Flow Engine Reference Guide for more details.

This chapter covers the following topics:

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

### 5.1 Overview of Holiday Calendars

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

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

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

### 5.2 Searching for a Holiday Calendar

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

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

The screenshot shows the 'Holiday Calendar' summary page. At the top, there is a search bar with the label 'Search' and a 'Name' input field. To the right, it says 'As of Date: 06/30/2017'. 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 five rows of predefined holidays.

Name	Created By	Creation Date	Last Modified By	Last Modification Date	Status
Christmas	BPFSYADMIN	11/13/2019 07:22:09	BPFSYADMIN	11/13/2019 07:22:09	Defined
Independence Day	BPFSYADMIN	11/13/2019 07:21:26	BPFSYADMIN	11/13/2019 07:21:26	Defined
New Year	BPFSYADMIN	11/13/2019 07:18:18	BPFSYADMIN	11/13/2019 07:18:18	Defined
Saint Patrick's Day	BPFSYADMIN	11/13/2019 07:20:25	BPFSYADMIN	11/13/2019 07:20:25	Defined
Valentine's Day	BPFSYADMIN	11/13/2019 07:19:02	BPFSYADMIN	11/13/2019 07:19:02	Defined

## 5.2.1 Prerequisites

Predefined Holiday Calendar

Procedure

85. Navigate to the Holiday Calendar summary page. This page is the gateway to all Holiday Calendars and related functionality. You can navigate to other pages relating to Holiday Calendar from this page.
86. Enter the Search criteria.
  - Enter the name of the Holiday Calendar.
  - Click the Search icon.

Only holiday calendars that match the search criteria are displayed.

### NOTE

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

## 5.3 Creating a Holiday Calendar

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

Procedure

1. Navigate to Common Object Maintenance > Holiday Calendar.
2. Click Add Holiday Calendar.
3. The Holiday Calendar details page is displayed.



4. Enter a code value for the new holiday calendar.

#### NOTE

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

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

#### NOTE

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

6. 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.

In the Holiday Details grid, define the Holiday details for the any period within the holiday range defined in step 6. There are two types of holidays that can be defined: Fixed and Moving.

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

Example

25th December – Christmas, is a fixed holiday.

Note: To define a fixed holiday, input the holiday date for the first occurrence in the date range. For example, if your Date Range runs from 01-JAN-2000 to 31-DEC-2050, you should input the fixed holiday, Christmas, as 25-DEC-2000. The holiday calendar procedure will populate all

subsequent 25-DEC entries in the holiday list table (FSI\_HOLIDAY\_LIST). A HOLIDAY\_TYPE code = 0 is a Fixed type holiday, code = 1 is a Moving type holiday, and code = 2 is a weekend.

The holiday calendar procedure will also ensure that holiday and weekend entries are not duplicated. For example, if weekends are defined as Saturday/Sunday and Christmas falls on a weekend day, there will be only one entry in the FSI\_HOLIDAY\_LIST table. The PREVIOUS\_WORKINGDAY and NEXT\_WORKINGDAY fields designate the valid prior and following working days, respectively.

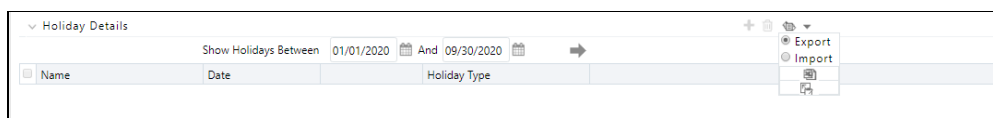
A moving holiday is one which is deemed as a holiday only for that particular date and year, and not for every year in the holiday period. All occurrences of a moving holiday must be input manually.

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

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

### 5.3.1 Excel Import / Export

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



## 5.4 Executing Holiday Calendar

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

Prerequisites

Predefined Rules

Procedure

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 have been generated displays as "processed" in the status column in the summary page.

**NOTE**

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

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 any update or modification to the Holiday Exceptions defined for that holiday calendar.
6. In such a case, the user will get a message “This holiday calendar has been modified, Please generate the holiday list again” and the holiday calendar state will be changed to “Defined” until the holiday list is regenerated with new definition.

## 5.5 Holiday Exceptions

**NOTE**

This section is applicable to Release Version 6.1 and higher.

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

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

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 checkbox when selected lists all the exceptions, if already defined, for the holidays within the From, To Date range.

The search result gives the list of all holidays based on the selection of the above search criteria fields.
4. In the Holiday Exceptions block, there are two types of exceptions that can be defined: Not a holiday and Shift to.

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

Spring earlier considered as a holiday in the holiday calendar can be marked as Not a Holiday in the Exceptions Window. Further the user can write his comments or remarks in the Notes Text Box next to the Exception Type drop-down list.

Any holiday can be shifted to another day, in which case the earlier declared holiday is removed from the Holiday List, while the shifted to day is included as a holiday.

## 6 Oracle Balance Sheet Planning Process

This module describes the steps that you need to follow to define and execute the end-to-end Balance Sheet Planning Process.

Oracle Balance Sheet Planning is based on the Oracle Financial Services Analytical Applications Infrastructure (OFSAAI). OFSAAI is the central, integrated data source and Administration layer on which Oracle Financial Services Analytical Applications (OFSA) are built. This description of the Oracle Balance Sheet Planning Process assumes that your system administrator has setup the OFSAAI data repository and has populated it with your enterprise wide business data.

This chapter covers the following topics:

- [Overview of the Process](#)
- [Reconciling the Data](#)
- [Cleansing the Data by performing Cash Flow Edits](#)
- [Setting Application Preferences](#)
- [Activating Currencies and Loading Exchange Rates](#)
- [\(Mandatory\) Deciding on historical rate information and managing by creating Interest Rate Codes](#)
- [Capturing Instrument Behavior for non-standard instruments](#)
- [\(Mandatory\) Defining Time Buckets](#)
- [\(Mandatory\) Defining Product Characteristics](#)
- [\(Mandatory - Deterministic\) Defining Forecast Rate Scenarios](#)
- [Defining Prepayments](#)
- [Prepayment Model Method](#)
- [Defining Forecast Assumptions](#)
- [Defining Transfer Pricing Rules](#)
- [Transfer Pricing Methodologies and Rules](#)
- [Defining Transfer Pricing Methodologies Using Node Level Assumptions](#)
- Defining Transaction Strategies
- Defining Formula Results
- (Mandatory – Stochastic) Defining Stochastic Rate Indexing Rules
- [\(Mandatory\) Defining and Running the Balance Sheet Planning Process](#)
- [Reviewing Processing Errors](#)
- [Accessing Balance Sheet Planning, Detail Cash Flow Results for Audit Purposes](#)
- Accessing Balance Sheet Planning, Interest Rate Audit Results
- [Analyzing Results](#)
- [Re - processing Erroneous Accounts](#)

## 6.1 Overview of the Process

Oracle Financial Services Balance Sheet Planning (OFS BSP) is designed to model balance sheets under a variety of rate environments. OFS BSP functionality uses several key concepts and has evolved from the continual iterations of building simulated management processes. The basis of OFS BSP functionality includes:

- The ability to model account-level detail in order to precisely capture the complex product characteristics within a financial institution's portfolios.
- A flexible time horizon is critical to meeting the wide range of forecasting requirements of financial institutions.
- Unconstrained chart of accounts definition is a basic requirement of effective modeling.
- A structured process for defining and controlling assumptions is critical to any successful modeling process.

### 6.1.1 Key Operational Concepts

OFS BSP includes six key modeling attributes:

- Modeling Using Account-Level Data
- Separation of Data from Assumptions
- Separation of Assumptions Types
- A Structured Approach to Defining Rate Scenarios
- Flexible Chart of Accounts
- Powerful Assumption IDs

### 6.1.2 Modeling Using Account-Level Data

OFS BSP models data at an account level (loan-by-loan and deposit-by deposit). In this way cash flows are precisely modeled based on unique characteristics of each loan and deposit.

### 6.1.3 Separation of Different Types of Assumptions

By separating data from modeling assumptions, you can modify assumptions and then run a reprocessing procedure without affecting data. In addition to the instrument data being separate from assumptions, each type of assumption is defined independently from other assumption types. Although they act dynamically during a processing run, assumptions about new business characteristics, new business volume, new business pricing, new business maturity mixes, and prepayments are defined independently. This facilitates the isolation of the impact of a change on one assumption.

### 6.1.4 Structured Approach to Defining Rate Scenarios

Structured testing of alternative rate environments is a key to a strong “what-if” analysis process. The model provides numerous utilities for defining and quality controlling rate scenarios. Because rate scenario modeling assumptions can be saved as patterns in Forecast Rate Scenario rules, the typical

burden of quality controlling rate scenarios is dramatically reduced. Once a pattern of rate shocks, spread changes or yield curve rotations (or combination of the above) is defined, it can be saved as a Forecast Rate assumption rule to be used again and again. When data are updated in the model, all you need to do is update the base position of key market rates. The change pattern in an assumption rule can be applied and the forecast rate assumptions are automatically updated. It can also easily be cloned and modified to be saved as another Forecast Rate assumption rule. This approach for defining rate scenarios is ideally suited for testing numerous rate environments in a controlled fashion.

### 6.1.5 Flexible Chart of Accounts

You can define an unlimited chart of accounts (Dimension Member Values), incorporating all of the key elements which drive cash flow generation.

### 6.1.6 The Power of Assumption Rules

You can mix and match any set of combinations of assumptions: forecast rate scenarios, pricing margins, maturity mix strategies, prepayments, product characteristics, etc. The separation of each element of the scenario assumptions means that you can incrementally modify one piece of the modeling equation and easily test its effect.

### 6.1.7 How the Model Works

While the specific operation of each section of the model is addressed separately in this guide, a general description of the modeling logic includes the following premises:

- The current position data defines the existing base of transactions
- New business volumes are generated within OFS BSP's planning user interfaces
- The maturity mix of new volumes is defined by assumptions
- Pricing of new volumes and repricing of existing volumes are defined by rate scenario assumptions and the contractual pricing characteristics of individual transactions
- Dynamic prepayment assumptions can be applied to any account
- Cash flows are determined through the integration of data and assumptions
- Assumptions can be flexibly combined

### 6.1.8 Current Position Data

OFS BSP forecasts on the basis of modeling the behavior of existing transactions, as well as those that originate in future periods. The complete cash flow characteristics of each existing transaction are defined in the data structure that is imported into the OFSAA data model on a loan-by-loan and deposit-by-deposit basis.

#### NOTE

A System Administrator is responsible for producing a current position forecast that is subsequently used by Planning Administrators and Planning Users within BSP's planning user interfaces.

### 6.1.9 New Business Volumes

New Add volumes in each period are defined on the basis of a forecast of new incremental volume for each account, or calculated on the basis of achieving a “target balance” in the account. The cash flow characteristics of newly originated volumes are determined by the Product Characteristics definitions. New volume assumptions apply to non-interest income and expense accounts as well.

**NOTE** All New Business volumes are generated by planning users within BSP's planning user interfaces.

### 6.1.10 The Maturity Mix of New Volumes

The maturity mix of forecasted volumes originated for an account is determined by assumptions which are applied to each element of the account.

**NOTE** In BSP, Maturity Mix data is applied to New Business volumes generated within BSP's planning user interfaces.

### 6.1.11 Pricing of New Volumes and Repricing

Pricing of newly originated volumes, or repricing of adjustable and variable rate volumes, is determined by the integration of several factors. Each existing or newly originated transaction is linked to a single rate (a market rate) or a yield curve. The actual rate determined at origination or repricing takes into account the prevailing single rate or yield curve. The term of the transaction (if pricing is tied to a yield curve) is also taken into account, as well as other pricing characteristics (margin, life cap, period cap, etc.). Incremental pricing margins can be applied to new originations on a period-by-period basis for each account.

**NOTE** All New Business pricing is generated by planning users within BSP's planning user interfaces.

### 6.1.12 Dynamic Prepayment Assumptions

You can apply dynamic prepayment assumptions to any account. Prepayments are applied on a loan-by-loan basis. Prepayment assumptions use individual instruments characteristics to drive prepayment behavior.



### 6.1.13 Cash Flows

Cash flows for every instrument are calculated in every modeling period according to the contractual terms defined in the incoming data and/or product characteristics definitions, combined with interest rate scenario and prepayment assumptions. Principal and interest cash flows are recalculated as contractually defined.

### 6.1.14 Batching Assumptions

Financial forecasts are built through the integration of current position data with each of the modeling scenario assumption elements:

- Current Position Data (account-level data)
- Forecast Rate Scenario Assumptions
- Forecast Balance Assumptions (collected in Planning interfaces)
- Maturity Mix Strategies
- Pricing Margin Assumptions (collected in Planning interfaces)
- Prepayment Assumptions
- Product Characteristics Assumptions

### 6.1.15 Flow of the Modeling Process

The organization of the OFS BSP menu structure is better understood in the context of the general flow of the modeling process, as follows:

5. Set up Application Preferences, including:
  - Certain elements of Application Preferences (as of date for data, modeling leaves, etc.)
  - Default values and limit details
6. Load transaction-level data.
  - Load data into the system for modeling.

7. Perform cash flow edits.

Each of the individual instrument records must be quality controlled. For each instrument record, the cash flow edits check all of the columns used in cash flow calculations for internal consistency. For example, the maturity date must be greater than the origination date, and the payment frequency must be greater than zero. This process is available within BSP Processing, and is a critical step in ensuring that OFS BSP produces expected results.

8. Define modeling assumptions.

Define assumption sets. These include any number of the assumptions described in this module and will minimally include Time Buckets, Product Characteristics and Forecast Rate Scenarios.

9. Specify the model run. Select a combination of assumption sets which will be applied to the data you wish to model. You may define a single processing run, or a batch of several runs, including

multiple sets of assumptions. The run or batch is launched and results are produced into results tables.

## 6.2 Reconciling the Data

Reconciliation is the process of comparing the information carried in the Instrument tables to the general ledger balances (contained in Ledger Stat).

The goal of the Balance Sheet Planning Process is to measure and manage interest rate and liquidity risk for the entire balance sheet, as represented on the general ledger. Many ledger accounts have corresponding data in the Instrument tables. In such instances, the balances from the instrument data must be compared with the corresponding ledger balances.

The reconciliation process involves defining a level at which some piece of information in the Instrument tables is to be compared to the General Ledger data carried in the Management Ledger (also known as LEDGER\_STAT). That level can be one dimension (to reconcile for each general ledger account number, for example, General Ledger Account ID) or multiple dimensions (to reconcile for each general ledger account number within each business unit, for example, General Ledger Account and Organization Unit).

The most common type of reconciliation is to compare the current balance of Instrument table data to the general ledger ending balance. The data carried in the database is a snapshot of the portfolio as of a given date. Consequently, comparing the current balances from the Instrument table to the general ledger ending balance measures the degree to which the extracted data is in balance with, or reconciles to, the general ledger.

Variances between the Instrument table and the Management Ledger table should be corrected. If the magnitude of the variances is within an accepted tolerance, plug entries should be created to force the reconciliation to zero. An Instrument table (FSI\_D\_LEDGER\_STAT\_INSTRUMENT) has been seeded in the database to hold these plug balances and any Ledger Specific balances that you wish to include as instrument balances for BSP processing.

## 6.3 Cleansing the Data by performing Cash Flow Edits

It is extremely important that the data in the Instrument tables is clean, accurate, and complete before it is used to generate cash flows and for further processing. Oracle BSP provides seeded Cash Flow Edit rules to edit (clean and prepare) Instrument table data. You can create multiple Cash Flow Edit Processes depending on the data to be cleansed. In addition, you can view actual results of Cash Flow Edits by accessing the audit data written into the FSI\_PROCESS\_ERRORS table.

You can also select the preview mode option so that you can preview the changes that will be made to the Instrument table data as a result of cash flow edits before those changes are applied in the Instrument tables.

It is highly recommended that you create and run Cash Flow Edits before processing data to generate any type of cash flow-related results. See: Cash Flow Edits

## 6.4 Setting Application Preferences

Application Preferences allow users to set the current as of date and configure default values used throughout the application.

## 6.5 Activating Currencies and Loading Exchange Rates

Rate Management under “Common Object Maintenance” handles all currency definitions for OFSAA applications. Currencies are conveniently referred to by code and written description. A comprehensive list of ISO-defined currencies is included, and you can define and add your own. Upon installation, one currency is active and ready for processing: the one identified by your organization as the functional currency. You can activate other currencies and define and activate newly-created currencies when needed. In addition, you can designate key currencies to be used for reporting. These alone will be available for cross-currency consolidation.

The Common Object Maintenance > Rate Management > Currencies screen enables you to select currencies for reporting and for establishing interest rates and exchange rates. It allows you to activate relevant currencies and classify as:

- Functional Currency
- Reporting Currencies
- Other Active Currencies

Before defining the classifications, let's begin by discussing two types of currencies: ISO-defined and user-defined.

### 6.5.1 Currency Definitions and Classifications

OFSAA Rate Management provides a list of ISO-defined currencies for you to activate as needed. (The functional currency is activated upon installation). You can also define and add your own. Any currency except the functional currency can be deactivated or deleted.

Currencies are displayed in alphabetical order by currency code.

### 6.5.2 The Functional Currency

At the time of installation, Rate Management requires the installer to designate a functional, or primary currency for the organization (stored in the FSI\_DB\_INFO table). A German multinational bank would therefore designate the Euro as its functional currency. Only one functional currency is allowed per organization, and once assigned it cannot be changed. The functional currency is both an active and a reporting currency.

### 6.5.3 Reporting Currencies

A reporting currency is an active currency that balances in other currencies are consolidated to, to facilitate reporting. Balances in reporting currencies are, in turn, consolidated to the functional currency. For example, an American multinational bank might consolidate its holdings in Asian currencies to the Japanese Yen and its balances in European currencies to the Euro. Then it would consolidate the sums to the U.S. dollar.

### 6.5.4 Other Active Currencies

An active currency is any currency the organization works with. When OFSAA is installed only the functional currency is active and available for processing. If your institution has holdings in more than

one currency then you need to activate those currencies. A Mexican bank doing business in the United States and Canada, for instance, would activate the U.S. dollar and the Canadian dollar.

For more information on loading exchange rate data using the staging area and the related data loader utility, see Oracle Financial Services Analytical Applications Data Model Utilities User Guide, Stage History Rates Loader module.

For more information on loading exchange rate data using the Currency Rates user interface, see Currency Rates.

## **6.6 (Mandatory) Deciding on historical rate information and managing by creating Interest Rate Codes**

The quality and availability of interest rate information varies 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.

OFSAA Rate Management facilitates the process of inputting and viewing interest rates and yields by supporting multiple rate formats and other rate attributes to give you data storage capabilities appropriate to your market. For example, you can store the following data attributes for each interest curve:

- Rate format (zero-coupon or yield-to-maturity)
- Accrual basis
- Compound basis

Term structure parameters provide insight into the stability and direction of future rates. Rate Management enables you to define and store—up to daily—term structure parameters for any and all currently supported term structure models.

When you add an Interest Rate Code, the Add/Edit page appears with four tabbed pages. The pages display interest rate code characteristics and enable you to define, input, modify, and view data. The tabs are Attributes, Terms, Rates, and Parameters. You can only define interest rates where you have an active currency. See: [Interest Rates Detail Screen](#).

For more information on loading interest rate data using the staging area and the related data loader utility, see Oracle Financial Services Analytical Applications Data Model Utilities User Guide, Stage History Rates Loader module.

## **6.7 Capturing Instrument Behavior for non-standard instruments**

### **6.7.1 Capturing Instrument Behavior for non-standard instruments**

Payment and repricing characteristics for most instruments can be accommodated through the data attribute values in the Instrument tables. However, certain instruments may not have contractual cash flows or may have cash flows that are based on unique payment and repricing patterns that are too complex to be accommodated in the standard fields of the Instrument tables. Oracle Balance Sheet Planning allows you to define custom behavior, payment and repricing patterns to accurately model the unique characteristics for such instruments.

## 6.7.2 Defining Behavior Patterns

In user defined Behavior patterns, you can assign a unique amortization type code to a set of payment tenors, and define principal cash flow amounts (via percentages) for the following instrument types:

- Non-maturity Instruments
- Non Performing Instruments
- Devolvement and Recovery of Guarantees

Once you create a behavior pattern, you can use it by mapping the unique behavior pattern code as the amortization type code for your instruments. Behavior pattern codes are defined within a pre-set range (70000 – 99999). When the cash flow engine encounters an instrument with an amortization type code within this pre-determined range, it understands that a Behavior Pattern should be referenced for determining the principal cash flow amounts.

### 6.7.2.1 CFE Requirements and Functionality

AMRT\_TYPE\_CD of the instrument table should contain the behavior pattern code.

Non Performing Assets

Behavior Sub Type = Substandard, Doubtful and Loss (from Behavior Pattern).

BEHAVIOR\_SUB\_TYPE\_CD can be NULL when BEHAVIOR\_TYPE\_CD = 1 (Non-Maturity). When BEHAVIOR\_TYPE\_CD = 2 (Non-Performing), then value is expected in BEHAVIOR\_SUB\_TYPE\_CD. All the Substandard, Doubtful and Loss events of Behavior Pattern will be processed by the CFE. Any outstanding balance after all the Non Performing events from the pattern definition are processed will be written off on the maturity date. No interest cash flows will be generated.

Next Payment Date: This will need to be after As of Date of the process run. Suggested to be the same as Maturity Date since no interest payment is expected to happen.

Maturity Date: This will need to be after As of Date of the process run. Write off event will happen on the maturity date.

Compounding Basis, Accrual Basis, Remaining Number of Payments, Current Payments, Current Net Rate, Adjustable Type Code: Since the interest cash flow will not be generated, these can be the default values. Interest cash flow is output for Earning Assets, Interest bearing Liabilities, Interest Income and Interest Expense account types.

### 6.7.2.2 Non Maturity

Behavior Sub Type = Core and Volatile (from Behavior Pattern).

Instrument record need not contain behavior sub type. Engine will generate the core runoffs and volatile runoffs based on the pattern definition. Interest cash flow is paid out on the payment dates.

Original Term, Amortization Term, Maturity Date: Engine arrives at Maturity Date based on the highest tenor given in the pattern definition. It is suggested that the Original Term and Amortization term be assigned 99 years for non maturity accounts. If the engine calculated maturity date is less than the maturity date in the instrument record (as normally is the case), then the instrument matures on the calculated maturity date and the remaining interest is paid out on the calculated maturity date (interest in arrears case). The maturity date is calculated by the engine by adding the longest non maturity tenor to as of date.

### 6.7.2.3 Devolvement and Recovery

Behavior Sub Type = Sight Devolvement, Sight Recovery, Usance Devolvement and Usance Recovery (from Behavior Pattern).

Instrument data should contain the behavior subtype as Sight (Code: 306) or Usance (Code: 305). The sub type code is used by the engine to generate the devolvement or recovery events.

- If sub type =Sight and Devolvement Status is “No” (both from the instrument record), then all the Sight Devolvement events from the Behavior Pattern will be processed. Finally, all the Sight Recovery Events will be processed.
- If sub type = Sight and Devolvement Status is “Yes” (both from the instrument record), then all the Sight Recovery events available in the Behavior Pattern will be processed.

Any unrecovered balances will be written off on the maturity date. Similarly, Usance events will be processed.

One Behavior pattern can contain a mix of Sight and Usance events but the Engine will process the events based on the Behavior Type Code of the instrument. No interest cash flows will be generated.

Next Payment Date: This will need to be after As of Date of the process run. Suggested to be the same as Maturity Date since no interest payment is expected to happen.

Maturity Date: This will need to be after As of Date of the process run. Any outstanding balance after all the Recovery events from the pattern definition are processed will be written off on the maturity date.

Compounding Basis, Accrual Basis, Remaining Number of Payments, Current Payments, Current Net Rate, Adjustable Type Code: Since the interest cash flow will not be generated, these can be the default values.

### 6.7.2.4 Behavior Pattern Structure

Oracle Balance Sheet Planning allows you to build three types of behavior patterns:

- Non Maturity
- Non Performing
- Devolvement and Recovery

These behavior patterns differ in terms of how they allow you to categorize cash flows based on the specific behavior type being modeled. The following table summarizes the various payment types available for each type of behavior pattern

Pattern Type	Payment Type
Non Maturity	Volatile
	Core
Non Performing	Sub Standard

	Doubtful
	Loss
Devolvement and Recovery	Sight Devolvement
	Sight Recovery
	Usance Devolvement
	Usance Recovery

### 6.7.2.5 Payment Events

You must define one or more payment events to complete a behavior pattern. A payment event is a set of payment characteristics, which define the time line and amount of a specific payment in the behavior pattern. While the payment types can change based on the pattern type selected, there are three inputs that are required for all behavior patterns:

- Term
- Amount
- Type

### 6.7.2.6 Principal Runoff Term

The Term of the principal runoff is determined by the input of a Tenor and Multiplier. For example, if you are defining the "Volatile" component of a non-maturity instrument, you would likely define the runoff term for the first amount as "1 Day". In this case, Tenor = "1" and Multiplier = "Day"

Amount

The cash flow amount is defined as a percentage of the end of period balance. For example, in the case of Non Maturity behavior pattern type, if the assumption for the Volatile runoff amount is that 25% of the portfolio is to be categorized as "volatile", the input should be "25". The sum of the percentages for Non Maturity behavior pattern type must equal 100%. The "Total Percentage" is shown at the bottom of the Pattern detail area indicating the cumulative percentage.

### 6.7.2.7 Payment Type

The payment type selection categorizes all payment runoff into meaningful groupings. The principal runoff type is carried forward by the cash flow engine and can be identified in the cash flow results by the following financial element codes.

- 186 Writeoff Positive
- 187 Timing of Writeoff Positive
- 188 Writeoff Negative
- 189 Timing of Writeoff Negative

- 200 Non Maturity - Core Runoff
- 201 Timing of Non Maturity - Core Runoff
- 202 Non Maturity - Volatile Runoff
- 203 Timing of Non Maturity - Volatile Runoff
- 204 Devolvement Runoff
- 205 Timing of Devolvement Runoff
- 206 Recovery Runoff
- 207 Timing of Recovery Runoff
- 208 Non Performing Asset Runoff
- 209 Timing of Non Performing Asset Runoff

### 6.7.3 Defining Payment Patterns

In a user defined payment pattern, you can assign a unique amortization type code to a set of payment events, which may include some of the following customized features:

- Changes in payment frequency
- Seasonal payment dates
- Nonstandard or variable payment amounts

Once you create a payment pattern, you can use it by entering the payment pattern code as the amortization type code for the instrument.

#### 6.7.3.1 Payment Pattern Structure

Oracle Balance Sheet Planning allows you to build three types of payment patterns:

- Absolute
- Relative
- Split

These payment patterns differ in terms of how they address payment schedules, which determine whether the payment events constituting the pattern are determined by calendar dates or periods. Absolute patterns are defined with sets of payment characteristics scheduled on specific calendar dates. Relative patterns are defined with sets of payment characteristics scheduled for certain periods of time.

You can also define a payment pattern with both absolute and relative payment events. This type of pattern is called a split pattern.

In addition, for each payment pattern, you need to specify a payment type, either conventional, level principal, or non-amortizing. Your choice of the pattern type and the payment types will determine the fields that are used for calculation.



### 6.7.3.2 Payment Events

You must define one or more payment event to complete a payment pattern. A payment event is a set of payment characteristics, which define the time line and amount of a specific payment in the payment pattern.

Though the characteristics of the payment phase change based on whether you are defining an absolute, relative, or split pattern, there are two characteristics that are required for all amortizing patterns:

- Payment method
- Value

### 6.7.3.3 Payment Method

The payment methods determine the payment amount for the payment event. There are six different methods.

The following table describes the different payment methods.

Method	Description
% of Original Balance	This method calculates the payment as a percentage of the original balance; the percentage being defined by the input percent. This method is useful for apportioning the starting balance on a level principal instrument over several payments. This method is only available for payment patterns defined with a level principal payment type.
% of Current Balance	This method calculates the payment as a percentage of the current balance prior to payment; the percentage being defined by the input percent. This method is only available for payment patterns defined with a level principal payment type.
% of Original Payment	This method calculates the payment as a percentage of the original payment column from the detail instrument data. This percentage is defined by the input percent.
% of Current Payment	This method calculates the payment as a percentage of the previous payment; the percentage being defined by the input percent. This payment is calculated on the payment date based on the characteristics of the instrument at the time of the payment, including the current rate, current balance, and current payment frequency.
Absolute Payment	This is an input payment amount. This amount represents both principal and interest for a conventional payment type, and represents only principal for a level principal payment type. For both types of patterns, absolute value payment amounts are entered as gross of participations.

Interest Only	This is a calculated payment amount. An interest-only payment is calculated during processing as balance times rate times accrual factor.
---------------	---

#### 6.7.3.3.1 Value

The value reflects the percentage or payment amount based on the method chosen for the payment event. Value is disabled for phases using the Interest Only payment method.

Payment amounts for conventional pattern phases must reflect both principal and interest payments. Payment amounts for level principal pattern phases only reflect the principal portion of the payment. For level principal pattern phases, the total cash flow on a payment date is the principal amount stored as the payment plus the calculated interest.

**NOTE** The payment method and value columns are not displayed for payment patterns defined with a non-amortizing payment type. All payments are assumed to be interest only for this type of payment pattern.

#### 6.7.3.4 Absolute Payment Patterns

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

Take the example of a loan that follows a seasonal payment pattern, in which the payment patterns for January, February and March are scheduled for interest-only payments. As revenues for the customer increase, the payment amount also increases. Therefore, the payments for April and May are 80% of the original payment, and June through September is 100% of the original payment. The payment decreases as the production season slows. The payment for October is decreased to 80% of the original payment, and the payments for November and December are decreased again to 50% of the original payment.

**NOTE** You can define absolute payment patterns only up to a year. This is because all entries are automatically ordered by date and are scheduled in a single year rotation

#### 6.7.3.5 Relative Payment Patterns

Relative payment patterns are commonly used for modeling instruments with irregular payment frequencies or for instruments where the payment type changes over time. Take the case of a four-year loan for example. The payment for the first 12 months could only be interest. The first 35 payments are scheduled for 50% of the currently scheduled payment, and the last payment is a balloon payment for the balance of the loan.

### 6.7.3.6 Split Payment Patterns

A split pattern contains multiple sets of payment patterns under a single amortization code. You use a split pattern for financial instruments that make principal payments along two concurrent amortization schedules. Each separate amortization schedule is termed a time line and assigned a percentage of the balance. A Split Pattern can constitute both absolute and/or relative payment patterns within itself.

## 6.7.4 Defining Repricing Patterns

User defined repricing patterns provide a mechanism to capture the repricing structure of instruments whose rates change according to complex schedules which cannot be captured in the standard fields of instrument tables.

The user defined repricing pattern allows you to define multiple changes to various elements affecting repricing including:

- Rates
- Margins
- Frequency

A repricing pattern has two major components:

- User Defined Repricing Pattern
- User Defined Repricing Event

---

**NOTE**

Oracle Balance Sheet Planning Repricing Pattern interface supports simultaneous multiple-user access.

### 6.7.4.1 User Defined Repricing Pattern

The user defined repricing pattern provides you with the ability to define a series of repricing patterns and events that describe the interest rate adjustment characteristics over the life of a cash flow instrument. One repricing pattern can be assigned to many cash flow instruments. There are two types of repricing patterns that you can define:

- Absolute Repricing Pattern
- Relative Repricing Pattern

### 6.7.4.2 User Defined Repricing Event

The events of a repricing pattern define changes to the interest rates of an instrument during its life. Every pattern begins with an initial event, which describes the behavior for the initial period.

**NOTE**

This initial event is required for the setup of all repricing patterns but is not used in Oracle Funds Transfer Pricing. This feature is used only by Oracle BSP, when assigning a rate at origination of new business and transaction strategy records.

The second event describes the change in behavior after the initial period is over. A third event describes the next change in behavior and so on. In relative repricing patterns, you can also define the number of times an event will be repeated before the next event is triggered.

At least one event must be defined for a repricing pattern. All events are listed in the Repricing Events table. The repricing pattern type, absolute or relative, determines the data required to be populated in the events table.

Caution: You have the option to change the repricing pattern type at any time during the create process. However, changing the repricing pattern type causes the system to automatically refresh the Repricing Events table, and the loss of all the data that you previously entered.

### 6.7.4.3 Event Detail

You define each event with a repricing type of either flat rate or indexed rate. The repricing types determine the event detail characteristic that are available.

#### Flat Rate

Selecting the flat rate repricing type allows you to set the rate of the instrument to a fixed value. For example, 6%. The following table describes the event detail characteristics that are available when the flat rate repricing type is selected.

Characteristic	Description
Net Rate	The new net rate value
Gross Rate	The new gross rate value
Transfer Rate	The new transfer rate value

**NOTE**

Flat rate always overrides the caps and floors defined on the instrument record.

### 6.7.4.4 Indexed Rate

Selecting the indexed rate repricing type allows you to set the rate of the instrument to an adjustable value, defined as the index rate plus a margin. The following table describes the event detail characteristics that are available when the indexed rate repricing type is selected:

Characteristic	Description
Interest Rate Code	Reference interest rate used as the index rate to set gross and net rates. This list of values is pulled from the current Historical Rates database.
Transfer Rate Interest Rate Code	Interest rate used to calculate the transfer rate.
Yield Curve Term	Term used in interest rate code lookups; if left blank, defaults to the term until the next repricing; set with a value and multiplier.
Net Margin	Added to index rate to get net rate.
Gross Margin	Added to index rate to get gross rate.
Transfer Margin	Added to index rate to get transfer rate.
Rate Cap Life	The upper limit for gross rate.
Rate Floor Life	The lower limit for gross rate.
Rate Set Lag	Period by which the date of the interest rate used for calculation precedes the event date; set with a value and a multiplier.

#### 6.7.4.5 Absolute Repricing Pattern

The absolute repricing pattern is used for instruments that are date dependent. Each specific date is a separate event.

You may have up to one year of defined events that repeat for the life of the instrument. For example, you could define one event for each day of the year; the maximum number of events that you can define is 365. However, you can only define one event for any given date.

#### 6.7.4.6 Relative Repricing Pattern

The relative repricing pattern is a series of repricing events that are driven by user defined time lines. It is used for instruments where the repricing is determined by elapsed time since origination. You specify the duration of each repricing period (frequency) and the number of times the event should occur (repeat) before calculating the next event in the pattern.

For example, an event can be defined with a frequency of 1, a multiplier of Months, and a repeat value of 3. This translates into an event that reprices every month for a duration of 3 consecutive months.

You may have a graduated rate mortgage that requires three rate changes over the life of the instrument. You will have three events following the initial event. If you wish the instrument to retain

the behavior defined for the last event, the repeat value should be set to 999. This prevents wrapping, or the recycling of all the defined events until the life of the instrument runs out.

#### 6.7.4.7 Pricing with Balance Tiers

Repricing Patterns include the option to set rates based on the balance of the instrument being priced. This selection is optional and users can select “None”, meaning there are no balance tiers needed, or they can select “Current Balance”. If Current Balance is selected, then users can define balance tier ranges and include different pricing details for each balance tier. This option is useful for applying pricing to products such as Savings Accounts or Money Market Accounts that pay different levels of interest based on the account balance.

Balance tiered pricing can be applied to detailed instrument records or to aggregate balances. When applying to aggregate balances, it is important to define the mix percentage of the portfolio for which the pricing will be applied. This is necessary because the original mix of accounts containing the related balance information is lost when the data is aggregated. The mix percentage input solves this problem. When balance tiered pricing is applied to detailed accounts, the mix percentage input is not required.

Example:

Suppose the repricing pattern is defined with the following balance tiers:

Balance > 0 and < 25,000 then current rate = 0.00%, mix % = 50%

Balance >=25,000 then current rate = 2.5%, mix % = 50%

Scenario 1, the instrument table contains detailed account records

Account #1 = \$10,000

Account #2 = \$10,000

Account #3 = \$10,000

Account #4 = \$10,000

Account #5 = \$10,000

Account #6 = \$50,000

The resulting rate will be  $[(\$50,000 \times 0.00\%) + (\$50,000 \times 2.50\%)] / \$100,000 = 1.25\%$

Scenario 2, the instrument table contains 1 aggregated instrument record

Account #1 = \$100,000

#### NOTE

In scenario 2, the mix percentage is needed.

The resulting rate will be  $(0.00 \times .50) + (2.50 \times .50) = 1.25\%$

### 6.7.5 Loading Payment Schedule details

Supporting instrument records that have completely unique payment characteristics is the Payment Schedule option. User can directly load cash flows for individual instrument contracts into the FSI\_D\_PAYMENT\_SCHEDULE table.

Instrument records are associated with Payment Schedules through the Amortization Type Code (AMRT\_TYPE\_CD) column. If the cash flow engine encounters an AMRT\_TYPE\_CD = 800, 801 or 802 it understands that the instrument record is associated with a Payment Schedule and will perform a lookup in the Payment Schedule table based on the IDENTITY\_CODE, ID\_NUMBER and INSTRUMENT\_TYPE\_CD of the record being processed.

For more information, refer to Initializing Schedule Records and Amortization Type Code sections of Cash Flow Engine Reference Guide.

## 6.8 (Mandatory) Defining Time Buckets

In generating forecasts for your current book of business, the OFSAA Cash Flow Engine processes your instrument-level business data on a daily basis. Results are aggregated into "time buckets" that you specify. Time Buckets also govern how new business forecasts are generated and stored as well as the overall duration of your forecast.

In general, the OFSAA Cash Flow Engine works with versatile Time Bucket definitions. In an ALM or Liquidity Risk Management context you might want to work with a number of different Time Buckets. For example, in a Liquidity Risk Management context you might want use daily buckets for 90 days followed by weekly buckets for 52 weeks. In an ALM context, you might want to use monthly time buckets for 60 months followed by annual time buckets for 5 years.

OFS Balance Sheet Planning shares the OFSAA Cash Flow Engine with other OFS applications but supports a subset of the engine's total capabilities. OFS BSP is intended to produce monthly forecasts over a chosen duration so Time Bucket modelling in BSP is limited to monthly time buckets. OFS Balance Sheet Planning supports forecasts of up to 240 months.

## 6.9 (Mandatory) Defining Product Characteristics

Product Characteristic rules allow you to define payment, pricing and repricing characteristics for new business. They are also used to specify general calculation attributes for both existing accounts and new business.

Defining a Product Characteristics rule is a mandatory step in setting up and configuring the Oracle BSP Application.

## 6.10 (Mandatory - Deterministic) Defining Forecast Rate Scenarios

Forecast Rate scenarios allow you to define your deterministic modeling scenarios including projections for future interest rates, future currency exchange rates and future economic indicators. The cash flow engine uses interest rate forecasts to project cash flows, including pricing new business, re-pricing existing business, calculating prepayments, determining discount methods and in determining rate dependent forecast assumptions.

The Forecast Rates scenario rules use interest rate codes, currency codes and economic indicator codes defined / stored in Rate Management, including all the active and reporting currencies and the primary, or functional, currency at your institution.

Defining a Forecast Rate Scenario is a mandatory step in setting up and configuring the Oracle BSP Application.

**NOTE**

OFS BSP supports Forecast Rate Scenarios having only one baseline forecast for each Interest Rate Code (IRC). BSP does not support Forecast Rate Scenarios having multiple forecast scenarios for each IRC.

## 6.11 Defining Prepayments

One of the major business risks faced by financial institutions engaged in the business of lending is prepayment risk. Prepayment risk is the possibility that borrowers might choose to repay part or all of 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.

Prepayment methodologies are associated with the product-currency combinations within the Prepayment rule. See: [Defining Prepayments](#).

### 6.11.1 Prepayment Methodologies and Rules

You can use any of the following five methods in a Prepayment rule to model the prepayment behavior of instruments:

- Constant Prepayment method
- Prepayment Model method
- PSA method
- Arctangent method
- ADCo Prepayment method

**NOTE**

For more information on ADCo Prepayment method, refer to ADCo Prepayment Method Chapter.



### 6.11.2 Constant Prepayment Method

The Constant Prepayment method of “Use Payment Dates”, 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.

Constant Prepayment method of “User Defined Prepayment Tenors” allows prepayment on any date, irrespective of contractual payment dates. You can create your own origination date ranges and define prepayment tenor(s) for each range. You can associate specific prepayment rate for each prepayment tenor.

## 6.12 Prepayment Model 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 amounts.

### 6.12.1.1 Prepayment Model Structure

A typical Prepayment model structure includes the following:

- **Prepayment Drivers:** You can build a Prepayment model using one to three prepayment drivers. A driver influences the prepayment behavior of an instrument and is either an instrument characteristic or a measure of interest rates.
- **The Prepayment Driver Nodes:** You can specify one or more node values for each of the prepayment drivers that you select.
- **Interpolation or Range method:** Interpolation or Range methods are used to calculate prepayment rates for the prepayment driver values that do not fall on the defined prepayment driver nodes.

### 6.12.1.2 Types of Prepayment Drivers

The prepayment drivers are designed to allow the calculation of prepayment rates at run time depending on the specific characteristics of the instruments for which cash flows are being generated. Although nine prepayment drivers are available, a particular prepayment model can contain only up to three prepayment drivers.

The prepayment drivers can be divided into the following two categories:

- **Age/Term Drivers:** The Age/Term drivers define term and repricing parameters in a Prepayment model. All such prepayment drivers are input in units of months. These Drivers include:

**Original Term:** You can vary your prepayment assumptions based on the contractual term of the instrument. For example, you could model faster prepayment speeds for longer term loans, such as a 10-year loan, than for short term loans, such as a 5-year loan. You would then select the Original Term prepayment driver and specify two node values: 60 months and 120 months.

**Repricing Frequency:** You can vary your prepayment assumptions based on the repricing nature of the instrument being analyzed. Again, you could specify different prepayment speeds for different repricing frequencies and the system would decide which one to apply at run time on a record by record basis.

**Remaining Term:** You can specify prepayment speeds based on the remaining term to maturity. For example, loans with few months to go until maturity tend to experience faster prepayments than loans with longer remaining terms.

**Expired Term:** This is similar to the previous driver but instead of looking at the term to maturity, you base your assumptions on the elapsed time. Prepayments show some aging effect such as the loans originated recently experiencing more prepayments than older ones.

**Term to Repricing:** You can also define prepayment speeds based on the number of months until the next repricing of the instrument.

- **Interest Rate Drivers:** The Interest Rate drivers allow the forecasted interest rates to drive prepayment behavior to establish the rate-sensitive prepayment runoff. Interest Rate Drivers include:

**Coupon Rate:** You can base your prepayment assumptions on the current gross rate on the instrument.

**Market Rate:** This driver allows you to specify prepayment speeds based on the market rate prevalent at the time the cash flows occur. This way, you can incorporate your future expectations on the levels of interest rates in the prepayment rate estimation. For example, you can increase prepayment speeds during periods of decreasing rates and decrease prepayments when the rates go up.

**Rate Difference:** You can base your prepayments on the spread between the current gross rate and the market rate.

**Rate Ratio:** You can also base your prepayments on the ratio of current gross rate to market rate.

The following diagram illustrates a three-driver prepayment model:



The ~ signifies a point on the X-Y-Z plane. In this example it is on the second node of the Z-plane. The Z -plane behaves like layers.

Oracle Balance Sheet Planning allows you to build prepayment models using the Prepayment Model rule. The Prepayment Model rule can then be referenced by a Prepayment Rule. See Prepayment Models.

## 6.12.2 PSA Method

The PSA Prepayment method (Public Securities Association Standard Prepayment Model) is a standardized prepayment model that is built on a single dimension, remaining 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.

**NOTE** PSA speed inputs can be between 0 and 1667

## 6.12.3 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).

**Note** All prepayment rates should be input as annual amounts.

User defined coefficients adjust this function to generate differently shaped curves. Specifically:

$$\text{CPR}_t = k_1 - (k_2 * \text{ATAN}(k_3 * (-\text{Ct}/\text{Mt} + k_4)))$$

where  $\text{CPR}_t$  = annual prepayment rate in period  $t$

$\text{Ct}$  = coupon in period  $t$

$\text{Mt}$  = market rate in period  $t$

$k_1 - k_4$  = user defined coefficients

A graphical example of the Arctangent prepayment function is shown below, using the following coefficients:

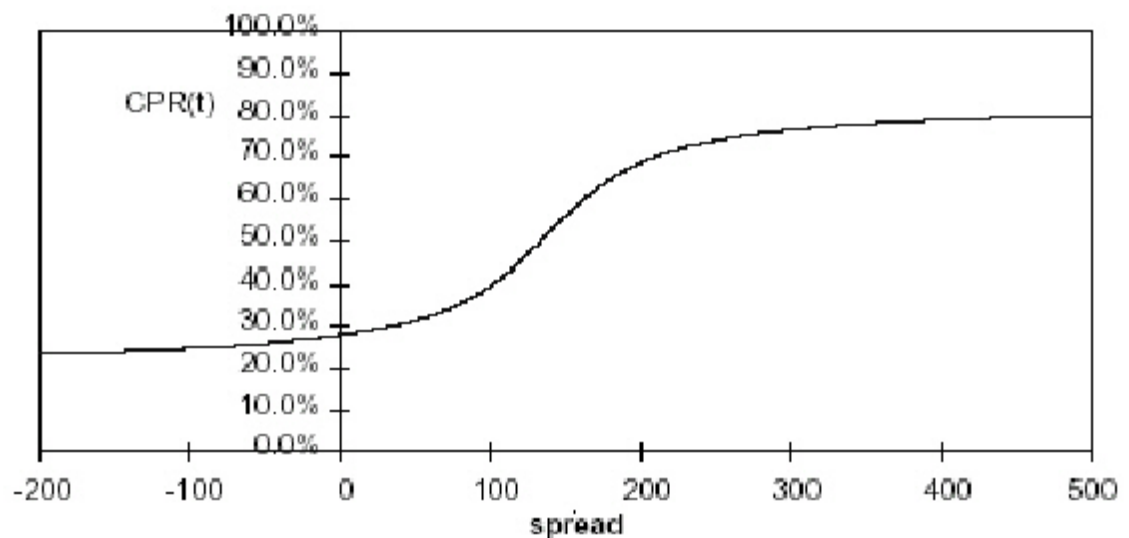
$k_1 = 0.3$

$k_2 = 0.2$

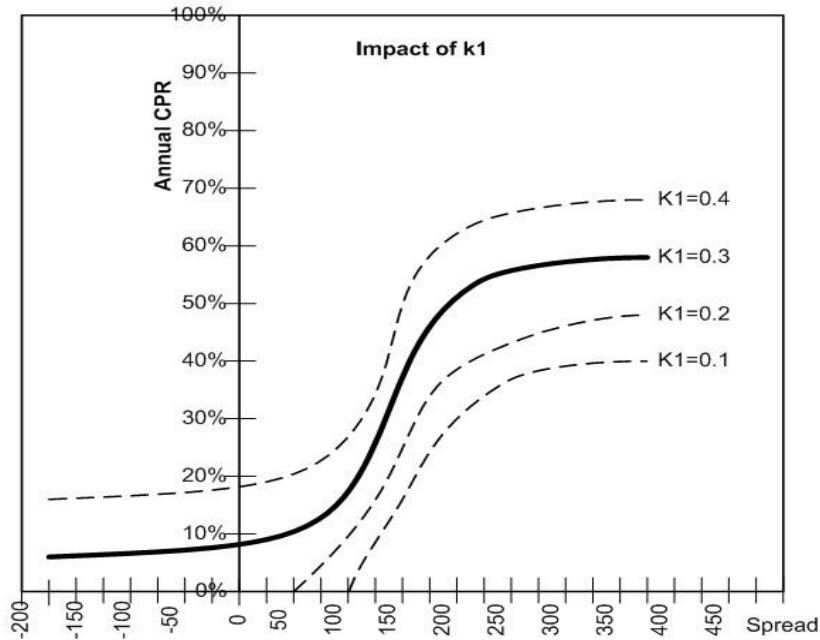
$k_3 = 10.0$

$k_4 = 1.2$

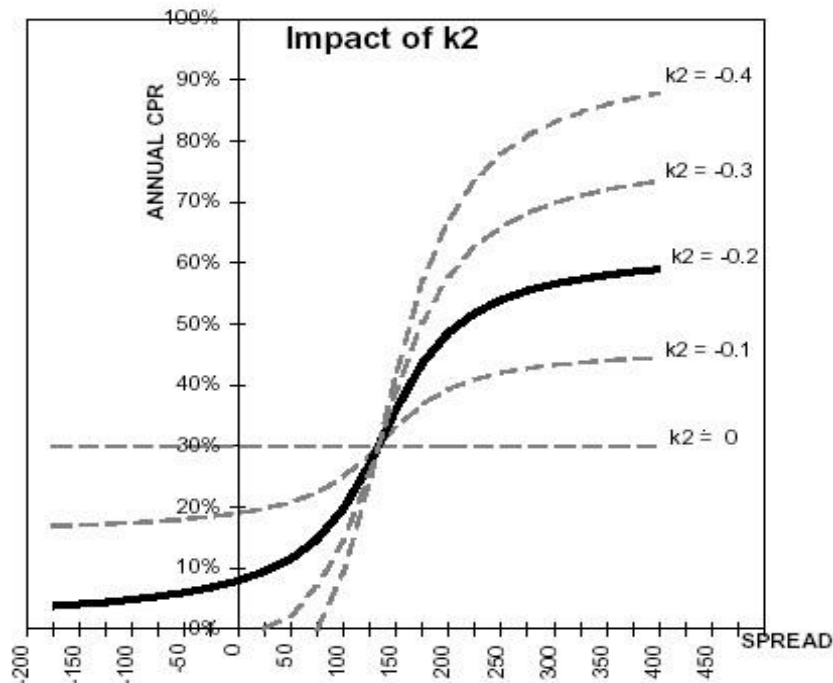
Each coefficient affects the prepayment curve in a different manner.



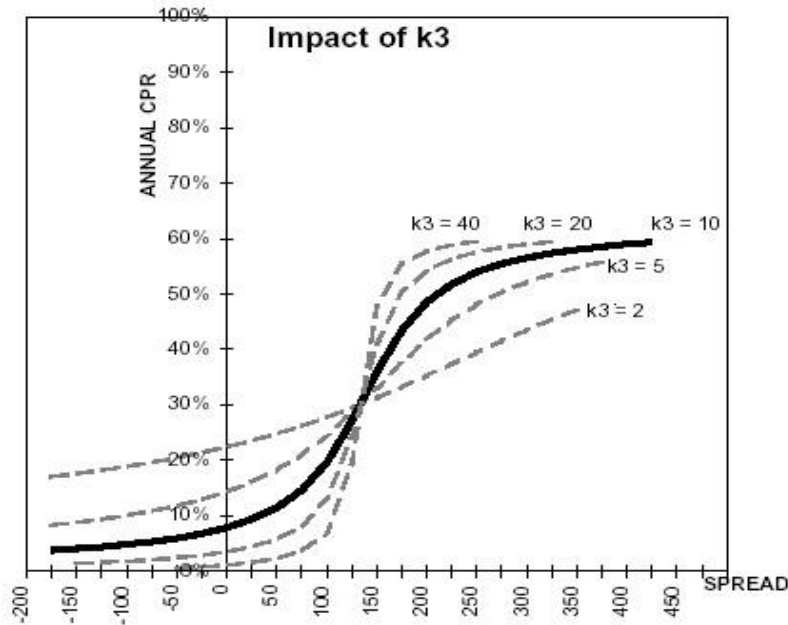
The following diagram shows the impact of  $K_1$  on the prepayment curve.  $K_1$  defines the midpoint of the prepayment curve, affecting the absolute level of prepayments. Adjusting the value creates a parallel shift of the curve up or down.



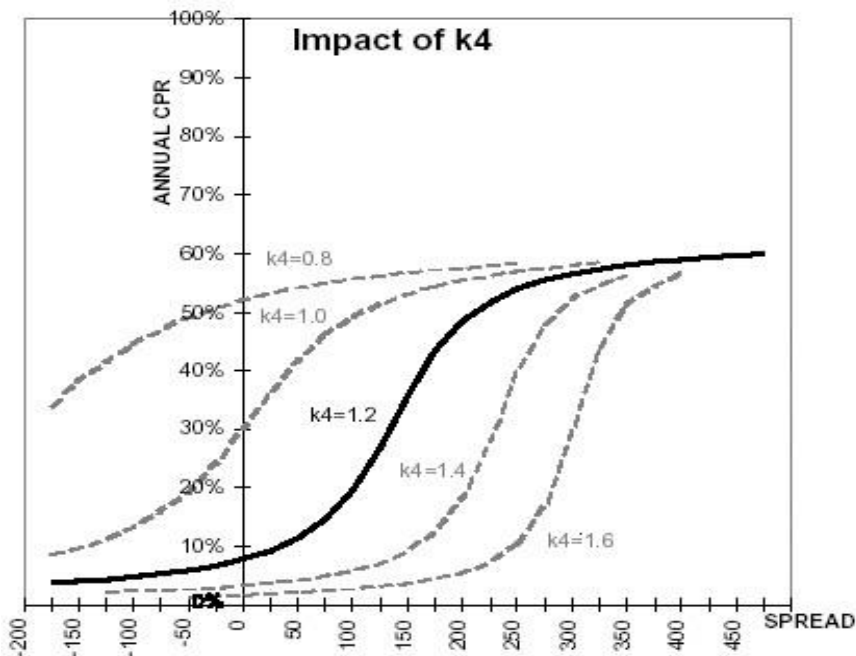
The following diagram shows the impact of K2 on the prepayment curve. K2 impacts the slope of the curve, defining the change in prepayments given a change in market rates. A larger value implies greater overall customer reaction to changes in market rates.



The following diagram shows the impact of K3 on the prepayment curve. K3 impacts the amount of torque in the prepayment curve. A larger K3 increases the amount of acceleration, implying that customers react more sharply when spreads reach the hurdle rate.



The following diagram shows the impact of K4 on the prepayment curve. K4 defines the hurdle spread: the spread at which prepayments start to accelerate. When the spread ratio = k4, prepayments = k1.



## 6.13 Defining Default Forecast Assumptions

You define new business assumptions in Oracle BSP through two different assumption rules:

- Forecast Maturity Mix
- Forecast Pricing Margins

For each of your forecasting products, Pricing Margin assumption sets allow you to specify default spreads relative to a pricing index (by currency) for each forecast month. When working with Forecast Sets in BSP's planning user interfaces, users can change this default margin and/or pricing method.

For each of your forecasting products, Maturity Mix assumption sets allow you to specify maturity terms (by currency) for each forecast month. BSP Planning Users can not modify the Maturity Mix assumptions specified by the BSP System Administrator.

## 6.14 Defining Transfer Pricing Rules

Defining Transfer Pricing rules is one of the optional steps in the Oracle Balance Sheet Planning process. You must define Transfer Pricing rules, in order to transfer price your forecasted balances. A Transfer Pricing rule is used to manage the association of transfer pricing methodologies to various product-currency combinations. It can also be used to manage certain parameters used in option costing.

See: [Defining Transfer Pricing Methodologies Using Node Level Assumptions](#)

To reduce the amount of effort required to define the transfer pricing methodologies for various products and currencies, Oracle Funds Transfer Pricing allows you to define transfer pricing methodologies using node level and conditional assumptions.

### Node Level Assumptions

Oracle Balance Sheet Planning uses the Product Dimension that has been selected within Application Preferences, to represent a financial institution's product portfolio. Using this dimension, you can organize your product portfolio into a hierarchical structure and define parent-child relationships for different nodes of your product hierarchy. This significantly reduces the amount of work required to define transfer pricing, prepayment, adjustment rule methodologies and other BSP assumption rules.

You can define transfer pricing, prepayment, adjustment rule methodologies and other BSP assumption rules at any level of your product hierarchy. Children of parent nodes on a hierarchy automatically inherit the methodologies defined for the parent nodes. However, methodologies directly defined for a child take precedence over those at the parent level. See [Defining Transfer Pricing Methodologies Using Node Level Assumptions](#).

### Conditional Assumptions

The conditional assumption feature allows you to segregate your product portfolio based on common characteristics, such as term to maturity, origination date, and repricing frequency, and assign specific transfer pricing methodologies to each of the groupings.

For example, you can slice a portfolio of commercial loans based on repricing characteristics and assign one global set of Transfer Pricing, Prepayment, Adjustment Rule Methodologies or other BSP assumption rules to the fixed-rate loans and another to the floating-rate loans.

## 6.15 Transfer Pricing Methodologies and Rules

The transfer pricing methodologies supported by Oracle Balance Sheet Planning can be grouped into the following two categories:

- **Cash Flow Transfer Pricing Methods:** Cash flow transfer pricing methods are used to transfer price instruments that amortize over time. They generate transfer rates based on the cash flow characteristics of the instruments.

In order to generate cash flows, the system requires a detailed set of transaction-level data attributes, such as, origination date, outstanding balance, contracted rate, and maturity date, which resides only in the Instrument tables. Consequently, cash flow methods apply only if the data source is Account tables. Data stored in the Management Ledger Table reflects only accounting entry positions at a particular point in time and does not have the required financial details to generate cash flows, thus preventing you from applying cash flows methodologies to this data.

The cash flow methods are also unique in that Prepayment rules are used only with these methods. You can select the required Prepayment rule when defining an BSP Process.

Oracle Balance Sheet Planning supports the following cash flow transfer pricing methods:

Cash Flow: Average Life

Cash Flow: Duration

Cash Flow: Weighted Term

Cash Flow: Zero Discount Factors

- Non cash Flow Transfer Pricing Methods: These methods do not require the calculation of cash flows. Oracle Balance Sheet Planning supports the following non cash flow transfer pricing methods:

Moving Averages

Straight Term

Spread from Interest Rate Code

Spread from Note Rate

Redemption Curve

## 6.15.1 Cash Flow: Average Life

The Average Life method determines the average life of the instrument by calculating the effective term required to repay back half of the principal or nominal amount of the instrument. The TP rate is equivalent to the rate on the associated interest rate curve corresponding to the calculated term.

Oracle Balance Sheet Planning derives the Average Life based on the cash flows of an instrument as determined by the characteristics specified in the Instrument Table and using your specified prepayment rate, if applicable. The average life formula calculates a single term, that is, a point on the yield curve used to transfer price the instrument being analyzed.



**NOTE** The Average Life TP Method provides the option to Output the result of the calculation to the instrument record (TP\_AVERAGE\_LIFE). This can be a useful option if you would like to refer to the average life as a reference term within an Adjustment Rule

## 6.15.2 Cash Flow: Duration

The Duration method uses the Macaulay duration formula:

In this formula:

$N$  = Total number of payments from Start Date until the earlier of repricing or maturity

$CF_n$  = Cash flow (such as regular principal, prepayments, and interest) in period  $n$

$r$  = Periodic rate (current rate/payments per year)

$m$  = Remaining term to cash flow/active payment frequency

$tn$  = Remaining term to cash flow  $n$ , expressed in years

Oracle Balance Sheet Planning derives the Macaulay duration based on the cash flows of an instrument as determined by the characteristics specified in the Instrument Table and using your specified prepayment rate, if applicable. The duration formula calculates a single term, that is, a point on the yield curve used to transfer price the instrument.

- Within the Duration calculation, the discount rate or current rate,  $r$ , is defined in one of three ways, based on how the methodology is setup by the user:

Current rate is defined as current net rate if the processing option, "Model with Gross Rates" is not selected and current gross rate if the option is selected. The current rate is used as a constant discount rate for each cash flow.

The user may directly input, while defining the TP rule, a constant rate to use for discounting. If specified, this rate is used as a constant discount rate for each flow.

The user can select to discount the cash flows using spot rates from a selected interest rate curve. With this approach, a discount rate is read from the selected interest rate curve corresponding to the term of each cash flow.

- Remaining term to cash flow is the difference between the date of each cash flow and the modeling start date for that instrument.

**NOTE** The Duration TP Method provides the option to Output the result of the calculation to the instrument record (TP\_DURATION). This can be a useful option if you would like to refer to the duration as a reference term within an Adjustment Rule

### 6.15.3 Cash Flow: Weighted Term

The Weighted Term method builds on the theoretical concepts of duration. As shown earlier, duration calculates a weighted-average term by weighting each time period,  $n$ , with the present value of the cash flow (discounted by the rate on the instrument) in that period.

Weighted Average =  $y = \sum$

Since the goal of the Weighted Term method is to calculate a weighted average transfer rate, it weights the transfer rate in each period,  $y_n$ , by the present value for the cash flow of that period. Furthermore, the transfer rates are weighted by an additional component, time, to account for the length of time over which a transfer rate is applicable. The time component accounts for the relative significance of each strip cash flow to the total transfer pricing interest income/expense. The total transfer pricing interest income/expense on any cash flow is a product of that cash flow, the transfer rate, and the term. Hence, longer term cash flows will have relatively larger impact on the average transfer rate. The Weighted Term method, with "Discounted Cash Flow" option selected, can be summarized by the following formula:

$$\text{Weighted-Average} = \bar{y} = \frac{\sum_{n=1}^N \left[ y_n \times \frac{CF_n}{(1+r)^m} \times t_n \right]}{\sum_{n=1}^N \left[ \frac{CF_n}{(1+r)^m} \times t_n \right]}$$

In this formula:

$N$  = Total number of payments from Start Date until the earlier of repricing or maturity

$CF_n$  = Cash flow (such as regular principal, prepayments, and interest) in period  $n$

$r$  = Periodic coupon rate on instrument (current rate/payments per year)

$m$  = Remaining term to cash flow  $n$ /active payment frequency

$t_n$  = Remaining term to cash flow  $n$ , expressed in years

$y_n$  = Transfer rate in period  $n$

Within the Weighted Average Cash Flow method definition screen, users can choose whether or not to discount the cash flows as described earlier. If the "Cash Flow" option is selected, rather than the "Discounted Cash Flow", the following simplified formula is applied:

$$\text{Weighted Average} = \bar{y} = \left( \frac{\sum_{n=1}^N [Y_n \times CF \times t_n]}{\sum_{n=1}^N [CF \times t_n]} \right)$$

#### 6.15.4 Cash Flow: Zero Discount Factors

The Zero Discount Factors (ZDF) method takes into account common market practices in valuing fixed rate amortizing instruments. For example, all Treasury strips are quoted as discount factors. A discount factor represents the amount paid today to receive \$1 at maturity date with no intervening cash flows (that is, zero coupon).

The Treasury discount factor for any maturity (as well as all other rates quoted in the market) is always a function of the discount factors with shorter maturities. This ensures that no risk-free arbitrage exists in the market. Based on this concept, one can conclude that the rate quoted for fixed rate amortizing instruments is also a combination of some set of market discount factors. Discounting the monthly cash flows for that instrument (calculated based on the constant instrument rate) by the market discount factors generates the par value of that instrument (otherwise there is arbitrage).

ZDF starts with the assertion that an institution tries to find a funding source that has the same principal repayment factor as the instrument being funded. In essence, the institution strip funds each principal flow using its funding curve (that is, the transfer pricing yield curve). The difference between the interest flows from the instrument and its funding source is the net income from that instrument.

Next, ZDF tries to ensure consistency between the original balance of the instrument and the amount of funding required at origination. Based on the transfer pricing yield used to fund the instrument, the ZDF solves for a single transfer rate that would amortize the funding in two ways:

- Its principal flows match those of the instrument.
- The Present Value (PV) of the funding cash flows (that is, the original balance) matches the original balance of the instrument.

ZDF uses zero coupon factors (derived from the original transfer rates, see the following example) because they are the appropriate vehicles in strip funding (that is, there are no intermediate cash flows between origination date and the date the particular cash flow is received). The zero coupon yield curve can be universally applied to all kinds of instruments.

This approach yields the following formula to solve for a weighted average transfer rate based on the payment dates derived from the instrument's payment data.

Zero Discount Factors =  $y =$

$$100 \times \left[ \frac{B_0 - \sum_{n=1}^N (B_{n-1} \times DTP_n) + \sum_{n=1}^N (B_n \times DTP_n)}{\sum_{n=1}^N (B_{n-1} \times DTP_n)} \right] \times p$$

In this formula:

$B_0$  = Beginning balance at time, 0

$B_{n-1}$  = Ending balance in previous period

Bn = Ending balance in current period

DTPn = Discount factor in period n based on the TP yield curve

N = Total number of payments from Start Date until the earlier of repricing or maturity

p = Payments per year based on the payment frequency; (for example, monthly payments gives p=12)

Deriving Zero Coupon Discount Factors: An Example

This table illustrates how to derive zero coupon discount factors from monthly pay transfer pricing rates:

Term in Months	(a) Monthly Pay Transfer Rates	(b) Monthly Transfer Rate: (a)/12	(c) Numerator (Monthly Factor): 1+ (b)	(d) PV of Interest Payments: (b)*Sum((f)/100 to current row	(e) Denominator (1 - PV of Int Pmt): 1 - (d)	(f) Zero Coupon Factor: [(e)/(c) * 100
1	3.400%	0.283%	1.002833	0.000000	1.000000	99.7175
2	3.500%	0.292%	1.002917	0.002908	0.997092	99.4192
3	3.600%	0.300%	1.003000	0.005974	0.994026	99.1053

## 6.15.5 Moving Averages

Under this method, a user definable moving average of any point on the transfer pricing yield curve can be applied to a transaction record to generate transfer prices. For example, you can use a 12-month moving average of the 12-month rate to transfer price a particular product.

The following options become available on the user interface (UI) with this method:

- Interest Rate Code: Select the Interest Rate Code to be used as the yield curve to generate transfer rates.
- Yield Curve Term: The Yield Curve Term defines the point on the Interest Rate Code that is used.
- Historical Range: The Historical Range defines the period over which the average is calculated.

The following table illustrates the difference between the yield curve and historical terms.

Moving Average	Yield Curve Term	Historical Range
Six-month moving average of 1 year rate	1 year (or 12 months)	6 months
Three-month moving average of the 6 month rate	6 months	3 months

The range of dates is based on the As of date minus the historical Range plus one, because the historical Range includes the As of date. Oracle Balance Sheet Planning takes the values of the yield curve points that fall within that range and does a straight average on them.

For example, if As of Date is Nov 21, the Yield Curve Term selected is Daily, and the Historical Range selected is 3 Days, then, the system will calculate the three-day moving average based on the rates for Nov 19, 20, and 21. The same logic applies to monthly or annual yield terms.

## 6.15.6 Straight Term

When you select the Straight Term method, the system derives the transfer rate using the last repricing date and the next repricing date for adjustable rate instruments, and the origination date and the maturity date for fixed rate instruments.

### 1. Standard Calculation Mode:

- For Fixed Rate Products (Repricing Frequency = 0), use Yield Curve Date = Origination Date, Yield Curve Term = Maturity Date - Origination Date.
- For Adjustable Rate Products (Repricing Frequency > 0)

For loans still in tease period (tease end date > As of Date, and tease end date > origination date), use Origination Date and Tease End Date - Origination Date.

For loans not in tease period, use Last Repricing Date and Repricing Frequency.

### 2. Remaining Term Calculation Mode:

- For Fixed Rate Products, use As of Date and Maturity - As of Date.
- For Adjustable Rate Products, use As of Date and Next Repricing Date - As of Date.

The following options become available on the application with this method:

- Interest Rate Code: Select the Interest Rate Code to be used for transfer pricing the account.

## 6.15.7 Spread from Interest Rate Code

Under this method, the transfer rate is determined as a fixed spread from any point on an Interest Rate Code. The following options become available on the application with this method:

- Interest Rate Code: Select the Interest Rate Code for transfer pricing the account.
- Yield Curve Term: The Yield Curve Term defines the point on the Interest Rate Code that will be used to transfer price. If the Interest Rate Code is a single rate, the Yield Curve Term is irrelevant. Select Days, Months, or Years from the drop-down list, and enter the number.
- Lag Term: While using a yield curve from an earlier date than the Assignment Date, you need to assign the Lag Term to specify a length of time prior to the Assignment Date.
- Rate Spread: The transfer rate is a fixed spread from the rate on the transfer rate yield curve. The Rate Spread field allows you to specify this spread.
- Assignment Date: The Assignment Date allows you to choose the date for which the yield curve values are to be picked up. Choices available are the As of Date, Last Repricing Date, Origination Date, or TP Effective Date.

### 6.15.8 Spread from Note Rate

To generate transfer prices using this method, you need to provide just one parameter: a rate spread. This spread is added or subtracted from the coupon rate of the underlying transaction to generate the final transfer rate for that record.

While entering the rate spread, make sure to input it with the appropriate positive or negative sign, as illustrated in the following table. The first row describes a situation where you are transfer pricing an asset and want to have a positive matched spread for it (the difference between the contractual rate of the transaction and the transfer rate is positive). Here, you need to enter a negative rate spread.

Account Type	Matched Spread	Sign of Rate Spread
Asset	Positive (Profitable)	Negative
Asset	Negative (Unprofitable)	Positive
Liability or Equity	Positive (Profitable)	Positive
Liability or Equity	Negative (Unprofitable)	Negative

### 6.15.9 Redemption Curve

This method allows you to select multiple term points from your transfer pricing yield curve and calculate an average transfer rate based on the weights you assign to each term point. The following options become available in the application with this method:

- Interest Rate Code: Select the Interest Rate Code which you want to use as the transfer pricing yield curve.
- Assignment Date: The Assignment Date allows you to choose the date for which the yield curve values will be picked up. Choices available are the As of Date, Last Repricing Date, Origination Date, or TP Effective Date.
- Percentages/Term Points: Defining the Redemption Curve Methodology

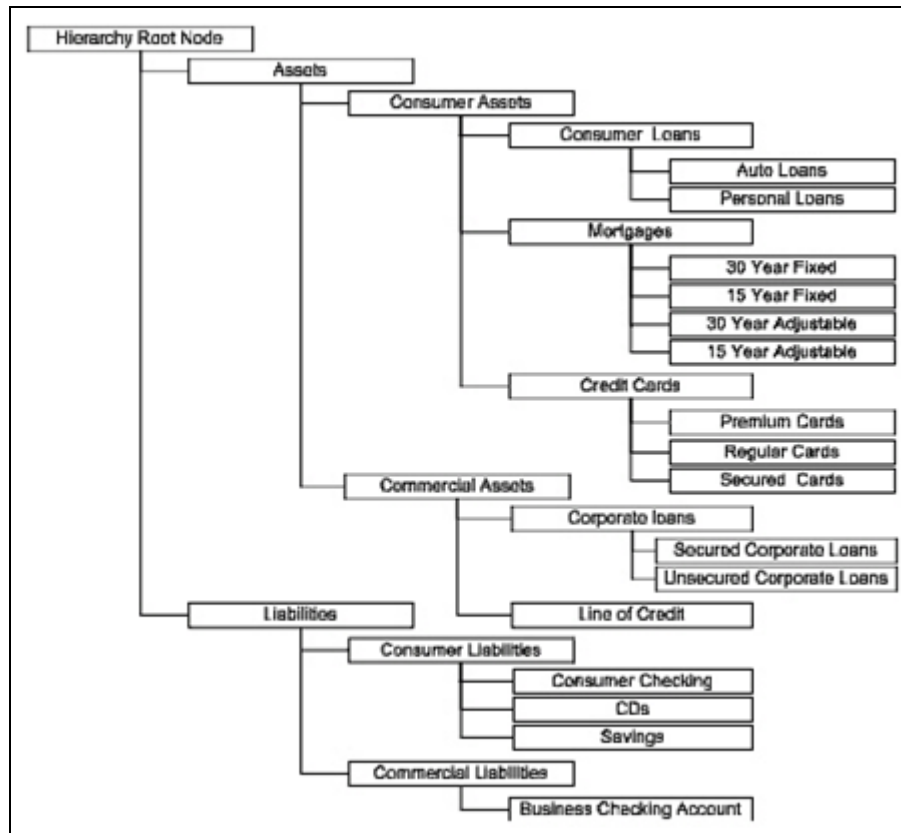
## 6.16 Defining Transfer Pricing Methodologies Using Node Level Assumptions

In Oracle Balance Sheet Planning, your product portfolio is represented using the Product Dimension specified in your BSP Application Preferences. Node Level Assumptions allow you to define transfer pricing, prepayment, adjustment and other BSP Rule 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 transfer pricing, prepayment, adjustment and other BSP Rule assumptions. Child nodes for which no assumptions have been specified automatically inherit the methodology of their closest parent node. Conversely, explicit definitions made at a child level will take precedence over any higher level parent node assumption.

Node level assumptions simplify the process of applying rules in the user interface and significantly reduce the effort required to maintain business rules over time as new products are added to the product mix. It is also not required for all rules to assign assumptions to the same nodes. Users may assign assumptions at different levels throughout the hierarchy.

#### Behavior of Node Level Assumptions

The following graphic displays a sample product hierarchy:



Suppose you want to transfer price this product hierarchy using the Spread from Interest Rate Code transfer pricing method except for the following products:

- Mortgages: You want to transfer price these using the Zero Discount Factors cash flow based method.
- Credit Cards: You want to transfer price all but secured credit cards using the Spread from Note Rate method.

To transfer price in this manner, you need to attach transfer pricing methods to the nodes of the product hierarchy as follows:

- Hierarchy Root Node: Spread from Interest Rate Code
- Mortgages: Zero Discount Factors Cash Flow
- Credit Cards: Spread from Note Rate
- Secured Credit Cards: Spread from Interest Rate Code

The transfer pricing method for a particular product is determined by searching up the nodes in the hierarchy. Consider the Secured Credit Cards in the above example. Since Spread from IRC is specified at the leaf level, the system does not need to search any further to calculate the transfer rates for the Secured Credit Cards. However, for a Premium Credit Card the system searches up the hierarchical nodes for the first node that specifies a method. The first node that specifies a method for the Premium Credit Card is the Credit Card node and it is associated with the Spread from Note Rate method.

**NOTE** Child nodes for which no assumptions have been specified automatically inherit the methodology of their closest parent node. So if neither a child node nor its immediate parent has a method assigned, the application searches up the nodes in the hierarchy until it finds a parent node with a method assigned, and uses that method for the child node. If there are no parent nodes with a method assigned then the application triggers a processing error stating that no assumptions are assigned for the particular product/currency combination.

All parameters that are attached to a particular methodology (such as Interest Rate Code) are specified at the same level as the method. If multiple Interest Rate Codes are to be used, depending on the type of the product, the method would need to be specified at a lower level. For instance, if you want to use IRC 211178 for Consumer Products and IRC 3114 for Commercial Products, then the transfer pricing methodologies for these two products need to be specified at the Commercial Products and Consumer Products nodes.

You need not specify prepayment assumptions at the same nodes as transfer pricing methods. For example, each mortgage category can have a different prepayment method while the entire Mortgage node uses the Zero Discount Factors cash flow method for transfer pricing.

## 6.17 Defining Adjustment Rules

Adjustment Rules allow users to define Transfer Pricing Add-on rates that are assigned incrementally to the base FTP rate to account for a variety of miscellaneous risks such as Liquidity risk or Basis risk or to supplement strategic decision making through use of Pricing Incentives, Breakage Charges or other types of rate adjustments.

Within both the Standard and Stochastic Transfer Pricing Processes, users can select an appropriate Adjustment rule to calculate add-on rates or breakage charges.

Add-on rates can be a fixed rate, a fixed amount, or a formula based rate. Breakage Charges can be a fixed percentage, a fixed amount or can be calculated on an Economic Loss basis. The adjustments are calculated and output separately from the base funds transfer pricing rate, so they can be easily identified and reported. In addition, Adjustments allow you to apply event-based logic through the use of conditional assumptions that are applied or varied only if a specific condition is satisfied.

### 6.17.1 Adjustment Methods and Rules

You can use any of the following methods in an Adjustment rule when the selected Adjustment Type is Liquidity Premium, Basis Risk Cost, Pricing Incentive or Other Adjustment:

- Fixed Rate



- Fixed Amount
- Formula Based Rate
- Use TP Method from selected TP Rule

Alternatively, you can use any of the following methods in an Adjustment rule when the selected Adjustment Type is Breakage Charge:

- Economic Loss
- Fixed Amount
- Fixed Percentage

For more information on Breakage Charge, refer to Oracle Financial Services Funds Transfer Pricing User Guide.

### 6.17.1.1 Adjustment - Fixed Rate

The Fixed Amount Adjustment method allows the user to associate an amount with specific terms or term ranges. Reference term selections include

- Repricing Frequency: The fixed amount is matched to the specified reprice frequency of the instrument. If the instrument is fixed rate and, therefore, does not have a reprice frequency, the fixed amount lookup happens based on the original term of the instrument.
- Original Term: The calculation assigns the fixed amount based on the original term on the instrument.
- Remaining Term: The calculation assigns the fixed amount based the remaining term of the instrument.

The remaining term value represents the remaining term of the contract and is expressed in days.

Remaining Term = Maturity Date – As of Date

- Duration (read from the TP\_DURATION column): The calculation assigns the fixed amount based on the Duration of the instrument, specified in the TP\_DURATION column.
- Average Life (read from the TP\_AVERAGE\_LIFE column): The calculation assigns the fixed amount based on the Average Life of the instrument, specified in the TP\_AVG\_LIFE column.

You can create your own reference term ranges and assign a particular adjustment amount to all instruments with a reference term falling within the specified range.

**NOTE** All adjustment rates should be input as annual rates.

### 6.17.1.2 Adjustment - Fixed Amount

The Fixed Amount Adjustment method allows the user to associate an amount with specific terms or term ranges. Reference term selections include:

- Repricing Frequency: The calculation retrieves the rate for the term point equaling the reprice frequency of the instrument. If the instrument is fixed rate and, therefore, does not have a reprice frequency, the calculation retrieves the rate associated with the term point equaling the original term on the instrument.

- **Original Term:** The calculation retrieves the rate for the term point equaling the original term on the instrument.
- **Remaining Term:** The calculation retrieves the rate for the term point corresponding to the remaining term of the instrument. The remaining term value represents the remaining term of the contract and is expressed in days.  $\text{Remaining Term} = \text{Maturity Date} - \text{As of Date}$
- **Duration (read from the TP\_DURATION column):** The calculation retrieves the rate for the term point corresponding to the Duration of the instrument, specified in the TP\_DURATION column.
- **Average Life (read from the TP\_AVERAGE\_LIFE column):** The calculation retrieves the rate for the term point corresponding to the Average Life of the instrument, specified in the TP\_AVG\_LIFE column.

You can create your own reference term ranges and assign a particular adjustment amount to all instruments with a reference term falling within the specified range.

**NOTE**

All adjustment amounts should be input in base currency for the selected product / currency combination.

### 6.17.1.3 Adjustment - Formula Based Rate

The Formula Based Rate Adjustment method allows the user to determine the add-on rate based on a lookup from the selected yield curve, plus a spread amount and then the resulting rate can be associated with specific terms or term ranges. Reference term selections include:

- **Repricing Frequency:** The calculation retrieves the rate for the term point equaling the reprice frequency of the instrument. If the instrument is fixed rate and, therefore, does not have a reprice frequency, the calculation retrieves the rate associated with the term point equaling the original term on the instrument.
- **Original Term:** The calculation retrieves the rate for the term point equaling the original term on the instrument.
- **Remaining Term:** The calculation retrieves the rate for the term point corresponding to the remaining term of the instrument. The remaining term value represents the remaining term of the contract and is expressed in days.

$\text{Remaining Term} = \text{Maturity Date} - \text{As of Date}$

- **Duration (read from the TP\_DURATION column):** The calculation retrieves the rate for the term point corresponding to the Duration of the instrument, specified in the TP\_DURATION column.
- **Average Life (read from the TP\_AVERAGE\_LIFE column):** The calculation retrieves the rate for the term point corresponding to the Average Life of the instrument, specified in the TP\_AVG\_LIFE column.

You can create your own reference term ranges and assign a particular formula based adjustment rate to all instruments with a reference term falling within the specified range.

With this method you also specify the Interest Rate Code and define an Assignment Date for the Rate Lookup. The Interest Rate Code can be any IRC defined within Rate Management, but will commonly be a Hybrid IRC defined as a Spread Curve (e.g. Curve A – Curve B).

Assignment Date selections include:

- As of Date

- Last Repricing Date
- Origination Date
- TP Effective Date
- Adjustment Effective Date
- Commitment Start Date

The formula definition is comprised of the following components:

- Term Point: Allows you to associate a specific term point from the IRC to each Term Range.
- Coefficient: Allows you to define a multiplier which is applied to the selected rate.
- Rate Spread: Allows you to define an incremental rate spread to be included on top of the IRC rate.

The resulting formula for the adjustment rate is: (Term Point Rate \* Coefficient) + Spread

**NOTE**

For increased precision, you can reduce the Term Ranges to smaller term increments allowing you to associate specific IRC rate tenors with specific terms.

#### 6.17.1.4 Adjustment – Use TP Method from Selected TP Rule

The “Use TP Method from Selected TP Rule” selection allows the user to calculate the add-on rate based on any TP method available in the selected Transfer Pricing Rule.

Users have the option to attach any Transfer Pricing Rule on the Adjustment Rule summary page, separately for each type of add-on rate. The TP Methods mapped to product hierarchy members in the TP Rule will be read during the adjustment rate calculation process and will be applied during calculation of the Adjustment Rate(s). Outputs will be written to the respective Adjustment Rate column, e.g. Basis Risk Cost Rate, Liquidity Premium Rate, Pricing Incentive Rate or Other Adjustment Rate.

## 6.18 (Mandatory) Defining and Running the Balance Sheet Planning Process

When all of the assumptions for a forecast are defined, users can define and execute BSP Processes where they combine the relevant assumptions into an BSP simulation run. BSP Processes initialize all selected assumption data and call the cash flow engine to execute the selected calculation processes and generate a results set. An BSP Process requires specific inputs based on the BSP Process type, including:

- Product Hierarchy / Data Source selection
- Calculation Elements
- Process Assumption Rules
- Output Preferences
- Audit Preferences

- Processing Parameters

Defining options within each of these pages and saving the process, creates a unique Process Identifier for individual forecasting objectives.

## 6.19 Reviewing Processing Errors

There is always the possibility that errors may occur during the execution of an BSP Process. A log of such errors is generated during processing and can be accessed by selecting the "View Log" link from the BSP Process summary pages.

Within this log, the report lists the specific transaction for which an error was generated and provides the internally generated identifier of the BSP Process that generated it.

As part of the rectification process, it is advisable to determine what caused the error and what should be done to correct it for the next run.

## 6.20 Accessing Balance Sheet Planning, Detail Cash Flow Results

Detailed cash flow results for individual account records can be written to an audit table for validation purposes. If you select the Detailed Cash Flows audit option on the BSP Process - Audit Block, the detailed cash flow results are written to the FSI\_O\_PROCESS\_CASH\_FLOWS table.

Application Preferences > Maximum Number of Instrument Records to Include in Detail Cash Flow Output

## 6.21 Analyzing Results

You should always analyze results obtained from the BSP Engine. For example, you should review the forecast rate – audit information to ensure that the new business rates and resulting interest accruals have been generated correctly for each scenario.

In addition, you should review both your beginning balances and resulting balances in each forecast period as well as your scenario specific behavioral assumptions to verify that assumptions have been defined and applied correctly.

The following relational database tables are populated with BSP Static Deterministic process results and can be queried directly by a SQL query tool such as Oracle SQL Developer:

Table Name	Description	Sample SQL query
Result Master	Static and point in time information such as current balance, current rate, current transfer rate, yield to maturity, market value, duration, DV01, and convexity are stored in this table for each Product COA member included in the process, for all scenarios associated with the process. Result Master data is stored in original / base currency.	<code>select * from fsi_o_result_master where result_sys_id=xxxxxx order by start_date_index, scenario_num, product_id;</code>
Result Detail	Cash flow results are stored in result detail and are spread across columns based on the "active" time bucket rule used when the process was run. Each row of data represents a distinct Financial Element such as Beginning Balance, Average Balance, Ending Balance, Interest Cash Flow, Principal Cash Flow, etc. Result Detail data is stored in original / base currency.	<code>select * from res_dtl_xxxxxx order by start_date_index, scenario_num, product_id, financial_elem_id, result_type_cd;</code>

## 6.22 Re - processing Erroneous Accounts

While reviewing your results, you might discover accounts with invalid results that need to be reprocessed. Oracle BSP Processes allow you to rerun a subset of information to make corrections to appropriate products when needed.

If you need to reprocess a portion of your instrument data, make sure that you reprocess all the Product dimensions members, across all instrument tables where relevant data exists.

## 7 Common Rule Management Tasks

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

This chapter covers the following topics:

- [Overview of Common Rule Management Tasks](#)
- [The Rule Summary Page](#)
- [Searching for Rules](#)
- [Creating Rules](#)
- [Viewing and Editing Rules](#)
- [Copying Rules](#)
- [Deleting Rules](#)
- [Dependency Checking](#)

### 7.1 Overview of Common Rule Management Tasks

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

- The Rule Summary Page
- Searching for Rules
- Creating Rules
- Viewing and Editing Rules
- Copying Rules
- Deleting Rules

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

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.

### 7.2 The 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.

The following table shows the page components.

Name	Type	Default Value	Required/Optional	Updatable	LOV, additional information
Folder	Drop Down	Set in Application Preferences	Required - for filtering the rules under the folder	No – Only able to select from presented list.	N/A
(Rule) Name	Text Box	None	Optional – for filtering the rules on Rule Name	Yes	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	Drop Down	Set in Application Preferences		No - Only able to select from presented list	N/A
Search	Button	N/A	N/A	No	Initiates rule search based on specified criteria.
Reset	Button	N/A	N/A	No	Restores default search criteria.
Add	Button	N/A	N/A	No	Initiates the Data or Ledger Loader rule creation process
(Rule) Name	Display Value	N/A	N/A	No	Mouse-over shows the rule description and in some cases also displays the unique system ID number.
Created By	Display Value	N/A	N/A	No	Who created the Rule version.
Creation Date	Display Value	N/A	N/A	No	When was the rule created.
Last Modified By	Display Value	N/A	N/A	No	Who last modified the rule.
Last Modified Date	Display Value	N/A	N/A	No	When the rule was last modified.
View	Icon	N/A	N/A	N/A	Opens the selected rule in read only mode.
Edit	Icon	N/A	N/A	N/A	Opens the selected rule in edit mode.
Delete	Icon	N/A	N/A	N/A	Deletes the selected Rule.
Copy	Icon	N/A	N/A	N/A	Initiates process for copying rules. Explained later in this document.

Name	Type	Default Value	Required/Optional	Updatable	LOV, additional information
Run	Button	N/A	N/A	N/A	Initiates process for running Rules. Explained later in this document.
Pagination Options	Icon	Set in Global Preferences	N/A	N/A	Indicates the number of rows to display per page in the summary table.

## 7.3 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
- 3. Navigate to the rule summary page for the appropriate rule type.
- 4. Search for the rule, as follows:
  - c. Select the folder in which the rule is stored.
  - d. (Optional) Enter the name of the rule.
  - e. Click Search.

Only rules that match the search criteria are displayed.

For more information, see [Overview of Common Rule Management Tasks](#) section.

## 7.4 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, perform the following procedure:

1. Navigate to the summary page of the Rule you want to create.
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 for the rule that you are creating.



## 7.5 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, perform the following procedure:

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

## 7.6 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, perform the following procedure:

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

## 7.7 Deleting Rules

You can delete rules that are no longer needed.

**NOTE** Once deleted, a rule cannot be retrieved.

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 dependency.

To delete a Rule, perform the following procedure:

1. Navigate to the summary page of the Rule you want to delete.
2. Search for a Rule. For further information, see [Searching for Rules](#) section.
3. Select the appropriate Rule and click the Delete icon.

For more information, see [Overview of Common Rule Management Tasks](#) section.

## 7.8 Dependency Checking

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

To check dependency of a Rule, perform the following procedure:

1. Navigate to the summary page of the Rule you want to check dependencies.
2. Search for a Rule. For further information, see [Searching for Rules](#) section.
3. Select the appropriate rule(s) 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, Folder.

### Example 8–1

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.

In order to delete the child, you must first delete the outermost parent object which uses the child.

## 8 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.

This chapter covers the following topics:

- [Overview of Cash Flow Edit Processes](#)
- [Creating Cash Flow Edit Processes](#)
- [Executing Cash Flow Edit Processes](#)

### 8.1 Overview of Cash Flow Edit Processes

Cash Flow Edit processes allow you to verify the accuracy and check the completeness of your Instrument table data.

**NOTE** Cash Flow Edits do not support the Derivatives tables.

The procedure for working with and managing a Cash Flow Edit process is similar to that of other Oracle Funds Transfer Pricing and Oracle Balance Sheet Planning Processes. It includes the following steps:

- Searching for Cash Flow Edit processes. For more information Searching for Rules section.
- Viewing and Updating Cash Flow Edit processes. For more information, see [Viewing and Editing Rules](#) section.
- Copying Cash Flow Edit processes. For more information, see [Copying Rules](#) section.
- Deleting Cash Flow Edit processes. For more information, see [Deleting Rules](#) section.
- Check Dependencies in the Cash Flow Edit processes
- Refresh the Cash Flow Edit summary page

Name	Description	Process	Status
Cash Flow Edit Process	CASH FLOW EDIT PROCESS	Active	Active
Cash Flow Edit Process	CASH FLOW EDIT PROCESS	Active	Active
Cash Flow Edit Process	CASH FLOW EDIT PROCESS	Active	Active

Ideally, you should create and run Cash flow Edit Processes on your Instrument table data before you submit cash flow engine based rules for processing.

For more information, see the following sections:

- [Creating Cash Flow Edit Processes](#)
- [Executing Cash Flow Edit Processes](#)

## Related Topics

Cash Flow Edit Logic, Oracle Financial Services Cash Flow Engine Reference Guide

## 8.2 Creating Cash Flow Edit Processes

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.

The following table describes key terms used for this procedure.

Term	Description
Filters	One of the two components that determine the data that will be cleansed by Cash Flow Edit processes. This field allows you to select a subset of data for processing by selecting a Filter that was previously created. Its default value is "No Filter".
Source Selection	One of the two components that determine the data that will be cleansed by Cash Flow Edit processes. This field allows you to select the Instrument tables that need to be included in a Cash Flow Edit process. Alternatively, you can select a hierarchy and then select the desired product members that will be included in the process. Note that the Source selection and Hierarchy selection options are mutually exclusive. You can define your dataset by selecting one or the other, but not a combination of both.
Preview Mode	Selecting this check box 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 is checked.
Source Selection: Available Tables	When the "Source Selection" option is made, you are presented with two Shuttle Control windows which contain the names of the Instrument Tables available for inclusion during a Cash Flow Edit process.
Source Selection: Selected Tables	One of the two Shuttle Control windows, it contains the names of the tables that have already been selected for processing by the Cash Flow Edit process.
Cash Flow Edit Rules	The Cash Flow Edit Rule section provides a summary of all seeded cash flow edit rules. Users can refer to this list to understand the validations that are applied to the cash flow fields on the instrument records and also view the default values that are applied when errors are found.

4. Navigate to the Cash Flow Edits Summary page.
5. Click Add button.

The Create Cash Flow Edits Process page is displayed.

Cash Flow Edits Process

As Of Date 06/25/2014

ALM Processing > Cash Flow Edits (Edit)

Cash Flow Edit Details

Name

edv

Description

rtfd

Folder

PFTSEG

Preview Mode

☒

Filter Selection

Filter Type

No Filter

Folder

PFTSEG

Filters

☐

Hierarchy Selection

Source Selection

Source

Available Tables

Folder

PFTSEG

Product Hierarchy

Test Hier

☐

Cash Flow Edit Rules

Error Code	Error Condition	Assignment	Error Level	Warning	Description
9104	(ACCRUAL_BASIS_CD = 1, 4 or 5) and (PMT_FREQ_MULT = D or AMRT_TYPE_CD = 800,801, or 802)	ACCRUAL_BASIS_CD = 3	2	AmortType/Accr/Basis Error	Accrual basis code cannot have a 30 day month assumption on instruments defined by a payment schedule
9104	ACCRUAL_BASIS_CD < 1 or > 6	ACCRUAL_BASIS_CD equal to 3	2	Invalid Accrual Basis Cd	Accrual basis code must be between 1 and 6 inclusively
9109	ORG_TERM_MULT not equal to D, M, or Y	ORG_TERM_MULT = 'M'	2	Invalid ORG_TERM_MULT	Checks for valid Original term multipliers

6. Complete standard steps for this procedure. For more information, see [Creating Rules](#) section.

NOTE

At this point, you can input the components to ensure that the data processed by Cash Flow Edits will be clean. If you save the Rule without selecting Instrument tables or selecting product members from the hierarchy, the Process will be saved but no data would be selected for cleansing.

7. (Optional) Select a Filter.
8. Select the Instrument tables or use a hierarchy to make Product member selections.

NOTE

Use the Source Selection: Shuttle Control to select the Instrument tables that you want to include in the Cash Flow Edit process. You can move Instrument tables from Available Tables into Selected Tables and vice versa by using Move, Move All, Remove, and Remove All. These tables can also be reordered to change the order of processing.

Initially, the selected tables list is empty. However, during subsequent runs, the selected tables list retains the names of the tables that you selected previously. For example, if you select two tables and save the Cash Flow Edits Process, the system shows them the next time you open the rule.

A table name shown in the Selected Tables list does not appear in the Available Tables.

9. Click Save.

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

## 8.3 Executing Cash Flow Edit Processes

You execute a Cash Flow Edit process to check the accuracy and the completeness of your Instrument table data. When you run in Preview mode, you can view the results of running a Cash Flow Edits process by querying the FSI\_PROCESS\_ERRORS table for generated errors before the system updates the underlying records in the Instrument tables.

### 8.3.1 Prerequisites

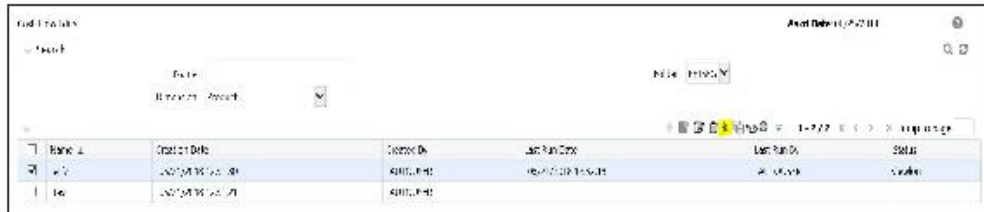
- Predefined Rules

### 8.3.2 Procedure

1. Navigate to the Cash Flow Edits summary page.
2. Search for a Rule.
3. Select a process and click the Run icon to execute the selected process. The Cash Flow Edits run confirmation page is displayed. The status of the process is displayed in the Status column. Upon completion of the process, you can navigate to the Log Viewer page by selecting the "View Log" hyperlink. From the Log Viewer, you can access a report that provides details of any cash flow edit errors that were identified by the process.

#### 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 run in Preview Mode, query the FSI\_PROCESS\_ERRORS table for any generated errors.



Name	Create Date	Created By	Last Run Date	Last Run By	Status
1	1/2/2019 10:21:01	ADMIN	1/2/2019 10:21:01	ADMIN	Success

#### NOTE

In case you do not want to run the process immediately, make a note of the System ID displayed by doing a mouse-over on the Name. You can use the System ID to schedule the execution of the process on the Operations > Batch Scheduling screen. For more information, see Batch Execution/Scheduling sections in OFSAI User Guide.

## 9 User Defined Behavior Patterns

This module describes the procedure for defining principal flows through Behavior Patterns, for instruments that do not have contractual amortization schedules.

This chapter covers the following topics:

- [Overview of User Defined Behavior Patterns](#)
- [Searching for Behavior Patterns](#)
- [Creating Behavior Patterns](#)

### 9.1 Overview of User Defined Behavior Patterns

User defined behavior patterns allow you to define principal amortization patterns for non-maturity products in your portfolio. You can include a behavior pattern while generating cash flows by entering the behavior pattern code as the amortization type code for the instrument(s). In many cases, particularly for BSP processing, the " non-maturity" instruments will be aggregated or summarized balances. The Behavior Pattern code can range from 70000 to 99999.

The procedure for working with and managing Behavior Patterns is similar to that of other Oracle Balance Sheet Planning assumption rules. It includes the following steps:

- Searching for Behavior Patterns
- Creating Behavior Patterns
- Viewing and Editing Behavior Patterns.
- Copying Behavior Patterns.
- Deleting Behavior Patterns.

### 9.2 Searching for Behavior Patterns

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

- View
- Edit
- Copy
- Delete
- Check Dependencies

### 9.3 Prerequisites

Predefined behavior patterns



The screenshot shows a web application window titled 'Add or Edit Behavior Pattern'. It contains a search bar with a 'Search' button. Below the search bar is a table with the following columns: Code, Name, Pattern Type, Behavior Code, Behavior Name, and Action. The table has one row with the following data: Code: 0000, Name: Add Behavior Pattern, Pattern Type: Non Maturity, Behavior Code: 0000000000, Behavior Name: ADD BEHAVIOR, and Action: ADD BEHAVIOR. The table is paginated, showing 1 of 1 pages.

## 9.4 Procedure

4. Navigate to the Behavior Pattern summary page. This page is the gateway to all behavior patterns and related functionality. You can navigate to other pages relating to behavior patterns from this page.
5. Enter the Search criteria
  - Enter the code or name of the Pattern.
  - Click the Search icon.

Only patterns that match the search criteria are displayed.

### NOTE

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

## 9.5 Creating Behavior Patterns

You create behavior patterns to capture the principal run-off behavior of product types that do not have contractual maturities.

Procedure

1. Navigate to the Behavior Pattern summary page.
2. Click Add Behavior Pattern.
3. The Behavior Pattern details page is displayed.
4. Enter a code value for the new behavior pattern.

### NOTE

The code, also known as an amortization type code, is a numeric identifier for the behavior pattern. The code value must be a number between 70000 and 99999. 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.

5. Enter the name and a brief description for the pattern.
6. Select the Behavior Pattern Type: Non Maturity, Non Performing, Devolvement and Recovery.



7. Define the Behavior Pattern Term Specifications for maturity tranches.
8. The selection of the Behavior Pattern type made in the previous step determines the information you must provide to successfully define that pattern type.

**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 system will refresh the payment specifications section 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 result in loss of data related to any prior selection.

## 9.5.1 Defining Non-Maturity Behavior Patterns

Non Maturity behavior patterns are commonly used for deposit products like checking, savings and money market accounts as well as for credit card accounts. These account types are similar in that they do not have contractual cash flows because customers have the option to deposit or withdraw any amount at any time (up to any established limits).

When working with non maturity behavior patterns, your percentage weights, assigned to maturity terms must add up to 100%.

## 9.5.2 Prerequisites

Select Non Maturity as the Behavior Pattern Type.

## 9.5.3 Procedure

This table describes key terms used for this procedure.

Term	Description
Tenor	Used to specify the maturity term for the particular row. E.g. 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 s	The relative amount of the principal balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts must add to 100%.
Type	Allows you to classify the runoff based on the appropriate type.
Add	Used to add one or more rows
Delete	Used to delete one or more rows

1. Define the maturity tenor and multiplier for the first maturity strip. The first strip usually represents non-core or "volatile" funds and typically has a very short maturity, such as "1 Day".
2. Select the Percentage to apply to the outstanding balance indicating how much of the outstanding balance will mature on the specified term.
3. Select the Runoff Type as Core or Volatile

**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. After defining the initial strip as Volatile, subsequent strips are typically classified as Core with varying maturity terms assigned.
5. You can also use the Excel import/export feature to add the behavior pattern information.
6. You may want to utilize the Data Input Helper to copy from a row where you have already defined the Pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.
  - c. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.

- d. Select the Data Input Helper icon.
  - e. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
  - f. Select the term points from the left side (Available Columns) of the shuttle box.
  - g. Select APPLY to copy assumptions to the selected rows.
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.

9. The Behavior Pattern is saved and the Behavior Pattern summary page is displayed.

## 9.5.4 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 are able to assign expected maturity profiles to these balances classifying them into appropriate categories of Sub Standard, Doubtful or Loss.

## 9.5.5 Prerequisites

Select Non Performing as the Behavior Pattern Type.

## 9.5.6 Procedure

This table describes key terms used for this procedure.

Term	Description
Tenor	Used to specify the maturity term for the particular row. E.g. 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 cannot exceed 100% for non performing patterns.
Runoff Type	Allows you to classify the runoff based on the appropriate type.
Add	Used to add one or more rows
Delete	Used to delete one or more rows

1. Define the maturity tenor and multiplier for the first maturity strip. The first strip can be any of the three categories including Substandard, Doubtful or Loss.
2. Select the Percentage to apply to the outstanding balance indicating how much of the outstanding balance will mature on the specified term.
3. Select the Runoff Type as Substandard, Doubtful or 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. You can also use the Excel import/export feature to add the behavior pattern information.
6. You may want to utilize the Data Input Helper to copy from a row where you have already defined the Pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.
  - a. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
  - b. Select the Data Input Helper icon.
  - c. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
  - d. Select the term points from the left side (Available Columns) of the shuttle box.
  - e. Select APPLY to copy assumptions to the selected rows.
7. To delete a row, select the check box corresponding to the row(s) you want to remove and click the Delete icon
8. Click Save.

9. The Behavior Pattern is saved and the Behavior Pattern summary page is displayed.

## 9.5.7 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 typically categorized as off balance sheet accounts. Users are able to 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.

## 9.5.8 Prerequisites

Select Devolvement and Recovery as the Behavior Pattern Type.

## 9.5.9 Procedure

This table describes key terms used for this procedure.

Term	Description
Tenor	Used to specify the maturity term for the particular row. E.g. 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

Term	Description
Percentage	The relative amount of the principal balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts cannot exceed 100% for devolvement and recovery patterns.
Runoff Type	Allows you to classify the runoff based on the appropriate type.
	Sight: indicates the Beneficiary is paid as soon as the Paying Bank has determined that all necessary documents are in order. This is preferred approach.
	Usance: is a period of time which can be between 30 and 180 days after the bill of lading date.
Add	Used to add one or more rows
Delete	Used to delete one or more rows

1. Define the maturity tenor and multiplier for the first maturity strip.
2. Select the Percentage to apply to the outstanding balance indicating how much of the outstanding balance will mature on the specified term.
3. Select the Runoff Type as Sight Devolvement, Sight Recovery, Usance Devolvement and 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. You can also use the Excel import/export feature to add the behavior pattern information.
6. You may want to utilize the Data Input Helper to copy from a row where you have already defined the Pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.
  - a. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
  - b. Select the Data Input Helper icon.
  - c. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
  - d. Select the term points from the left side (Available Columns) of the shuttle box.
  - e. Select APPLY to copy assumptions to the selected rows.

7. To delete a row, select the check box corresponding to the row(s) you want to remove and click the Delete icon
8. Click Save.

The screenshot shows the 'Behavior Patterns' configuration window. The table contains the following data:

action	multiplier	percentage	display name
0	100.00%	100.00%	Default
All	100.00%	100.00%	100.00%

The 'Save' button is highlighted at the bottom of the window.

The Behavior Pattern is saved and the Behavior Pattern summary page is displayed.

## 10 User Defined Payment Patterns

This module describes the procedure for capturing instrument payment patterns that are too complex to be accommodated in the standard fields of Instrument tables.

This chapter covers the following topics:

- [Overview of User Defined Payment Patterns](#)
- [Searching for Payment Patterns](#)
- [Creating Payment Patterns](#)
- [Payment Pattern Data Loader](#)

### 10.1 Overview of 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 as the amortization type code for the instrument.

### 10.2 Searching for Payment Patterns

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

- View
- Edit
- Copy
- Delete
- Check Dependencies



Code	Description	Payment type	Interest type	Amortization	Last Modified Date	Last Modified By
0001	Flat Payment Pattern	Arithmetic	SAVED TO INSTR	ARITHMETIC	DATE/TIME TO ADD	ADMIN

### 10.3 Creating Payment Patterns

You create payment patterns to capture the repayment behavior of instruments that are too complex to be accommodated through use of the standard instrument table fields.

9. Navigate to the Payment Pattern summary page.
10. Click Add Payment Pattern.

The Add Payment Pattern page is displayed.



11. Enter a code value for the new payment pattern.

#### 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.

12. Enter a brief description for the pattern.
13. Select the Payment Pattern Type: Absolute, Relative, or Split.
14. Define the Payment Pattern Term Specifications for payment phases.

#### NOTE

You can enter negative values for amortization type of level principal that is applicable to pattern types absolute, relative and split, for absolute value Payment Method.

The selection of the payment pattern type made in the previous step determines the information you must provide to successfully define that pattern type. For more information, see the following:

- [Defining Absolute Payment Patterns](#)
- [Defining Relative Payment Patterns](#)
- [Defining Split Payment Patterns](#)

#### NOTE

The Payment Pattern Details page displays the specifications associated with the Absolute Payment Pattern Type, which is the default Payment Pattern Type value. You should 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.

## 10.3.1 Defining 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.

### 10.3.1.1 Prerequisites

Select Absolute as the Pattern Type.

### 10.3.1.2 Procedure

This table describes key terms used for this procedure.

Term	Description
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.
Add	Used to add one or more rows.
Delete	Used to delete a row.

1. Select the Payment Type from the drop-down list: Conventional, Level Principal, or Non-Amortizing.

**NOTE** The Payment Type determines the type of information required to successfully define the Payment Phase.

2. Define the Payment Phases.

**NOTE** A Payment Phase is a set of payment characteristics that defines the time line of the instrument's amortization.

- f. Select a Month for the pattern.
- g. Enter a Date for the pattern.
- h. Select the Payment Method.

**NOTE**

The available Payment Methods depend on the Payment Type. Payment Methods do not apply to the Non-Amortizing Payment Type.

- i. Enter the Value for the Payment Method you selected in the previous step for applicable Payment Types.

**NOTE**

If you selected the Interest Only Payment Method in the previous step, the Value field does not apply.

- j. Click Add Another Row to add additional Payment Phases to the Pattern and click Delete corresponding to the rows you want to delete.

**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. You can define up to 365 Payment Phases for each Payment Pattern.

- 3. Click Save.

The Payment Pattern is saved and the Payment Pattern summary page is displayed.

- 4. You may want to utilize the Data Input Helper to copy from a row where you have already defined the pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature

- a. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
- b. Select the Data Input Helper icon.
- c. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
- d. Select the term points from the left side (Available Columns) of the shuttle box.
- e. Select APPLY to copy assumptions to the selected rows.

- 5. Click Save.

The Payment Pattern is saved and the Payment Pattern summary page is displayed.

### 10.3.1.3 Excel Import/Export

Excel import/export functionality is used for adding/editing absolute payment pattern information. For more details, refer to [Excel Import/Export](#).

### 10.3.1.4 Guidelines

When a detail instrument using an Absolute Payment Pattern is processed for Remaining Term cash flow processing, the Next Payment Date is internally calculated to determine which Payment Phase should be used. The calculated Next Payment Date is only used for this purpose. The Next Payment Date stored on the Instrument record in the Instrument table is always the date used for processing the initial payment.

The following table describes the relationship between Payment Phase properties and Payment Types.

	Conventional	Level Principal	Non Amortizing
Month	Yes	Yes	Yes
Day	Yes	Yes	Yes
Payment Method	Yes	Yes	
Value	Yes	Yes	

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

Payment Method	Conventional	Level Principal	Non Amortizing
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	

## 10.3.2 Defining Relative Payment Patterns

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

### 10.3.2.1 Prerequisites

Select Relative as the Pattern Type.

### 10.3.2.2 Procedure

This table describes key terms used for this procedure.

Term	Description
Frequency	The frequency of the payment.
Multiplier	The unit of time applied to the frequency. The choices are: <ul style="list-style-type: none"> <li>Days</li> <li>Months</li> <li>Years</li> </ul>
Repeat	The number of times the Payment Phase should be repeated.
Move Up	Allows you to move a particular Payment Phase row up by one position. Note: The Move Up icon for the first row of the table is always inactive.
Move Down	Allows you to move a particular row down by one position. Note: The Move Down icon for the last row of the table is always inactive.
Delete	Allows you to delete a row.

1. Select the Payment Type from the drop-down list: Conventional, Level Principal, or Non-Amortizing.

The payment type determines the available characteristics for defining the payment amount.

2. Define the Payment Phase.

#### NOTE

The payment type determines the type of information required to successfully define the payment phase.

- a. Enter the Frequency for each payment phase.
- b. Select the appropriate Multiplier for each payment phase.

- c. Enter the number of times each Payment Phase should be repeated in the Repeat column.
- d. Select the Payment Method.

**NOTE**

The available Payment Methods depend on the Payment Type. Payment Methods do not apply to the Non-Amortizing Payment Type.

- e. Type the Value for the Payment Method you selected in the previous step for applicable Payment Types.
- f. Click Add Another Row to add additional Payment Phases to the Pattern and click Delete corresponding to the rows you want to delete.

**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. You can define up to 365 Payment Phases for each Payment Pattern.

- 3. You may want to utilize the Data Input Helper to copy from a row where you have already defined the Pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.
  - a. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
  - b. Select the Data Input Helper icon.
  - c. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
  - d. Select the Frequency and/or Repeat from the left side (Available Columns) of the shuttle box.
  - e. Select APPLY to copy assumptions to the selected rows.
- 4. Click Apply.

The payment pattern is saved and the Payment Pattern home page is displayed.

**NOTE**

Any empty rows are ignored and not saved with the payment pattern.

### 10.3.2.3 Excel Import/Export

Excel import/export functionality is used for adding/editing relative payment pattern information. For more details, see [Excel Import/Export](#) section.

### 10.3.2.4 Guidelines

It is not necessary to set up relative payment patterns for the complete term of an instrument. The payment pattern automatically repeats until 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 at one month. The second row shows 999 payments at 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.

Payment Phase Attributes	Payment Types: Conventional	Payment Types: Level Principal	Payment Types: Non-Amortizing
Frequency	Yes	Yes	Yes
Multiplier	Yes	Yes	Yes
Repeat	Yes	Yes	Yes
Payment Method	Yes	Yes	
Value	Yes	Yes	

### 10.3.3 Defining Split Payment Patterns

You use a Split payment pattern for financial instruments that make principal payments along 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.

#### 10.3.3.1 Prerequisites

Select Split as the pattern type.

#### 10.3.3.2 Procedure

This table describes key terms used for this procedure.

Term	Description
Percent	The percent value represents the percentage weight of the time line being defined for the individual payment phases (each row). The sum of the percentage weights must total 100%.

1. Select Pattern Type Split.  
The Create Term Specifications page is displayed.

2. Select the required Pattern Type for each leg.
  - Absolute
  - Relative
3. Enter the percentage value for each split.

**NOTE** The sum of the percent values of all splits must add up to 100.

4. Select the Payment Type for each Payment Phase or Split.

**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. For more information, see the following:

- [Defining Absolute Payment Patterns](#)
- [Defining Relative Payment Patterns](#)

5. Select one of the legs and then select Apply to define pattern details for the leg.
6. You may want to utilize the Data Input Helper to copy from a row where you have already defined the Pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature
  - a. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
  - b. Select the Data Input Helper icon.
  - c. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
  - d. Select the Frequency and/or Repeat from the left side (Available Columns) of the shuttle box.
  - e. Select APPLY to copy assumptions to the selected rows.
7. Click Save.

The Split payment pattern is saved and the Payment Pattern summary page is displayed.



### 10.3.3.3 Excel Import/Export

Excel import/export functionality is used for adding/editing split payment pattern information. For more details, refer Excel Import/Export.

**NOTE** The sum of the percent values of all splits must add up to 100.

### 10.3.4 Payment Pattern Data Loader

The Payment Pattern Loader provides the ability to load bulk payment pattern definitions through a back end procedure. This Loader reads the stage table data, does data quality checks on the same, and load them into FSI\_PAYMENT\_PATTERN and FSI\_PAYMENT\_PATTERN\_EVENT tables, if the stage table data is valid. For more information on setting up the automated process, see Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

To execute the Data loader process, click the Data Loader icon on the Payment Pattern Summary window.

A warning message will appear: "Upload all available Payment Pattern?" Click "Yes". A confirmation message will display.

The process will load all of the data included in the staging tables as defined in the Data Model Utilities User Guide.

Code	Description	Pattern type	Creation date	Created by	Last modified by
2232	addPaymentPattern	Pattern	01/29/2018 15:30:16	ADMIN	ADMIN

## 11 User Defined Repricing Patterns

This module discusses the procedure for working with and managing user defined repricing patterns.

This chapter covers the following topics:

- [Overview of Repricing Patterns](#)
- [Searching for Repricing Patterns](#)
- [Creating Repricing Patterns](#)

### 11.1 Overview of 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.

The procedure for working with and managing repricing patterns is, similar to that of other Oracle Balance Sheet Planning business rules. It includes the following steps:

- Searching for Repricing Patterns, For more information, refer to [Searching for Rules](#)
- Creating Repricing Patterns, For more information, refer to [Creating Rules](#)
- Viewing and Editing Repricing Patterns, For more information, refer to [Viewing and Editing Rules](#)
- Copying Repricing Patterns, For more information, refer to [Copying Rules](#)
- Deleting Repricing Patterns, For more information, refer to [Deleting Rules](#)

### 11.2 Searching for Repricing Patterns

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

- View
- Edit
- Copy
- Delete
- Check Dependencies

#### 11.2.1 Prerequisites

Predefined repricing patterns

#### 11.2.2 Procedure

8. Navigate to the Repricing Pattern summary page. This page is the gateway to all repricing patterns and related functionality. You can navigate to other pages relating to repricing patterns from this point.
9. Enter the Search criteria.

f. Enter the code or description of the pattern.

g. Select the Search icon.

Only patterns that match the search criteria are displayed.

Code	Description	Pattern Type	Creation Date	Created By	Last Modified Date	Last Modified By
Net	Net Interest	Absolute	10/26/2017 10:27	ADMIN	10/26/2017 10:27	ADMIN
Net	Net Interest	Absolute	10/26/2017 10:27	ADMIN	10/26/2017 10:27	ADMIN
Net	Net Interest	Relative	10/26/2017 10:27	ADMIN	10/26/2017 10:27	ADMIN

## 11.3 Creating Repricing Patterns

You can calculate the Interest for multiple repricing rates for the a single period if the repricing frequency is greater than payment frequency. Net Interest, Gross Interest, and TP interest cashflows are used for multiple pricing. The multiple repricing is supported for both current and New business.

You create Repricing patterns to capture the repricing behavior of instruments whose rates change according to complex schedules.

### 11.3.1 Procedure

1. Navigate to the Repricing Pattern summary page.

2. Click Add Repricing Pattern.

The Add Repricing Pattern page is displayed.

3. Type a code value for the new Repricing Pattern.

#### NOTE

The code is a numeric internal identifier for the repricing pattern. The code value must be a number between 500-99999, and the code value you assign to the new pattern must be unique. In addition, the code must be mapped to the appropriate instrument records (ADJUSTABLE\_TYPE\_CD field) to connect the instrument to the appropriate pattern.

4. Type a brief description for the pattern.

5. 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. For more details, see the following sections:

- [Defining Absolute Repricing Patterns](#)
- [Defining Relative Repricing Patterns](#)

#### NOTE

The Add Repricing Pattern page displays the parameters associated with the Absolute repricing pattern type, which is the default repricing pattern type value. If you change this value to Relative, the system refreshes the repricing specifications corresponding to the new pattern type, and any data entered previously is lost. However, a warning message is displayed when you change the pattern type. The data is discarded only after your confirmation.

## 11.3.2 Defining 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.

### 11.3.2.1 Prerequisites

Selecting Absolute as the pattern type.

### 11.3.2.2 Procedure

This table describes key terms used for this procedure.

Term	Description
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.
Repricing Type	A drop list, it displays the repricing type, Flat rate or Indexed rate, associated with a particular event.
Add Row	Allows you to Add one or more repricing events.
Delete	Allows you to delete specific rows in the Repricing Events table.

1. Click Add Event.
2. Select the Repricing Type: Flat or Indexed.

The default value 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.

#### Flat Rate

A Flat rate is a specific rate—it is directly input. For more details, see [User Defined Repricing Event](#) section.

To define a Flat Rate Event, select check box for the event you are going to define and select the Define button. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events page:

a. Select Balance Tier option:

None: If None is selected, then Balance Tiered pricing is not applied.

Current Balance: If Current Balance is selected, then users can define balance tiers and associate different rates with the corresponding balance tier level.

b. Specify the required month-day combination for the event.

**NOTE** You cannot specify a month-day combination for the first event as this row is reserved for the initial period.

c. Enter the Net Rate.

d. Enter the Gross Rate.

e. Enter the Transfer Rate.

**NOTE** You must enter a valid value for at least one of these rate fields.

f. You may want to utilize the Data Input Helper to copy from a row where you have already defined the pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.

- i. Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.
- ii. Select the Data Input Helper icon.
- iii. From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.
- iv. Select the term points from the left side (Available Columns) of the shuttle box.
- v. Select APPLY to copy assumptions to the selected rows.

g. Click Apply.

The Event summary Page is displayed. Note the status indicator has changed from Red to Green indicating that details for the event have been defined.

At this point, you have the option of defining additional events or saving. To add an additional event, repeat Step 1: Click Add Event. If you want to save the repricing pattern and events, advance to the next step.

### Indexed Repricing

An Indexed rate is a set of parameters used to calculate a rate. For more information, see [User Defined Repricing Event](#) section.

To define an Indexed Repricing Event, select check box for the event you are going to define and select the Define button. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events page:

### NOTE

Select the checkbox above each column that you want to include in the repricing event.

#### h. Select a Balance Tier option:

None: If None is selected, then Balance Tiered pricing is not applied.

Current Balance: If Current Balance is selected, then users can define balance tiers and associate different rates with the corresponding balance tier level.

#### i. Select the Interest Rate Code.

#### j. Select the Transfer Interest Rate Code.

#### k. Enter the Net Margin.

#### l. Enter the Yield Curve Term and select the appropriate Multiplier.

#### m. Enter the Gross Margin.

#### n. Enter the Transfer Rate Margin.

#### o. Enter the Rate Cap Life.

- p. Enter the Rate Floor Life.
- q. Enter the Rate Set Lag and select the appropriate Multiplier.
- r. 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 Step 1 Add Create Event. If you want to save the repricing pattern and events, advance to the next step.

3. Click Save at the bottom of the page.

The repricing pattern is saved and the Repricing Pattern summary page is displayed.

### 11.3.2.3 Excel Import/Export

Excel import/export functionality is used for adding/editing absolute repricing pattern information. For more details, see Excel Import/Export section.

## 11.3.3 Defining Relative Repricing Patterns

The Relative repricing pattern is used for instruments where the repricing is determined by 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.

### 11.3.3.1 Prerequisites

Selecting Relative as the pattern type.

### 11.3.3.2 Procedure

This table describes key terms used for this procedure.



Term	Description
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: <ul style="list-style-type: none"> <li>• Days</li> <li>• Months</li> <li>• Years</li> </ul>
Repeat	Allows you to specify the number of times a repricing event should be repeated.
Repricing Type	A drop list, it displays the repricing type, Flat rate or Indexed rate, associated with a particular event.
Add	Allows you to Add one or more repricing events.
Move Up	Allows you to move a particular row up by one position. Note: This action for the first and second rows is not active.
Move Down	Allows you to move a particular row down by one position. Note: This action for the first and last rows is not active.
Delete	Allows you to delete specific rows in the Repricing Events table.

The steps to create Relative repricing patterns are similar to creating Absolute repricing patterns. For more information, see [Defining Absolute Repricing Patterns](#).

The only difference is that the fields in the Repricing Events table are different. You need to specify the following parameters in the Repricing Events table for a Relative repricing pattern:

- Frequency
- Multiplier
- Repeat

You may want to utilize the Data Input Helper to copy from a row where you have already defined the pattern definition or apply a fixed value down the page. The following optional steps describe how to use this feature.

Select the checkbox next to the rows that you want to work with or use the "Select ALL" option by selecting the checkbox on the header row.

Select the Data Input Helper icon.

From the Data Input Helper – popup screen, select Method – "Grow by Amount" or some other appropriate method.

Select the term points from the left side (Available Columns) of the shuttle box.

Select APPLY to copy assumptions to the selected rows.

### **11.3.3.3 Excel Import/Export**

Excel import/export functionality is used for adding/editing relative repricing pattern information. For more details, refer Excel Import/Export.

## 12 Behavior Pattern Rule

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

This chapter covers the following topics:

- Overview of Behavior Pattern Rules
- [Creating Behavior Pattern Rules](#)
- [Defining Behavior Pattern Rule](#)
- [Defining a Behavior Pattern Rule: An Example](#)

### 12.1 Creating Behavior Pattern Rules

You create behavior pattern rule to capture the principal run-off behavior of product types that do not have contractual maturities.

### 12.2 Procedure

4. Navigate to BSP Assumption Specification-> Behavior Pattern Rule page.
5. The Behavior Pattern Rule summary page is displayed. Click Add Behavior Pattern Rule.
6. Complete standard steps for this procedure.

Important: In addition to the standard steps for creating rules, the Procedure for creating a Behavior Pattern rule involves one extra step. After Standard Step 6, you need to select a product hierarchy.

You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from parent nodes to child nodes.

### 12.3 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 directly defined for a child take precedence over those at the parent level.

## 12.3.1 Prerequisites

Performing basic steps for creating or editing a Behavior Pattern rule

## 12.3.2 Procedure

From the Assumption Browser screen, select the product(s) and the currency for which you want to define a Behavior Pattern(s) and select the “Add New” button to launch the Behavior Pattern Details screen.

**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.

### 12.3.2.1 The Behavior Pattern Details screen

## 12.3.3 Defining a Behavior Pattern Rule: An Example

To create a Behavior Pattern rule, enter the following details on Behavior Pattern Rule UI:

- From the Assumption Browser, select Currency (US Dollar) and Total Loans.
  - Name
  - Description
  - Folder

▪ Access Type

2. From the Assumption Browser, select Currency (US Dollar) and a product from the hierarchy browser. Select the Add New icon to enter the Assumption Details page.
3. Select a pattern from the Behavior Pattern selector. Here, the Behavior Pattern drop-down shows the list of existing Behavior patterns. For more information, refer to User Defined Behavior Pattern chapter. You can select only one Behavior Pattern at a time.

Click Apply.

## 13 Time Buckets

This module describes the procedure for working with and managing Time Bucket rules.

This chapter covers the following topics:

- [Overview of Time Bucket Rules](#)
- [Creating Time Bucket Rules](#)
- [Defining Time Bucket Rules](#)

### 13.1 Overview of Time Bucket Rules

Time Bucket rules allow users to create the various time bucket definitions used for computing and outputting aggregated cash flows. Time Bucket rules determine the granularity of cash flow output and can be set at any frequency through a combination of daily, monthly and yearly buckets.

BSP shares the same user interface as ALM, but is limited to monthly time buckets set up using the Income Simulation tab. BSP does not utilize Interest Rate GAP or Liquidity GAP Time Bucket definitions.

Only BSP System Administrators actively use Time Bucket rules. In BSP, all other users (Planning Administrators and Planning Users) do not actively set up any time buckets. Instead, BSP builds its own synthetic time bucketing rules whenever you define a new Forecast Set.

For example, if you define a new Forecast Set that has a duration of 18 months, any planning user who executes cash flows against that Forecast Set will be using an 18-month, monthly time bucket rule.

For BSP, it is recommended that the System Administrator use a single Time Bucket rule whose duration will be longer than the duration of any Forecast Set you may plan to use.

In general, Time Buckets can be defined for the following type of output:

- Income Simulation
- Interest Rate GAP
- Liquidity GAP

Income Simulation Buckets allow you to specify the time periods used for storing and reporting results. These bucket definitions set the modeling horizon for date-related business rule assumptions. When you change the number or frequency of the modeling buckets, existing business rules are affected.

**NOTE**

Be cautious when changing Time Bucket definitions when known dependencies exist.

You can specify any combination of days, months, and years when setting up the buckets. Although, all cash flows are generated on a daily basis, they are aggregated into defined income simulation buckets when results are stored. Reports access information from the income simulation buckets and let you aggregate buckets. For example, you can define monthly income simulation buckets but generate a quarterly income statement. On the other hand, you cannot generate a weekly balance sheet if all income simulation buckets are monthly.

If you want to use different configurations of income simulation buckets, such as all monthly or all quarterly, you should create a separate Time Bucket rule for each and use an appropriate naming convention to identify these characteristics. All date-related assumption rules should be defined and used in the context of a single set of Income Simulation buckets or a single Time Bucket rule.

Income Simulation Bucket definitions are referenced by all bucket based forecast business rules, including Forecast Rates, Forecast Balances, Pricing Margins and Maturity Mix rules and also by BSP Deterministic Processes during BSP engine processing.

Interest Rate GAP Buckets allow you to define Interest Rate (repricing) GAP buckets including a catch all bucket to move reprice gap output for Non Interest Rate Sensitive products. Interest Rate GAP Buckets are not utilized by BSP. For information on how Interest Rate GAP Buckets are used by OFSAA Cash Flow Engine, see the OFSAA ALM User Guide and the *OFSAA Cash Flow Engine Reference Guide*.

With this Dynamic Start Date capability, users can also define forward start dates for computing dynamic market valuations. The Dynamic Start Date capability allows you to consider amortization of existing business and any new business assumptions that are applicable between the current as of date and the future dated – Dynamic Start Date. You must set up Income Simulation Buckets before defining Interest Rate GAP Buckets. Note that Dynamic Start dates are not supported in BSP.

**NOTE**

Only Interest Rate GAP financial elements are impacted by the Interest Rate GAP bucket definitions. The Interest Rate GAP financial elements range from FE660 to FE700.

Liquidity GAP Buckets are similar to Interest Rate GAP buckets. The only difference is that Liquidity Bucket definitions impact only the Liquidity Runoff financial elements, which range from FE 1660 to 1717.

The procedure for working with and managing Time Bucket rules is similar to that of other Balance Sheet Planning business rules. It includes the following steps:

- Searching for Time Bucket rules. For more information, refer to [Searching for Rules](#) section.
- Creating Time Bucket Rules, For more information, refer to [Creating Rules](#) section.
- Viewing and Editing Time Bucket rules. For more information, refer to [Viewing and Editing Rules](#) section.

- Copying Time Bucket rules. For more information, refer to [Copying Rules](#) section.
- Deleting Time Bucket rules. For more information, refer to [Deleting Rules](#) section.

## 13.2 Creating Time Bucket Rules

You create Time Bucket rules to specify the time periods used for storing and reporting BSP results.

Procedure

4. Navigate to the Time Buckets summary page.

Name	Creation Date	Quantity	Last Modification Date	Last Modified By
delisting	06/25/2018 12:40:00	1000000	06/25/2018 12:40:00	N. K. K. K.
delisting rule	06/25/2018 12:40:00	1000000	06/25/2018 12:40:00	N. K. K. K.

5. Complete standard steps for this procedure. For more information, see [Creating Rules](#) section.

## 13.3 Defining Time Bucket Rules

The definition of a Time Bucket rule is part of the Create or Edit Time Buckets rule process. When you click Save in the Create Time Buckets rule process, the rule is saved and the Time Buckets rule summary page is displayed. However, Time Bucket assumptions may not have been defined at this point. Typically, you would start defining your Time Bucket assumptions before clicking Save.

### 13.3.1 Prerequisites

Performing basic steps for creating or editing a Time Bucket rule.

### 13.3.2 Procedure

From the Time Bucket details screen, you have one tab available for creating Time Bucket definitions.

- Income Simulation Buckets (required)
- Interest Rate GAP Buckets, including Non Interest Rate Sensitive Bucket (required only if Repricing Gap is selected during processing). For Non Interest Rate Sensitive Bucket, both Repricing Gap and Include Non Rate Sensitive Bucket are required selections.)
- Liquidity GAP Buckets (required only if Liquidity Gap is selected during processing)

The first step is to define your Income Simulation buckets.

From the Income Simulation tab, do the following:

1. Click the Add Rows button and input the desired number of rows corresponding to the number of Income Simulation Buckets you would like to create.



**NOTE**

You can select a pre-defined number of rows from the list, For example, 3, 5 or 10, or you can input the exact number of rows you would like to add. The maximum number of buckets you have under any tab is 240.

2. Under Frequency, input a numeric value, For example 1. The Frequency column displays the duration of the multiplier. The frequency in conjunction with the multiplier displays the duration of the buckets. The frequency can be any number from 1 to 999. Under Multiplier, select an appropriate value from the list. The Multiplier column includes Daily, Monthly, or Yearly choices.

**NOTE**

Limit the definition of Income Simulation buckets to the date range that is relevant to your reporting requirement. It is not necessary to create "catch-all" buckets at the end of the series. When large buckets are created, for instance, 99 Years, this can result in the following error:

INSERT Oracle Error: ORA- 01426: numeric overflow Driver  
Function: drv\_oci::Execute()

3. Continue adding frequencies and multipliers as needed.

Example	
Frequency	Multiplier
1	Month
1	Month
1	Month
1	Month
1	Month.....

4. After you fill in the frequencies and multipliers, the start and end dates are calculated automatically based on the As of Date, defined in your Application Preference settings.

#### NOTE

You may want to utilize the Data Input Helper to copy from a row where you have already defined the time bucket definition or apply a fixed value down the page. The following optional steps describe how to use this feature.

- s. Select the check box next to the rows that you want to work with or use the " Select ALL " option by selecting the checkbox on the header row
- t. Select the Data Input Helper icon.
- u. From the Data Input Helper – popup screen, select Method – "Keep Current Values" or some other appropriate method.
- v. Select the Frequency and/or Multiplier from the left side of the shuttle box.
- w. Select APPLY to copy assumptions to the selected rows.

**NOTE**

Steps 5, 6, and 7 are utilized in ALM's auto-balancing function, but are not used in BSP.

5. After defining time bucket frequencies, move across each row to input the appropriate Federal Tax Percentages and State Tax Percentages.

Tax percentages are used in BSP when processing with the auto-balancing option selected. Type 35.00 for 35%. The tax rate entered is interpreted as the tax rate for that bucket regardless of the frequency of the bucket. That is, 35% entered for a monthly bucket is applied as a 35% monthly rate to the taxable income forecast for that month.

6. Under Dividend Amount, type a value. Dividend amounts are used in HM when processing with the auto-balancing option selected. The values you enter here will be paid out as dividends for all rate scenarios.
7. Under Dividend Percentage, type a value. Dividend percentages are used during auto-balancing calculations. The dividend percentage is defined as a percent of the net income after tax that will be paid out as dividends for the period.

Total Dividends = Dividends Amount + (Dividends Percent x Net Income after Tax)

8. Select SAVE if you are finished.

**NOTE**

For BSP, no other steps are required. BSP does not support Interest Rate GAP Time Buckets and BSP does not support Liquidity GAP Time Buckets.

Otherwise, navigate to the Interest Rate GAP Buckets tab.

After defining Income Simulation buckets, navigate to the Interest Rate GAP Buckets tab. The Interest Rate GAP bucket detail page provides two important inputs. The first is the ability to define Interest Rate GAP buckets and optionally add a Non Interest Rate Sensitive bucket for Non Rate Sensitive products. The second capability allows you to define one or more Dynamic Start Dates. The following steps explain how to complete each of these setup tasks.

**NOTE**

The Interest Rate GAP bucket can be defined from Bucket count 1 till Bucket count 239 in all dynamic start dates. The last time series time bucket in all dynamic start dates will default to 99 years as a "catch all" bucket. This is used to verify the total runoff for reporting requirements.

From the Interest Rate GAP Buckets tab, do the following:

9. Click the Add Rows button corresponding to the Default Dynamic Start Date and input the desired number of rows for your Interest Rate GAP Buckets.

**NOTE**

By default, the first time bucket in Interest Rate Gap Buckets (bucket count 0) is defined as Non Interest Rate Sensitive Bucket.

A new Attribute of product dimension 'Interest Rate Sensitivity Category' is introduced to identify products as Interest Rate sensitive or Non Interest Rate sensitive. Once a product is mapped as Non Interest Rate sensitive, user also needs to enable 'Include Non Interest Rate Sensitive Bucket' in Process Rules (see [BSP Processing](#)). This would move reprice gap output from Non Interest Rate Sensitive products into Non Interest Rate Sensitive Bucket

10. Follow steps 2 — 4 described above under Income Simulation buckets, to complete the setup of your Interest Rate GAP buckets and Non Interest Rate Sensitive Bucket for the default Dynamic Start Date.
11. If you would like to define additional – forward dated, Dynamic Start Dates, Click the “Add Dynamic Start Date” button to add one or more parent nodes to the bucket hierarchy.

12. For each additional Dynamic Start Date row, input a Frequency and Multiplier to determine future start date(s).
13. Click the Add Rows button corresponding to each new Dynamic Start Date and repeat the Interest Rate GAP Bucket definition steps described above to complete the setup.
14. For a more detailed example on creating additional Dynamic Start Dates.

After defining Interest Rate GAP buckets, navigate to the Liquidity Buckets tab. The Liquidity Buckets detail page has the same structure as the Interest Rate GAP details page. It allows you to define the Liquidity GAP Buckets for the default Dynamic Start Date and also allows you to add one or more additional Dynamic Start Dates. The use of Dynamic Start Dates will allow you to forecast your liquidity position as of some future point in time, considering all relevant assumptions, including amortization, prepayments, early withdrawals, and rollovers.

**NOTE**

By default, the last time series time bucket in all dynamic start dates will default to 99 years as a “catch all” bucket. This is used to verify the total runoff for reporting requirements.

From the Liquidity Buckets tab, do the following:

15. Click the Add Rows button corresponding to the Default Dynamic Start Date and input the desired number of rows for your Liquidity Buckets.
16. Follow steps 2 – 4 described above under Income Simulation buckets, to complete the setup of your Liquidity Buckets for the default Dynamic Start Date.
17. If you would like to define additional – forward dated, Dynamic Start Dates, Click the “Add Dynamic Start Date” button to add one or more parent nodes to the bucket hierarchy.
18. If needed, input a Frequency and Multiplier for the new Dynamic Start Date to determine the future start date.
19. Click the Add Rows button corresponding to the new Dynamic Start Date and repeat the Liquidity GAP Bucket definition steps described above.
20. For a more detailed example on creating additional Dynamic Start Dates, see Example
21. Once you have completed the setup for all bucket types, click the SAVE button.

### 13.3.2.1 Excel Import/Export

Excel import/export functionality is used for adding/editing time bucket information. For more details, refer to [Excel Import/Export](#)

### 13.3.2.2 Additional Required Steps

All users must have an “Active” Time Bucket Rule at all times. There is a checkbox at the top of the page, above the Bucket tabs. If you wish to “Activate” a particular Time Bucket Rule, simply check this box and Save the Rule. You will note the Active Time Bucket rule for your user appears on the Title bar in green text.

	Total Number	Frequency	Multiplier	Start Date	End Date	Federal Tax Percentage	State Tax Percentage	Standard Amount	Discount Percentage
<input type="checkbox"/>	1	25	Months	06/06/2014	07/25/2016	0	0	0	0
<input type="checkbox"/>	2	10	Months	07/06/2016	08/25/2017	0	0	0	0
<input type="checkbox"/>	3	6	Months	08/06/2017	11/25/2017	0	0	0	0
<input type="checkbox"/>	4	15	Months	11/06/2017	02/25/2019	0	0	0	0

**NOTE**

Each time you change the As of Date in your Application Preferences screen, all Time Bucket Rule Bucket Start Date and Bucket End Date are updated automatically.

## 14 Default Product Profiles

Product Characteristic setup can be a time consuming process as there are more than 40 attributes which can be required when defining characteristics for dimension members in the product COA hierarchy. Product Profiles allow you to pre-define and save common product definitions and reference these definitions while defining your Product Characteristic assumptions. Setup time is reduced because product profiles provide common default values for the majority of required fields. The following Product Profiles are seeded during installation:

- Bond – Adjustable Rate
- Bond – Fixed Rate
- Credit Card
- Discount Instrument
- Lease
- Loan – Adjustable Rate
- Loan – Fixed Rate
- Loan – Floating Rate
- Loan – Neg Am
- Savings
- Term Deposit

In addition to the seeded profiles, you can add custom product profiles to your setup by creating completely new profiles or by using the Save As option with one of the existing profiles.

**NOTE** The seeded Product Profiles are not editable and cannot be deleted.

The procedure for working with and managing Product Profiles is similar to that of other Asset | Liability Management business rules. It includes the following steps:

- Searching for Product Profiles.
- Creating Product Profiles
- Viewing and Editing Product Profiles.
- Copying Product Profiles.
- Deleting Product Profiles.

### 14.1 Viewing a seeded Product Profile

You can review any of the twelve seeded Product Profile definitions.

Procedure

22. Navigate to the Product Profile summary page.

Product Profiles As of Date: 04/05/2015

Search

<input type="checkbox"/>	Name	Creation Date	Created By	Last Modification Date	Last Modified By
<input type="checkbox"/>	Bond Adjustable Rate	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Bond Fixed Rate	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Credit Card	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Discount Instrument	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Lease	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Loan Adjustable Rate	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Loan Fixed Rate	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Loan Floating Rate	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Loan Hybrid	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Refinings	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	Term Deposit	04/04/2016 13:04:14	Crade	04/04/2016 13:04:14	
<input type="checkbox"/>	TestProductProfiles	04/05/2016 16:56:17	ALMUSER	04/05/2016 16:56:15	ALMUSER

23. Select the check box next to the Product Profile you want to View and select the View Icon.
24. Navigate through the All Business and New Business tabs to review the seeded values.

## 14.2 Creating Product Profiles

You create Product Profiles to assign default attributes for common products and then reference these product profiles within your Product Characteristic assumption rules to reduce setup time. In addition to the seeded Product Profile templates, you can also create new Profiles.

### Procedure

1. Navigate to the Product Profile summary page.
2. Complete standard steps for this procedure.

Active Time Buckets: test, TimeBucke  
ALM Maintenance: Product Profiles

Product Profiles

As Of Date: 3/4/2015

Product Profile Details

Name:

Description:

Product Attributes

Mandatory Taxation: ☐

Open Source Stock:

Pay Equivalent Compounding Convention:

Holiday Calendar:

Interest Period:

Pay Equivalent Compounding Convention:

Holiday Calendar:

Save Cancel

System ID:

System ID:	ALM.SUB	System ID:	01/12/2015 09:45:24
System ID:	ALM.SUB	System ID:	01/12/2015 09:45:24

3. Enter a Name and Description for the new Profile.
4. Define product attributes for the profile you are creating. For more information on individual attributes, see (Mandatory) Defining Product Characteristics
5. Click Save to complete the new profile definition.

## 14.3 Summary of Seeded Product Profiles

The following tables summarize the attributes defined for each product profile:

### 14.3.1.1 Bond Adjustment Rate

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention



Location	Default Value	Attribute
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Non-Amortizing	Amortization Type
New Business > Define Core Product Attributes >	Other Adjustable	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	6 Months	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >	6 Months	Repricing Frequency
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Negative Amortization Attributes >		<Not Applicable>
New Business>Define Inflation Adjustment Attributes >	0	Index Name
New Business>Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business>Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.2 Bond Fixed Rate

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Non-Amortizing	Amortization Type
New Business > Define Core Product Attributes >	Fixed Rate	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	6 Months	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score

Location	Default Value	Attribute
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.3 Credit Cards

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Behavior Pattern	Amortization Type
New Business > Define Core Product Attributes >	Floating Rate	Adjustable Type

Location	Default Value	Attribute
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

#### 14.3.1.4 Discount Instruments

Location	Default Value	Attribute
All Business >	100	Percent Taxable

Location	Default Value	Attribute
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Non-Amortizing	Amortization Type
New Business > Define Core Product Attributes >	Fixed Rate	Adjustable Type
New Business > Define Core Product Attributes >	3.0%	Original Deferred Amortization %
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	90 Days	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / 360	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer

Location	Default Value	Attribute
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.5 Lease

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Lease	Amortization Type
New Business > Define Core Product Attributes >	Fixed Rate	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency

Location	Default Value	Attribute
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / 360	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.6 Loan Adjustment Rate

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar

Location	Default Value	Attribute
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Conventional Adjustable	Amortization Type
New Business > Define Core Product Attributes >	Other Adjustable	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >	1 Year	Repricing Frequency
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type



Location	Default Value	Attribute
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.7 Loan Fixed Rate

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Conventional Fixed	Amortization Type
New Business > Define Core Product Attributes >	Fixed	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis

Location	Default Value	Attribute
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		< Not Applicable >
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.8 Loan Floating Rate

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention

Location	Default Value	Attribute
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Conventional Adjustable	Amortization Type
New Business > Define Core Product Attributes >	Floating Rate	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		< Not Applicable >
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.9 Loan Negative Amortization

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Adjustable Negative Amortization	Amortization Type
New Business > Define Core Product Attributes >	Other Adjustable	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >	1 Month	Repricing Frequency
New Business > Define Neg Am Attributes >	6 Months	Payment Change Frequency
New Business > Define Neg Am Attributes >	3 Months	Equalization Frequency

Location	Default Value	Attribute
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

### 14.3.1.10 Savings

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Behavior Pattern	Amortization Type
New Business > Define Core Product Attributes >	Floating Rate	Adjustable Type

Location	Default Value	Attribute
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE** If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.

#### 14.3.1.11 Term Deposits

Location	Default Value	Attribute
All Business >	100	Percent Taxable
All Business >	Do Not Adjust	Pay Equivalent Compounding Convention

Location	Default Value	Attribute
All Business >	Blank, that is, holiday calendar not selected	Holiday Calendar
All Business >	Unadjusted and Disabled, if holiday calendar not selected in the preceding section. Unadjusted and Enabled, if holiday calendar is selected in the preceding section.	Rolling Convention
All Business >	Shift Dates Only is selected and Disabled if Rolling Convention not selected. Shift Dates Only is selected and Enabled if Rolling Convention is selected to be other than Unadjusted.	Interest Calculation Logic
New Business > Define Core Product Attributes >	Non-Amortizing	Amortization Type
New Business > Define Core Product Attributes >	Fixed Rate	Adjustable Type
New Business > Define Core Product Attributes	Unchecked	Inflation Indexed Instrument
New Business > Define Payment Attributes >	1 Month	Payment Frequency
New Business > Define Payment Attributes >	Interest In Arrears	Interest Type
New Business > Define Payment Attributes >	Actual / Actual	Accrual Basis
New Business > Define Payment Attributes >	Simple	Compounding Basis
New Business > Define Payment Attributes >	Floating Net Rate	Net Margin Flag
New Business > Define Adjustable Rate Attributes >		<Not Applicable>
New Business > Define Other Mortgage Attributes >	700	Customer Credit Score
New Business > Define Other Mortgage Attributes >	80	Original Loan to value
New Business > Define Other Mortgage Attributes >	FANNIE_MAE	Issuer
New Business > Define Neg Am Attributes >		<Not Applicable>
New Business> Define Inflation Adjustment Attributes >	0	Index Name

Location	Default Value	Attribute
New Business> Define Inflation Adjustment Attributes >	Principal and Interest payments both	Index Adjustment Type
New Business> Define Inflation Adjustment Attributes >	No Floor	No Floor Capital Protection Category

**NOTE**

If the user is mapped to ADCo, Product Profile will always show "Define Other Mortgages Attributes" tab.



## 15 Product Characteristics

This module describes the procedure for working with and managing Product Characteristic rules.

This chapter covers the following topics:

- Overview of Product Characteristic Rules
- [Creating Product Characteristic Rules](#)
- [Defining Product Characteristic Rules](#)
- [Copying Assumptions Across Currencies and Products](#)

### 15.1 Creating Product Characteristic Rules

You create a Product Characteristics rule to assign attributes to your products.

Procedure

6. Navigate to the Product Characteristics summary page.
7. Complete standard steps for this procedure.

The screenshot displays the 'Product Characteristics' summary page. At the top, there's a header with 'Active Time Bucket: test\_TimeBucket', 'Product Characteristics', and 'As Of Date: 01/05/2019'. Below the header, there's a search bar and a table with columns for 'Product Characteristics Details', 'Enter Product Hierarchy', 'Select Currency', 'Assumption Browser', and 'Rules'. The 'Assumption Browser' section is currently selected, showing a list of assumptions. The 'Rules' section is also visible, showing a list of rules. The page includes standard navigation and action buttons at the bottom.

#### NOTE

In addition to the standard steps for creating rules, the procedure for creating Product Characteristics involves one extra step. After Standard Step 6, you need to select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from parent nodes to child nodes.

## 15.2 Defining Product Characteristic Rules

The definition of a Product Characteristics rule is part of the Create or Edit Product Characteristics rule process. When you click Save in the Create Product Characteristics rule process, the rule is saved and the Product Characteristics rule summary page is displayed. However, Product Characteristic assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your Product Characteristic assumptions for product-currency combinations before clicking Save.

### Defining Product Characteristics 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.

### 15.2.1 Prerequisites

Performing basic steps for creating or editing a Product Characteristics rule

### 15.2.2 Procedure

From the Assumption Browser screen, select the product(s) and the currency for which you want to define Product Characteristics and select the “Add New” button to launch the Product Characteristic Details screen.

To define a Product Characteristics rule, complete the following steps:

1. Choose the Currency.

**NOTE**

To define assumptions for all currencies with the selected product, choose the “Default Currency”.

2. From the Assumption Browser, choose the product or products that you want to define.
3. Select the Add Assumption icon.
4. Type a value for each mandatory field. Mandatory input fields are marked with a red asterisk.

**NOTE**

You can optionally select one of the seeded Product Profile templates or a user defined Product Profile to pre-populate the appropriate Product Characteristic fields.

5. From the File menu, select Save.

### Hint

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 Code is a required input. In most cases, you will want to use a currency specific interest rate curves for pricing instruments within each specific base currency. The Default Currency option, if used will apply a selected Interest Rate Code across all currencies.

## 15.2.3 Assumption List Tab

Assumption List Tab is present next to the Assumption Browser in all the screens which have assumption browser. This tab provides search capability with the help of five fields:

- Dimension Member Code
- Dimension Member Name
- Dimension Member Description
- Dimension Member Status
- Is Leaf

Dimension Member Code, Name and Description provide filter criteria for search such as: Contains, Starts With, Ends With, Exactly Matches.

Dimension Member Status is a drop-down list containing values such as: Defined, Not Defined, Inherited, Defined and Inherited, and All.

Is Leaf is a checkbox which can be toggled.

Search button initiates search on the assumption browser based on the filter criteria provided in the above mentioned fields. Reset restores default search criteria.

The search results will flatten the hierarchy and display all of the products that meet the input criteria. Use the pagination widget to display the number of products per page (up to a maximum of 99). You can proceed to edit or create new rules in the assumption list tab.

## 15.2.4 The Product Characteristic Details screen

The details screen has three input tabs.

- All Business

- New Business
- Model Integration

**NOTE**

The Model Integration tab will be available only if Moody's structured cashflow library integration is done with BSP.

### 15.2.4.1 The All Business tab

Assumptions made on the All Business tab apply to both current position data and new business balances.

The common Product Characteristic fields listed on the ALL Business tab are as follows:

Field	Behavior
Option Adjusted Spread	<p>The option adjusted spread is used during stochastic processing only. It is an adjustment to the stochastic discount factor used in calculating market value and value at risk. Valid values for this spread are between -5.000% and 5.000%, but a value less than 2.00% is recommended for best results. For more information about the calculation of discount factors, see the Oracle Financial Services Cash Flow Engine Reference Guide.</p> <p><b>Note:</b> BSP does not support stochastic processing.</p>
Model with Gross Rates	<p>If your institution has outsourced loan serving rights for some of your assets (most typically mortgages), the rates paid by customers on those assets (gross rates) will be greater than the rates received by your bank (net rates). For these instruments, both a net and gross rate will be calculated within the cash flow engine and both gross and net rate financial elements will be 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.</p> <p><b>Note:</b> Modelling with gross rates is not supported in BSP.</p>
Interest Credited	<p>This option allows interest payments to be capitalized as principal on simple/non-amortizing instruments.</p>
Percent Taxable	<p>Percent Taxable specifies the percent of income or expense that is subject to the tax rates defined in the active Time Bucket rule. This is used with the Auto-balancing option in the ALM Process rules. Percent taxable should be setup for each product and reporting currency or product and default currency combination.</p> <p><b>Note:</b> Percent taxable is not used in BSP</p>

Field	Behavior
Currency Gain/Loss Basis	<p>Currency Gain/Loss Basis determines how exchange rate fluctuations are reflected in financial element results for each product and currency combination. The choices are:</p> <ul style="list-style-type: none"> <li>• Temporal</li> <li>• Historical Basis</li> <li>• Current Rate</li> </ul> <p>See the Oracle Financial Services Cash Flow Engine Reference Guide for more information on the cash flow calculations associated with currency gain/loss recognition techniques.</p> <p><b>Note:</b> Only used in ALM consolidated currency runs; not supported in BSP.</p>
Pay Equivalent Compounding Convention	<p>In most cases, interest rates are not adjusted for the differences in pay-basis between the quote basis of the pricing index and the payment frequency of the account to which the index is assigned. Some instruments, notably Canadian Mortgages, follow a convention that the interest rates are adjusted. In this case, the Pay-Equivalent Compounding Convention should be set to Semi-Annual Quoting Convention. For other accounts, the convention should be set to Do Not Adjust.</p>
Holiday Calendar	<p>The default value is Blank and is Enabled. This drop-down list contains the list of all holiday calendar definitions defined in the Holiday Calendar UI.</p>

Field	Behavior
Rolling Convention	<p>The default value is Unadjusted and is Enabled, only when Holiday Calendar has been selected in the preceding field. This drop-down list contains four values:</p> <p>Unadjusted</p> <p>Following Business Day</p> <p>Modified following business day</p> <p>Previous business day</p> <p>Modified previous business day</p> <p>Actual/Un-adjusted</p> <p>Payment on the actual day, even if it is a non-business day.</p> <p>Following Business Day</p> <p>The payment date is rolled to the next business day.</p> <p>Modified following business day*</p> <p>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.</p> <p>Previous business day</p> <p>The payment date is rolled to the previous business day.</p> <p>Modified previous business day*</p> <p>The payment date is rolled to the previous business day, unless doing so would cause the payment to be in the previous calendar month, in which case the payment date is rolled to the next business day</p> <p>*Many institutions have month-end accounting procedures that necessitate this.</p>
Interest Calculation Logic	<p>There are two options:</p> <ul style="list-style-type: none"> <li>Shift Dates Only</li> </ul> <p>Recalculate Payment</p>

**NOTE**

The holiday calendar attributes can be applied directly on the instrument records for existing business. If they are not applied on the records, the engine will use the definition from the all business tab to apply holiday calendar for existing and new business.

### 15.2.4.2 The New Business tab

Assumptions made on the New Business tab impact forecast business only. These assumptions are used together with the other Forecast Assumption rules including Forecast Balances, Pricing Margins and Maturity Mix to determine the behavior of your forecast instruments. There are five sub-tabs within New Business setup including:

- Define Core Product Attributes
- Define Payment Attributes
- Define Adjustable Rate Attributes
- Define Negative Amortization Attributes
- Define Other Mortgage Attributes \*
- Define Inflation Adjustment Attributes \*\*

#### NOTE

\* This tab will be displayed only if you are mapped to ADCo LDM functionality and currency is selected as USD.

\*\* This tab will be displayed, if Inflation Indexed Instrument option is selected in Define Core Products Attributes tab for New Business.

### 15.2.4.3 Relationship Triggers

There are dependencies built into the tabular structure of this screen. Based on assumptions made in the first two tabs, the remaining two tabs may not be active.

Field	Value	Behavior
Amortization Type Code	Conv. Fixed, Conv Adjust., Adjst/Ng Amrt	Always interest in arrears, therefore disables Interest Type
Amortization Type Code	Conv. Fixed, Rule-of-78's	No repricing occurs, therefore disables the Define Negative Amortization Attributes and enables the Adjustable Rate Attributes tab. In this case, Rate Change Rounding Type, Rate Change Rounding Factor (when there is Rounding), Rate Floor Life and Rate Cap Life fields will be enabled in the Adjustable Rate Attributes tab.
Amortization Type Code	Adjst/Ng Amrt	Enables Negative Amortization Attributes tab
Amortization Type Code	Payment Pattern	Enables the Payment Pattern drop list
Amortization Type Code	Behavior Pattern	Enables the Behavior Pattern drop list

Field	Value	Behavior
Amortization Type Code	Conv Fixed, Conv Adjust., Level Principal, Non Amortizing	Inflation Indexed Instrument check box will be enabled
Adjustable Type Code	Other Adjustable, Fixed Rate, Floating Rate, or Repricing pattern	Repricing Frequency is not applicable, or it is defined elsewhere, therefore disables Repricing Frequency and Multiplier. Enables the Adjustable Rate Attributes tab When Adjustable Type Code is Fixed, the Adjustable Rate Attributes tab is enabled. In this case, Rate Change Rounding Type, Rate Change Rounding Factor (when there is Rounding), Rate Floor Life and Rate Cap Life fields will be enabled in the Adjustable Rate Attributes tab.
Adjustable Type Code	Repricing Pattern	Enables the Repricing Pattern drop list. In addition, several of the repricing attributes are defined elsewhere, therefore they are disabled in this rule. Only periodic increase and decrease, rate change min and rounding are enabled
Repricing Frequency	"0"	No repricing occurs, therefore disables Adjustable Rate Attributes
Model with Gross Rates	Off	Net Margin Flag options are only necessary when modeling with different gross rates and net rates, therefore disables Net Margin Flag.  <b>Note:</b> This is not supported in BSP.
Rate Change Rounding Type	"No Rounding" or "Truncate"	Rounding does not apply, therefore disables Rate Change Rounding Percent
Currency		Allows display of Interest Rate Codes and Transfer Rate Interest Rate Codes for which the selected currency is the reference currency. In Product Characteristics, Default Currency allows all Interest Rate Codes, regardless of currency

#### 15.2.4.3.1 New Business Fields

Following is a listing of new business fields used in the Product Characteristics rule > Core Product Attributes tab.

The screenshot displays the 'Core Product Attributes' tab within a software interface. It features several input fields and checkboxes for configuring product characteristics. The 'Amortization Type' is set to 'Conv Fixed', 'Adjustable Type' is 'Fixed Rate', 'Rate Change Rounding Type' is 'No Rounding', and 'Currency' is 'USD'. The 'Inflation Indexed Instrument' checkbox is checked. Other fields like 'Repricing Pattern' and 'Rate Change Rounding Factor' are also visible but not filled in.



Field	Description
Amortization Type	<p>Method of amortizing principal and interest. The choices consist of all standard OFSAA codes and all additional user-defined codes created through the Payment Pattern and Behavior Pattern interfaces, as given below:</p> <ul style="list-style-type: none"> <li>• Conventional Fixed</li> <li>• Conventional Adjustable</li> <li>• Balloon Payment</li> <li>• Adjustable Negative Amortization</li> <li>• Non-Amortizing</li> <li>• Rule of 78's</li> <li>• Level Principal</li> <li>• Payment Pattern</li> <li>• Behavior Pattern</li> <li>• Lease</li> </ul>
Adjustable Type	<p>Determines the repricing characteristics of the new business record. The choices consist of all standard OFSAA codes plus Repricing Pattern. The standard OFSAA codes are as follows:</p> <ul style="list-style-type: none"> <li>• Fixed Rate</li> <li>• Floating Rate</li> <li>• Other Adjustable</li> </ul>
Lease Residual Value	For Lease instruments, this value specifies the residual amount as a percent of the par balance.
Amortization Method for Premiums, Discounts and Fees	<p>Determines the method used for amortizing premiums, discounts or fees. The available codes are:</p> <ul style="list-style-type: none"> <li>• Level Yield</li> <li>• Straight Line</li> </ul>
Behavior Pattern Code	Lists all user-defined behavior patterns created through the user interface.
Payment Pattern Code	Lists all user-defined payment patterns defined through the user interface.
Repricing Pattern Code	Lists all user-defined reprice patterns created through the user interface.
Interest Rate Code	Defines the pricing index to which the instrument interest rate is contractually tied. The interest rate codes that appear as a selection option depend on the choice of currency. The interest rate code list is restricted to codes which have the selected currency as the reference currency. If the default currency is chosen, all interest rate codes are available as a selection.
Original Deferred Amortization Percent	The initial deferred balance expressed as a percent of original par balance.
Inflation Indexed Instrument	Check box to model instrument as Inflation Indexed.

Following is a listing of new business fields used in the Product Characteristics rule > Payment Attributes tab:

Field	Description
Payment Frequency	Frequency of payment (P & I), Interest or Principal). For bullet instruments, use zero.
Interest Type	<p>Determines whether interest is calculated in arrears or advance or if the rate is set in arrears. There are three interest types:</p> <ul style="list-style-type: none"> <li>Interest in Arrears</li> <li>Interest in Advance</li> <li>Set in Arrears</li> </ul> <p>For conventional amortization products, interest in arrears is the only valid choice.</p>
Rolling Convention	Reserved for future use.
Accrual Basis	<p>The basis on which the interest accrual on an account is calculated. The choices are as follows:</p> <ul style="list-style-type: none"> <li>30/360</li> <li>Actual/360</li> <li>Actual/Actual</li> <li>30/365</li> <li>30/Actual</li> <li>Actual/365</li> <li>Business/252 *</li> </ul>
Compounding Basis	<p>Determines the number of compounding periods per payment period. The choices are the following:</p> <ul style="list-style-type: none"> <li>Daily</li> <li>Monthly</li> <li>Quarterly</li> <li>Semi-Annual</li> <li>Yearly</li> <li>Continuous</li> <li>Simple</li> <li>At Maturity</li> </ul>
Net Margin Flag	<p>The setting of the net margin flag affects the calculation of net rate. The two settings are:</p> <ul style="list-style-type: none"> <li>Floating Net Rate - the net rate reprices in conjunction with the gross rate, at a value net of fees.</li> <li>Fixed Net Rate - the net rate equals a fixed fee equal to the net margin.</li> </ul>

**NOTE**

\* A Holiday calendar selection is required if business/252 accrual basis is selected. Business/252 accrual basis is only applicable to the recalculate option of the holiday calendar rule. If user selects the shift payment dates, the payment will still be recalculated for the non holiday/weekend date.

Following is a listing of new business fields used in the Product Characteristics rule > Adjustable Rate Attributes tab:

Field	Description
Repricing Frequency	Contractual frequency of rate adjustment
Tease Period	The tease period is used to determine the length of tease period.
Tease Discount	The tease discount is used in conjunction with the original rate to calculate the tease rate. The tease rate is the original rate less the tease discount.
First Reset Cap	<p>This indicates the maximum delta between the initial rate and the first reset for mortgage instruments that have a tease period. This rate will be applicable at the tease end period, prior to the first reset. After this, the periodic and lifetime cap value will be applied. The value of this field will be automatically populated from Product Profile window if the product is mapped to Product Profile and value is defined for First Reset Cap.</p> <p>For example:            Current Rate = 3.5% (from the instrument record)            Margin = 0.3 %            First Reset Cap = 0.5% (from the instrument record)            First Reset Floor = 0.1% (from the instrument record)            Scenario 1: If New Forecasted Rate = 5.1% (Forecast Rates Assumption)            Fully indexed rate (after applying minimum rate change, rounding effects) is higher than the (Current Rate + First Reset Cap). So, the new rate assigned will be 3.5% + 0.5% = 4.0%</p>

Field	Description
First Reset Floor	This is the initial minimum value for mortgage instruments that have a tease period. This floor rate will be applicable at the tease end period, prior to the first reset. After this, the periodic and lifetime floor value will be applied. The value of this field will be automatically populated from Product Profile window if the product is mapped to Product Profile and value is defined in for First Reset Floor.
Rate Cap Life	Maximum rate for life of the instrument.
Rate Set Lag	Period by which the rate lookup lags the repricing event date.
Rate Change Rounding Factor	Percent to which the rate change on an adjustable instrument is rounded.
Rate Change Rounding Type	Method used for rounding of interest rate codes. The choices are as follows: no rounding, truncate, round up, round down, round nearest.
Rate Increase Period	Maximum interest rate increase allowed during the cycle on an adjustable rate instrument.
Rate Decrease Period	Maximum amount rate can decrease during the repricing period of an adjustable rate instrument.
Minimum Rate Change	The minimum required change in rate on a repricing date.
Rate Floor Life	Minimum rate for life of the instrument.
Rate Increase Life	Maximum interest rate increase allowed during the life of an adjustable rate instrument, used to calculate rate cap based on forecasted rate scenario. If both rate increase life and rate cap are defined, the process uses the more restrictive rate.
Rate Decrease Life	Maximum amount rate can decrease during the life of an adjustable rate instrument, used to calculate the rate floor based on the forecasted rate scenario. If both rate decrease life and rate floor are defined, the process uses the more restrictive rate.

Following is a listing of new business fields used in the Product Characteristics rule > Negative Amortization Attributes tab:

Payment Change Frequency	0 Months	Payment Change Lag	0.0000%
Payment Change Lag	0 Months	Payment Change Life	0.0000%
Payment Change Life	0.0000%	Payment Change Period	0.0000%
Payment Change Period	0.0000%		

Field	Description
Payment Change Frequency	The frequency at which the payment amount is recalculated for adjustable negative amortization instruments.

Field	Description
Equalization Frequency	Frequency at which current payment necessary to fully amortize the instrument is re-computed.
Payment Decrease Life	Maximum payment decrease allowed during life of a negative amortization instrument.
Payment Decrease Period	Maximum payment decrease allowed during a payment change cycle of a negative amortization instrument.
Equalization Limit	Maximum negative amortization allowed, as a percent of original balance. E.g., if principal balance should never exceed 125% of original balance, this column would equal 125.0
Payment Increase Life	Maximum payment increase allowed during the life of a negative amortization instrument.
Payment Increase Period	Maximum payment increase allowed during a payment change cycle on a negative amortization instrument.

Following is a listing of new business fields used in the Product Characteristics rule > Define Other Mortgage Attributes tab:

Field	Description
Customer Credit Score	The default value of this is 700 and it should be in the range of 300-850. The value of this field will be automatically populated from Product Profile window if the product is mapped to Product Profile and value is defined for Customer Credit Score.
Original Loan To Value	The default value of this is 80 and it should be in the range of 1-300. The value of this field will be automatically populated from Product Profile window if the product is mapped to Product Profile and value is defined for Original Loan To Value.
Issuer	Select the name of Issuer. The default value is FANNIE_MAE.
Prepayment Index	This is the first index value fetched by the UI among the defined ADCo Curves.

Note: This tab will be displayed if ADCo LDM mapping is done, and if the selected currency is USD and product is of account type "Earning Assets".

#### 15.2.4.4 The Model Integration tab

This tab allows you to made the assumptions based on Moody's structured cashflow library integration for All Business and New business balances.

This tab will be displayed only if you have installed Moody's structured cashflow library. Following are the prerequisites to view the "Model Tuning" tab:

- Moody's structured cashflow library installed on the setup
- Moody's structured cashflow library enabled for the specific user
- Product is securitized products or loans

You can tune the model using the Tune option. Select the model from Model Selection drop-down list and click Tune. Following modelling options are available in Model Selection drop-down list:

- None
- Source System Provided
- ADCo

Based on the selected model, the UI parameters will vary.

#### 15.2.4.4.1 Source System Provided

Field	Behavior
Prepayments	This is the magnitude for prepayment rate. The default value of this is 1, and it should be greater than 0.
Default	This is the magnitude for default rate. The default value of this is 1, and it should be greater than 0.
Recovery	This is the magnitude for recovery rate. The default value of this is 1, and it should be greater than 0.
Recovery Lag	This is the recovery lag applied to each loan. The default value of this is 0, and the value range is 1 to 100.
Servicer Advancing	Select the servicer advancing as None, Interest, or Both. The default value of this is None.
Draw Rates	This is the magnitude for mortgage Draw rates. The default value of this is 1, and it should be greater than 0.

#### 15.2.4.4.2 ADCo

Enter values in these parameters if you want to use ADCo LDM integration along with Moody's Structured Cash flow library.

Field	Behavior
SMM for Failed Loans	This is the failed loan's SMM in percentage. The default value of this is 0 and it should be in the range of 0-100.
MDR for Failed Loans	This is the failed loan's MDR in percentage. The default value of this is 0 and it should be in the range of 0-100.
Recovery for Failed Loans	This is the failed loan's recovery in percentage. The default value of this is 0 and it should be in the range of 0-100.
Subprime FICO Loans	Loan is considered subprime if FICO is less than this value ( 620 if not provided). The default value of this is 620 and it should be in the range of 300-850.
FICO to use(if not available)	FICO to use for loans which do not have this information. The default value of this is 680 and it should be in the range of 300-850.

#### 15.2.4.5 Define Inflation Adjustment Attributes tab

[All Business](#)
[New Business](#)

[Define Core Products Attributes](#)
[Define Payment Attributes](#)
[Define Adjustable Rate Attributes](#)
[Define Inflation Adjustment Attributes](#)

Index Name\*

Index Adjustment Type\*

Capital Protection Category\*

When Inflation Indexed Instrument check box is selected, the Define Inflation Adjustment Attributes tab is enabled. For more information on Inflation Indexed Instrument calculation, refer to Oracle Financial Services Cash Flow Engine Reference Guide.

## NOTE

The Define Inflation Adjustment Attributes tab will be enabled if Adjustment type is selected as Conventional Adjust, Conventional Fixed, Level principal, or Non-Amortizing.

[illegible]

Tab	Field	Behavior
Index Adjustment Attributes	Index Name	Lists all Economic Indicator defined through user interface.
Index Adjustment Attributes	Capital Protection Category	<p>Determines Capital protection to be provided to Inflation indexed instruments. The choices are:</p> <ul style="list-style-type: none"> <li>No Floor: No Floor does not provide any downside protection.</li> <li>Floor of 1: Floor of 1 provides protection from downside movement.</li> <li>Max during Life: Max during life gives maximum advantage using maximum Index factor for calculation.</li> </ul>
Index Adjustment Attributes	Index Adjustment Type	<p>Determines type of Index adjustment. The choices are following:</p> <ul style="list-style-type: none"> <li>Principal and Interest</li> <li>Principal Only</li> <li>Interest Only</li> </ul>

**NOTE**

For more information on cash flow calculations associated with Inflation indexed instrument, refer to Oracle Financial Services Cash Flow Engine Reference Guide.

## 15.3 Copying Assumptions Across Currencies and Products

This functionality provides you with the option to copy, in total or selectively, the product assumptions contained within the BSP assumption rules from one currency to another currency or a set of currencies, or from one product to another product or set of products.

Copy of assumptions enhances the usability of Oracle Balance Sheet Planning in a multi-currency environment. For example if you have 10 currencies enabled in the application, you need to input only one set of assumptions and then copy those assumptions across all enabled currencies, instead of having to input 10 full sets, thereby saving a significant amount of input time.

This functionality also reduces the risk associated with data input errors as you need to audit inputs for just a single set of assumptions before executing the copy procedure. The copy across currencies process requires users to select a replacement yield curve for each target currency. These currency specific IRC's replace the IRC selection made for each product in the source currency selection set. It is possible to edit the target assumptions after the initial copy processes has been completed.

### 15.3.1 Prerequisite

Define BSP rule related product assumptions. See:

- Overview of Product Characteristic Rules
- [Overview of Discount Method Rules](#)
- [Overview of Prepayment Rules](#)
- [Creating a Forecast Balance Rule](#)
- [Overview of Maturity Mix Rules](#)
- [Overview of Pricing Margin Rules](#)
- [Overview of Transfer Pricing Rules](#)
- [Overview of Adjustment Rules](#)

### 15.3.2 Procedure

Use the following procedure to copy assumptions across currencies or products:

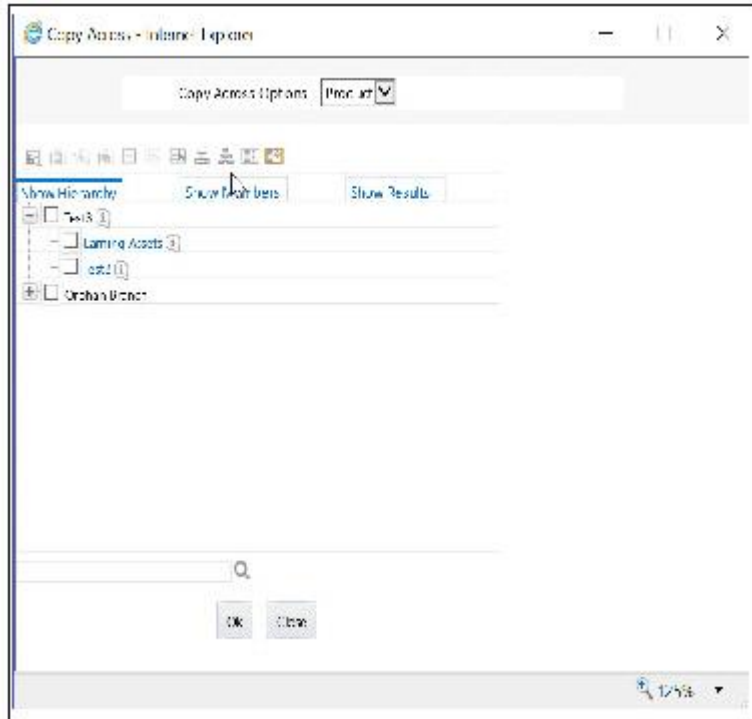
1. Navigate to the appropriate BSP business rule assumption browser.
2. Define assumptions for the source currency / product set.
3. Save the assumptions.
4. Select the defined product assumptions using the check boxes corresponding to each product (or Node on the hierarchy) that you want to include in the copy process.



5. Click the Copy Across icon.



6. On the Copy Across details page, select the listed currencies either individually using the corresponding check boxes or in total using Select All.



7. Specify an interest rate code for each selected currency. This is necessary because each interest rate code is specific to a single currency. When copying product assumptions across currencies, you must define the interest rate code for each target currency to replace the interest rate code used for the source currency assumptions.

**NOTE**

While defining a rule if IRC is required, then Copy Across (currency) UI will have an option to select the IRC. For example, Product Characteristic, Discount Methods, Prepayments, Transfer Pricing Rules, Adjustment Rules UIs, the Copy Across (Currency) UI will have option for IRC selection.

While defining a rule if IRC selection is not required, then Copy Across (Currency) will have the IRC selection option disabled. For example, Forecast Balances, Maturity Mix, Pricing Margin UIs, the Copy Across (Currency) UI will not have option for IRC selection.

If a rule does not require the IRC selection and RDP selection is required (for, Forecast Balances, Maturity Mix, Pricing Margin), then Copy Across (Currency) will not have an option to select the IRC.

8. Click Apply to initiate the copy process and to return to the Assumption Browser page.

**NOTE**

You can review the results of the copy process from the Assumption Browser by selecting a different currency and following the usual navigation to view or edit assumptions. The application displays new assumptions for each product included in the original source selection. The copy process replaces pre-existing assumptions for any product-currency combination that is included in the target selection.

9. Click Save on the Assumption Browser page to save the assumptions to the database.

## 16 Forecast Rate Scenarios

Forecast Rate scenario assumptions allow you to define future interest rates, future economic indicators, and future currency exchange rates. Use interest rate forecasts to project cash flows, including pricing new business, re-pricing existing business, calculating prepayments, and determining discount methods. Use Economic Indicator forecasts to include in behavioral modeling and scenario/stress analysis. Use currency exchange rate forecasts to account for the effects of currency fluctuations on income.

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. See OFSAA Rate Management for information on how to define interest rates, economic indicator, and currency exchange rates.

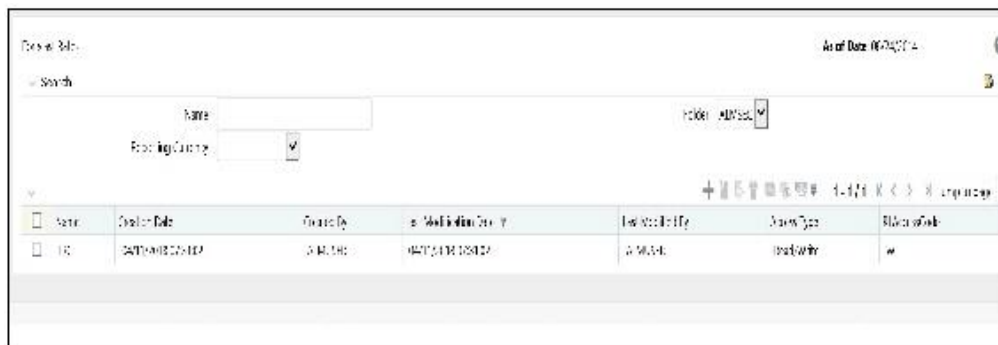
This module describes how to create a Forecast Rates assumption rule to forecast cash flows and, if you work with multiple currencies, to model relationships between interest rates and exchange rates.

This chapter covers the following topics:

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

### 16.1 Creating a Forecast Rates Assumption Rule

10. From the Forecast Rates bar, select the “Add” icon.



The screenshot shows the 'Forecast Rates' window. At the top, there is a search bar and a 'Name' field. Below these, there is a 'Forecasting Currency' dropdown menu. A table of existing rules is displayed below the dropdown. The table has columns for 'Name', 'Created Date', 'Created By', 'Last Modified By', 'Last Modified', 'Forecast Type', and 'Status'. One rule is listed with the name 'BANKING RATES'.

Name	Created Date	Created By	Last Modified By	Last Modified	Forecast Type	Status
BANKING RATES	2014-01-01 10:00:00	ADMIN	ADMIN	2014-01-01 10:00:00	INTEREST	Active

11. Type a descriptive name for the rule.
12. Type a description for the rule. This is an optional field.
13. Select a reporting currency.
14. Select a folder.

15. Select the Access Type option.

16. Click Save.

### 16.1.1.1 Features of Forecast Rates

The reporting currency you selected when creating the Forecast Rates assumption rule appears in the title bar. Each forecast 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 <2%, you can set the minimum rate to floor at 0%, although negative rates are allowed if desired.

Here, you have following options available for defining Forecast Rate Scenario:

- Standardized Approach
- Enhanced Approach

IRRBB Standardized Approach Shocks allows users to select one of the six Standardized Approach Shocks (SAS) in a forecast rates scenario for certain currency IRCs. You can select following 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 will be available for supported currencies. If an IRC is for a non-supported currency, then these would not display.

For more information, see Cash Flow Engine reference guide.

The active currencies defined under Rate Management > Currencies, are listed under the Currency Codes section. 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 section is dependent on the selected currency. The IRCs, including a reference IRC for each currency, are loaded from Rate Management. When you select a currency other than the reporting currency, the options under Currency Forecast Method provide several ways to model relationships between exchange rates and interest rates.

The Economic Indicators for all active indices are listed in the Economic Indicator section. These indices are not dependent upon the currency selected. Use these indicators to set up scenarios around changing economic conditions that will affect the forecast outcome of another variable. For example, if you forecast a higher GDP, you may have 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 Rate Management.

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

You can map your forecast scenario with Behavior Pattern Rule. For more information, refer to Behavior Pattern 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.

Select	To
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 Rate Management.

You can map your forecast scenario with Behavior Pattern Rule. For more information, refer to [Behavior Pattern Rule Mapping](#).

### Examples of Currency Forecasting

The examples below use the following 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

To Begin: For all examples, begin by doing the following:

1. Create a new Forecast Rates assumption rule with USD as the reporting currency.
2. In the Forecast Rates window, add (or rename) a scenario:
  - Click Add (or Rename).
  - Type a name for the scenario.
  - 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, do the following:

3. From Currency Codes, select AUD: Australian Dollar.
4. From Currency Forecast Method, click Flat.
5. Click View.

Under Rate Value, you will 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 your Application Preferences.

Bucket Number	Start Date	End Date	Rate Value
1	06/25/2014	09/24/2014	0.88
2	09/25/2014	11/09/2014	0.88

6. Click OK.
7. At the bottom of the page, click Save.

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, do the following:

1. From Currency Codes, select AUD: Australian Dollar.
2. From Currency Forecast Method, select Structured Change.
3. Click Define.
4. Add rows and type bucket numbers and rate changes as follows:

Start Bucket	End Bucket	From Date	To Date	Total Rate Change
1	2	06/25/2014	09/24/2014	0.000

5. You can also use the Excel import/export feature to add the rate changes.
6. Click Apply.
7. Click View.

Bucket Number	Start Date	End Date	Rate Value
Base Rate			
1	06/25/2014	09/24/2014	0.90
2	09/25/2014	10/09/2014	0.90

8. Click OK.
9. At the bottom of the page, click Save.

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, do the following:

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.



Exchange Rate View Direct Input(USD : US Dollar)

Bucket Number	Start Date	End Date	Rate Value
Base Rate			
1	06/25/2014	09/24/2014	0.80
2	09/25/2014	10/09/2014	0.70

6. You can also use the Excel import/export feature to add the rate values.
7. Click OK.
8. At the bottom of the page, click Save.

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.
6. Type interest rate changes for 02/01/2010 through 04/30/2010.
7. Click Apply.

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, click Direct Input.
11. Click Define.
12. Type interest rate changes for 02/01/2010 through 04/30/2010.
13. Click Apply.
14. At the bottom of the page, click Save.

#### NOTE

The View button is not available for the parity feature. If you want to view results, enable the “forecast rate” option in the BSP process – Audit Block, for the relevant interest rate codes. Audit results will be 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. The forecast is based on the historical interest rates from the reference IRC of each currency. This example assumes that the following reference IRCs have been assigned in Rate Management:

- U. S. dollar: Treasury Index

- Australian dollar: IRC AUD

In the Forecast Rates ID window, do the following:

1. From Currency Codes, select AUD: Australian Dollar.
2. From Currency Forecast Method, click No Arbitrage.
3. At the bottom of the page, click Save.

#### NOTE

The View button is not available for the No Arbitrage feature. If you want to view results, enable the “forecast rate” option in the BSP process – Audit Block, for the relevant interest rate codes. Audit results will be written to the FSI\_INTEREST\_RATES\_AUDIT table.

## 16.3 Economic Indicator Forecast Methods

The following Economic Indicator methods are available:

Select	To
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

As you follow the steps in the examples, substitute similar data at your site if this particular data is not available.

Flat: View 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 the Economic Indicator Forecast Method, click Flat.
4. Click View.

Start Bucket	End Bucket	From Date	To Date	Total Rate Change
1	1	05/05/2014	05/04/2014	-4.0000

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

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

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

5. From Currency Codes, select USD: US Dollar.
6. From Economic Indicators, select New Residential Sales.
7. From Rate Forecast Method, click Structured Change.
8. Click Define.
9. Type the following interest rate change:
10. Click Apply.
11. Click View.

Economic Indicators View Structured Change(test_EI)			
Bucket Number	Start Date	End Date	Rate Value
Base Rate			
1	06/25/2014	09/04/2014	5.00
2	09/25/2014	10/09/2014	5.00

12. You can see the incremental increase over the six months (150 = 25 per mo \* 6 months)

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

- In step 3, click Direct Input
- In step 5, type in New Residential Sales data (forecasted values for each bucket rather than forecasted values changes over a period of one or more buckets).

After you have defined forecast method for an Economic Indicator, you can undo the definition by selecting relevant Economic Indicator (green color check-box) and clicking "Un-Define" button. This will bring the Economic Indicator to its original un-defined state indicated by red color check box. This step is necessary if you want to delete an Economic Indicator from "Common Object Maintenance > Rate Management > Economic Indicators" user interface after defining forecast method for it.

## 16.4 Interest Rate Forecast Methods

The following Interest Rate Forecast methods are available:

Select	To
Flat	Forecast no change in the interest rate for all dates beginning with the as-of date.

Select	To
Structured Change	Forecast rate changes in terms of absolute or percent change, for any modeling period or interest rate term, such as: <ul style="list-style-type: none"> <li>□ +100 basis points on Day 1</li> <li>□ -200 basis points over the first 6 months</li> <li>□ Yield curve rotation (short point decreasing, long point increasing)</li> </ul>
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:

Select	To
Linear Interpolation	Linear interpolation uses linear yield curve smoothing. Linear yield curves are continuous but not smooth; at each knot point there is a kink in the yield curve. You may not want to use a linear yield curve with a model that assumes the existence of a continuous forward rate curve, due to the nonlinear and discontinuous knot points of a linear yield curve.
Cubic Spline of Yields	<p>A cubic spline is a series of third degree polynomials that have the form:  <math>y = a + bx + cx^2 + dx^3</math></p> <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 (<math>y''=0</math>) or flat (<math>y'=0</math>).</p>

Select	To
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 minimum number of knot points, there will be 6 equations. For n number of knot points, the number of equations is <math>2n-2</math>. If n is the number of points to be interpolated, the order of the matrix to be formed is <math>5*(n-1) \times 5*(n-1)</math>. The matrix is formed according to the following logic:</p> <p>The second derivative at the end points and the first derivative of the last point is Zero. At the points other than the end points the value of the first derivatives, second derivatives and the third derivatives of the function are equal.</p>

#### NOTE

In looking up 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.

#### Examples of Interest Rate Forecasting

As you follow the steps in the examples, substitute similar data at your site if this particular data is not available.

#### NOTE

You can generate the forecast rates for 360 calendar months, Moody's structured cashflow library's structured cashflow library integration is done with BSP. 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. Engine will identify 24 Months term point as 2 Years and 120 Months as 10 Years. If the term point(s) are not available, then engine will not be able to send the forecast rates for the IRC

Engine will match the last day of the calendar month with the ISB (income simulation bucket) dates and fetch the rate corresponding to the term point to pass to 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

needs to be extended till 360th month. For example, if the ISB covers only 240 months, then 240th month rate will be applied from 241st to 360th months.

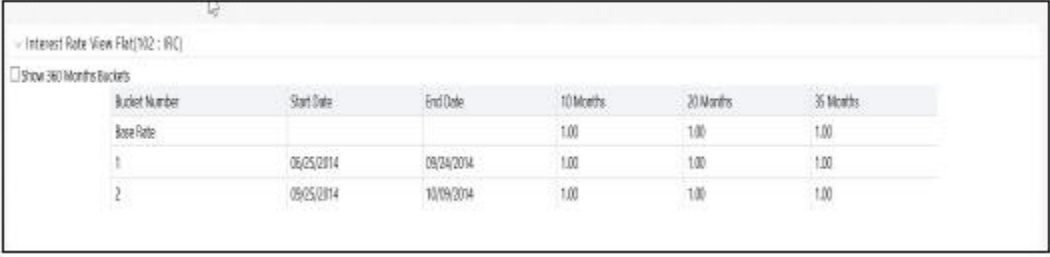
When "Show 360 months Buckets" check box is enabled, 2 year (24 months) and 10 year (240 months) term points will be highlighted in red color.

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

Flat: View 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, click 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 ISB view. Here, Show Rates for 360 Months Buckets check box is disabled by default. On checking this 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 box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user.



Bucket Number	Start Date	End Date	10 Months	20 Months	36 Months
Base Rate			1.00	1.00	1.00
1	09/25/2014	09/24/2014	1.00	1.00	1.00
2	09/25/2014	10/19/2014	1.00	1.00	1.00

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

6. From Currency Codes, select USD: US Dollar.
7. From Interest Rate Codes, select US Treasury Curve.
8. From Rate Forecast Method, click Structured Change.
9. Select the Interpolation Method.
10. 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 and click apply.
11. Type the following interest rate changes:

Start Bucket	End Bucket	From Date	To Date	1 Months	32 Months
1	1	06/25/2014	09/24/2014	0.0000	0.0000

You can also use the Excel import/export feature to add the interest rate changes.

12. Click Apply.

13. Click View.

After clicking View, the Interest Rate View window displays the results in ISB view. Here, Show Rates for 360 Months Buckets check box is disabled by default. On checking this 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. The Show 360 Months Buckets box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user.

14. The rate increases you typed 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:

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

15. The interest rates in buckets 2-7 reflect the increases.

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

16. In step 5, type interest rates (forecasted rates for each bucket rather than forecasted rate changes over a period of one or more buckets).

17. In step 3, click Direct Input

18. During defining the Direct Input, "Show 360 Months Buckets" box is checked by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user. If you enter the forecast rates against 360 months, the UI converts the same to across income simulation buckets.

Interest Rate Code Direct Input (IRC)

☒ Show 360 Months Buckets

Bucket Number	Forecast Month	10 Months	20 Months	35 Months
Base Rate		1.000000	1.000000	1.000000
<input type="checkbox"/> 1	JUN-14	1.000000	1.000000	1.000000
<input type="checkbox"/> 2	JULY-14	1.000000	1.000000	1.000000
<input type="checkbox"/> 3	AUG-14	1.000000	1.000000	1.000000
<input type="checkbox"/> 4	SEPT-14	1.000000	1.000000	1.000000
<input type="checkbox"/> 5	OCT-14	1.000000	1.000000	1.000000

Apply Cancel

19. Similarly, user can enter the data for income simulation buckets after unchecking the “Show 360 Months Buckets”. Now, UI will convert the rates from ISB to 360 months view.

When you switch from 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?” If you select YES, then the definition is erased. Else, it is retained. In effect, you will be restricted to do the following:

Warning [6289]

Switching the view will erase the existing definition. Do you want to continue?

Yes No

- Enter the data across ISB, check the “Show 360 Months Buckets” box and override that data for a few of the 360 months buckets.
- Enter the data across 360 months buckets, uncheck the “Show 360 Months Buckets” box and override 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, “Show Rates for 360 Months Buckets” check box is enabled by default.

If you have defined the rates in ISB and click View, the Interest Rate View window displays the result in ISB view. Here, “Show Rates for 360 Months Buckets” check box is disabled by default. On checking this 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.

Interest Rate View Direct Input (IRC)

☒ Show 360 Months Buckets

Bucket Number	Start Date	End Date	10 Months	20 Months	35 Months
Base Rate			1.00	1.00	1.00
1	06/25/2014	09/24/2014	1.00	1.00	1.00
2	09/25/2014	10/09/2014	1.00	1.00	1.00

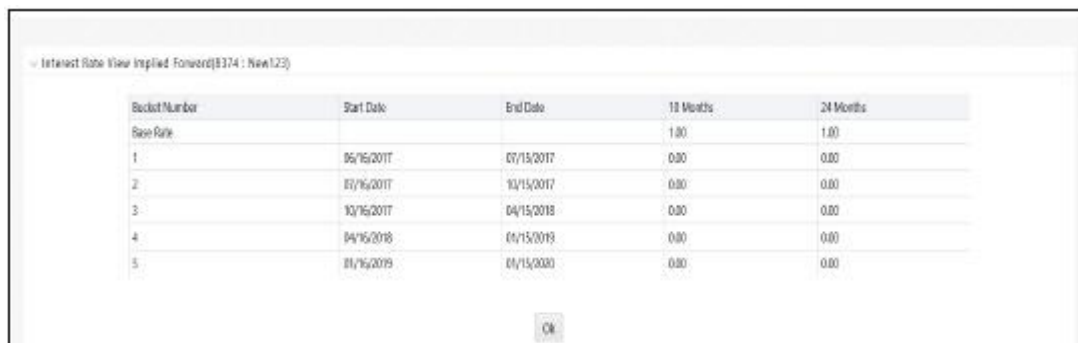


You can also use the Excel import/export feature to add the interest rates. For more details, refer Excel Import/Export.

**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 changes desired to base curve, leave at 0.0 and click apply.
5. You can also use the Excel import/export feature to add the absolute or percent rate changes.
6. Click view to view the implied forward rates.

After clicking View, the Interest Rate View window displays the results in ISB view. Here, Show Rates for 360 Months Buckets check box is disabled by default. On checking this 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 box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user.



Interest Rate View Implied Forward(8374 : New123)

Bucket Number	Start Date	End Date	18 Months	24 Months
Base Rate			1.00	1.00
1	05/15/2017	07/15/2017	0.00	0.00
2	07/15/2017	10/15/2017	0.00	0.00
3	10/15/2017	04/15/2018	0.00	0.00
4	04/15/2018	01/15/2019	0.00	0.00
5	01/15/2019	01/15/2020	0.00	0.00

OK

**Change from Base:** Select a forecast rates 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 ISB view. Here, Show Rates for 360 Months Buckets check box is disabled by default. On checking this 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 box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user.

**Yield Curve Twist:** Set 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, click Yield Curve Twist.
4. Click Define.
5. Type the following interest rate changes (flattening the curve around the 3 month term point):

6. Click Apply.

After clicking View, the Interest Rate View window displays the results in ISB view. Here, Show Rates for 360 Months Buckets check box is disabled by default. On checking this 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 box is available by default if the ADCo LDM, or Moody's structured cashflow library, or both functions are mapped to the user.

After you have defined forecast method for an Interest Rate Code, you can undo the definition by selecting relevant Interest Rate Code (green color check-box) and clicking “Un-Define” button. This will bring the Interest Rate Code to its original un-defined state indicated by red color check box. This step is necessary if you want to delete an Interest Rate Code from “Common Object Maintenance > Rate Management > Interest Rates” user interface after defining forecast method for it.

Interest Rate Codes (Currency : USD : US Dollar)			
Interest Rate Codes	Interest Rate Code Forecast Method	Interpolation Methods	Minimum Rate
<input checked="" type="checkbox"/> 8374 : New123	Flat	Cubic spline of yields	0.000000

## Standardized Approach Shocks

### NOTE

Standardized Approach shocks are unlike other interest rate rules as they are applied at the scenario level instead of at the IRC level. When a user creates a new Forecast Rates rule, by default, Scenario 1 is always the base scenario for Standardized Approach purposes and cannot have a Standardized Approach shock definition.

1. On the main page of a Forecast Rates rule, select the “IRRBB Shocks”. This will allow users to define either Standardized or Enhanced Approach scenarios, or both for a single Forecast Rates rule. Once a forecast rates rule has been designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach scenario type.
2. To apply a Standardized Approach scenario, click the “add scenario” button.
3. In the Add Forecast Rates Scenario popup box, select the Scenario Type which you want to apply to this scenario.

**NOTE**

Only one Standardized Approach shock may 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 may not be changed except for their interpolation method and minimum rate.

4. Click Apply. The scenario is now a Standardized Approach shock.

The screenshot shows a dialog box titled "Add Forecast Rates Scenario". It contains three input fields: "Scenario Number" with the value "3", "Scenario Name" with the value "SA - Par Dwn 3", and "Scenario Type". The "Scenario Type" dropdown menu is open, displaying a list of options: "None", "SA - Parallel Down", "SA - Short Up", "SA - Short Down", "SA - Flattenner", and "SA - Steepener".

### 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. On the main page of a Forecast Rates rule, select the "IRRBB Shocks". This will allow users to define either Standardized or Enhanced Approach scenarios, or both for a single Forecast Rates rule. Once a forecast rates rule has been designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach scenario type.
2. To apply an Enhanced Approach scenario, click the "add scenario" button.

**NOTE**

Only one Enhanced Approach shock may be applied to a single scenario, and no two EA shocks of the same type may be applied to the same Forecast Rates rule. All IRCs in this scenario remain fully editable for Forecast Method, Interpolation Method and Minimum Rate.

3. Click Apply. The scenario is now an Enhanced Approach shock.

## 16.5 BSP Volatility Codes

This feature allows users to set a static shock percentage (positive or negative) to be applied to BSP Volatilities in a forecast rates screen.

For more information, refer to Cash Flow Reference Guide on OHC.

This section will display the list of Interest Rate Codes those are defined as BSP Volatility Surface. For an BSP Volatility to be viewable and editable in this screen, you should have following prerequisites:

- Be defined in Rate Management: Interest Rate as an BSP Volatility Surface
- Have a matching currency to the Forecast Rates Reporting Currency

For more information, refer to [Interest Rates Detail Screen](#)

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

1. From Currency Codes, select a currency, for example USD: US Dollar. Only BSP Volatility Surfaces of the same currency will be available.
2. In the BSP Volatility block, select a Vol Surface.

3. Enter shock percentage for respective BSP 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 BSP Volatility then click View.

Expiration Date	Strike	
04/12/2016		
04/12/2016		
	5.15	10.30

6. To remove the shock percentage, click Un-Define.

## 16.6 Editing a Forecast Rate

To edit a Forecast rate, follow the steps given below:

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 on Apply button, it turns to Green color.

**NOTE** Selecting a different IRC means the addition of an IRC and not the deletion/Unselection of the rest of the IRCs. When you reopen the Forecast Rate, lowest IRC code will be checked by default.

If the scenario has been defined as a Standardized Approach scenario, this definition may be changed or removed.

3. Select the Edit button for a Standardized Approach scenario
4. To change the scenario from one SA shock to another SA shock, select the new definition. Doing this will change all qualifying SA IRCs to the new definition.
5. To remove a SA definition to the current scenario, select “NONE” as the Scenario Type.  
Note: This will remove all Forecast Method definitions for all qualified SA IRCs.
6. To change the SA definition to an Enhanced Approach definition, select an available Enhanced Approach Scenario Type.  
Note: This will remove all Forecast Method definitions for all qualified SA IRCs.
7. Click Apply to accept the change.

If the scenario has been defined as an Enhanced Approach scenario, this definition may be changed or removed.

8. Select the Edit button for an Enhanced Approach scenario.
9. To change the scenario from one EA shock to another EA shock, select the new definition. Note: Changing from one EA scenario to another EA scenario will not change the IRC Forecast Methods already defined.
10. To remove an EA definition to the current scenario, click to uncheck the selection box "IRRBB Standardized Rate Shocks". Note: Changing from an EA Scenario type to NONE will not change the currently defined IRC Forecast Methods.
11. To change an existing EA definition to a Standardized Approach scenario, select a currently available Standardized Approach type in the Scenario Type dropdown menu.  
Note: This will change all relevant IRC Forecast Methods definitions.
12. Click Apply to accept the change.

## 16.7 Behavior Pattern Rule Mapping

The Behavior Pattern Rule Mapping drop-down shows the list of existing Behavior Pattern Rule. you can select any behavior pattern to map with current forecast scenario. If you want to map a behavior pattern to all the forecast scenarios, the use "Apply to all scenarios" check-box. For more information on Behavior Pattern Rule, refer to chapter [Behavior Pattern Rule](#).

## 16.8 Data Loader Procedure

Stage Forecast Rate Loader procedure loads forecast rates definitions into OFSAA BSP Forecast rates tables from 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, user can view the information in Forecast Rate Assumptions UI.

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

Executing the Data Loader

To execute the Data Loader Procedure:

1. Navigate to the Forecast Rates Main page.
2. Click the Data Loader Execution button on the action bar – This will execute all the available Forecast Rates set up in the data loader for Direct Input and Structured Change methods.  
A warning message will appear: "Update all available Forecast Rates?"
3. Click "Yes"

Forecast Rates

As of Date: 06/15/2017

Search

Name

Reporting Currency

Folder: ALMSEC

1 - 1 / 1

Jump to page

<input checked="" type="checkbox"/>	Name	Creation Date	Created By	Last Modification Date	Last Modified By	RLAccessCode
<input checked="" type="checkbox"/>	362	04/17/2018 15:05:05	ALMUSER	04/17/2018 15:11:46	ALMUSER	W

## 17 Prepayment Rules

This module describes the procedure for working with and managing Prepayment rules.

This chapter covers the following topics:

- Overview of Prepayment Rules
- [Creating Prepayment Rules](#)
- [Defining Prepayment Methodologies](#)
- [Defining Early Redemption Assumptions](#)
- [Associating Conditional Assumptions with Prepayment Rules](#)

### 17.1 Product Characteristics

This module describes the procedure for working with and managing Product Characteristic rules.

This chapter covers the following topics:

- Overview of Product Characteristic Rules
- [Creating Product Characteristic Rules](#)
- [Defining Product Characteristic Rules](#)
- [Copying Assumptions Across Currencies and Products](#)

### 17.2 Creating Prepayment Rules

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

#### 17.2.1 Procedure

4. Navigate to the Prepayment rule summary page.
5. Complete standard steps for this procedure.



Active Time Bucket: test\_timeBucket  
Assumption Specification: Prepayments

Prepayments

As Of Date: 05/25/2014

Prepayment/Early Redemption Details

Name: Prepayment

Description:

Factor: ALMSEC

Access Type: ☒ Read/Write ☐ Read Only

Select Product Hierarchy

Factor: ALMSEC

Product Hierarchy: Test\_App\_Prod

Select Currency

Currency: Default Currency

Description Browser: Assumption List

Assumption Rows

Product	Calculation Method	Conditional Description	Status
<input checked="" type="checkbox"/> Test3			
<input checked="" type="checkbox"/> Orphan Branch			

Save Cancel

Auto Test User Comments

System ID:

Created By: ALMUSER Creation Date: 06/13/2018 10:24:13

Last Modified By: ALMUSER Last Modification Date: 06/13/2018 10:24:13

**NOTE**

In addition to the standard steps for creating rules, the procedure for creating a Prepayment rule involves one extra step. After Standard Step 6, you can select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from parent nodes to child nodes.

## 17.3 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 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 in either of the following two ways:

- By creating a conditional assumption using conditional logic. For more information, see [Associating Conditional Assumptions with Prepayment Rules](#) section.
- Directly on the Prepayment methodology page, as described here.

## 17.3.1 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.

### 17.3.1.1 Prerequisites

Performing basic steps for creating or editing a Prepayment rule.

### 17.3.1.2 Procedure

This table describes key terms used for this procedure.

Term	Description
Calculation Method	The method used to model prepayment behavior of instruments. Oracle Balance Sheet Planning provides four prepayment calculation methods: Constant, Prepayment Model, PSA, and Arctangent.
Cash Flow Treatment	Allows you to specify one of the following two ways in which prepayments are made. <ul style="list-style-type: none"> <li>Refinance: This is the most commonly 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.</li> <li>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.</li> </ul>
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"> <li>Remaining Term: The number of months remaining until the instrument matures.</li> <li>Reprice Frequency: The frequency with which the instrument reprices. This defaults to the original term for a fixed rate instrument.</li> <li>Original Term: The number of months that was the originally scheduled life of the instrument.</li> </ul>
Prepayment Rate Definition	This table allows you to specify constant annual prepayment rate, or the associated factors, that you want to apply to the instruments having origination dates in a particular date range.

Term	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 by selecting a currency and one or more products from the hierarchy.
2. Select a Calculation Method, 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.

3. Select a Cash Flow Treatment type, Refinance or Curtailment.

**NOTE**

Refinance is the most commonly used method.

4. Define the parameters and annual prepayment rates for the selected calculation method: Constant, Prepayment Model, PSA or Arctangent.

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:

**NOTE**

- [Defining the Constant Prepayment Method](#)
- [Defining the Prepayment Model Method](#)
- [Defining the PSA Prepayment Method](#)
- [Defining the Arctangent Calculation Method](#)

**5. 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.

**NOTE**

When you click Save, the prepayment assumptions are saved and the Prepayment rule summary page is displayed.

**NOTE**

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within the Prepayment rules from one currency to another currency or a set of currencies or from one product to another product or set of products. For more information, see [Associating Conditional Assumptions with Prepayment Rules](#).

## 17.3.2 Defining the Constant Prepayment Method

Use this procedure to define prepayment assumptions using the Constant Prepayment method.

### 17.3.2.1 Prerequisites

Performing basic steps for creating or updating a Prepayment rule.

Prepayment Calculation Method

Calculation Method: Constant

Cash Flow Treatment: Refinance

Prepayment Specification - Constant

Use Payment Dates ☒ User Defined Prepayment Terms

Start Origination Date: 01/01/1900

End Origination Date: 12/31/2499

Percent: 0.0000

Formula: Base Annual PP rate = Constant rate

### 17.3.2.2 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 runoff on the first day of the forecast.

**NOTE** 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](#)

### 17.3.2.3 Use Payment Dates

1. Select the "Use Payment Dates" option.

The screenshot shows the 'Prepayment' configuration window. The 'Use Payment Dates' option is selected under the 'Prepayment Calculation Method' section. Below this, there is a table for 'Prepayment Tenors' with columns for 'Tenor', 'Frequency', and 'Rate'. The table is currently empty. At the bottom, there is a 'Start Origination Date' field and a 'Rate' field.

Tenor	Frequency	Rate

2. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.

**NOTE**

The first cell in the Start Origination Date column and all of 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 prior to the previous End Origination Date field.

3. 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.

**NOTE**

The Percent column represents the actual annualized prepayment percentage that the system uses to generate the principal runoff during the cash flow calculations.

4. Click Add Row to add additional rows and click the corresponding Delete icon to delete a row.  
You can add as many rows in this table as you require. However you need to enter relevant parameters for each new row.
5. You can also use the Excel import/export feature to add the Prepayment rate information.
6. You can use Data Input Helper feature. For more information, refer to Data Input Helper.
7. Define Seasonality assumptions as required to model date specific adjustments to the annual prepayment rate. Inputs act as multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

#### 17.3.2.4 User Defined Prepayment Tenors

1. Select the User Defined Prepayment Tenors option. This option allows you to specify the term and multiplier to prepayment date for the particular row.

**Prepayment Rule Details**

Name: New Prepayment  
Description:

**Product and Currency Details**

Product: Asset  
Currency: Default Currency

**Prepayment Calculation Method**

Calculation Method: Constant  
Cash Flow Treatment: Reference

**Prepayment Specification - Constant**

Formula Base Annual PR rate = Constant rate  
☐ Use Payment Dates  
☒ Use Defined Prepayment Tenors

Balance Selection: Current Balance  
Prepayment Rule Type: Annual Prepayment Rate

Select	Start Origination Date <sup>1</sup>	End Origination Date <sup>1</sup>	Tenor <sup>1</sup>	Multiplier <sup>1</sup>	Percent <sup>1</sup>	Repeat <sup>1</sup>
<input type="checkbox"/> Tenor 1	01/01/1900	11/21/2018	12	Months	10.0000	1
<input type="checkbox"/> Tenor 2	11/22/2018	12/31/2400	18	Months	20.0000	1
<input type="checkbox"/> Tenor 3			24	Months	10.0000	1

**Seasonality**

Apply Cancel

- 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.  
 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.  
 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.
- Select the Prepayment Rate Type as Annual Prepayment Rate Or De-annual Prepayment Rate.  
 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.
- Enter the Start Origination Date and End Origination Date ranges, add additional ranges as required using the Add Row button.
- Enter the term to runoff tenor and multiplier for each of the date ranges.
- Enter the annual prepayment rate percent for each of the date ranges.
- Enter 'Repeat' if you want same prepayment to occurs multiple times. By default it is set to 1.
- Click Add Row to add additional runoff % rows and click the corresponding Delete icon to delete a row.

9. Define Seasonality assumptions as required to model date specific adjustments to the annual prepayment rate. Inputs act as multiplier, for example, an input of 2 will double the prepayment rate in the indicated month.

**NOTE**

The manner in which prepayment / redemption tenor is interpreted has changed from BSP 8.0.7 onwards in case of user defined prepayment and user defined early redemption. Earlier runoff occurred on “As of date + Prepayment / early redemption tenor”. From BSP 8.0.7 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 BSP 807 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.

### 17.3.3 Defining the Prepayment Model Method

Use this procedure to define prepayment assumptions using the Prepayment Model Calculation method.

#### 17.3.3.1 Prerequisites

- Performing basic steps for creating or updating a Prepayment rule
- Creating Prepayment Model rule

The screenshot shows the 'Prepayment Model Calculation' rule configuration window. It includes sections for 'Prepayment Model Calculation Method', 'Prepayment Model', 'Calculation Method Selection', and 'Market Rate Definition'. The 'Calculation Method Selection' table is as follows:

Calculation Method	Calculation Method	Calculation Method	Prepayment Model
<input type="checkbox"/> Sub-Ordination Date	Sub-Ordination Date	Calculation Method	Prepayment Model
<input type="checkbox"/> Prepayment	Prepayment	Calculation Method	Prepayment Model

The 'Market Rate Definition' section includes fields for 'Index', 'Index Type', 'Spread', and 'Term'.

#### 17.3.3.2 Procedure

1. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
2. Enter the Spread. The spread is added to the rate from the underlying interest rate curve to determine the market rate.
3. Select an Associated Term: Remaining Term, Reprice Frequency, or Original Term.
4. Specify the Prepayment Model parameters.



- Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
- 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.
- Select a predefined prepayment model from the Prepayment model Rule list of values. Click the View Details 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.
- Click Add Another Row to add additional rows and click the corresponding Delete to delete a row.

You can add as many rows in this model as you require. However you need to enter relevant parameters for each new row.

You can also use the Excel import/export feature to add the Prepayment rate information.

5. Define Seasonality assumptions as required to model date specific adjustments to the annual prepayment rate. Inputs act as multiplier, for example, an input of 2 will double the prepayment rate in the indicated month.

## 17.3.4 Defining the PSA Prepayment Method

Use this procedure to define prepayment assumptions using the PSA Prepayment method.

### 17.3.4.1 Prerequisites

Performing basic steps for creating or updating a Prepayment rule.

### 17.3.4.2 Procedure

1. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.

#### NOTE

The first cell in the Start Origination Date column and all of 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 prior to the previous End Origination Date field.

2. 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 Details icon.

**NOTE** The default value is 100 PSA and inputs can range from 0 to 1667.

3. Click Add Row to add additional rows and click the corresponding Delete icon to delete a row. You can add as many rows in this table as you require. However you need to enter relevant parameters for each new row.
4. You can also use the Excel import/export feature to add the Prepayment rate information.
5. 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.

## 17.3.5 Defining the Arctangent Calculation Method

Use this procedure to define prepayment assumptions using the Arctangent Calculation method.

### 17.3.5.1 Prerequisites

Performing basic steps for creating or updating a Prepayment rule.

### 17.3.5.2 Procedure

1. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
2. Enter the Spread.  
The spread is added to the rate from the underlying interest rate curve to determine the market rate.
3. Select an Associated Term: Original Term, Reprice Frequency, or Remaining Term.
4. Specify the Arctangent Argument table parameters.
5. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
6. 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.
7. Click Add Another Row to add additional rows and click the corresponding Delete to delete a row.

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 also use the Excel import/export feature to add the Prepayment rate information.
9. Define the Seasonality assumptions as required to model date specific adjustments to the annual prepayment rate. Inputs act as multiplier, For example, an input of 2 will double the prepayment rate in the indicated month.

## 17.4 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.

### 17.4.1 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.

### 17.4.2 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:

#### 17.4.2.1 Use Payment Dates

1. Select the "Use Payment Dates" option.

Requirements: Early Redemption

Early Redemption Calculation Method

Calculation Method: Constant

Early Redemption Specification - Constant

Formula:  $\text{Cash Annual P\% rate} = \text{Constant rate}$

Use Payment Dates: ☐ Use Defined Redemption Tenors

Start Maturity Date <sup>1</sup>	End Maturity Date <sup>1</sup>	Percent <sup>1</sup>
1/1/1900	11/30/2010	20.0000
11/30/2010	12/31/2499	80.0000

Seasonality

☐ Seasonality

January	1.0000	July	1.0000
February	1.0000	August	1.0000
March	1.0000	September	1.0000
April	1.0000	October	1.0000
May	1.0000	November	1.0000
June	1.0000	December	1.0000

Apply Cancel

2. Enter the Start Maturity and End Maturity Dates.

**NOTE**

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.

3. 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.

**NOTE**

The Percent column represents the actual annualized prepayment percentage that the system uses to generate the principal runoff during the cash flow calculations.

4. Click Add Row to add additional rows and click the corresponding Delete icon to delete a row.
5. You can add as many rows in this table as you require. However you need to enter relevant parameters for each new row.
6. You can use Data Input Helper feature. For more information, see Data Input Helper section.
7. You can also use the Excel import/export feature to add the Prepayment rate information. For more details, see Excel Import/Export section.

### 17.4.2.2 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.

The screenshot displays the 'Early Redemption' configuration interface. It includes sections for 'Early Redemption Calculation Method', 'Early Redemption Specification - Constant', and a table for 'Early Redemption' with columns for 'Select', 'Start Maturity Date', 'End Maturity Date', 'Tenor', 'Multiplier', 'Percent', and 'Repeat'. The 'Balance Selection' is set to 'Current Balance' and the 'Prepayment Rate Type' is 'Annual Prepayment Rate'. The table contains three rows of data for different maturity date ranges and tenors.

Select	Start Maturity Date	End Maturity Date	Tenor	Multiplier	Percent	Repeat
<input type="checkbox"/> Tenor(1)	31/03/1980	31/03/2018	12	Months	20.0000	1
<input type="checkbox"/> Tenor(2)	31/03/2018	31/03/2048	36	Months	30.0000	1
<input type="checkbox"/> Tenor(3)						

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.

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.

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 Annual Prepayment Rate is selected then prepayment rate entered in screen is directly used. In the other case, rate entered in screen in de-annualised before calculating 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 early redemption runoff percentage for each of the date ranges.
8. Enter 'Repeat' if you want same prepayment to occurs multiple times. By default it is set to 1.
9. Click Add Row to add additional runoff % rows and click the corresponding Delete icon to delete a row.
10. 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.

**NOTE**

The manner in which prepayment / redemption tenor is interpreted has changed from BSP 8.0.7 onwards in case of user defined prepayment and user defined early redemption. Earlier runoff occurred on "As of date + Prepayment / early redemption tenor". From BSP 8.0.7 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 BSP 807 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.

## 17.5 Associating Conditional Assumptions with Prepayment Rules

Oracle Balance Sheet Planning 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:

Common Object Maintenance > Unified Analytical Metadata > Map Maintenance

To create a map, use the following steps:

1. Navigate to Map Maintenance.
2. Select 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, e.g. 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, Chapter 2 – Object Management.

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. The following screenshot displays a representative Conditional Assumption using a Data

**NOTE**

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).

## 18 Prepayment Models

This module describes the procedure to build prepayment models using Prepayment Model Rules.

This chapter covers the following topics:

- Overview of Prepayment Models
- [Creating Prepayment Models](#)
- [Editing Prepayment Models](#)
- [Editing Prepayment Rates in a Prepayment Model](#)
- [Prepayment Rate Data Loader](#)

### 18.1 Creating Prepayment Models

Creating a Prepayment Model comprises the following sub procedures:

- Creating Prepayment Models
- Defining the structure of the prepayment model
- Assigning Node Values

#### 18.1.1 Procedure to create a Prepayment Model

This table describes key terms used for this procedure.

Term	Description
Dimension	Influences the prepayment behavior of an instrument. You can build a prepayment model using up to three prepayment dimensions. Each dimension maps to an attribute of the underlying transaction (For example, age/term or rate and so on) so the cash flow engine can apply a different prepayment rate based on the specific characteristics of the record.



Term	Description
Lookup method	<p>Used to calculate prepayment rates for the prepayment dimension values that do not fall exactly on the defined prepayment dimension nodes. Oracle Balance Sheet Planning offers the following lookup methods:</p> <ul style="list-style-type: none"> <li>• Interpolation: Under this method, the prepayment rates are determined by calculating an exact value on an axis. This method assumes that prepayment speeds change on a straight-line basis between the two nodes and calculates accordingly</li> <li>• Range: Under this method, the prepayment rates are determined by calculating a range of values on an axis. This method assumes that the prepayment speed will remain the same for the entire range.</li> </ul> <p>The following example explains the differences between these two lookup methods. The following lists show the age and corresponding prepayment rates of instruments.</p> <p>Age</p> <ul style="list-style-type: none"> <li>• 12</li> <li>• 24</li> <li>• 36</li> <li>• 60</li> </ul> <p><b>Prepayment Rates</b></p> <ul style="list-style-type: none"> <li>• 5</li> <li>• 10</li> <li>• 15</li> <li>• 20</li> </ul> <p>Under the Interpolation method, the prepayment speeds increase gradually. In this example, the Interpolated prepayment rate of an instrument aged 30 months is 12.5%. This is exactly halfway between the 10% and 15% rate. However, under the Range method, the Prepayment speeds increase in steps. Using the Range method, the prepayment rate is 10%, as this rate percentage would apply to the range from 24 months to 35.9999 months.</p>
Nodes	Exact points for each dimension where attribute information has been defined.

7. Navigate to the Prepayment Model summary page.
8. Complete standard steps for this procedure. For more information, refer to [Creating Rules](#) section.

## 18.1.2 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.

### 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).

9. Select the first Dimension.
10. Select a lookup method for that Dimension.
11. Enter the number of Buckets for the Dimension.

This number may vary from dimension to dimension.

12. If required, repeat the previous three steps for up to two additional Dimensions.

### NOTE

There are certain restrictions while defining Dimensions:

- You must select the Dimension type for a row and define the values for that dimension.
- You cannot define the second (row) dimension until you have defined the first (row) dimension. Similarly, the third dimension cannot be defined until you have defined the first two dimensions.

13. 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.

#### OTE

To change the lookup method of a particular Dimension, select the required method from the corresponding list of methods from the Dimensions tab.

#### 14. Assign values for each of the buckets.

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

#### 15. Click Apply.

The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

#### 16. 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.

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

#### 17. 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.

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

## 18.2 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.

### 18.2.1 Prerequisites

Predefined Prepayment Models.

### 18.2.2 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 icon.

The Prepayment Model opens in Edit mode.

#### 18.2.2.1 Procedure to Update Rates

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

#### 18.2.2.2 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.

## 18.3 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.

### 18.3.1 Procedure

1. Search for the Prepayment Model, for which you want to define prepayment rates. For more information, refer to [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.

#### 18.3.1.1 Excel Import/Export

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

## 18.4 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, refer to Oracle Financial Services Analytical Applications 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.



## 19 Forecast - Pricing Margins

This module describes the procedure for working with and managing Pricing Margin rules.

This chapter covers the following topics:

- [Overview of Pricing Margin Rules](#)
- [Creating Pricing Margin Rules](#)
- [Defining Pricing Margin Rules](#)
- [Defining a Pricing Margin Rule: An Example](#)

### 19.1 Overview of Pricing Margin Rules

In BSP, Pricing Margin rules allow users to define default pricing margins (or spreads) for your products. Pricing margins are defined period by period based on your active Time Bucket definition, for each product and, potentially, each currency. Pricing margins work together with an underlying base interest rate curve to determine note rate pricing for new business volumes defined through BSP's planning user interfaces. New business assumptions are defined based on the combined inputs from the following three forecast related business rules:

- Product Characteristics
- [Forecast - Pricing Margins](#)
- Forecast – Maturity Mix

When you require more complex definitions of pricing margins to model unique account pricing details, user-defined repricing patterns can be used. For more information, refer to User Defined Repricing Patterns

The procedure for working with and managing Pricing Margin rules is similar to that of other Oracle Balance Sheet Planning business rules. It includes the following steps:

- Searching for Pricing Margin rules. For more information, refer to [Searching for Rules](#) section.
- Creating Pricing Margin Rules. For more information, refer to [Creating Rules](#) section.
- Viewing and Editing Pricing Margin rules. For more information, refer to [Viewing and Editing Rules](#) section.
- Copying Pricing Margin rules. For more information, refer to [Copying Rules](#) section.
- Deleting Pricing Margin rules. For more information, refer to [Deleting Rules](#) section.

As part of creating and editing Pricing Margin rules, you assign Pricing Margins to applicable products. Refer to [Defining Pricing Margin Rules](#)

### 19.2 Creating Pricing Margin Rules

You create Pricing Margin rules to assign pricing margins (or spreads) to be used in pricing new volumes defined through Forecast Balances business rules.

7. Navigate to the Pricing Margins rule summary page.
8. Complete standard steps for this procedure.

**NOTE** In addition to the standard steps for creating rules, the procedure for creating a Pricing Margins rule involves one extra step. After Standard Step 6, you need to select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between nodes allows inheritance of methodologies from parent nodes to child nodes.

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within BSP 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.

## 19.3 Defining Pricing Margin Rules

The definition of a Pricing Margins rule is part of the Create or Edit Pricing Margins rule process. When you click Save in the Create Pricing Margins rule process, the rule is saved and the Pricing Margins rule summary page is displayed. However, Pricing Margin assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your Pricing Margin assumptions for product-currency combinations before clicking Save.

### 19.3.1 Defining Pricing Margins 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.



## 19.3.2 Prerequisites

Performing basic steps for creating or editing a Pricing Margins rule

## 19.3.3 Procedure

Defining Pricing Margins has two primary steps:

1. Choosing your rate dependency option
2. Inputting Pricing Margin details for the selected products

**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 Code is a required input.

## 19.3.4 Rate Dependency Selection screen

### 19.3.4.1 Rate Dependency Relationships

Rate dependency relationships utilized within ALM but are not supported in BSP. For BSP, you must select No Relationship.

- No Relationship
- Rate Level Dependent
- Rate Spread Dependent
- Economic Indicator Dependent

### 19.3.4.2 Rate Dependency Patterns

If one of the Rate Dependency options, other than No Relationship, is selected, the Rate Dependency Pattern drop list becomes active. The list of available patterns is limited to those which apply to the selected Rate Dependency Relationship type.

## 19.3.5 The Pricing Margin Details screen

In an income simulation scenario, you may want to price new business for an account at a margin above or below a market interest rate code. For example, you can model a premium paid on CDs in relation to a market yield curve by adding a pricing margin to the interest rate code assigned to the product in the Product Characteristics rule. If you want a rate that is 25 bps above the market yield curve, you will type "0.25" as the pricing margin for the appropriate modeling period.

The Pricing Margin rule uses the modeling period defined in the "active" Time Bucket rule. You should always verify that your modeling horizon and related assumptions are consistent with the As of Date and active Time Bucket rule before processing.

### 19.3.5.1 Rate Tiers

Rate Tiers reflect the Rate Dependency Pattern details from the selected Rate Dependency Pattern. You define Pricing Margin assumptions for each rate tier. The application will automatically determine which set of assumptions to apply for a given scenario based on the relationship between the Rate Tier and the related Forecast Rate assumption value.

### 19.3.5.2 Margin Type

This option allows you to enter the Margin as Rate (fixed rate) or Percent (percentage of forecast Rate). By default, it is set to Rate.

- If Margin Type is selected as Rate, provided Margin is used as a fixed spread.
- If Margin Type is selected as Percent, Margin needs to be provided as Percentage of forecast rate. If margin is 10% of forecast rate, 10 needs to be provided. Margin is calculated as:

$$\text{Margin} = \text{Margin \%} * \text{Raw Rate}$$

For more information, refer to Cash Flow Reference Guide on [OTN](#).

Once you change from Rate to Percent, all unsaved margin data will be deleted.

An warning message is displayed: All entered value will be lost. Do you want to proceed?

### 19.3.5.3 Bucket Number

The bucket number input allows you to select a range of buckets over which the pricing margin assumption will apply. Start Date and End Date values are updated automatically based on the Bucket Number input for each row.

### 19.3.5.4 Start Date and End Date

When the Pricing Margins detail page opens, the Start Date (min value) and End Date (max value) columns are automatically populated and are read-only values. The date ranges represent the Income Simulation Date buckets as defined in the "active" Time Bucket rule. See Time Buckets for more

information. Any new business originated within these dates is modeled using the pricing margins defined in the Pricing Margin rule. New business added for each date bucket will have the same net and gross margin for its life. The margins for a particular instrument will not change as the instrument ages.

### 19.3.5.5 Gross Margin

The Gross Margin you define is added to the Interest Rate Code specified in the Product Characteristics rule to define the gross rate on new business.

**NOTE** BSP supports only Net Margins.

### 19.3.5.6 Net Margin

The Net Rate is affected by setting the Net Margin Flag in the Product Characteristics rule. If Net Margin Flag is set to Floating Net Rate, then Net Rate is equal to the Interest Rate Code plus Net Margin.

If the Net Margin Flag is set to Fixed Net Rate, then Net Rate is equal to Net Margin.

**NOTE** If Margin Type is selected as Percent and Net Margin Flag is set to Fixed Net Rate, provided Margin as Percent is treated as Rate.

Apply Defined Buckets to all Rate Tiers

This option allows you to copy the bucket setup from one page to all other Rate Tiers when using Rate Dependent assumptions.

## 19.4 Defining a Pricing Margin Rule: An Example

Define a Pricing Margin Rule using a Rate Dependency Pattern.

1. From the Assumption Browser, select Currency (US Dollar) and a product from the hierarchy browser.

2. Select the “Add New” icon to enter the Assumption Details page.
3. Select the Rate Level Dependent – Rate Dependency option.

4. Select the Rate Level – Rate Dependency Pattern from the drop list.
5. Select Apply to navigate to the Pricing Margin Tab where you can define assumptions for each rate tier.
6. Add bucket ranges to the page as needed. Optionally, select the “Apply Defined Buckets to All Rate Tiers” checkbox to copy the bucket structure across all rate tier pages.
7. Input Rate Spreads for each bucket range that you define.

#### NOTE

You may want to utilize the Data Input Helper to copy an assumption from a row where you have already defined a value or apply a fixed amount down the page. The following optional steps describe how to use this feature.

- x. Select the checkboxes next to the rows that you want to work with or use the “Select ALL” option by selecting the checkbox on the header row.
  - y. Select the Data Input Helper icon.
  - z. From the Data Input Helper – popup screen, select Method – “Keep Current Values” or some other appropriate method.
  - aa. Select the Frequency and/or Multiplier from the left side of the shuttle box.
  - bb. Select APPLY to copy assumptions to the selected rows.
8. You can also use the Excel import/export feature to add the Date Buckets/Margins information in the Pricing Margins tab.
9. Select Apply to commit your assumptions for each Rate Tier. Repeat the process for each rate tier. After you have defined assumptions for all Rate Tiers, you will return automatically to the Assumption Browser page.

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**NOTE**

You can select more than one product at a time from the Assumption Browser page.

When Pricing Margin assumptions are defined for all required product / currency combinations, select SAVE from the Assumption Browser page.

## 20 Forecast – Maturity Mix

This module describes the procedure for working with and managing Maturity Mix rules.

This chapter covers the following topics:

- [Overview of Maturity Mix Rules](#)
- [Creating Maturity Mix Rules](#)
- [Defining Maturity Mix Rules](#)

### 20.1 Overview of Maturity Mix Rules

Maturity Mix rules allow you to define the term distribution of new business added during each forecast period. Maturity Mix assumptions are set at the product and currency levels. For new volumes generated during a simulation run, you will define the maturity and amortization terms applied to the balances originated in each period, as well as specify a maturity distribution for the volumes originated. For example, mortgage originations may be divided into 25% - 5 Year Term / 30 Year Amortization, 25% - 7 Year Term / 30 Year Amortization, and 50% - 30 Year Term / 30 Year Amortization. You attach the set of maturity assumptions to apply to all new volumes within a Dynamic BSP Process by selecting the appropriate Maturity Mix rule.

In BSP, all new business processing occurs within BSP's planning user interfaces. BSP does not directly support Dynamic Deterministic processes. When you process a new business forecast in BSP's planning user interfaces, you operate within the context of a specific Forecast Set. For BSP, Maturity Mix rules are part of the definition of each Forecast Set.

New business assumptions are defined based on the combined inputs from the following 4 forecast related business rules:

- Product Characteristics
- [Forecast - Pricing Margins](#)
- [Forecast – Maturity Mix](#)

The procedure for working with and managing Maturity Mix rules is similar to that of other Oracle Balance Sheet Planning business rules. It includes the following steps:

- Searching for Maturity Mix rules. For more information, refer to [Searching for Rules](#) section.
- Creating Maturity Mix Rules. For more information, refer to [Creating Rules](#) section.
- Viewing and Editing Maturity Mix rules. For more information, refer to [Viewing and Editing Rules](#) section.
- Copying Maturity Mix rules. For more information, refer to [Copying Rules](#) section.
- Deleting Maturity Mix rules. For more information, refer to [Deleting Rules](#) section.

As part of creating and editing Maturity Mix rules, you define Maturity Mix assumptions for applicable products. See: [Defining Maturity Mix Rules](#)

## 20.2 Creating Maturity Mix Rules

You create Maturity Mix rules to define the maturity and amortization term for new business volumes. Maturity Mix rules use the modeling period defined in the active Time Bucket rule to establish the date range over which these assumptions can be defined.

Procedure

10. Navigate to the Maturity Mix rule summary page.
11. Complete standard steps for this procedure.

**NOTE** In addition to the standard steps for creating rules, the procedure for creating a Maturity Mix rule involves one extra step. After Standard Step 6, you need to select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between nodes allows inheritance of methodologies from parent nodes to child nodes.

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within BSP 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.

## 20.3 Defining Maturity Mix Rules

The definition of a Maturity Mix rule is part of the Create or Edit Maturity Mix rule process. When you click Save in the Create Maturity Mix rule process, the rule is saved and the Maturity Mix rule summary page is displayed. However, Maturity Mix assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your Maturity Mix assumptions for product-currency combinations before clicking Save.

Defining Maturity Mix 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.

### 20.3.1.1 Prerequisites

Performing basic steps for creating or editing a Maturity Mix rule

### 20.3.1.2 Procedure

Defining Maturity Mix assumptions involves three primary steps:

1. Choosing your rate dependency option
2. Defining Maturity Mix assumption bucket ranges
3. Inputting Maturity Mix assumption details

#### 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 Code is a required input.

#### Rate Dependency Relationships

There are four rate dependency options to choose from:

- No Relationship
- Rate Level Dependent
- Rate Spread Dependent
- Economic Indicator Dependent

### 20.3.1.3 Rate Dependency Patterns

If any one of the Rate Dependency options, other than No Relationship, is selected, the Rate Dependency Pattern drop list becomes active. The list of available patterns is limited to those which apply to the selected Rate Dependency Relationship type.

#### NOTE

Rate Dependency Patterns are not supported in BSP. For BSP, you must select No Relationship.



### 20.3.1.4 Maturity Mix Date Bucket Selection Screen

Click the Add Row button to select the number of maturity mix date ranges that are required during the forecast period. The Bucket Number column is used to calculate the start and end dates. The Bucket Number column determines which income simulation bucket is used to calculate these dates.

The Maturity Mix rule uses the modeling period defined in the “active” Time Bucket rule. You should always verify that your modeling horizon and related assumptions are consistent with the As of Date and active Time Bucket rule before processing.

#### Rate Tiers

Rate Tiers reflect the Rate Dependency Pattern details from the selected Rate Dependency Pattern. You define Maturity Mix assumptions for each rate tier. The application will automatically determine which set of assumptions to apply for a given scenario based on the relationship between the Rate Tier and the related Forecast Rate assumption value.

#### Bucket Number

The bucket number input allows you to select a range of buckets over which the maturity mix assumptions will apply. Start Date and End Date values are updated automatically based on the Bucket Number input for each row.

#### Start Date and End Date

When the Maturity Mix detail page opens, the Start Date (min value) and End Date (max value) columns are automatically populated and are read-only values. The date ranges represent the Income Simulation Date buckets as defined in the “active” Time Bucket rule. See [Time Buckets](#) for more information. Any new business originated within these dates is modeled using the Maturity Term(s) defined in the Maturity Mix rule.

#### NOTE

The Start Date value in the first row is always set equal to the first modeling date, i.e. the as of date plus 1 day, and the End Date value in the last row always equals the last day of the modeling horizon as defined in the “active” Time Bucket rule.

#### Apply Defined Buckets to all Rate Tiers

This option allows you to copy the bucket setup from one page to all other Rate Tiers when using Rate Dependent assumptions.

### 20.3.1.5 Maturity Mix Details Screen

The Maturity Mix details screen allows you to define the maturity mix details. You can assign one or more maturity terms within the details page, but the sum of the percentage weights must equal 100%.

Active Time Bucket: TIMEBUCKET2  
Maturity Mix  
As Of Date: 07/31/2017

Name: maturity\_mix  
Description:   
Folder: ALNSFC  
Assumptions:   
Assumptions Type: ☐ Fixed Only ☒ Nonlinear

Name	Units	Multiplier	Assumptions	Percent
	1	1		100%

Total Percentage: 100%

Maturity: Maturity (= term)

Multiplier: Maturity multiplier (= days, months, years)

Amortization: The amortization term will default to the maturity term. The amortization term should always be greater than or equal to the maturity term.

Multiplier: Amortization multiplier (= days, months, years)

Percent: The percentage of new business at the specified term and maturity for the associated date bucket.

For each Date Bucket defined, the maturity terms must be specified.

### 20.3.1.6 Defining a Maturity Mix Rule: An Example

1. Define a Maturity Mix rule using a Rate Dependency Pattern.
2. From the Assumption Browser, select Currency (US Dollar) and a product from the hierarchy browser.

Active Time Bucket: TIMEBUCKET2  
Maturity Mix  
As Of Date: 07/31/2017

Name: maturity\_mix  
Description:   
Folder: ALNSFC  
Assumptions:   
Assumptions Type: ☐ Fixed Only ☒ Nonlinear

Select Product Hierarchy:   
Folder: ALNSFC  
Product Hierarchy:   
Select Currency:   
Currency: Default Currency

Assumption Browser:   
Assumption List:   
Product:   
Name:   
Description:   
Save Cancel

3. Select the “Add New” icon to enter the Assumption Details page.
4. Select the Rate Level Dependent – Rate Dependency option.

5. Select the Rate Level – Rate Dependency Pattern from the drop list.
6. Select Apply to navigate to the Date Buckets Tab.
7. Add bucket ranges to the page as needed. Optionally, select the “Apply Defined Buckets to All Rate Tiers” checkbox to copy the bucket structure across all rate tier pages.
8. Select the check box for the first bucket range and select “Define” to navigate to the Terms tab.
9. Add one or more rows based on the number of maturity terms needed for the selected product.
10. Input Maturity Terms, Amortization Terms and Percentage Weights for each row and select Apply to save your inputs for the selected bucket range. Notice the status column on the Date Buckets tab turns from Red to Green, indicating that you have successfully defined assumptions for the bucket range.
11. Continue to define Maturity Mix assumptions for each Bucket Range.
12. You can also use the Excel import/export feature to add the maturity information in the Terms tab.
13. Select Apply to commit your assumptions for each Rate Tier. Repeat the process for each rate tier. After you have defined assumptions for all Rate Tiers, you will return automatically to the Assumption Browser page.

#### NOTE

You can select more than one product at a time from the Assumption Browser page.

14. When Maturity Mix assumptions are defined for all required product / currency combinations, select SAVE from the Assumption Browser page.

## 21 Transfer Pricing Rules

This module describes the procedure for working with and managing Transfer Pricing rules.

This chapter covers the following topics:

- [Overview of Transfer Pricing Rules](#)
- [Creating Transfer Pricing Rules](#)
- [Defining Transfer Pricing Methodologies](#)
- [Defining the Redemption Curve Methodology](#)

### 21.1 Overview of Transfer Pricing Rules

Transfer Pricing rules allow you to specify methodologies for transfer pricing your product portfolio. Within BSP, these Transfer Pricing rule assumptions apply to future balances only. If you are trying to Transfer Price instrument balances, Oracle Funds Transfer Pricing is required.

A Transfer Pricing rule may contain a transfer pricing methodology defined for a particular product, or a set of methodologies defined for all products (Dimension Members) in a particular product hierarchy. In addition, it contains certain parameters used in defining option cost methodologies.

Refer to [Defining Transfer Pricing Methodologies](#)

The Transfer Pricing rule is a key component of the Transfer Pricing Process. The Transfer Pricing Process, uses the transfer pricing methodologies contained in the Transfer Pricing rules to generate transfer rates. Consequently, before processing information for a new period, you need to review and validate the assumptions contained in your Transfer Pricing rules.

**NOTE** If Transfer Pricing Assumptions are managed at the Parent / Node level, new product dimension members will automatically inherit TP Method assignments.

If new members are added to the applicable product dimension, you need to update your Transfer Pricing rules by defining appropriate methodologies for the new products.

The procedure for working with and managing the Transfer Pricing rule is similar to that of other Oracle Balance Sheet Planning assumption rules. It includes the following steps:

- Searching for Transfer Pricing rules. For more information, refer to [Searching for Rules](#) section.
- Creating Transfer Pricing Rules. For more information, refer to [Creating Rules](#) section.
- Viewing and Editing Transfer Pricing rules. For more information, refer to [Viewing and Editing Rules](#) section.
- Copying Transfer Pricing rules. For more information, refer to [Copying Rules](#) section.
- Deleting Transfer Pricing rules. For more information, refer to [Deleting Rules](#) section.

As part of creating and editing Transfer Pricing rules, you can also define transfer pricing methodologies. See:

- [Defining Transfer Pricing Methodologies](#)
- [Defining the Redemption Curve Methodology](#)

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within the Transfer Pricing, Prepayment and Adjustments rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

## 21.2 Creating Transfer Pricing Rules

You create a Transfer Pricing rule to map transfer pricing methodologies for your products.

### 21.2.1.1 Procedure

15. Navigate to the Transfer Pricing rule summary page.
16. Complete standard steps for this procedure. .

**NOTE** In addition to the standard steps for creating rules, the procedure for creating a Transfer Pricing rule involves one extra step. After Standard Step 5, you need to select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from parent nodes to child nodes.

## 21.3 Defining Transfer Pricing Methodologies

The assignment of transfer pricing methodologies is part of the Create or Edit Transfer Pricing rules process where assumptions about transfer pricing methodologies are made for product-currency combinations. When you click Save in the Create Transfer Pricing rules process, the rule is saved and the Transfer Pricing rule Summary page is displayed. However, the transfer pricing methodology has

The Transfer Pricing rule supports definition of assumptions for combinations of two dimensions: Product and Currency.

You can define transfer pricing methodologies for your entire product portfolio one currency at a time. Suppose your portfolio is comprised of products denominated in two currencies (US Dollar and Japanese Yen) and that you want to specify different transfer pricing assumptions and /or different Transfer Pricing yield curves, for each product group. Using the currency selection drop-down list, you can first define assumptions for the products denominated in US Dollars and then proceed with defining assumptions for the Yen-based products.

Once you have created a Transfer Pricing rule, you can assign transfer pricing methodologies to product-currency combinations in either of the following two ways:

By creating a conditional assumption using conditional logic. See:

- Associating Conditional Assumptions with Prepayment Rules
- Defining Prepayments Using Node Level Assumptions

Directly on the Transfer Pricing methodology page, as described here.

### 21.3.1.1 Prerequisites

## Performing basic steps for creating or updating a Transfer Pricing rule

[illegible]

### 21.3.1.2 Procedure

This table describes key terms used for this procedure.

Term	Description
Yield Curve Term	Defines the point on the yield curve that the system references to calculate transfer rates.
Historical Range	Specifies the period over which the average is to be taken for the Moving Averages method.

Term	Description
Lag Term	Specifies a yield curve from a date earlier than the Assignment Date for the Spread from Interest Rate Code method.
Rate Spread	The fixed positive or negative spread from an Interest Rate Code or Note Rate, used to generate transfer rates in the Spread from Interest Rate and Spread from Note Rate methods.
Model with Gross Rates	This option allows you to specify whether modeling should be done using the net or gross interest rate on the instrument. This option is only applicable when the Net Margin Code is also set to one, for example, Fixed. Gross rates are typically selected while modeling the effect of serviced portfolios where the underlying assets have been sold but the organization continues to earn servicing revenue based on the original portfolio.
Assignment Date	This is the effective date of the yield curve.
Percentage/Term Points	The term points that the system uses to compute the Redemption Curve method results. A percentage determines the weight assigned to each term point when generating results.

17. Navigate to the Assumption Browser page.

18. Select a Product Hierarchy

19. Select a Currency

#### NOTE

The list of currencies available for selection is managed within Rate Management, and reflects the list of "Active" currencies.

Expand the hierarchy and select one or more members (leaf values and/or node values) from the product hierarchy.

20. Click the Add icon to begin mapping Transfer Pricing methods to the list of selected product dimension members. The system displays a list of all the products (for which you can define assumptions) or currencies (that are active in the system).

21. In the TP Method selector page, Account Table data source is selected by default and disabled.

22. Select the Transfer Pricing method for the selected product member.

#### NOTE

The Transfer Pricing methodologies available depend on the selected data source.

Depending on the transfer pricing method selected, certain required and optional parameter fields are displayed. You can update these fields as required.

23. Click Apply.

At this point you can:

- Continue defining additional methodologies for other product-currency combinations contained in your selection set, by repeating the above procedure.
- Complete the process by clicking Cancel or by answering to NO to the confirmation alert after applying assumptions for each Product / Currency combination in your select set.

24. From the Assumption Browser page, click Save.

25. The new assumptions are saved and the Transfer Pricing rule selector page is displayed.

**NOTE**

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within the Adjustments, Transfer Pricing, and Prepayment rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

## Guidelines

## Availability of Transfer Pricing Methodologies

The availability of transfer pricing methodologies depends on the data source that you select: Account Table or Ledger Table. In BSP, by default, only Account Table data source is selected and is disabled. The following table describes the Transfer Pricing Methodologies available for the Account Table Data Source and displays whether that methodology requires the selection of a Transfer Pricing Interest Rate Code.

**NOTE**

The Interest Rate Code LOV is filtered by the selected Currency.

Child nodes for which no assumptions have been specified automatically inherit the methodology of their closest parent node. So if neither a child node nor its immediate parent has a method assigned, the application searches up the nodes in the hierarchy until it finds a parent node with a method assigned, and uses that method for the child node. However, if no parent node has a method assigned then the application triggers a processing error stating that no assumptions are assigned for the particular product/currency combination.

Transfer Pricing Methodology	Interest Rate Code		Data Source: Account Table
Cash Flow: Average Life	Yes	Yes	
Cash Flow: Duration	Yes	Yes	
Cash Flow: Weighted Term	Yes	Yes	
Cash Flow: Zero Discount Factors	Yes	Yes	
Moving Averages	Yes	Yes	
Straight Term	Yes	Yes	
Spread from Interest Rate Code	Yes	Yes	
Spread from Note Rate		Yes	
Redemption Curve	Yes	Yes	



### Required Parameters

You cannot define a transfer pricing methodology successfully, unless you specify the required parameters. The following table displays the parameters associated with each transfer pricing method and specifies whether they are required or optional. The optional parameter fields display default values. However, you may decide to change the values for the optional parameters.

Transfer Price Method	Yield Curve Term	Historical Range	Lag Term	Rate Spread	Assignment Date	Term Points
Cash Flow: Average Life						
Cash Flow: Weighted Term						
Cash Flow: Duration						
Cash Flow: Zero Discount Factors						
Moving Averages	Required	Required				
Straight Term						
Spread from IRC	Required		Required	Required	Required	
Spread from Note Rate				Required		
Redemption Curve					Required	Required

## 21.4 Defining the Redemption Curve Methodology

As part of the process for defining the Redemption Curve methodology, you must select as many Term Points from your selected Transfer Pricing Yield curve as are needed and allocate the percentage weighting for each of those points.

### Prerequisites

Performing basic steps for creating or updating a Transfer Pricing rule

Procedure to Add Term Points:

To add the Term Points, follow these steps:

1. Click Add New Term Points. The Add New Term Points page is displayed.
2. Select the Transfer Pricing Yield Curve Points as required.
3. Click OK.
4. The Term Point Selection section is displayed. Update the percentage value for each Term Point.

**NOTE**

The sum of all the percentages for all Term Points must add up to 100. To remove a Yield Curve Point from the Percentages/Term Points table, select the term point(s) and click the Delete icon.

## 22 Adjustment Rules

Adjustment rules allow you to specify methodologies to calculate Transfer Pricing add-on rates for the relevant forecast balances in your portfolio. The methodologies contained in the Adjustments rule are referenced by the Static and Dynamic Deterministic BSP Processes.

**NOTE** Adjustment Rule assumptions are used to assign TP Add-on rates to future balances only within BSP, and are assumed to be constant for the life of the record from origination. Therefore the specific rules are not referenced in a Static Deterministic process. To assign adjustment rates to your instrument table data, Oracle Funds Transfer Pricing is required.

The procedure for working with and managing Adjustment rules is similar to that of other Oracle Balance Sheet Planning business rules. It includes the following steps:

- Searching for Adjustment rules. For more information, refer to [Searching for Rules](#) section.
- Creating Adjustment Rules. For more information, refer to [Creating Rules](#) section.
- Viewing and Editing Adjustment rules. For more information, refer to [Viewing and Editing Rules](#) section.
- Copying Adjustment rules. For more information, refer to [Copying Rules](#) section.
- Deleting Adjustment rules. For more information, refer to [Deleting Rules](#) section.

As part of creating and editing Adjustment rules, you define adjustment methodologies for applicable products. See the following sections for more information:

- [Defining Adjustment Methods](#)
- [Availability of Adjustment Methods](#)
- [Adjustment Method Parameters](#)
- [Procedure to Define the Formula Based Rate Adjustment Method](#)

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within the Adjustments, Transfer Pricing, and Prepayment rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

### 22.1 Creating Adjustment Rules

You create an Adjustments rule to define adjustment methodologies for your products.

Procedure

5. Navigate to the Adjustments rule summary page.
6. Complete standard steps for this procedure.

**NOTE** In addition to the standard steps for creating rules, the procedure for creating an Adjustments rule involves one extra step. After Standard Step 5, you need to select a product hierarchy. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from parent nodes to child nodes.

The definition of adjustment methods is part of the Create or Edit Adjustments rule process. When you click Save in the Create Adjustments rule process, the rule is saved and the Adjustments rule summary page is displayed. However, adjustment assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your adjustment assumptions for product-currency combinations before clicking Save.

## Performing basic steps for creating or editing an Adjustments rule

This table describes key terms used for this procedure.

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Term	Definition
Lookup Method	Method used to derive an add-on rate for different reference term values. Specify Range as the lookup method if you want the application to apply the rates defined in the Adjustments rule to a range of reference term values, using the terms defined in the rule to specify the lower end of the range. Note that for values less than the lowest term point, the application uses the value associated with the lowest point. Specify Interpolation as the lookup method if you want the application to interpolate add-on rate values for applicable reference terms falling between node points specified in the Adjustments rule, using straight line interpolation between the term points.
Term	In conjunction with the Multiplier, this field allows you to specify the value for the Reference Term, for a given lookup tier.
Multiplier	The unit of time applied to the Term. The choices are: Days, Months, Years.
Rate	The add-on rate to be applied to instruments where Reference Term is the product of the Term and Multiplier defined for the row. The rate should be in percentage form, for example, 1.25 percent should be input as 1.25.
Assignment Date	For BSP, the usage of TP Adjustment Rates is limited to assigning rates to new originations only. So, Origination Date is selected by default.
Interest Rate Code	Used for the rate lookup for the Formula Based Rate.
Formula	The mathematical formula used in the Formula Based Rate adjustment method to determine the Add-on rate: $(\text{Term Point Rate} * \text{Coefficient}) + \text{Rate Spread}$
Term Point	In conjunction with the Multiplier (day, month, or year), it is used in the Formula Based Rate method when looking up the rate for the designated Interest Rate Code.
Coefficient	Coefficient by which the Term Point rate should be multiplied.
Rate Spread	The spread added to the interest rate read from the selected Interest Rate Code. Rate Spread is used in the Formula Based Rate adjustment method. For the Formula Based Rate method, the spread is added to the result of the Term Point Rate * Coefficient. Enter the Rate Spread in percentage form, for example, 1.25 percent should be input as 1.25.

## 22.2.1 Availability of Adjustment Methods

The list of adjustment methods depends on the adjustment type that you select: add-on rates (including Liquidity Adjustments, Basis Risk costs, Pricing Incentives, and Other adjustments). The following table describes the adjustment methods available for each of the adjustment types.



Adjustment Method	Adjustment Type: Add-On Rates (Liquidity Adjustments, Basis Risk Costs, Pricing Incentives, and Other Adjustments)
Do Not Calculate	Yes
Fixed Rate	Yes
Formula Based Rate	Yes

**NOTE** If you select "Do not calculate" as the calculation method, no adjustment 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.

## 22.2.2 Adjustment Method Parameters

To define an adjustment calculation method, you must specify one or more parameters, depending on the method. The parameter fields may display a default value, which you can override.

The following tables display the parameters associated with the adjustment methods for different adjustment types.

Adjustment Method	Reference Term	Lookup Method	Term	Multiplier	Rate	Assignment Date	IRC	Formula
Do Not Calculate								
Fixed Rate	Yes	Yes	Yes	Yes	Yes			
Formula Based Rate	Yes	Yes	Yes	Yes		Yes	Yes	Yes

**NOTE** The Add-On Rate adjustment types include Liquidity Adjustments, Basis Risk Costs, Pricing Incentives, and Other Adjustments.

### 22.2.2.1 Prerequisites

Performing basic steps for creating or editing an Adjustments rule

### 22.2.2.2 Procedure

Once you have created an Adjustments rule, you can assign adjustment methodologies to product-currency combinations in either of the following two ways:

7. By creating a conditional assumption using conditional logic. See:

- [Associating Conditional Assumptions with Prepayment Rules](#)
- Defining Prepayments Using Node Level Assumptions

8. Directly on the Adjustment methodology page, as described here.

Use the following procedure to define an adjustment method:

9. Navigate to the Adjustments assumption browser page.
10. Select an appropriate adjustment type: Liquidity Adjustment, Basis Risk Cost, Pricing Incentive, or, Other Adjustment by opening the Adjustment Type selector window. You can enable one or more adjustment types within a single Adjustment Rule and apply more than one Adjustment to a single product.

**NOTE**

The product hierarchy refreshes when you change your Adjustment Type selection, but note that all selections made within the rule are saved. For example, when Liquidity Adjustment is selected, the hierarchy displays the status of Liquidity Adjustment mappings within the hierarchy. If you change your Adjustment Type selection to Basis Risk Cost, the hierarchy will refresh and you will see the status of all Basis Risk Cost mappings, and so on.

11. Select a Product Hierarchy.
12. Specify a currency.
13. Based on the selected hierarchy, the application displays a list of all the products (for which you can define assumptions).
14. Select the check box of one or more products for which you want to define adjustment details.
15. Select an adjustment method and enter the appropriate parameters.

**NOTE**

The adjustment methods available depend on the selected adjustment type. Depending on the adjustment type and method adjustment combinations selected, certain required and optional parameter fields are displayed. You can update these fields as required. See:

- [Adjustment Method Parameters](#)
- [Procedure to Define the Formula Based Rate Adjustment Method](#)

16. Click Apply. If only one product was selected, the assumption browser page is displayed. If more than one product was selected on the assumption browser page, then each subsequent product in the select list will appear in the Selected Product drop list and each item should be defined appropriately. After completing the assumption details for each selected product, the assumption browser page will be displayed. At this point you can:
  - Continue defining assumptions for additional product-currency combinations for the selected Adjustment Type, by repeating the above procedure
  - Select a new Adjustment Type and continue defining assumption details for the required set of products
  - Complete the process by clicking Save. The new assumptions are saved and the Adjustments rule summary page is displayed.

## NOTE

Oracle Balance Sheet Planning provides you with the option to copy, in total or selectively, the product assumptions contained within the Adjustments, Transfer Pricing, and Prepayment rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

### 22.2.3 Procedure to Define the Formula Based Rate Adjustment Method

The screenshot shows the 'Adjustment Rule' configuration page. The 'Adjustment Type' is set to 'Liquidity Adjustment'. Under 'Define Adjustment Rule', 'Selected Product' is 'test\_productMember' and 'Adjustment Method' is 'Formula Based Rate'. The 'Fixed Rate' section shows 'Reference Term' as 'Original Terms' and 'Lookup Method' as 'Range'. The 'Parameters' section includes a table with columns for Operator, Term, Multiplier, Operator, Term, Multiplier, and Rate. The table contains two rows: the first row has '>=', 'Months', 'x', 'Months', and the second row has '<=', 'Months', and 'Rate'.

Defining the Formula Based Rate adjustment method involves the following additional steps:

17. Select Update to define the mathematical formula. The Define Formula for Reference Term page is displayed.
18. Specify the Term Point, Coefficient, and Rate Spread parameters on the Define Formula for Reference Term page.

### 22.2.4 Procedure to Define the Fixed Rate Adjustment Method

The screenshot shows the 'Adjustment Rule' configuration page for the 'Fixed Rate' method. The 'Adjustment Type' is 'Liquidity Adjustment'. Under 'Define Adjustment Rule', 'Selected Product' is 'test\_productMember' and 'Adjustment Method' is 'Fixed Rate'. The 'Fixed Rate' section shows 'Reference Term' as 'Original Terms' and 'Lookup Method' as 'Range'. The 'Parameters' section includes a table with columns for Operator, Term, Multiplier, Operator, Term, Multiplier, and Rate. The table contains two rows: the first row has '>=', 'Months', 'x', 'Months', and the second row has '<=', 'Months', and 'Rate'.

Defining the Fixed Rate adjustment method involves the following additional steps:



1. Select Update to define the mathematical formula. The Define Formula for Reference Term page is displayed.
2. Specify the Term Point, Coefficient, and Rate Spread parameters on the Define Formula for Reference Term page.

## 23 BSP Processing

When all the required assumptions are defined, BSP Processing performs calculation processes and generates a result set. There are two types of BSP processing rules, each to be described in detail later in this module.

- Static Deterministic
- Dynamic Deterministic

**NOTE** The Dynamic Deterministic Process is supported through the Planning module.

Depending on what type of process you choose, the corresponding Process Rule guides you through the required inputs on the process flow screen.

This chapter covers the following topics:









- [Overview of BSP Processes](#)
- [Creating an BSP Process Rule](#)
- [Executing an BSP Process](#)

### 23.1 Overview of BSP Processes

BSP Processes allow you to perform the following tasks:

- Determine the data that you want to process (Product Hierarchy block).
- Submit to the BSP processing engine the financial element results you want to calculate: (Calculation Elements).
- Specify to the BSP processing engine the product characteristics, prepayments, discount methods and forecast assumptions to be used in the process (Rule Selection blocks).
- Specify the Forecast Rate Scenarios (for Deterministic processes) or Rate Index (for Stochastic processes) you want to include.
- Define the output dimension and what additional attributes you want updated at the instrument level (Output Preferences block).
- Enable the output of detailed cash flows or forecast interest rates for audit purposes (Audit Options block).
- Define the processing parameters for a reprocess on an existing run or an entire new process (Processing Parameters block).
- Formulate and execute the BSP processing request and generate results (BSP Process Summary Page).

Following icons are available on Process Summary grid:

Icons	Description
Add (  )	Click <b>Add</b> to begin the process of building a new BSP Process Rule. The Add icon is disabled if any rows in the summary table are selected.
View (  )	Select a single row in the summary table to enable the View icon. The View control allows you to view the contents of a Process on a read-only basis. The View control is only enabled when a single Process rule has been selected..
Edit (  )	Select a single row in the summary table enables the Edit icon. Click Edit to modify an existing Process rule. The Edit icon is only enabled when a single Process rule is selected.
Copy (  )	Select a single row in the summary table to enable the Copy icon. Click Copy to create a copy of an existing Process rule. The Copy icon is only enabled when a single Simplified Batch is selected.
Check Dependencies (  )	Select a Process rule and then click Check Dependencies to generate a report on all rules that utilize your selected interest rate curve. The Check Dependencies icon is only enabled when a process is selected.
Delete (  )	Select one or more rows in the summary table to enable the Delete icon. Click Delete to deletes the process rules that are selected.
Execute (  )	Select a single row in the summary table to enable the Execute icon. Click Execute to execute the selected process. The Execute icon is only enabled when a single Process rule is selected.
Refresh (  )	Click Refresh to refresh the Process Rule summary page.

## 23.2 Creating a BSP Process Rule

To define a BSP Process Rule, complete the following steps:

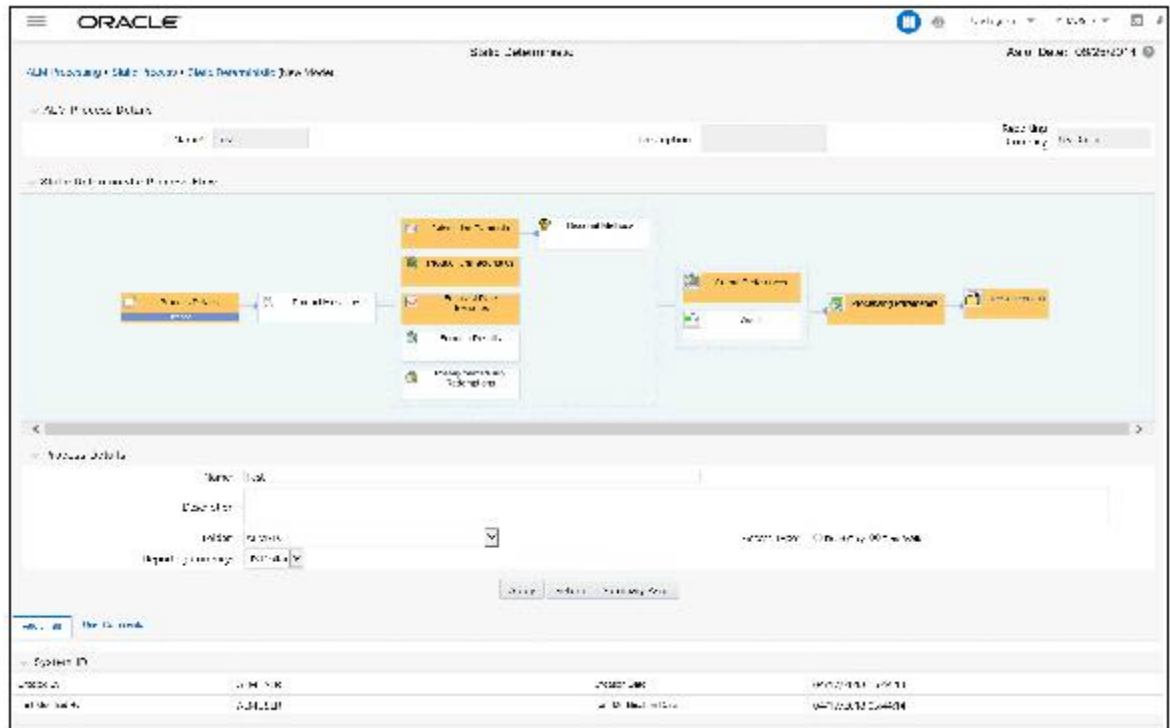
3. Navigate to Balance Sheet Planning > BSP Processing > Static Deterministic Process.
4. From the Summary Page, click the “Add New” icon.
5. The process will take you through a series of required steps to define the flow depending upon what type of process you selected. For each of the blue highlighted boxes in the process flow area, you are required to make a selection.

**NOTE** The gray boxes are optional but will have an effect on the result set if defined.

## 23.2.1 Creating a Static Deterministic BSP Process Rule

Deterministic processing generates output based on a set of user-defined forecast rate scenarios. The static process indicates that new business assumptions are not included in this flow.

1. Fill in the necessary details in the Process Details block:
  - Name
  - Folder and Reporting Currency from respective drop-down menus
  - Click “Apply”. The process will take you to the Product Hierarchy selection options.



2. In the product Hierarchy Block:
  - cc. a. Select a Product Hierarchy and select nodes from the hierarchy corresponding to data you want to include in the process, OR
  - dd. b. Alternatively, select the Source Selection button, and select the instrument tables corresponding to the data you want to include in the process.
  - ee. c. Select a Filter (optional), to further constrain the data to be included in the process. Filters work as a secondary constraint, applied after the data set is determined based on Product Hierarchy member selection or Source Selection.

### NOTE

Do not use Default Product Member (value of -1) within a Product Hierarchy, for Processing. For example, if the process is running on Product Hierarchy of Common Chart of Account, do not use default chart of account member of -1.

There are four types of filters:

- Data Element Filter

- Hierarchy Filter
- Group Filter
- Attribute Filter

**NOTE**

Before using the product hierarchy approach for selecting data to include in your process, there is a procedure that must be run ("PRODUCT TO INSTRUMENT MAPPING"). This procedure can be executed from the Batch Scheduler – Run - interface.

The purpose of the Product to Instrument mapping procedure is to scan all instrument tables (FSI\_D\_XXX) and populate the mapping table ( "FSI\_M\_PROD\_INST\_TABLE\_MAP" ) with a listing of the product dimension members that exist within each instrument table. When you select Products (parents or children) within an ALM or FTP process definition, the process refers to this mapping table to identify the instrument tables to include in the process.

It is recommended that you establish an internal process whereby this procedure is executed after every data load to ensure that mappings are up to date.

Related Topics: For more information on Product to Instrument mapping procedure, see Oracle Financial Services Analytical Applications Data Model Utilities User Guide.

- ff.** Select Apply.
- 3.** Rule Selection Blocks – The boxes in blue with the yellow highlight are required for the definition of the process.
- a.** In the Calculations Elements block, select either the Generated aggregated cash flow results or Stop at the Process cash flows option. By default, the Generated aggregated cash flow option is selected and required for most BSP results processing. The Stop at the Process cash flows option is only used when you do not require the aggregated results and wish to only compute detail cash flows in the FSI\_O\_PROCESS\_CASH\_FLOWS table. This is used by users who integrate with Liquidity Risk Management and need to create cash detailed flow output for a large number of instrument records. In this case, the aggregate output is not needed. The Stop at process cash flows option does not write aggregated results to the Result or Consolidated Master or Result or Consolidated Detail output tables.

- b.** Choose the calculation elements to include in the process run: "Market Value, YTM, Duration, DV01/PV01", "Repricing Gap", "Liquidity Gap", "Average Life", "Transfer Pricing" – if defined then select the Folder and Transfer Pricing Rule, TP Adjustments – if defined\* then select the Folder and TP Adjustment Rule, Effective Interest Rate, Repricing Balances

and Rates, Runoff components, Prepayment Runoff – if defined, Tease, Cap, Floor and Negative Amortization Details, Standard Financial Elements.

#### NOTE

The Adjustment folder and method are un-editable, since the adjustment rates are constant for the life of the record and will be read from the instrument record. You only need to check the TP adjustment box to persist the adjustment rates thru to the forecast.

- c. Include Non Rate Sensitive Bucket check-box gets enabled when 'Repricing Gap' is selected. A new Attribute of product dimension 'Interest Rate Sensitivity Category' is introduced to identify products as Interest Rate sensitive or Non Interest Rate sensitive. Once 'Include Non Rate Sensitive Bucket' is enabled, reprice gap output of Products which are mapped as Non Interest Rate sensitive, would move into Non Interest Rate Sensitive bucket. For more information on Non Interest Rate Sensitive Bucket, see [Time Buckets](#) chapter.

If 'Include Non Rate Sensitive Bucket' is not enabled, engine will ignore 'Interest Rate Sensitivity Category' product attribute, and would treat all products as Interest Rate Sensitive. Reprice Gap output would move into respective Reprice Gap buckets.

- d. Select the Market Value, YTM, Duration, DV01/PV01 option if you want to measure the price sensitivity for small changes in the underlying interest rate curves (DV01/PV01). For this calculation, Market Value is also required.
- e. Choose Embedded Option Decisioning. This is an optional selection. This is a drop-down list with the following values:

Cashflow to Maturity– This selection ignores the option on the instrument and treats it as a regular bond. This is the default behavior.

Cashflow to the first Expiry Date– This selection forces the option on the instrument to be exercised on the first applicable date. American options exercise the option on start date if option start date > as of date. Else, if as\_of\_date > option start date, the option is called in the 1st time bucket.

Rate Path Dependent – This selection, checks the exercisability of the option on the bond, as per the scenario defined.

- f. The Calculate Option Market Value option is used to calculate the Market Valuation (MV) for certain embedded and stand-alone (bare) options. Supported embedded options are Calls, Puts, Caps (caplets) and Floors (floorlets). This option will be enabled only if Market Value, YTM, Duration, DV01/PV01 option is also selected.

For example,

When Calculate Option Market Value check-box is selected and RATE\_CAP\_LIFE has data filled (that is, holds a non-null value greater than 0), then Embedded CAP Option MV will be calculated.

When Calculate Option Market Value check box is selected and RATE\_FLOOR\_LIFE has data filled (that is, it is non-null value greater than 0 or it is less than RATE\_CAP\_LIFE and RATE\_CAP\_LIFE is greater than 0), then Embedded FLOOR Option MV will be calculated.

- g. Click "Apply".

- h. If Market Value is chosen from step 1 above, the Discount Methods box will become highlighted blue and need to be defined (see Discount Methods, for rule set up). If no market value chosen, continue to step 5 below.
  - i. Select from the discount methods box the desired method (see Discount Methods, for set up) and click “Apply”.
  - j. From the Product Characteristics bar, select the desired definition and click "Apply" (see Product Characteristics, for rule definition).
  - k. Select the Forecast Rates rule you want applied to the process, and click “Apply”. (see Forecast Rate Scenarios , to set up rate scenarios). The flow will now take you to output preferences. Or, if you want to add a prepayment rule to the process, continue to step 7 below.
  - l. Click the Prepayments/Early Redemptions box and choose the defined prepayment rule (see Prepayment Rules ). This is an optional step.
4. Output Preferences options
- a. Select the output dimension from the drop-down list (Options include: Product, Product/Currency, Organization/Product, Organization/Product/Currency).
  - b. Depending on the dimension chosen, you can Consolidate to Reporting Currency by checking the box if the dimension Product /Currency or Organization/Product/Currency was chosen.
  - c. If you have the BSP BI reporting product, you can select to export the results to the BSP BI Mart by clicking the box. You also have the option to update the Instrument Data Tables with financial measures by checking the box of the desired calculated item (Market Value, Macaulay Duration, Modified Duration, Convexity, Yield to Maturity, Average Life, DV01/PV01, Option Market Value, Structured Cashflow Attributes\*). The DV01/PV01 and Option Market Value options will be enabled only if Market Value, YTM, Duration, DV01/PV01 option is selected in Calculation block. Select Apply Limit to BI option, if you want to use the defined repricing gap limit with BSP BI report. This is useful, if you want to view repricing gap report with a limit set as per your risk policy. Apply Limit to BI option will be enabled only if Move Results to BSPBI Mart option is active.
  - d. Click “Apply” after the page is defined. The process will take you to the Processing Parameters section. Or you can click the audit box for the following options: If no audit options are required, skip to #6, Processing Parameters.

**NOTE**

\* The Structured Cashflow Attributes option will be enabled only if you are mapped to Moody's structured cashflow functionality.

## 5. Audit Preferences (optional)

### NOTE

Known Issue

If you select FE in BSP process and data contains rate-tier instrument, then BSP process will fail.

#### ▪ Detailed Cash Flow:

Check the box to record the cash flows and repricing events occurring for the desired number of records processed. For each record, daily results are written to the FSI\_O\_PROCESS\_CASH\_FLOWS table. The data in this table uses the RESULT\_SYS\_ID, which identifies the Process used. Select from the options below:

Input the desired number of Records in the dialog box

Select all records to be output.

In the financial elements tab below, you have the option to select the FE's you want to output in the detail cash flows table. Highlight the items in the available section and move selection over to the selected section.

Click apply, or go to step 2 for Forecast rates output.

#### ▪ Tiered Balanced Cash Flows:

Tiered Balanced Cash Flows option allows you to define the Tiered balance interest. The Tiered balance interest is useful when a different interest rate is paid/charged for parts of an account balance that fall within set amount ranges. Payment frequency, current payment and so on can will be defined at account level. Reprice frequency, next reprice date and so on can be defined at tier level.

Select this option when you want system to write detailed cash flows are rate tier level.

#### ▪ Forecast Rates:

Select Forecast Rates to write forecast exchange, interest rates or economic indicator results to the following tables: FSI\_EXCHANGE\_RATES\_AUDIT, FSI\_INTEREST\_RATES\_AUDIT, and/or FSI\_ECONOMIC\_INDICATORS\_AUDIT. For more information on the table structures, see the Oracle Financial Services Analytical Applications Data Model Data Dictionary.

Highlight items from the available code section for the desired forecast type (Interest Rate, Exchange Rate, or Economic Indicator) and move selection (or all) to the selected items box.

### NOTE

For consolidation of Formula Results output, ensure to select respective currencies in Audit section.

Click "Apply" and the screen will take you to Processing Parameters.

The screenshot shows a dialog box titled 'Audit'. It contains a text input field labeled 'Number of records to be output'. Below this are three checkboxes: 'Detailed Cash Flows', 'Tiered Balance Cash Flows', and 'One Month Rates'. At the bottom right, there are two buttons: 'Apply' and 'Return To Summary Page'.

## 6. Processing Parameters:

- a. The processing parameters allow you to run an entire process or re-process a portion of an existing run. From the drop-down list, select Entire Process or Selective Reprocess.



- b. If Selective Reprocess is selected, you can click the box “Current Position Data” to reprocess that particular data set. With selective reprocessing you can run a subset of the process to replace invalid products and to add new products. With Selective Reprocess, the Reprocessing components are enabled to selected components for reprocessing. When the Process Rule is executed, the data in the result tables are not immediately deleted. The data for the selected subset is replaced, but the rest of the results remain intact.
- c. Select Auto balancing accounts: If you selected Auto Balancing in the Output Preferences (section 4.4.) the Auto Balancing Accounts option is available for re-processing. Click the box to apply.
- d. Select the desired product Hierarchy Filter from the drop-down list to indicate which products should be re-processed.
- e. Click “Apply” and the screen will take you to Freeze Process section.

7. Freeze Process
  - a. Select Freeze to complete the process.
  - b. Select Reset to erase all selections made previously within the process definition flow.
  - c. Select Confirm.
8. "Stop holiday calendar" checkbox is provided with a calendar date picker. If checked, a calendar is enabled on which a date can be selected. Cash flows generated post this date will not apply the holiday calendar. On selecting the checkbox a warning message will pop up stating "If Enabled, the outputs could have a combination of adjusted and unadjusted cashflows".

#### NOTE

Holiday calendar is used to adjust the outputs on holiday events, which may increase processing time. If Users do not want to have adjusted output after a certain time point, say, when buckets become wider, then this field stops adjusting cashflows from that time point, reducing processing time. If user wants to have cash flow adjusted for entire processing period, then this field does not require any input.

## 23.3 Executing a BSP Process

To run a Process ID, follow these steps:

1. Choose Process/Run from the list under the process bar.
2. Click the run icon to execute the process.
3. A popup window will appear including the execution ID. Click OK.
4. When a process is running the status bar will show one of the following three values: success, failure and processing.

**NOTE** The process must be defined completely.

5. When the Status "View Log" appears, the run is complete.

**NOTE** Click the refresh grid button to see the change in status.

6. Click the "View Log" status to ensure run was complete.
7. To view the error log, click the "Task id" number in the view log page.

## 24 Data Aggregation and Stratification

This chapter covers the following topics:

- [Overview of Data Stratification](#)
- [Setting up Stratification Definitions](#)
- [Executing a Stratification Rule](#)
- [Creating New Aggregate Table](#)

### 24.1 Overview of Data Stratification

Data Aggregation and Stratification enables you to summarize large volumes of financial instruments to a manageable scale for processing purposes. The engine that does the aggregation and stratification processing is the Data Stratification Rule. This application enables you to perform mathematically intensive calculations on a relatively small number of instrument pools that are proxies for a much larger number of individual instrument records. Using this feature is a multi-step process, which includes:

- Understanding what you want and how you want to aggregate and stratify data
- Optionally defining balance or rate tiers to be used for grouping data
- Configuring the Data Map metadata for the source and target data maps that are to be used on the Stratification Definition page
- Setting up stratification definitions and rules in the Stratification Rule pages
- Testing the rules that you create

This section covers following topics:

- Aggregation Action
- Stratification Action
- Stratification tips

#### 24.1.1 Stratification Action Operations

When creating pools of instruments, you need to identify the operation for each of the attributes. You have the following choices in terms of how to populate each attribute in the instrument pool from the instrument data:

- **Discrete:** Directs the Aggregation and Stratification engine to populate the instrument pool with discrete values.

This option populates the pool with discrete values for an attribute if there is no logical or mathematical way to group instruments with different values, and the attribute is significant for processing purposes. Choosing the discrete action for an attribute ensures that only instruments with matching values are grouped together in a pool. The discrete action may be the correct choice for important code fields. Be careful when using the discrete action on amount, date, or rate fields. These types of fields tend to have many discrete values. A typical value for a discrete group by is a dimension ID field or a yes/no flag.

- **Group by:** Use for dimensions or other attributes that you want to use to group the detailed data.

This option allows you to select columns that you want to use to group the instrument data. This will typically be used for dimension columns like Product, Org Unit or Currency or any other dimensions that are needed for grouping the data.

- **Tier:** If you want to group the data by ranges of values, you can define the ranges using Stratification Tiers.

Tiers are typically used for balance and rate fields to assist in grouping similar data into tranches or pools. Tiers should be defined on columns that impact the way assumptions are made, such as prepayments, interest rate margins or other meaningful assumptions.

### 24.1.2 Aggregation Action Operations

These are the default operations:

- **Average:** Calculates the average value of an attribute for all instruments in the pool
- **Weighted Average:** Calculates the average weighted value for an attribute by the current balance

Examples of attributes for which you may want to calculate the weighted average are interest rate fields: interest rates, cap rates, floor rates and interest rate margins for floating rates. Other possibilities include remaining term, original term, loan to value and so forth.

- **Min, Max (minimum, maximum):** Select one of these operators to populate the pool with the minimum or maximum value of a given attribute for all the instruments that are part of the pool.
- **Median:** Applies the Median Date value for all date values in the pool
- **Sum** (The sum action calculates the total sum value for a numeric attribute)

The most common attributes that you want to calculate the sum for are the balance and payment amount fields. By calculating the total of the balance and payment amounts, the total of all pool balances should reconcile to and represent the totals of all instruments that are in the portfolio.

- **Default:** Applies a specified default value

### 24.1.3 Stratification Tips

Here are some criteria to keep in mind when evaluating how you want to stratify data:

- When identifying attributes that you want to include as part of the instrument pools, keep in mind the primary use of the stratified data you are creating.

For example, the BSP engine uses only the current balance amount fields for its calculations. As far as the BSP engine is concerned, designing a stratification rule that populates other balance or amount fields is optional.

- You need to identify the stratification criteria for the attributes

This step is simplified by the fact that any attributes that you identify as needing to maintain discrete values for, or that are going to be dropped or defaulted by definition, cannot be used as grouping criteria for pools.

- Maximize efficient processing by designing rules to summarize the instruments into as few pools as possible, while at the same time only grouping instruments that generate the same or similar cash flows.

In other words, all of the instruments that are grouped together into a pool should share common and pertinent financial characteristics.

## 24.2 Setting up Stratification Definitions

This section discusses how to setup stratification definitions

Page used to setup Stratification Configurations:

Page Name	Navigation	Usage
Stratification	Common Object Maintenance> Data Stratification> Stratification Definition	Define the aggregation process at any level of complexity

### 24.2.1 Setting up Stratification Definitions

This section discusses how to setup stratification definitions.

#### 24.2.1.1 Pages Used to Setup Stratification Rules

Page Name	Navigation	Usage
Stratification Rules Definition – Definition	Common Object Maintenance > Data Stratification > Stratification Definition> Definitions	Specify rule name, description, source data and target data tables
Stratification Rules Definition – Defaults	Common Object Maintenance > Data Stratification > Stratification Definition> Defaults	Specify default values for each column type
Stratification Rules Definition – Aggregation	Common Object Maintenance > Data Stratification > Stratification Definition> Aggregation	Define aggregation actions (or use the default values) for each column in the data map
Stratification Rules Definition – Stratification	Common Object Maintenance > Data Stratification > Stratification Definition> Stratification	Define how to group or pool the data

## 24.2.2 Stratification Configuration Page

Use the Stratification Configuration page to define the aggregation process at any level of detail of complexity.

Navigation: Common Object Maintenance > Data Stratification> Stratification Definition > New or Edit.

This example illustrates the fields and controls on the Stratification Definition page. You can find definitions for the fields and controls later on this section.

To configure Stratification, follow below steps:

8. Establish how you want the Stratification engine to process amounts, rates, dates and integers by assigning a stratification action to each.

Default input apply a default value into the action settings on the Definition page.

9. Select a source and target instrument table, Default Values, Aggregation Actions and Stratification Actions to complete the definition for each instrument table that you want to aggregate.

## 24.2.3 Setting up Stratification Tier Structures

An alternative to incremental grouping is to group according to tiers. You can use tiers on numbers, amounts and rate fields. The main difference between using tiers versus other aggregation actions is that you can define the specific tiers that you want to stratify the data into to match business logic, reporting requirements or both. Tiers also give you more control in terms of limiting the number of strata created for any given attribute to only ranges that are pertinent for processing or reporting purpose. For example, you could define a tier rule that groups the initial balance amounts in increments of 10,000. However, this could result in hundreds of strata if the balance amounts range anywhere from 1 to 100,000,000. A more efficient and logical way to group balance amounts may be to setup tiers so that the first tier contains records with amounts between 1 and 50,000; the second tier contains records with amounts between 50,000 and 1,000,000; and the third tier contains records with amounts between 1,000,000 and 100,000,000. Tiers are ideal for handling balance amounts.

### 24.2.3.1 Page Used to Set Up Tier Structure

Page Name	Navigation	Usage
Tier Structures	Common Object Maintenance> Data Stratification> Stratification Tier	Stratify source data into a finite number of pools that are used by the Stratification Definition under Stratification Action

### 24.2.3.2 Tier Definition Page

Use the Tier Definition page to define stratification criteria for creating a finite number of pools that are used by the Stratification Definition – Group by page.

#### Tier Definition Page

This example illustrates the fields and controls on the Tier Structures page. You can find definitions for the fields and controls later on this page.

Input the lower and upper boundary amounts for each tier and then add to the definition. The lower bound range must be greater than the prior upper bound amount. These values cannot be equal and do not overlap. The initial lower bound and last upper bound should small enough and large enough to capture all possible values.

Note that under Tier Type, “Discrete” is also available to select. This option populates the pool with discrete values for an attribute if there is no logical or mathematical way to group instruments with different values, and the attribute is significant for processing purposes. Choosing the discrete action for an attribute ensures that only instruments with matching values are grouped together in a pool. The discrete action may be the correct choice for important code fields. Be careful when using the discrete action on amount, date, or rate fields. These types of fields tend to have many discrete values. A typical value for a discrete group by is a dimension ID field, code field or a yes/no flag.

### 24.2.4 Defining Stratification Rules

Use the Stratification Rules > Tabs to define the Stratification Definition

Navigation: Common Object Maintenance > Data Stratification > Stratification Definition

#### Stratification Rules – Definitions Page

This example illustrates the fields and controls on the Stratification Rules – Definition Page.

To define Stratification Definition, follow below steps:

1. Provide a unique name and description for the Stratification Definition rule.
2. Select a source instrument table. The list of values will include all seeded and properly registered instrument tables which contain account level data records.
3. Select a target aggregate instrument table. This is the table that will be populated with the results of the Stratification.
4. Specify whether or not to include a catch all bucket in the process. This will ensure that all records from the source table are accounted for in the target table.
5. Select Apply to save your inputs and navigate to the next tab.

#### Stratification Rules – Defaults Page

This example illustrates the fields and controls on the Stratification Rules – Defaults Page.

To define Stratification Defaults, follow below steps:

6. Select the Amount default. Possible selections are MAX, MIN, SUM, AVG. Recommended selection is SUM.
7. Select the Date default. Possible selections are MAX, MIN, MEDIAN. Recommended selection is MEDIAN.
8. Select the AlphaNumeric default. Possible selections are MAX, MIN. Recommended selection is MAX.
9. Select the Rate default. Possible selections are MAX, MIN, SUM, AVG and Weighted Average. Recommended selection is Weighted Average. If Weighted Average is selected, then additionally select the balance column to use for weighting.
10. Select the Integer default. Possible selections are MAX, MIN. Recommended selection is MAX.
11. Select Apply to save you inputs and navigate to the next tab.

#### Stratification Rules – Aggregation Page

This example illustrates the fields and controls on the Stratification Rules – Aggregation Page.



To define Stratification Aggregation details, follow below steps:

1. Select the specific row you want to define from the bottom half of the page.
2. You have the option to use the default values previously input on the Defaults tab or you can input a different Aggregation Action at the top of the page.
3. Use the pagination selections at the bottom of the page to address / review all columns or alternatively type the column name or a portion of the column name to navigate directly to a specific column.
4. Select Apply to save your inputs and navigate to the next page.

#### Stratification Rules – Stratification Page

This example illustrates the fields and controls on the Stratification Rules – Stratification Page.

To define Stratification/Group by details, follow below steps:

1. Select the Column(s) and Stratification Action that you want to use for grouping the detailed records into aggregate/pooled records. Typical columns used for grouping will be dimension columns, balance or rate columns or any other meaningful columns that you want to be unique for each pool record.

2. For each Stratification column, select the Stratification Action. Options are Tier, Discrete and Group by. Both the Tier and Discrete options require an additional Stratification Tier definition to be selected.
3. Select Apply to save your inputs and remain in the rule or select Save to save your inputs and close the rule.

## 24.2.5 Defining Stratification Tiers

Use the Stratification Tiers page to define the Stratification Tier Definition

Navigation: Common Object Maintenance > Data Stratification > Stratification Tier

Stratification Tiers Page

This example illustrates the fields and controls on the Stratification Tiers Page.

The screenshot displays the 'Stratification Tier' definition page. It includes the following elements:

- Name:** CS Cur Book Bal Tiers
- Description:** Tier definition for Current Book Balance
- Tier Type:** TIER
- Data Type:** BALANCE
- Defined Tiers:** A section with a message 'Please select a row from Defined Ranges to Edit.' and an 'Action Block' containing 'Lower Bound' and 'Upper Bound' fields with input values 0.01 and 100,000 respectively, and 'Add', 'Update', and 'Remove' buttons.
- Defined Ranges:** A table with columns 'Lower Bound' and 'Upper Bound' containing three rows of defined ranges.
 

Lower Bound	Upper Bound
0.01	100000
100000.01	1000000
1000000.01	100000000
- Page 1 of 1 (1-3 of 3 items)** with navigation arrows.
- Buttons:** Save, Save As, Cancel.

To define Stratification Tiers, follow below steps:

1. Provide a unique name and description for the Stratification Tier.
2. Select the Tier Type, that is Tier or Discrete.
3. Select the column Data Type that this definition will apply to. This selection will limit the columns where this Tier rule will be available for selection in the Stratification Definition rule.
4. Define each individual tier with lower and upper bounds and Add as a defined range. Additionally use the Update or Remove buttons to manage the individual tier definitions.
5. Once all tiers ranges have been defined, select the Save button save the assumptions and exit the Tier screen.

**NOTE** The tier definitions created in this step are mapped to the individual columns in the Stratification Definition rule on the Stratification tab.

## 24.2.6 Creating New Aggregate Table

The following aggregate tables are seeded with application data model:

#	Logical name	Physical table name
1	Annuity Contracts Aggregate	FSI_D_ANNUIITY_CONTRACTS_AGGR
2	Borrowings Aggregate	FSI_D_BORROWINGS_AGGR
3	Checking And Savings Accounts Aggregate	FSI_D_CASA_AGGR
4	Credit Cards Aggregate	FSI_D_CREDIT_CARDS_AGGR
5	Credit Lines Aggregate	FSI_D_CREDIT_LINES_AGGR
6	Guarantees Aggregate	FSI_D_GUARANTEES_AGGR
7	Investments Aggregate	FSI_D_INVESTMENTS_AGGR
8	Leases Aggregate	FSI_D_LEASES_AGGR
9	Loan Contracts Aggregate	FSI_D_LOAN_CONTRACTS_AGGR
10	Money Market Contracts Aggregate	FSI_D_MM_CONTRACTS_AGGR
11	Mortgages Aggregate	FSI_D_MORTGAGES_AGGR
12	Retirement Accounts Aggregate	FSI_D_RETIREMENT_ACCOUNTS_AGGR
13	Term Deposits Aggregate	FSI_D_TERM_DEPOSITS_AGGR

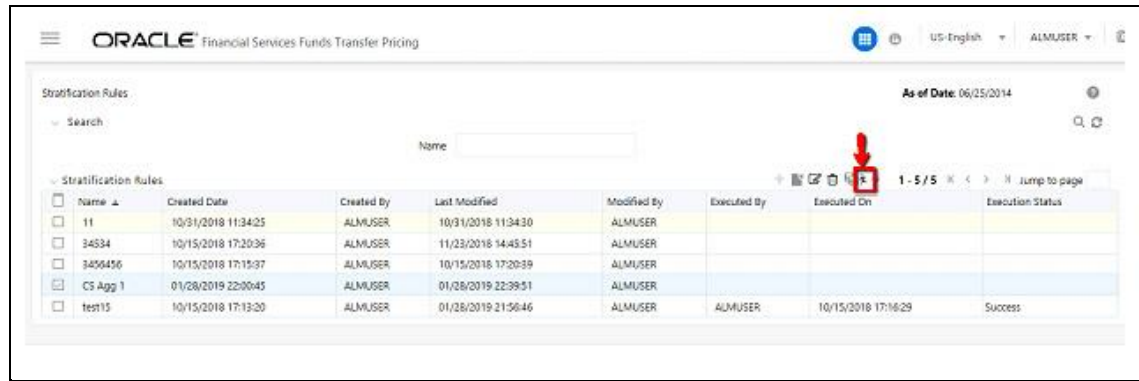
If you want to create a new aggregate table then, apart from basic instrument and leaf columns, the following mappings must be done in data model:

- Super-type
  - INSTRUMENT\_AGGREGATE
  - INSTRUMENT\_AGGREGATE\_BASIC
- Table classification
  - EPM Aggregation (701)

This may be required when you create a custom instrument table and want to use stratification for it.

## 24.3 Executing a Stratification Rule

Stratification Rules can be executed from the Stratification Rule Summary Page:



To execute a Stratification Rule, follow below steps:

1. Navigate to the Stratification Rule Summary Page.
2. Select the Stratification Rule you want to process.
3. Select the Run icon.
4. Select the as of date for the instrument data you want to aggregate.
5. Select OK to begin the process.

You can also execute stratification rule either from SQL\*Plus OR from within a PL/SQL block OR from ICC Batch UI within OFSAAI framework.

### 24.3.1 Using SQL\*Plus

To run the procedure from SQL\*Plus, login to SQL\*Plus as the Schema Owner. The function requires four parameters. Following is the syntax for calling the procedure:

declare

result number;

begin

---- Call the function

result := fn\_insert\_into\_data\_strat\_tab(batch\_id => :batch\_id,

mis\_date => :mis\_date,

stratification\_id => :stratification\_id,

user\_name => :user\_name);

end;

- batch\_id : any string to identify the executed batch
- mis\_date: in the format YYYYMMDD
- stratification\_id: numeric system id of stratification rule
- user\_name: OFSAA user id of the user executing the function

Example

declare

```

result number;
begin
---- Call the function
result := fn_insert_into_data_strat_tab(batch_id => 'abc',
    mis_date => '20180601',
    stratification_id => 123,
    user_name => AUTOUSER);
end;

```

### 24.3.2 Using ICC Batch Framework

To execute the procedure from OFSAI ICC framework, create a new Batch with task as TRANSFORM DATA and specify the following parameters for the task:

- Datastore Type: Select appropriate datastore from list
- Datastore Name: Select appropriate name from the list
- IP address: Select the IP address from the list
- Rule Name: Data\_Stratification
- Parameter List: stratification\_id, user\_name

Task Definition	
Task ID	Task1
Description	Stratification Rule
Components	TRANSFORM DATA
Dynamic Parameters List	
Property	Value
Datastore Type	EDW
Datastore Name	PM80INFO
Primary IP For Runtime Processes	10.184.154.4
Rule Name	Data_Stratification
Parameter List	123, 'AUTOUSER'

After the Stratification rule execution is complete, you can compare balances from the source table and target table to ensure all data has been accounted for, i.e. the sum of current balance from source table should equal sum of current balance in the target table.

Once data has been populated and verified in the aggregation tables, it is ready for processing by the BSP and/or FTP applications. You can select either regular instrument tables or aggregate instrument tables in the BSP and TP Processes under Source Selection. You should select one or the other. Selecting both in the same process will lead to double counting of the balances.

## 25 Andrew Davidson and Company (ADCo) Prepayment Method

The Andrew Davidson & Co (ADCo) prepayment method calculates the prepayment amount for a combination of currency equal to US Dollar and Product Account equal to Type Earning Asset. ADCo related UI inputs and the CFE execution are available only for a user who is an ADCo Licensee and where the specific user has the ADCo function mapped to them.

### 25.1 Deployment of ADCo Libraries on OFSAAI

The following are the objectives of deploying ADCo Libraries on OFSAAI:

- Deploy ADCo libraries on OFSAAI
- Enable ADCo prepayment-model functionality in BSP

The following are the objectives of deploying ADCo Libraries on OFSAAI:

- BSP 8.0
- ADCo v1.9 libraries for Loan-Dynamic-Model, for your operating system / version

**NOTE** ADCo is not available on IBM AIX operating systems.

#### 25.1.1 Steps

- Preparation:
  - d. Login to the UNIX Profile where OFSAAI database-tier is installed.
  - e. Create a folder called “adco”; create 3 sub-folders under “adco”: “io”, “data”, “lib”
  - f. Edit the .profile script and set the following environment variables:
 

ADCO\_IO\_DIR: set it to the absolute path of the “io” sub-folder created earlier.

DATAFILEDIR: set it to the absolute path of the “data” sub-folder created earlier.

LD\_LIBRARY\_PATH: update this environment variable to include the absolute-path of the “lib” sub-folder created earlier.
  - g. Stop all OFSAAI services.
  - h. Log-out of the UNIX Session and log back in to UNIX. Verify that the 3 environment variables created above are set properly.
  - i. Start all OFSAAI Services.
- Deployment:
  - a. Download the v1.9 ADCo libraries and place the file “libadppmdl.so” into the “adco/lib” sub-folder.

- b. Place the monthly license-key and historical-rate files into the “adco/data” sub-folder.
  - c. If you have been provided the following 2 files by ADCo, place both of these files in the “adco/io” sub-folder.
    - ADCO\_DefaultValues\_INACTIVE.txt
    - ADCO\_XMLSettings\_INACTIVE.txt
- Enable ADCo functionality in BSP:
  - a. Login to OFSAAL.
  - b. Under the OFSAAL Home Page, go to Administration -> Security Management
  - c. Expand System Administrator and click “Function – Role Map”.
  - d. Associate the SMS-Function “ADCo Prepayments for BSP” with the required roles.

## **25.2 Procedure For Setting Up ADCo Process**

The steps to set up an ADCo process are as follows:

6. Mapping of the ADCo function to BSP Admin user
7. Set up the 7 Indices to use with ARMs.
8. Set up the 2 year, 10 year rate IRCs.
9. Set up the National HPI.
10. Load the STG\_LOAN\_CONTRACTS table.
11. Run the T2T batch to populate the FSI\_D\_MORTGAGES table.
12. Select the NHPI from Application Preferences.
13. Forecast the 2 year, 10 year rate IRCs.
14. Forecast the 7 indices (only required where indices are mapped to ARMs).
15. Forecast the National HPI (optional).
16. Setup the Prepayment rule mapping ADCo method to the required Mortgage – USD combinations.
17. Setup the Static Deterministic Process including the rules defined above (Forecast Rates and Prepayments).
18. Select the SMM Rates Output flag (optional).
19. Execute the Process.

The detailed procedure for using ADCo prepayment method comprises utilizing the above mentioned specific settings in various BSP modules as documented in the following sections.

### **25.2.1 Mapping of the ADCo function**

After acquiring the ADCo license, the user must manually map the ADCo function to the BSP Admin user in the Role Function Mapping screen of Security Management (Home>Administration>Security Management). Only after this mapping, will the user be available to view the ADCo related changes

made in the Forecast Rates and Prepayments screens. This is not applicable to the common screens of Rate Management and Application Preferences. For more details on security management, see Oracle Financial Services Analytical Applications Infrastructure User Guide.

### 25.2.1.1 Rate Management

Interest Rates:

The screenshot displays the 'Interest Rate Code Details' screen. At the top, the breadcrumb trail reads 'Master Maintenance > Rate Management > Interest Rates'. Below this, the 'Interest Rate Code Details' section contains the following fields: 'Interest Rate Code \*' (with a hint '(Hint: 1 - 999999)'), 'Name', 'Description', 'Volatility Curve' (a dropdown menu), 'Risk Free' (a checkbox), 'Display for All Currencies' (a checkbox), 'Reference Currency' (a dropdown menu currently set to 'Australian Dollar'), and 'Structure Type' (a dropdown menu currently set to 'Standard').

In Rate Management Interest Rates detail screen, is a drop-down list called the Curve Identifier. This is a drop-down list that contains the list of 4 curve identifier types, that is, par treasury, zero coupon treasury, par libor/ swap, and zero coupon libor swap. These curve identifiers can be mapped to the seven indices to be used with the Adjustable Rate Mortgages (ARMs) meant for ADCo purpose, whose reference currency is always US Dollar. The seven indices are:

Element Name	Element Description
PAR_TSY_1YR	1-Year Par Treasury Monthly Yield (%)
PAR_LIBOR_6M	6-Month Par LIBOR Monthly Yield (%)
PAR_LIBOR_1YR	1 Year Par LIBOR Monthly Yield (%)
MTA_12	12 Month MTA Monthly Yield (%)
PAR_TSY_3YR	3-Year Par Treasury Monthly Yield (%)
PAR_TSY_5YR	5-Year Par Treasury Monthly Yield (%)
COFI_11D	11th District COFI Monthly Yield (%)

User has to define the 7 indices for use with the ARMs, with the same name as expected by ADCo. Also, the IRC to supply 2 year and 10 year rates also must be defined in this UI. User need not enter the Term structure parameters if the IRC is to be used only for ADCo purposes.

Economic Indicators:

In the Economic Indicators detail screen, the historical data for the National Housing Price Index (NHPI) is entered. Setting up the NHPI is an optional step.



Loading the STG\_LOAN\_CONTRACTS table:

For the purpose of ADCo, this step of loading the STG\_LOAN\_CONTRACTS table should be performed. The following are the columns that have been included in this table for ADCo Purpose:

COLUMN_NAME	DISPLAY NAME
d_last_delinquent_date	Last Delinquent Date
f_payment_option_flag	Payment Option Flag
f_relo_loan_flag	Relocation Loan Flag
f_sub_prime_flag	Sub Prime Flag
n_first_reset_cap	First Reset Cap
n_first_reset_floor	First Reset Floor
n_joining_score	Original Credit Score
n_loan_charge	Loan Charge
n_mrtgg_insrn_amount	Mortgage Insurance Amount
n_mrtgg_insrn_cutoff	Mortgage Insurance Cutoff
n_mrtgg_insrn_premium	Mortgage Insurance Premium
n_no_of_interest_only_mths	Number of Interest Only Months
n_no_of_prop_units	Number of Property Units
n_orig_cust_ltv	Original Customer LTV
n_prepmt_index_term	Prepayment Index Term
v_loan_doc_status	Loan Documentation Status
v_prepmt_index_cd	Prepayment Index Code
v_prepmt_index_term_unit	Prepayment Index Term Unit
v_prop_loc_state_cd	Property Location State Code
v_prop_purpose_cd	Property Purpose Code
v_prop_sub_type_cd	Property Sub-Type Code

Running the T2T Batch to populate FSI\_D\_MORTGAGES table:

In order to run the T2T Batch to populate FSI\_D\_MORTGAGES table, perform the following steps:

1. Navigate to Common Object Maintenance > Operations.
2. Set up a batch in the Batch Maintenance UI.
3. Select the above batch set up in step 2 and for a particular information date, execute the batch. This populates the FSI\_D\_MORTGAGES table.

### 25.2.1.2 Application Preferences

In the ADCo Parameter grid, there is a input parameter called National Housing Pricing Index(NHPI).

National Housing Pricing Index (NHPI) - This is an input parameter for ADCo definition purpose, that the user has to select from the drop-down containing the list of all economic indicators defined from Rate Management. The user is required to set up a NHPI economic index as if they desire to override the base Adco NHPI forecast. This is an optional step.

The screenshot displays the Oracle Application Preferences window. The interface includes a top navigation bar with the Oracle logo and user information (ALMUSER). The main content area is titled 'Application Preferences' and contains several sections for configuring the system.

**Select Preferences For:** ALMUSER

**Parameters - General**

Property Name	Property Value	Is Editable
Security Map	None	<input checked="" type="checkbox"/>
As of Date	06/15/2017	<input checked="" type="checkbox"/>
Show Execution Parameters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Runtime Parameters	Leaf Description	
Legal Entity	Default Member	<input checked="" type="checkbox"/> Disable Legal Entity

**Processing - General**

Property Name	Property Value	Is Editable
Default Total Error Message Limit	250	<input checked="" type="checkbox"/>
Default Error Message Limit Per Item	25	<input checked="" type="checkbox"/>
Debugging Output Level	Show All SQL	<input checked="" type="checkbox"/>

**Processing - Application Specific**

Property Name	Property Value	Is Editable
Maximum Number of Instrument records to include in detail cash flow output	10	<input checked="" type="checkbox"/>
Maximum Number of Rate Paths for Monte Carlo Processing	10	<input checked="" type="checkbox"/>
Random Number Generation seed Method	Fixed Seed	<input checked="" type="checkbox"/>
Initial Seed Value	0	<input checked="" type="checkbox"/>
Enable Holiday Calendar Adjustments	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Assumption Management Defaults**

Property Name	Property Value	Is Editable
Folder Name	ALMSEC	<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 checked="" type="checkbox"/>
Default Product Hierarchy	IT	<input checked="" type="checkbox"/>
Organizational Unit Dimension	Organizational Unit	<input checked="" type="checkbox"/>
Hierarchy Member Navigation Size	100	<input checked="" type="checkbox"/>

**Auto-balancing Leases**

Property Name	Property Value	Is Editable
Product Hierarchy	IT	<input checked="" type="checkbox"/>
Type of Leaf	Leaf Description	
Assets	Test_1000	<input checked="" type="checkbox"/>
Liabilities		<input checked="" type="checkbox"/>
Retained Earnings		<input checked="" type="checkbox"/>
Dividends		<input checked="" type="checkbox"/>
Federal Taxes		<input checked="" type="checkbox"/>
State Taxes		<input checked="" type="checkbox"/>
Accumulated Translation Balance		<input checked="" type="checkbox"/>

**ADCo Parameters**

Property Name	Property Value	Is Editable
National Housing Pricing Index		<input checked="" type="checkbox"/>

## Product Characteristics

Define Other Mortgage Attributes: This tab is available only if the user has an ADCo License.

For more information, see [Product Characteristics](#).

### 25.2.1.3 Forecast Rates

#### Interest Rate Forecast Methods:

In the case of an ADCo IRC forecast, while defining using Direct Input, the 'Show 360 months Buckets' checkbox is shown ONLY if the BSP\_ADCO function is mapped to the user.

- By default the checkbox is unchecked (or checkbox is not shown), and the UI continues to display its existing behavior.
- If the user checks the box, then the UI shows 360 month rows and the date display follows the MMM-YYYY format.

Forecasting the 7 indices is similar to forecasting the 2 year and 10 year rate IRCs having term points as 2 years and 10 years.

#### Economic Indicator (EI) Forecast Methods:

The UI has a similar behavior for EI forecasting method selection of “Direct Input”. But UI checks for the National HPI Selection in Application Preferences. In the BSP Process screen, UI shows the audit options for ADCo, ONLY if BSP\_ADCO function is mapped to the user. Forecasting the NHPI is an optional step.

### 25.2.1.4 Prepayments

#### Defining Prepayment Methodologies:

Oracle Balance Sheet Planning provides five prepayment calculation methods: Constant, Prepayment Model, PSA, Arctangent, and ADCo (Andrew Davidson and Co.) Prepayment method.

#### Defining the ADCo Prepayment Method:

Use this procedure to define prepayment assumptions using the ADCo Prepayment method.

#### Prerequisites:

Performing basic steps for creating or updating a Prepayment rule.

#### Procedure:

1. Select the currency to be US Dollar and Product Account Type as an Earning Asset.
2. Select ADCo Prepayment method from the Prepayment method drop-down list. The UI shows “ADCo Prepayment” method as an available method in the drop-down list, ONLY if BSP\_ADCO function is mapped to the user.
3. Select Refinance or Curtailment from the Calculation drop-down list.
4. The ADCo Prepayment container is displayed containing the index drop-down list which contain IRCs defined in Rate Management including the seven indices to be used with the Adjustable Rate Mortgages(ARMs) meant for ADCo purpose, whose reference currency is always US Dollar. Select the required IRC.
5. Click Apply.

### 25.2.1.5 Transaction Strategies

Define Other Mortgage Attributes: This tab is available only if the user has an ADCo License.

For more information, refer to Transaction Strategies, on page 527.

### 25.2.1.6 BSP Processing

Creating a Static Deterministic Process rule:

In the Audit block, there is a checkbox called Output ADCo Prepayment SMM rates. Selecting this checkbox is an optional step.

Output ADCo Prepayment SMM rates: This checkbox is enabled only if the user has an ADCo Licensee. Check this box to capture the SMM rates for each scenario, As of Date, instrument, Product Leaf, Remaining Term and the Process ID. On every rerun of the same process ID, new set of SMM rates at scenario level is written to the audit table `fsi_o_smm_rates_audit` after deleting the existing records for the process ID. On selective reprocessing of the same process ID, the audit table is truncated and the new set of rates is written to the table.

### 25.2.1.7 Error Scenarios

- BSP Engine logs error messages into `FSI_PROCESS_ERRORS` if ADCo method is assigned to a non Mortgage and process the next record. This validation check is based on the instrument type.
- BSP Engine logs warning messages into `FSI_PROCESS_ERRORS` if the input parameters required are missing from the Mortgages table
- BSP engine logs error messages into `FSI_PROCESS_ERRORS` if forecast rates scenario definitions are inconsistent or the definition is missing. Say, if the rule has 10 scenarios and the ADCo curves are forecast for only 9 scenarios, then a warning message is logged. No warning messages are written if National HPI is not forecast.

### 25.2.1.8 CD/MLS Tables Included for ADCo

The following are the CD/MLS tables included for the purpose of ADCo:

S.No.	TABLE_NAME	DISPLAY_NAME	DESCRIPTION
1	FSI_DELINQUENCY_STATUS_CD	Delinquency Status Cd	Holds Data For Delinquency Status Cd
2	FSI_DELINQUEN_STATUS_MLS	Delinquency Status Mls	Holds Data For Delinquency Status Mls
3	FSI_DOCUMENTATION_CD	Documentation Cd	Holds Data For Documentation Cd
4	FSI_DOCUMENTATION_MLS	Documentation Mls	Holds Data For Documentation Mls
5	FSI_GEOGRAPHIC_LOC_STATE_CD	Geographic State Cd	Holds Data For Geographic State Cd

S.No.	TABLE_NAME	DISPLAY_NAME	DESCRIPTION
6	FSI_GEOGRAPHIC_LOC_STATE_MLS	Geographic State Mls	Holds Data For Geographic State Mls
7	FSI_ISSUER_CD	Issuer	Holds Data for Issuer Cd
8	FSI_PPMT_MODEL_INDICES_CD	Ppmt Model Indices Cd	Holds Data For Prepayment Model Indices Cd
9	FSI_LOAN_TYPE_CD	Loan Type Cd	Holds Data For Loan Type Cd
10	FSI_LOAN_TYPE_MLS	Loan Type Mls	Holds Data For Loan Type Mls
11	FSI_O_SMM_RATES_AUDIT	Single Monthly Mortality Rate Audit Table	Single Monthly Mortality rate audit
12	FSI_PPMT_MODEL_INDICES_MLS	Ppmt Model Indices Mls	Holds Data For Prepayment Model Indices Mls
13	FSI_PREV_DELQ_STATUS_CD	Prev Delq Status Cd	Holds Data For Previous Delinquency Status Cd
14	FSI_PREV_DELQ_STATUS_MLS	Prev Delq Status Mls	Holds Data For Previous Delinquency Status Mls
15	FSI_PROPERTY_PURPOSE_CD	Property Purpose Cd	Holds Data For Property Purpose Cd
16	FSI_PROPERTY_PURPOSE_MLS	Property Purpose Mls	Holds Data For Property Purpose Mls
17	FSI_PROPERTY_SUB_TYPE_CD	Property Sub Type Cd	Holds Data For Property Sub Type Cd
18	FSI_PROPERTY_SUB_TYPE_MLS	Property Sub Type Mls	Holds Data For Property Sub Type Mls
19	FSI_PURPOSE_CD	Purpose Cd	Holds Data For Purpose Cd
20	FSI_PURPOSE_MLS	Purpose Mls	Holds Data for Purpose Mls

## 25.3 ADco Mapping

S No	Column Mapped/Used	Input (Adco)
1	CUR_MIN_PMT	CurMinimumPayment
2	LOAN_DOC_STATUS	Documentation

S No	Column Mapped/Used	Input (Adco)
3	FIRST_RESET_AGE	FirstResetAge
4	FIRST_RESET_CAP	FirstResetCap
5	FIRST_RESET_FLOOR	FirstResetFloor
6	PMT_OPTION_FLG	HasOptionalPayment
7	NO_INT_ONLY_MTHS	IOMonths
8	RELO_LOAN_FLG	IsRelo
9	SUB_PRIME_FLG	IsSubprime
10	LIEN_POSITION	LienPosition
11	MORT_INS_CUTOFF	MI_Cutoff
12	MORT_INS_PREMIUM	MI_Premium
13	MORT_INS_AMT	MIAmount
14	NO_LAST_DELQ_MTHS	MonthsSinceLastDelinquency
15	NO_PROPERTY_UNITS	NumUnits
16	ORG_CUST_LTV	OrigCombinedLTV
17	RATE_INCR_CYCLE	PeriodicCap
18	RATE_DECR_CYCLE	PeriodicFloor
19	NO_PREPAY_PENALTY_MTHS	PPMonths
20	PREV_DELQ_STATUS_CD	PreviousDelinquency
21	GEOGRAPHIC_LOC_STATE_CD	State
22	CUR_LOAN_TO_VALUE	Cur_LTV
23	PREPAY_INDEX	Index
24	JOINING_SCORE	Credit_Score
25	CUR_PAR_BAL	Cur_Face
26	FICO_SCORE	CurFICO
27	MARGIN_GROSS	GrossMargin
28	RATE_CAP_LIFE	LifeCap
29	RATE_FLOOR_LIFE	LifeFloor
30	PURPOSE_CD	Loan_Purpose
31	NEG_AMRT_LIMIT	MaxNegAm
32	REPRICE_FREQ	MonthsBetweenReset
33	PROP_PURPOSE_CD	Occupancy
34	ORG_NET_PAR_BAL_C	Orig_Face
35	ORG_LOAN_TO_VALUE	Original_LTV

S No	Column Mapped/Used	Input (Adco)
36	ORG_TERM	OriginalTerm
37	PMT_INCR_CYCLE	PayCap
38	PROP_SUB_TYPE_CD	Property_Type
39	MATURITY_DATE, AS_OF_DATE	RemainingTerm
40	CUR_GROSS_RATE	StartingWac
41	adjustable_type_cd	WacIsFixed
42	PROPERTY_ZIP_CODE	ZipCode
43	NO_BALLOON_MTHS	BalloonMonths
44	FIRST_FORECAST_MTH	FirstForecastMonth
45	FIRST_FORECAST_YR	FirstForecastYear
46	AGE_ON_BOOK	Age
47	RATE_SET_LAG	LookBackMonths
48	ORG_RATE	WAC

## 25.4 Limitations

Support for Adco when using FTP forecasting methods is not currently supported and will be available when the FTP application supports Adco.

## 26 Moody's WSA Integration

Moody's Analytics has a model - WSA libraries, which generate structured security cash flows. This functionality is required to support the modeling of structured products (ABS/MBS CMO's, and CDO's). In OFSAA BSP, this integration is necessary for modeling structured product cash flows of a given tranche of a security. These cash flows cannot be modeled in the OFSAA CFE because of the nature of the rules in the waterfall of cash flows.

For example, a structured security is backed by a pool of loans, and these loans pay principle and interest but the certainty of cash flows is not known because of prepayment and loss activity within specified loan pool. These monthly cash flows are run through the waterfall rule within the securitization and only then are the individual tranche cash flows derived. The moody's cash flow model will output these specific tranche cash flows under given input assumptions, and OFSAA will uptake these cash flows into the BSP processing. The input assumption information is passed to the Moody's model, so their model will produce cash flows for a given tranche of a security (such as, interest and principal), and the model results will be imported into our deterministic cash flow results (Detail cash flows, Result Detail, Result Master Cons Detail and Cons Master).

Prior to using the Moody's cashflow libraries in OFSAA BSP, Users must procure a license to the WSA libraries from Moody's Analytics.

### 26.1 Deployment of Moody Libraries on OFSAAI

The follow are the prerequisites to deploy Moody libraries on OFSAAI:

- BSP 8.0
- A license for the WSA libraries is required from Moody's

#### 26.1.1 Steps to Deploy Moody Libraries on OFSAAI

- Preparation
- 6. Login to the UNIX Profile where OFSAAI database-tier is installed.
- 7. Create a folder called "moody"; create 2 sub-folders under "moody" : "data", "lib64".
- 8. Edit the .profile script and set the following environment variables:
  - MOODYS\_DATA\_PATH: set it to the absolute path of the "data" sub-folder created above
  - LD\_LIBRARY\_PATH: update this environment variable to include the absolute-path of the "lib64" sub-folder created above
  - ADCO\_DATA\_PATH: set it to absolute path where AD-Co historical-rate files present.

#### NOTE

This is only required if you are using the Moody's libraries along with ADCo prepayment model. For more information on Adco LDM prepayment model, refer to chapter Andrew Davidson and Company (ADCo) Prepayment Method.

- 9. Stop all OFSAAI services.



10. Log-out of the UNIX Session and log back in to UNIX. Verify that the 2 environment variables created above are set properly.
11. Start all OFSAAI Services.
  - e. Deployment:
    - vi. Download the Moody libraries and place the files into the “moody/lib64” sub-folder.
    - vii. Place the deal files in “Moody's Data” folder.
  - f. Enable Moody functionality in BSP
    - i. Login to OFSAAI as the SYSADMN.
    - ii. Under the OFSAAI Home Page, go to Administration -> Security Management.
    - iii. Expand System Administrator and click “Function – Role Map”.
    - iv. Associate the SMS-Function “Moody Integration for BSP” with the required roles to the required user-name.

## 26.2 Moody's Integration – Considerations

### 26.2.1.1 WSA Engine and Processing of the Records

- Moody's WSA Engine requires CUSIP or Deal-Id/Tranche (Bond) Id for processing the instruments. Depending on the Forecast Scenario's and the behavior assumptions, the WSA engine will process the records and output the respective cash flows for various scenarios.
- Moody's provides the cash flows only at the tranche balance, Users should populate the balance of their position in the appropriate column, and the cash flows from Moody's would be scaled to the balance provided. This happens within the OFSAA BSP engine.
- If the user has Moody's installed, only securitized products (supported by Moody's) should be populated in the FSI\_D\_ASSET\_BACK\_SEC (or the table classification code for securitized products). Other records if populated in this table would not be processing. For example: If the user populates loans and securitized products in the FSI\_D\_ASSET\_BACK\_SEC table, the loan records would not be processed in the table.
- OFSAA BSP also writes back instrument attributes such as agency\_type, Asset\_type, Original balance of the tranche, current balance of the tranche, coupon, stated maturity, periodicity etc for upstream system to use, if needed.

### 26.2.2 WSA Engine and OFSAA Rate Management

Interest Rate Curves required for Moody's should be setup through the Curve Identifier drop-down list in the Rate Management IRC UI. Moody's requires the following curves to be defined:

- LIBOR (Zero-Coupon LIBOR/Swap)
- TREASURY CURVE (Zero-Coupon Treasury)
- COFI (Cost of Funds Index)
- PRIME (Prime Lending Rate)

It's the user's responsibility to setup the proper curves while using Moody's libraries. User can define only one treasury curve / one libor curve / one COFI curve and one prime curve per currency.

**NOTE** A majority of the deals would be based of LIBOR/Treasury Curves.

### 26.2.3 WSA Engine and OFSAA Product Characteristic Definition

A New tab “Model Integration” is introduced for the Moody's WSA Integration. This tab is enabled only for the account types “Structured Products - Assets” “Structured Products - Liabilities”.

Model Selection, Tuning and tuning parameters for the selected model can be passed through the Model Integration in Product Characteristic UI.

Users should logically branch the deals (RMBS, CMBS, SLABS, Credit Cards) in their hierarchy for modeling the behavior in the following two ways. Details follow:

- Passing the assumptions from a table: User can choose to pass the following assumptions (listed in the table below) through the table “FSI\_D\_BEHAVIOR\_ASSUMPTIONS”. These would be read from the table and applied to the deal with the matching “INSTRUMENT\_NUM” in the instrument table. In the model selection UI, user has to select “Source system provided” against the particular node for modeling with the user provided assumptions.

Assumption Types/Subtype Details:

ASSUMPTION TYPE	ASSUMPTION SUBTYPE	DESCRIPTION
PREPAYMENT	PREPAY_CURVE_PSA	Standard prepayment curve measuring for prepayments in the residential mortgage market.
PREPAYMENT	PREPAY_CURVE_SMM	Monthly prepayment or default rate.
PREPAYMENT	PREPAY_CURVE_CPR	Constant Prepayment Rate (CPR): Prepayment percentage expressed as an annual compounded rate.
PREPAYMENT	PREPAY_CURVE_HEP	Home Equity Prepayment: A measure of prepayments for closed-end, fixed rate HEL loans. This curve accounts for the faster seasoning ramp for home equity loans.
PREPAYMENT	PREPAY_CURVE_ABS	Asset-Backed Securities (ABS): It is used in ABS markets, where prepayments differ significantly from standard mortgages. This model defines an increasing sequence of monthly prepayment rates, which correspond to a constant absolute level of loan prepayments in all future periods.
DEFAULT	DEFAULT_CURVE_CDR	Constant Default Rate (CDR): Default percentage expressed as an annual compounded rate
DEFAULT	DEFAULT_CURVE_SDA	Standard default curve: Measuring for defaults in the residential mortgage market
DEFAULT	DEFAULT_CURVE_MDR	Monthly Default Rate

ASSUMPTION TYPE	ASSUMPTION SUBTYPE	DESCRIPTION
DEFAULT	DEFAULT_CURVE_SEASONED_CDR	
DEFAULT	DEFAULT_CURVE_SEASONED_MDR	
DELINQUENCY	dq30Val	A pointer to data for from 30 to 59 day's delinquency
DELINQUENCY	dq60Val	A pointer to data for from 60 to 89 day's delinquency
DELINQUENCY	dq90Val	A pointer to data for 90 plus day's delinquency
RECOVERIES	RECOVERY	Vector of recoveries
DRAW	HELOC_DRAW_RATES	Vector of annualized draw rates for HELOC
FORBEARANCE	FORBEARANCE	Sets the constant or vectored forbearance rate for SLABS deals
DEFERMENT	STUDENT_LOAN_REPAY_TYPE_FULL_DEFER	Capitalize Interest
DEFERMENT	STUDENT_LOAN_REPAY_TYPE_PRIN_DEFER	Pay Interest, Balance Flat
CREDIT_CARDS	CREDIT_CARD_ASSUMP_YIELD	Portfolio/Annual Yield
CREDIT_CARDS	CREDIT_CARD_ASSUMP_REPAYMENT	Repayment Rate
CREDIT_CARDS	CREDIT_CARD_ASSUMP_RECOVERY	Loss Rate
CREDIT_CARDS	CREDIT_CARD_ASSUMP_PURCHASE	Purchase Rate
CREDIT_CARDS	CREDIT_CARD_ASSUMP_DEFAULT	Default Rate

- When a user is passing assumptions, for example the Prepayment vector, the subtype values can be in; – PSA, SMM, CPR, HEP and ABS. Users has to make sure they are passing the correct and acceptable subtype with respective to Moody's. Only one subtype can be applied for prepayment and default per each CUSIP.
- When passing the delinquency assumptions, the dq30val, dq60Val and dq90Val mentioned for are not subtypes; rather they are various levels of delinquencies possible. Typically a deal would have all three vectors available.
- ADCo prepayment and default modeling: User can also choose to model through the ADCo model by selecting “ADCo” in the model selection drop-down list. ADCo can only be used against RMBS deals, as ADCo can only model Mortgage Backed Securities.

#### Tuning Parameters:

Tuning is available to allow the user to customize the assumptions being provided to the Moody's WSA engine.

- For Source System Provided:

Tuning Parameter	Description	Default Value
Prepayment	Magnitude for prepay rate	1
Default	Magnitude for default rate	1
Recovery	Magnitude for recovery rate	1
Recovery Lag	Recovery lag applied to each loan	0
Draw Rates	Magnitude for mortgage draw rates	1
Servicer Advancing	NONE/INTEREST/BOTH	None

- For ADCO:

Additionally Parameters available are:

Tuning Parameters	Description	Default
ficoToUseIfNotAvailable	Fico to use for loans which do not have this INFO	680
ficoSubprimeThreshold	Loan is considered subprime if FICO is less than this value ( 620 if not provided)	620
SMM for Failed Loans	SMM for Failed Loans	NA
Recovery for Failed Loans	Recovery for Failed Loans	NA
MDR for Failed Loans	MDR for Failed Loans	NA

## 26.3 Setting-up a Moody's Process

The steps to set up a Moody process, follow these steps:

1. Mapping of the Moody's function to the BSP user
2. Set up the curves needed for the Moody's WSA libraries, with the respective curve identifier.
3. Load the STG\_INVESTMENTS and STG\_INSTRUMENT\_CONTRACT\_MASTER tables.
4. Run the T2T batch to populate the FSI\_D\_ASSET\_BACK\_SEC table
5. Define the Model Integration rule in the Product Characteristic UI for the leaf nodes in the member hierarchy
6. Define the Forecast Rate rules and the discount methods - only required for valuation. (For more details on ADCo 360 Bucket forecasting, refer to chapter Forecast Rate Scenarios.)
7. Setup the Static/dynamic deterministic Process including the rules defined above (Prod Char, Forecast Rates and Discount methods). (Note: New Business is not supported for Securitized products)

8. Select the structured product output flag (optional) to update the instrument records
9. Execute the Process.

## **26.4 Limitations**

- New business not supported for Dynamic Deterministic processing.
- WSA libraries are only available on Linux Operating Systems (5 & 6)

## 27 Appendix A: Process Tuning

This module provides information on configuring the Oracle Financial Services Analytical Application (OFSAA) server-centric software for multiprocessing through the Process Tuning UI.

**NOTE** This appendix is shared with other OFS applications including Funds Transfer Pricing and Asset Liability Management. OFS Balance Sheet Planning and OFS Asset Liability Management share the same OFSAA server-centric software (cash flow engine) for deterministic processing. Within this appendix, all references to static deterministic multiprocessing for Asset Liability Management processes apply equally to Balance Sheet Planning processes.

**ATTENTION** The Process Tuning UI is available for definition ONLY for a User who has a role mapping that of 'Administrator' or 'Auditor'. The 'Auditor' role mapped user has 'READ-ONLY' access to Process Tuning UI.

This appendix covers the following topics:

- [Multiprocessing Model](#)
- [Multiprocessing Options](#)
- [Specifying Multiprocessing Parameters](#)
- [Tuning Multiprocessing](#)

For more information on OFSAA Process Tuning Options, see the Doc ID 13077[66.1](#)

### 27.1.1 Multiprocessing Model

By default, multiprocessing is disabled for all applications. Multiprocessing is enabled by setting application specific parameters located under the Common Object Maintenance > Process Tuning. The following applications and features have multiprocessing settings:

- Asset Liability Management – Deterministic and Stochastic Processing
- Balance Sheet Planning – Deterministic Processing
- Funds Transfer Pricing – Standard and Stochastic Processing

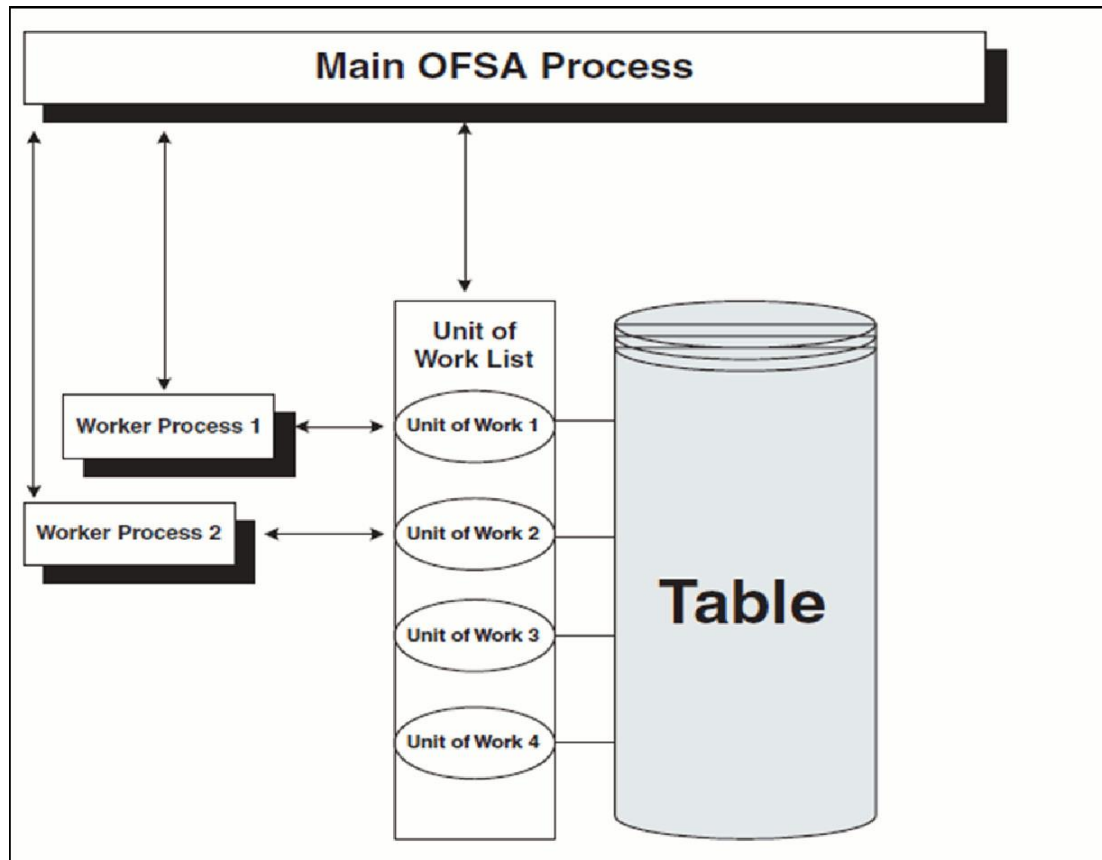
**NOTE** BSP does not support Stochastic Processing.

OFSAA multiprocessing is based on the concept of a unit-of-work. A unit-of-work is a set of rows from the database. A single OFSAA process becomes multiple processes by dividing the single process

according to distinct sets of rows. Units of work are distributed to worker processes until all processes have been completed. To achieve multiple parallel processes, the following options must be configured:

- Creating a list or lists of units of work
- Defining the number of worker processes to service the units-of-work lists
- Defining how the worker processes service the unit-of-work lists

The specifics of each option are discussed. The following diagram illustrates the basic multiprocessing principles:



10. The main process makes a list of all units of work that must be processed.
11. The main process spawns worker processes. Each worker process is assigned a unit of work by the main process.
12. When all units of work have been completed, the worker process exits and the main process finishes any clean-up aspects of processing.
13. During processing the following is true:
  - Each worker process must form its own database connection.
  - A unit of work is processed only by a single worker process.
  - Different units of work are processed at the same time by different worker processes.

**NOTE**

If data is not distributed well across physical devices, I/O contention may offset the advantage of parallelism within OFSAA for I/O bound processing. It is recommended that users choose dimension or combination of dimensions that produce a relatively equal distribution of data records.

## 27.1.2 Multiprocessing Options

The Multiprocessing Options are the settings and parameters that control how individual ALM or FTP Processes are processed by the Cash Flow engine. The seeded data model includes default settings for all of the multiprocessing options, but you can also customize the settings for your own use. This section describes the different Multiprocessing options as well as how to customize each. These options are:

- Units of Work
- Unit-of-Work Servicing
- Worker Processes

### Units of Work

The OFSAA processing engines determine units of work for any job based upon the Process Data Slicing Code assignment. The Data Slicing Code comprises one or more columns by which data in the (processing) table is segmented. The individual segments are the defined Units of Work.

The Process Tuning user interface enables you to specify different unit-of-work definitions for your processes. You could specify one unit-of-work definition for one set of processes and then specify a different unit-of-work definition for another set of processes.

The OFSAA Processing Engines determine the units of work for a job by executing the following statement (with filtering criteria applied) on every table the process is run against:

```
select distinct<data slice columns>from<table>where<filter condition>;
```

where <data slice columns>is the comma-separated list of columns used for data slicing, <table>is the name of the instrument table being processed, and <filter condition>is the additional filter (if any) for the process. All portfolio tables with numeric columns will be used of Data slicing, .

### Default Unit-of-Work Definitions

OFSAA provides three default unit-of-work definitions:



PROCESS_DATA_SLICES_CD	PROCESS_DATA_SLICES_SEQ	COLUMN_NAME
1	1	ORG_UNIT_ID
1	2	COMMON_COA_ID
2	1	ORG_UNIT_ID
3	1	COMMON_COA_ID

Any single Process Data Slice Code can comprise multiple columns. As an example of this, the PROCESS\_DATA\_SLICES\_CD = 1 comprises both ORG\_UNIT\_ID and COMMON\_COA\_ID. The PROCESS\_DATA\_SLICES\_SEQ identifies the precedence for the columns within the Process Data Slices CD.

### Unit-of-Work Servicing

Unit-of-work servicing identifies how the OFSAA processing engines interact with Oracle Database Table Partitioning.

### What is Partitioning

Partitioning addresses the key problem of supporting very large tables and indexes by enabling you to decompose them into smaller and more manageable pieces called partitions. Once partitions are defined, SQL statements can access and manipulate the partitions rather than entire tables or indexes. Partitions are especially useful in data warehouse applications, which commonly store and analyze large amounts of historical data.

### What Is Unit-of-Work Servicing?

Unit-of-work servicing specifies how individual units of work are processed for a table that is partitioned.

For a partitioned table, an application Rule Type/ Rule Step can create multiple units-of-work lists by executing the following statement (with filtering criteria applied) on every table partition the process is run against:

```
select distinct<data slice columns>from<table_partition_n>
```

For example,

```
SELECT DISTINCT REV.COLUMN_NAME, MLS.DISPLAY_NAME from REV_TAB_COLUMNS REV,
REV_TAB_COLUMNS_MLS MLS
```

```
WHERE REV.TABLE_NAME=MLS.TABLE_NAME AND
REV.COLUMN_NAME=MLS.COLUMN_NAME
```

```
AND REV.TABLE_NAME='PORTFOLIO' AND REV.DATA_TYPE='NUMBER' AND
MLS.MLS_CD='US'
```

```
UNION SELECT 'DATA_SLICE_ID' COLUMN_NAME,'Data Slice' DISPLAY_NAME from DUAL
```

```
UNION SELECT 'FINANCIAL_ELEM_ID' COLUMN_NAME,'Financial Element' DISPLAY_NAME
from DUAL ORDER BY DISPLAY_NAME;
```

where <data slice columns> is the comma-separated list of columns used for data slicing. Any column in a table can be used for data slicing. <table\_partition\_n> are the unique table partitions of a table where n is assumed to be greater than 1.

The different Servicing methodologies are stored in the FSI\_PROCESS\_PARTITION\_CD and FSI\_PROCESS\_PARTITION\_MLS tables. You cannot add any customized Servicing methodologies. The Servicing methodologies provided in OFSAA are as follows:

PROCESS_PARTITION_CD	PROCESS_PARTITION
0	Do not use partitions (single servicing)
1	Use shared partitions (Cooperative Servicing)
2	Use non-shared partitions (Dedicated Servicing)

These methodologies are defined as follows:

- Single Servicing
- Cooperative Servicing
- Dedicated Servicing

#### Single Servicing

Single Servicing indicates that the OFSAA processing engine fulfils unit-of-work requests regardless of any table partitioning. As each individual process completes, it requests the next unit-of-work segment, whether or not that segment belongs in the same Table partition.

Use Single Servicing when you do not have Oracle Table Partitioning in your database.

#### Cooperative Servicing

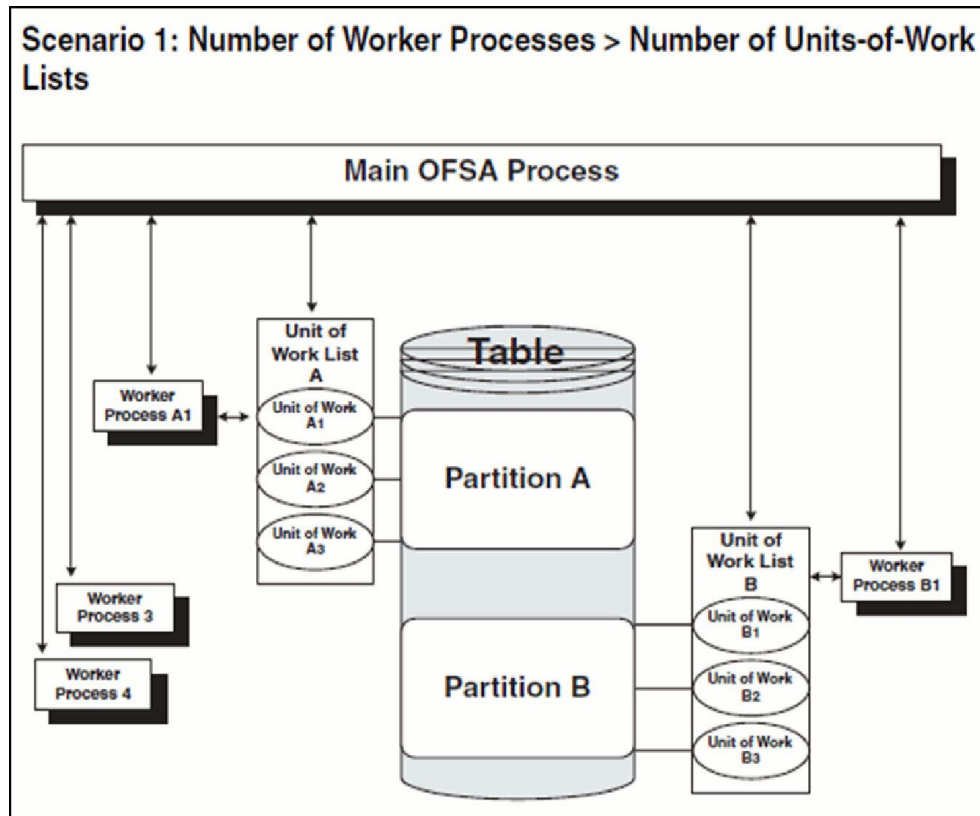
Cooperative Servicing indicates that the OFSAA processing engine fulfils unit-of-work requests so that each process works against a specific partition unless it is idle. Idle processes then work against the next available unit-of-work segment, whether or not that segment belongs in the same Table partition.

#### Dedicated Servicing

Dedicated Servicing indicates that the OFSAA processing engine fulfils unit-of-work requests so that each process works against a specific partition.

#### Examples of How Worker Processes Service Units of Work

FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD defines how Worker Processes service the units-of-work list or lists. As explained in the define units-of-work list or lists step, an FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equal to 0 results in a single units-of-work list. With a single units-of-work list, all available worker processes service the list until all units of work are complete. When FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equals 1 or 2 and the table to be processed is partitioned, multiple units of work lists are created. The following scenarios explain how the worker processes service multiple units-of-work lists:

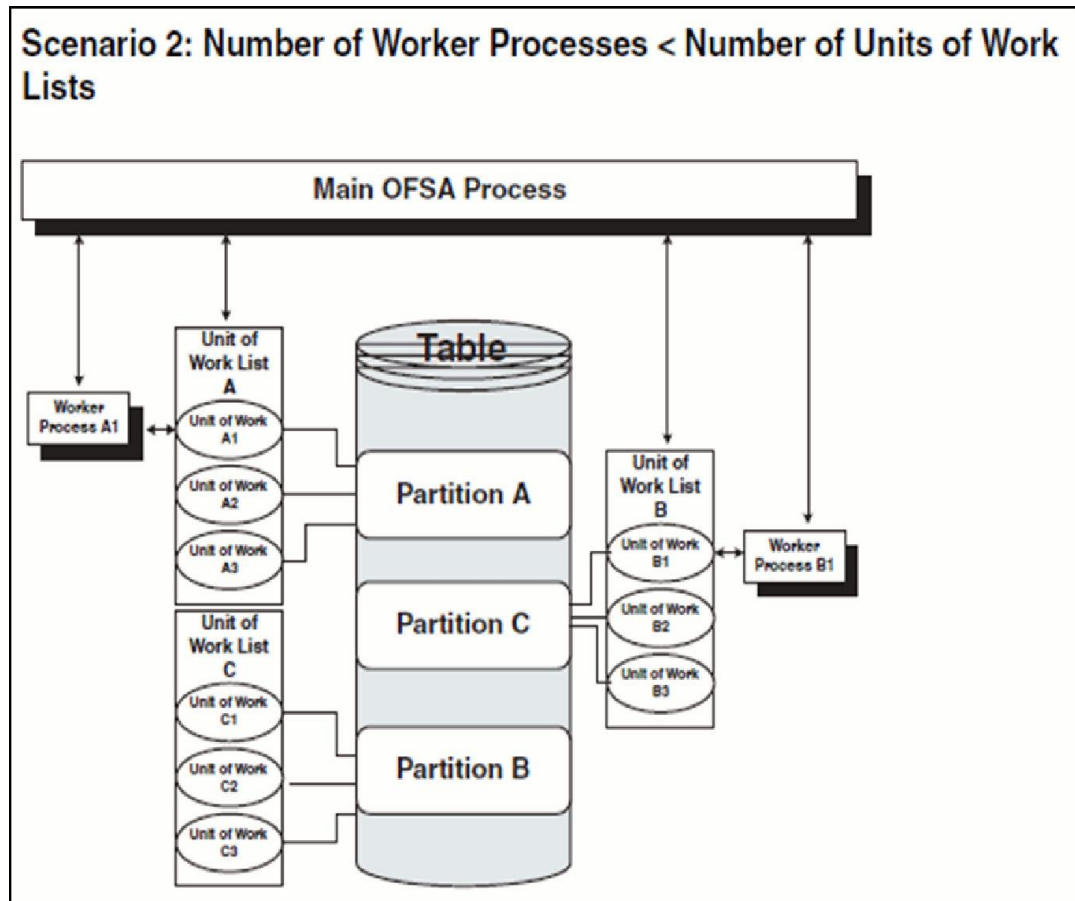


- The main process makes two lists of all units of work that need to be processed, unit-of-work list A and unit-of-work list B, respectively. (The setup is that the Table has two partitions.)
- The main process spawns four worker processes. A dedicated worker process is assigned to service each units-of-work list, Worker Process A1 and Worker Process B1 respectively. (The setup is (FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.NUM\_OF\_PROCESSES = 4)

If FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equals 1, Worker Process 3 and Worker Process 4 assist Worker Process A1. When a unit-of-work list is complete, the available worker processes assist dedicated worker process on their unit-of-work List.

If FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equals 2, Worker Process 3 and Worker Process 4 do not assist the dedicated worker processes

- When all units of work have been completed, the worker process exits and the main process finishes any clean-up aspects of processing.
- During processing the following is true:
  - Each worker process must form its own database connection.
  - A unit of work is processed only by a single worker process
  - Different units of work are processed at the same time by different worker processes.



- The main process makes three lists of all units of work that need to be processed: unit-of-work list A, unit-of-work list B, and unit-of-work list C, respectively. (The setup is that the Table has three partitions.)
- The main process spawns two worker processes. A dedicated worker process is assigned to service a units-of-work list, Worker Process A1 and Worker Process B1 respectively. (The setup is (FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.NUM\_OF\_PROCESSES = 2).

If FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equals 1, Worker Process A1 and Worker Process B1 work until all units of work are complete from all three unit-of-work lists.

If FSI\_PROCESS\_ID\_STEP\_RUN\_OPT.PROCESS\_PARTITION\_CD equals 2, the first worker process to complete their unit-of-work List services unit-of-work list C. When the other worker process completes their list, the worker process exits.

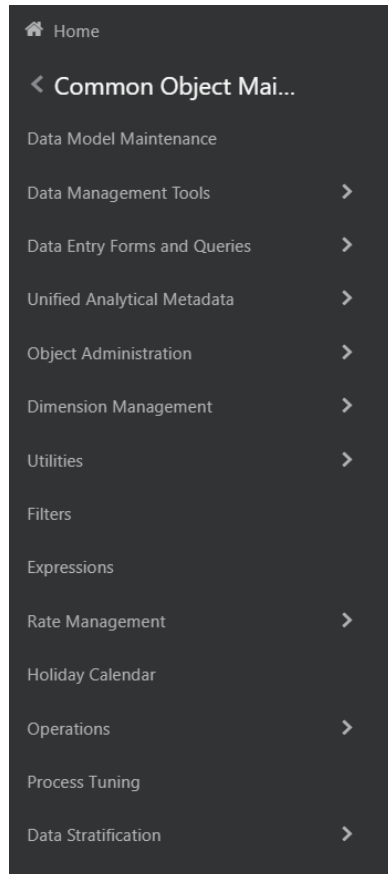
- When all units of work have been completed, the worker process exits and the main process finishes any clean-up aspects of processing.
- During processing the following is true:
  - Each worker process must form its own database connection.
  - A unit of work is processed only by a single worker process.
  - Different units of work are processed at the same time by different worker processes.

## Worker Processes

Worker Processes refer to the number of individual processes working simultaneously to complete the job. The Main OFSAA Process launches the individual worker processes. OFSAA enables you to specify the number of worker processes for your jobs.

### 27.1.3 Specifying Multiprocessing Parameters

Users can access the multi-processing / tuning UI under the Common Object Maintenance on the LHS menu:



The application installation process seeds default multiprocessing parameters. By default, multiprocessing is turned off for all processes. To turn on multiprocessing, Application Administrators can define Process tuning assumptions at the application level or for individual processes.

This section discusses the following topics:

- Multiprocessing Assignment Levels
- Defining Multiprocessing
- Engine Overrides

#### Multiprocessing Assignment Levels

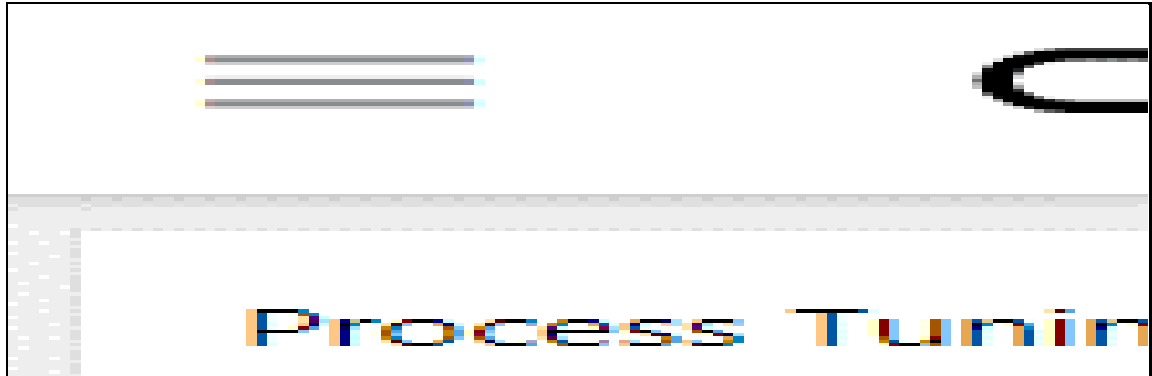
Multiprocessing parameters can be specified at different levels. A Multiprocessing Assignment Level is the category of ALM or FTP execution that is processed with a designated set of multiprocessing parameters.

OFSAA provides multiprocessing assignments at the following levels:

- Rule Type
- Rule Step
- Rule Name

#### Rule Type

When specifying multiprocessing parameters at the Rule Type level, all Rule Names for that Rule Type are processed with the designated parameters.



The OFSAA multiprocessing UI allows you to designate a set of multiprocessing parameters used for a specific Rule step within a given Rule Type.

**NOTE** BSP uses PROCESS\_ENGINE\_CD = 2 (i.e., BSP uses the Asset Liability Management rule type).

The valid Rule Type values present in the 'Rule Type' drop-down list are:

FSI_PROCESS_ENGINE_CD		
PROCESS_ENGINE_CD	DESCRIPTION	RULE TYPE
2	Asset   Liability Management Process	Asset   Liability Management
3	Funds Transfer Pricing Process	Funds Transfer Pricing

The OFSAA multiprocessing UI allows you to designate a set of multiprocessing parameters used for a specific Rule step within a given Rule Type.

#### Rule Step

The Rule Step identifies a particular phase of an OFSAA process. Rule Steps are reserved names specific to each Rule Type.

Each Rule Step Name applies to a specific Rule Type.

The mapping of the list of valid Rule Steps and the Rule Type for which they apply is as follows:

PROCESS_ENGINE_CD	RULE STEP NAME
0	ALL
2	Client Data by Prod
2	Client Data by Prod, Org
2	Client Data by Prod, Currency
2	Monte Carlo client data
3	ALL

### Rule Name

Users can optionally specify multiprocessing parameters at the Rule Name level to override any parameters assigned at the Rule Type level. This enables you to individualize your multiprocessing options to handle situations unique to specific Processes. In most cases, defining multi-process assumptions at the Application / Rule Step level is sufficient.

The list of valid Rule Names is populated from the FSI\_M\_OBJECT\_DEFINITION\_B and FSI\_M\_OBJECT\_DEFINITION\_TL tables.

Only Rule Names of the following Process types are available for multi-processing:

- Asset | Liability Management Process
- Funds Transfer Pricing Process

### Defining Multiprocessing

The process of defining Multiprocessing involves associating multiprocessing parameters to OFSAA Rule Types and/or Rule Names. Included in this section are the following topics:

- Parameter Tables
- How to Specify Parameters

### Parameter Tables

While defining multiprocessing, the user interface inserts data into the following objects:

FSI\_PROCESS\_ID\_RUN\_OPTIONS

FSI\_PROCESS\_ID\_STEP\_RUN\_OPT

FSI\_PROCESS\_ID\_RUN\_OPTIONS\_V (Read Only View)

TABLE_NAME	DISPLAY_NAME	DESCRIPTION
FSI_PROCESS_ID_RUN_OPTIONS	Process ID Run Options	This table specifies the Rule Name (ALM Process / FTP Process) for a single Process Type.
FSI_PROCESS_ID_STEP_RUN_OPT	Process ID Step Run Options	This table stores the Process Tuning Definition and contains the Rule Name (ALM Process / FTP Process) and process tuning option selections.
FSI_PROCESS_ID_RUN_OPTIONS_V	Process ID Run Options View	This table provides a read-only view based on FSI_PROCESS_ID_RUN_OPTIONS and FSI_PROCESS_ID_STEP_RUN_OPT tables.

Each table is described as follows:

FSI\_PROCESS\_ID\_RUN\_OPTIONS

COLUMN_NAME	DESCRIPTION	Display Name
PROCESS_RUN_OPTION_SYS_ID	Rule Name (ALM Process / FTP Process) System ID Number	System ID Number
PROCESS_ENGINE_CD	Process Engine Code that run this Rule Name (ALM Process / FTP Process)	Process Engine Code

FSI\_PROCESS\_ID\_STEP\_RUN\_OPT



COLUMN_NAME	DESCRIPTION	Display Name
PROCESS_STEP_RUN_SYS_ID	This stores the Rule Name's (ALM Process / FTP Process) System ID Number.	System ID Number
PROCESS_ENGINE_STEP_CD	Rule Step of the Rule Name getting the Process Data Slices Code and Process Partition Code	Step Name
NUM_OF_PROCESSES	Number of Processes	Number of Processes
COMMIT_FREQ	The number of rows after which the process commits changes.	Commit Frequency
ARRAY_SIZE_ROWS	The number of rows updated in a single call to the database.	Array Size Rows
PROCESS_PARTITION_CD	Process Partition code used by this Rule Name (ALM Process / FTP Process) in this step	Process Partition Code
PROCESS_DATA_SLICES_CD	Process Data Slices Code used by this Rule Name (ALM Process / FTP Process) in this step	Process Data Slices Code
PROCESS_ENGINE_CD	Process Engine Code that run this Rule Name (ALM Process / FTP Process)	Process Engine Code

FSI\_PROCESS\_ID\_RUN\_OPTIONS\_V

COLUMN_NAME	DESCRIPTION	Display Name
SYS_ID_NUM	Rule Name (ALM Process / FTP Process) System ID Number	System ID Number
STEP_NAME	Rule Step of the Rule Name getting the Process Data Slices Code and Process Partition Code	Step Name
PROCESS_ENGINE_CD	Process Engine Code that run this Rule Name (ALM Process / FTP Process)	Process Engine Code
NUM_OF_PROCESSES	Number of Processes	Number of Processes
PROCESS_DATA_SLICES_CD	Process Data Slices Code used by this Rule Name (ALM Process / FTP Process) in this step	Process Data Slices Code
PROCESS_PARTITION_CD	Process Partition code used by this Rule Name (ALM Process / FTP Process) in this step	Process Partition Code
COMMIT_FREQ	The number of rows after which the process commits changes.	Commit Frequency
ARRAY_SIZE_ROWS	The number of rows updated in a single call to the database.	Array Size Rows

### How to Specify Parameters

The setup of multiprocessing is broken down into the following steps:

- Assignment Level Details
- Parameter Specification
- Multi-Processing Options
- Assign Unit-of-Work Servicing Methodology

For each step, the relevant multiprocessing parameters are described. Some applications override the multiprocessing configuration in order to handle special processing conditions. The Engine Overrides section explains these special processing conditions.

### Assignment Level Details

The 'Rule Type', 'Rule Step' and 'Rule Name' columns identify the Assignment Level for multiprocessing.

### Procedure:

1. Log on to Financial Services Applications with the User ID/password that has 'Administrator' Privileges.
2. Navigate to Common Object Maintenance > Process Tuning Options Summary Page. This page is the gateway to Process Tuning Options related functionality.

3. Click Add to create a new Process Tuning assumption. Note, you can create only one process tuning assumption per combination of Rule Type and Rule Name.
4. The Process Tuning Options Summary – Create page is displayed.
5. Step - 1: Assignment Level Details Block is the first block.

6. This block contains 4 fields - Rule Type, Rule Step, Folder Name and Rule Name.
7. Select the required Rule Type.
8. Folder Name is a drop-down to assist rule-name selection, filtered by selected folder.
9. Select the required Rule Step. Rule Step is a drop-down that is filtered based on its mapping to the Rule Type selected.
10. Select the required Rule Name. Rule Name is a drop-down that displays rules of the selected type, within the specified folder.

The system supports four assignment levels. Because an application allows configurations that mix these levels, it is important to understand the order in which the application resolves the multiprocessing parameters when the configuration mixes assignment levels. The order is:

11. Specific Step of a specific Process for an engine
12. All Steps of a specific Process for an engine
13. Specific Step of all Processes for an engine

The next step after defining Assignment Level details is to define the Multiprocessing Parameters. Multiprocessing parameters include inputs for the following:

- Partition Type
- Array Row Size
- Number of Processes
- Commit Frequency

The following describes inputs for each parameter:

#### Partition Type

Partition Type selection is required when table partitioning is being used within your instrument tables. If no partitioning is being done, then the default selection of “No Partitioning” should be selected. If partitioning is being done, then users should select either Dedicated or Cooperative. For more information on these selections, refer to the section on Multiprocessing Options > Unit of Work servicing.

## Number of Processes

The number of processes selection indicates the number of concurrent processes to be launched by the engine. Typically, the number of processes should be less than or equal to the number of CPUs available on the server. Users should experiment with the number of processes setting to find the optimal value.

## Array Row Size and Commit Frequency

You must do some trials to set these at optimum level. Commit frequency can be set as 999 and array size rows as 500. Setting the array update size to be greater than the commit frequency has no effect because the array update size is limited by commit frequency.

To use Commit\_Freq = 0 Or > 0, below are recommendations:

- If only "Process Cash Flow" writing is applicable as part of the process definition, then use Commit\_Freq optimally greater than 0.
- If "Process Cash Flow" is not applicable but output to RES\_DTL, CONS\_DTL etc. is done (as part of process definition), then the entry should be set to "0" in case commit is required at UOW (i.e. Unit of Work) End.
- If both "Process Cash Flow" and output to RES\_DTL, CONS\_DTL are applicable, then you should set Commit\_Freq > 0 in order to take benefit of the Process Cash Flow Bulk Processing. If commit at the end of UOW is sought, then this setting should be set to "0".

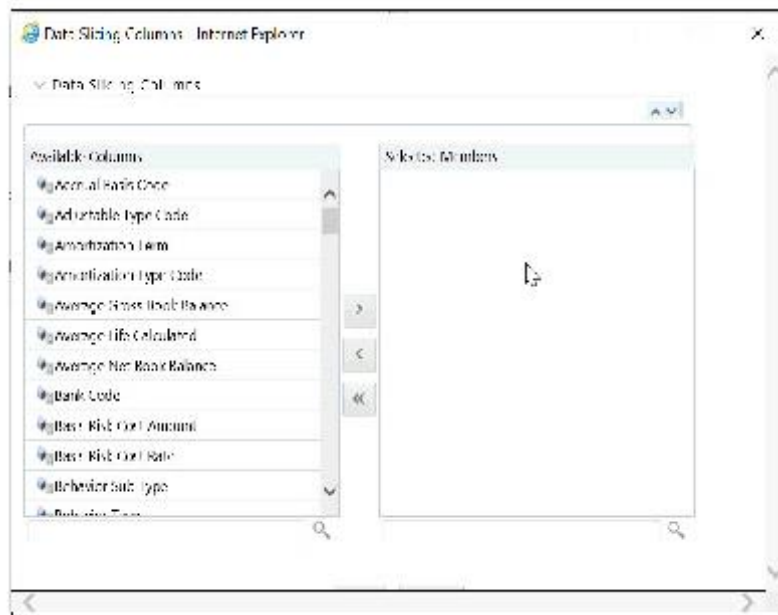
Step 3 in the multiprocessing setup includes the following selections:

## Data slice type

Data Slice Type is a static drop-down with 2 values [Distinct Values, No Slicing]. Users should choose distinct values to enable multiprocessing. After choosing distinct values, users are required to further select their Data Slicing dimensions.

## Data slicing dimensions

Choose the edit option to launch a pop-up window to select the slicing columns



**NOTE** All portfolio tables with numeric columns will be used of Data slicing. The columns with null values cannot be used for data slicing .

### Engine Overrides

For some conditions, the OFSAA Processing Engines override the multiprocessing definition for an assignment level. The overrides are as follows:

#### Balance Sheet Planning

Balance Sheet Planning configures the data slicing columns automatically using the Product Leaf Column defined in the active Application Preferences as the default slicing column for all runs. The Balance Sheet Planning engine adds more slicing columns based upon the parameters specified in the Balance Sheet Planning Process, as follows:

- If Product/Organizational Unit functional dimensions are selected, the engine adds ORG\_UNIT\_ID as an additional slicing column.
- If Product/Currency functional dimensions are selected, the engine adds ISO\_CURRENCY\_CD as an additional slicing column.
- If Product/Organizational/Currency functional dimensions are selected, the engine adds ORG\_UNIT\_ID and ISO\_CURRENCY\_CD as additional slicing columns.

## 27.1.4 Tuning Multiprocessing

Tuning for optimal multiprocessing settings is an exercise similar to tuning a database. It involves experimentation with different settings under different load conditions.

### Database Bound versus Engine Bound Jobs

OFSAA jobs fall into the following two categories:

- Database bound—Those jobs that spend more time within database manipulations.

- Engine bound—Those jobs whose calculations are complex, with the time spent with database Operations being small compared to the amount of time doing calculations.

The following table lists OFSAA jobs by Application and identifies whether the job is usually database bound or Engine bound.

Application	Job Type	Generic Job Type	OFSAA / DB Bound	MP Enabled	Comments
Asset   Liability Management	Detail Processing (Current position, Gap, Market Value)	Row by Row	OFSAA	Yes	All processing except Formula Results and Auto Balancing
Asset   Liability Management	Formula Results	Row by Row	OFSAA	No	Formula Results is not currently functional, and will available in a later release
Asset   Liability Management	Auto Balancing	Row by Row	OFSAA	No	

The scalability of database-bound jobs is largely determined by size of the database server. The scalability of Engine bound jobs is determined by the size of the application server.

#### Tuning the OFSAA Database from the Application Layer

Despite the many multiprocessing options, tuning the OFSAA database from the application layer is achieved by following a simple process. The process is as follows:

1. Identify the OFSAA job types that are used by your organization.
2. For each job type, time the runs for a series of Number of Processes settings, defined in Step 2: Parameter Details.
3. Based on the results, determine the appropriate setting per application.

#### Special Considerations

Because of the nature of parallel processing performed by OFSAA, different processes tend to need to access the same tables at the same time. Unless care is taken in designing the layout of the database tables, this can lead to I/O contention, which in turn, can reduce scalability.

## 27.1.5 Recommendations for Performance Improvement

While configuring an BSP process user can chose to output detailed cash flows (either all or part). This data is stored in table FSI\_O\_PROCESS\_CASH\_FLOWS. When a process is re-run either for same as of date or for different date existing data of that process is deleted from this table before calculations initiate. When volume of data is high this can take time thereby impacting overall performance. Below recommendations will help improve this.

1. Create non-unique index on column RESULT\_SYS\_ID of table FSI\_O\_PROCESS\_CASH\_FLOWS. The index is expected to make DELETE of existing data faster when a process is re-run.
2. FSI\_O\_PROCESS\_CASH\_FLOWS can be partitioned by RESULT\_SYS\_ID. Automatic List Partitioning can be used so that partitions get added automatically when a new process is defined and executed.
3. Before executing BSP process, existing data for that process can be removed from FSI\_O\_PROCESS\_CASH\_FLOWS by using DELETE or TRUNCATE PARTITION function. This will ensure that engine does not spend time doing that activity.

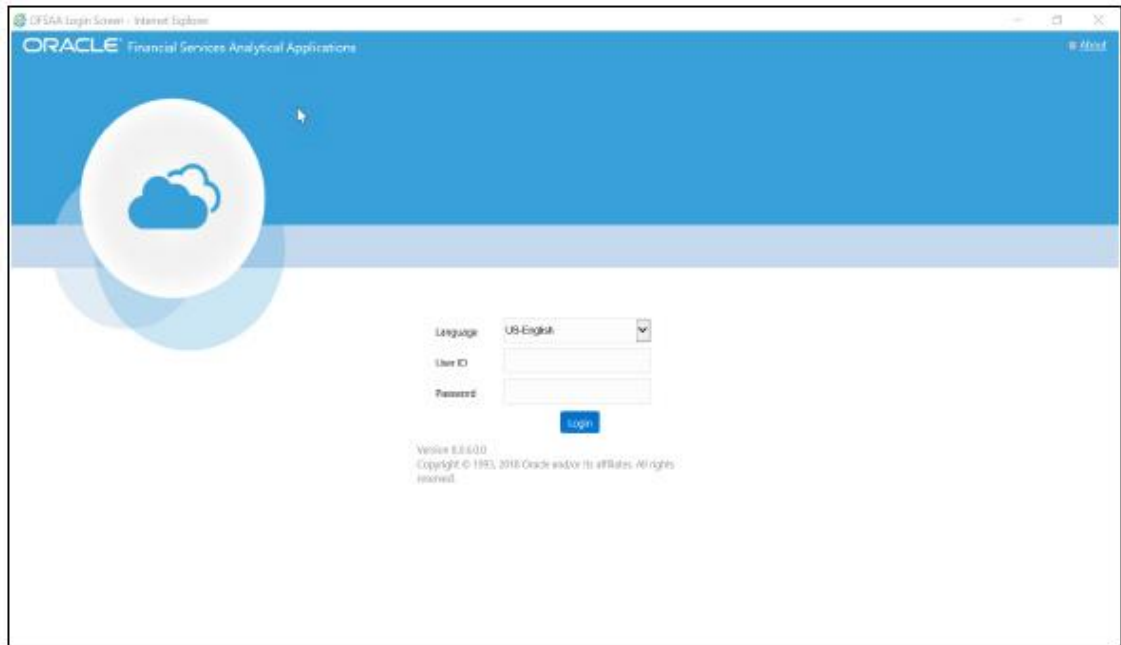
Some other server and database level settings that can improve performance are:

4. REDO Log size of database can be increased. This will reduce log switch waits and improve overall time for analytical operations.
5. CURSOR\_SHARING parameter of database can be set to FORCE. By doing this database will try to convert SQL queries generated by cash flow engine to use bind variables which will reduce hard parses and can improve performance.

Above are just for guidance and you must take help of database administrators and other system personnel to implement the above taking your specific infrastructure and other requirements in consideration.

## 28 Appendix B: Multi Language Support

With the introduction of Multi-Locale Support, the user interfaces can be viewed in various languages.



In addition to the base language (American English, for example, en\_US), the following languages are currently supported for BSP, by installing the associated Language Pack.

**NOTE** BSP's planning interfaces are currently only available in American English.



Language Name	Java Locale
Arabic	AR_EG
Portuguese	PT_BR
French	FR_FR
German	DE_DE
Indonesian	IN_ID
Italian	IT_IT
Japanese	JA_JP
Korean	KO_KR
Russian	RU_RU
Simplified Chinese	ZH_CN
Spanish	ES_ES
Thai	TH_TH
Traditional Chinese	ZH_TW
Vietnamese	VI_VN
Turkish	TR_TR
Hebrew	iw_IL
French Canada	fr_CA

Depending on the type of the rule, the Name/Description specified during create/edit is either attached to the login-locale or is stored independent of the login-locale. The selection of the login-locale therefore governs which assumption/rules are visible, and which are not visible. The following illustrates the visibility of assumptions and rules, across languages in the 8.0.0.0.0 release. This applies to all Summary screens, embedded selections in subsequent screens and so on.

#### NOTE

Starting from AAI 7.3.3.0.0, all Dimension Management Objects as well as Filters and Expressions would be visible in all languages (and therefore available for embedding), regardless of the language in which they were created.

Assumption / Rules	Visible across all languages	Visible only in the creation-language*
Common Object Maintenance		
Process Tuning		✓
Simplified Batch	✓	✓
Holiday Calendar**	✓	
SQL Rules	Refer to the OFSAAI User Guide to verify the behavior.	
Data Entry Forms and Queries		
Dimension Management		
(Attributes, Members, and Hierarchies)		
Filters		
Expressions		
Common Object Maintenance> Rate Management		
Interest Rate Codes **	✓	
Currencies **	✓	
Economic Indicators **	✓	
BSP Maintenance		
Behavior Patterns	✓	
Payment Patterns **	✓	
Repricing Patterns **	✓	
Product Profiles**	✓	
Time Buckets **	✓	
BSP Assumption Specification		
Product Characteristics		✓
Discount Methods		✓
Prepayments		✓
Prepayment Models		✓
Rate Dependency Patterns		✓
Forecast Rate Scenarios		✓

Forecast Balances		✓
Transaction Strategies		✓
Maturity Mix		✓
Pricing Margin		✓
Transfer Pricing Rules		✓
TP Adjustments		✓
Stochastic Rate Indexing		✓
BSP Processing		
Static Deterministic Process		✓
Static Stochastic Process		✓
Dynamic Deterministic Process		✓
Dynamic Stochastic Process		✓
Cash Flow Edits	✓	

\* A future release (TBD) will expand visibility for many of these application object types, to provide visibility regardless of logged-in locale.

\*\* These object-types are visible across all languages because the Name and Descriptions are not stored in translation-compatible structures, which is different from the storage format for AAI objects like Dimension Management, Filters and Expressions.

## 29 Appendix C: Common Utilities and Scripts

This chapter covers the following topics:

- [RMIPC.SH Script](#)

### 29.1.1 RMIPC.SH Script

rmipc.sh script is a utility script that cleans up shared memory segments and semaphores for a given Unix User ID. This file will be present as part of every OFSAA application build and is available in the \$FIC\_HOME/ficdb/bin folder. Passing the User ID as a command line is optional. When it is not passed as a command line argument, the shell script will default the ID to that of the currently logged in Unix user. The script will first check for any running OFSAA processes (for example: BSP, FTP, PFT) before attempting to remove any shared memory segments or semaphores. If there are any running OFSAA processes, the script will not run.

#### NOTE

The script will always consider only the first 8 characters of the User ID, while determining the list of open semaphores/shared-memory arrays.

If you are using AIX platforms, then this script will also kill your AM process since the AM process also creates semaphores in AIX. Any process under the OFSAA Unix ID provided which creates semaphores or shared memory segments may be killed. Also, be careful if OFSAA has been installed using the same Unix user as installed Oracle database as this script will clean up all semaphores / shared memory arrays used by the Oracle database. The script is not meant to be used in a batch process.

## 30 Appendix D: Standard Navigation Paths

Typical Oracle Financial Services Balance Sheet Planning navigation paths are shown in this table. Access all of these pages through the BSP Administrator or BSP Analyst responsibility.

Page	Navigation Path
Application Preferences	Balance Sheet Planning > Application Preferences
Time Buckets Home	Balance Sheet Planning > BSP Maintenance > Time Buckets
Time Buckets – Income Simulation Buckets	Balance Sheet Planning > BSP Maintenance > Time Buckets > Income Simulation Buckets
Time Buckets – Repricing Gap Buckets	Not used by BSP
Time Buckets – Liquidity Gap Buckets	Not used by BSP
Product Profiles Home	Balance Sheet Planning > BSP Maintenance > Product Profiles
Behavior Pattern Home	Balance Sheet Planning > BSP Maintenance > Patterns > Behavior Patterns
Payment Pattern Home	Balance Sheet Planning > BSP Maintenance > Patterns > Payment Patterns
Repricing Pattern Home	Balance Sheet Planning > BSP Maintenance > Patterns > Repricing Patterns
Interest Rate Code Home	Common Object Maintenance > Rate Management > Interest Rates
Currency Rates Home	Common Object Maintenance > Rate Management > Currency Rates
Currencies Home	Common Object Maintenance > Rate Management > Currencies
Economic Indicators Home	Not used in BSP
Product Characteristics Home	Assumption Specification > Product Characteristics
Product Characteristics Details	BSP Assumption Specification > Product Characteristics > Add New
Prepayment Rule Home	BSP Assumption Specification > Prepayments

Page	Navigation Path
Prepayment Methodology	BSP Assumption Specification > Prepayments > Add New > Prepayment Method Selector > Add
Prepayment Models Home	BSP Assumption Specification > Prepayment Models
Prepayment Models Details	BSP Assumption Specification > Prepayment Models > New
Transfer Pricing Rules	BSP Assumption Specification > Forecast Assumptions > Transfer Pricing Rules
TP Adjustments	BSP Assumption Specification > Forecast Assumptions > TP Adjustments
Forecast Rates	BSP Assumption Specification > Forecast Rates
Forecast Rates Details	BSP Assumption Specification > Forecast Rates > New
Maturity Mix Home	BSP Assumption Specification > Forecast Assumptions > Maturity Mix
Maturity Mix Details	BSP Assumption Specification > Forecast Assumptions > Maturity Mix > Add New > Assumption Browser > Add
Pricing Margins Home	BSP Assumption Specification > Forecast Assumptions > Pricing Margins
Pricing Margins Details	BSP Assumption Specification > Forecast Assumptions > Pricing Margins > Add New > Assumption Browser > Add
Static Deterministic Process Home	BSP Processing > Static Deterministic Process
Cash Flow Edits Process	BSP Processing > Cash Flow Edits

## 31 Appendix E: Export of Dimensions and Forecast Set Cash Flow Results

This feature will enable user to export the dimensions and forecast set cash flow results into the CSV or TSV file. Following are the dimensions will be exported:

- Forecast set scenario
- Forecast set version
- Legal entity
- Leg type
- Result type
- Financial elements
- Currency
- Planning center
- Planning product

### 31.1 Database Tables used for Dimensions

The following table lists the database tables used for dimensions.

Dimension	Table Names	Filter Criteria
Forecast Set	FSI_M_BSP_FCAST_SET FSI_M_OBJECT_DEFINITION_B FSI_M_OBJECT_DEFINITION_TL	Based on Forecast set id
Scenario	FSI_CONSOLIDATION_CD FSI_CONSOLIDATION_MLS	
Version	FSI_VERSION_CD FSI_VERSION_MLS	
Legal Entity	DIM_LEGAL_ENTITY_B DIM_LEGAL_ENTITY_TL	
Leg Type	FSI_LEG_TYPE_CD FSI_LEG_TYPE_MLS	
Result Type	FSI_RESULT_TYPE_CD FSI_RESULT_TYPE_MLS	

Dimension	Table Names	Filter Criteria
Financial Element	DIM_FINANCIAL_ELEMENTS_B DIM_FINANCIAL_ELEMENTS_TL	Financial element ids less than or equal to 650 will be exported
Currency	FSI_CURRENCY_MLS FSI_CURRENCIES	All the active currencies will be exported
Planning Center	DIM_ORG_UNIT_B DIM_ORG_UNIT_TL	Based on the application preferences planning center dimension table is selected
Planning Product	DIM_GENERAL_LEDGER_B DIM_GENERAL_LEDGER_TL Or DIM_COMMON_COA_B DIM_COMMON_COA_TL or DIM_PRODUCTS_B DIM_PRODUCTS_TL	Based on the application preferences product dimension table is selected
Forecast Set Master Results	FSI_O_BSP_MASTER_RES_DTL	Based on Forecast set id

## 31.2 Configuration File

The configuration file “bsp\_forecastset\_export.properties” available under <FIC\_DB>/conf folder. This file will be used for configuring the following details:

Property Name	Details
ExportFormat	Export files format. The value should be either S or H. S for standard database format and H for Hyperion import format.
ExportFileType	Export files type. The value should be either CSV or TSV.
FilePath	All the exported files will be placed under this path.
MasterResDetailFileName	File name of forecast set cash flow results.
MLS_CD	Locale value. Example: US
ForecastSet	If value is ‘Y’ then forecast set definitions will be exported



Property Name	Details
Scenario	If value is 'Y' then scenarios will be exported
Version	If value is 'Y' then versions will be exported
LegalEntity	If value is 'Y' then legal entities will be exported
LegType	If value is 'Y' then leg types will be exported
ResultType	If value is 'Y' then result types will be exported
FinancialElement	If value is 'Y' then financial elements will be exported
Currency	If value is 'Y' then currencies will be exported
PlanningCenter	If value is 'Y' then planning center hierarchies will be exported
PlanningProduct	If value is 'Y' then planning product hierarchies will be exported
AppendPrefix	If value is 'Y' then prefix will be appended to the code or id fields. This property is used only if ExportFormat is H.
ForecastSetPrefix	Prefix value to be appended for forecast set.
ScenarioPrefix	Prefix value to be appended for scenario.
VersionPrefix	Prefix value to be appended for version.
LegalEntityPrefix	Prefix value to be appended for legal entity.
LegTypePrefix	Prefix value to be appended for leg type.
ResultTypePrefix	Prefix value to be appended for result type.
FinancialElementPrefix	Prefix value to be appended for financial element.
PlanningCenterPrefix	Prefix value to be appended for planning center.
PlanningProductPrefix	Prefix value to be appended for planning Product.

## 31.3 Export

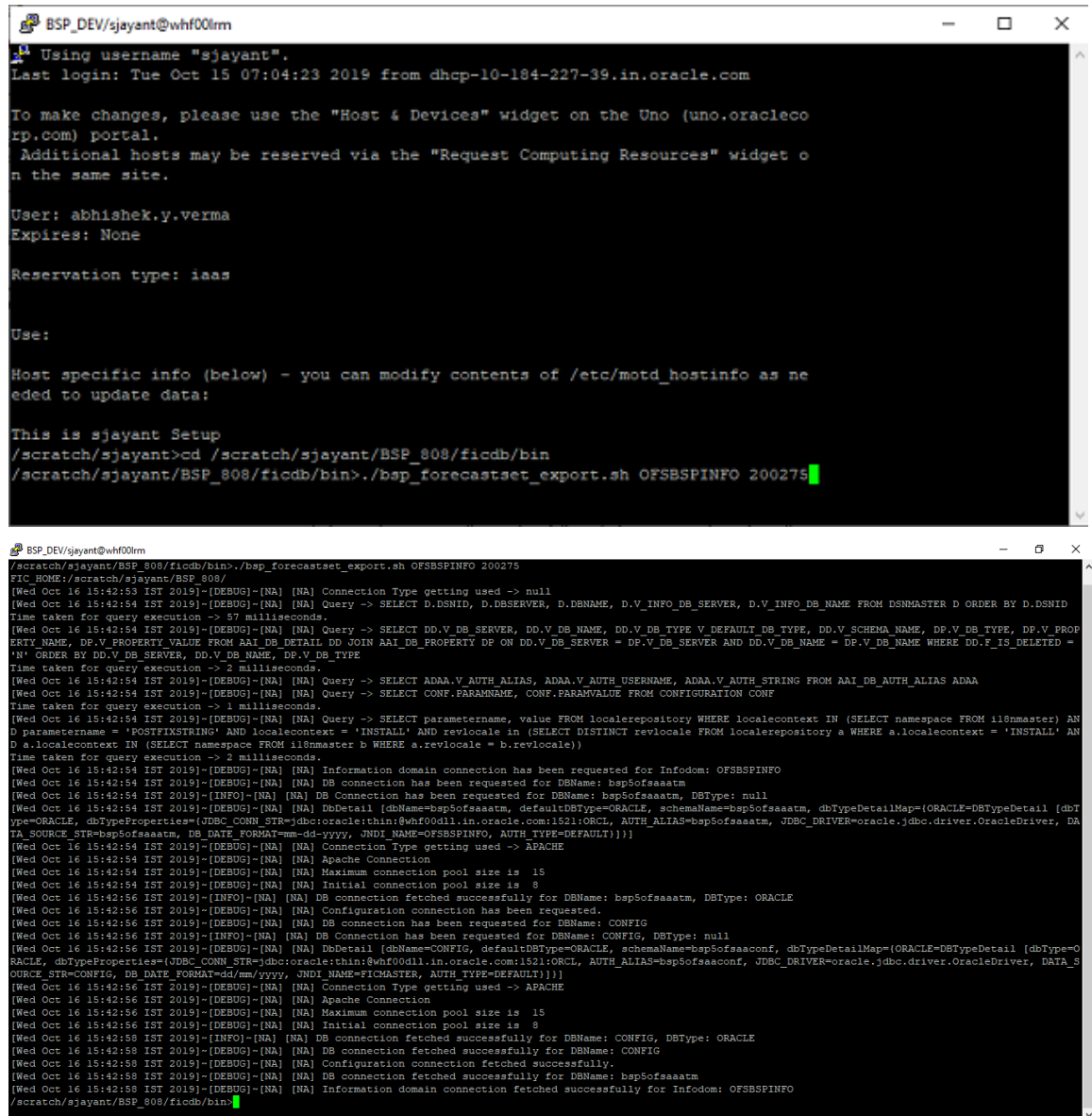
The shell script file “bsp\_forecastset\_export.sh” is available under the <FIC\_DB>/bin folder. This file can be executed for exporting the dimensions and forecast set cash flow results. This shell script file can be executed directly from putty session or creating ICC batch in the application.

### 1. Execution from Putty session:

Navigate to <fic\_db>/bin folder and execute the following statements

./bsp\_forecastset\_export.sh <infodomain name> <forecast\_set\_id>

Example: ./bsp\_forecastset\_export.sh OFSBSPINFO 200275



```

BSP_DEV/sjayant@whf00lrm
Using username "sjayant".
Last login: Tue Oct 15 07:04:23 2019 from dhcp-10-184-227-39.in.oracle.com

To make changes, please use the "Host & Devices" widget on the Uno (uno.oracleco
rp.com) portal.
Additional hosts may be reserved via the "Request Computing Resources" widget o
n the same site.

User: abhishek.y.verma
Expires: None

Reservation type: iaas

Use:

Host specific info (below) - you can modify contents of /etc/motd_hostinfo as ne
eded to update data:

This is sjayant Setup
/scratch/sjayant>cd /scratch/sjayant/BSP_808/ficdb/bin
/scratch/sjayant/BSP_808/ficdb/bin>./bsp_forecastset_export.sh OFSBSPINFO 200275

/scratch/sjayant/BSP_808/ficdb/bin>./bsp_forecastset_export.sh OFSBSPINFO 200275
FIC HOME:/scratch/sjayant/BSP_808/
[Wed Oct 16 15:42:53 IST 2019]-(DEBUG)-(NA) [NA] Connection Type getting used -> null
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Query -> SELECT D.DSNID, D.DBSERVER, D.DENAME, D.V_INFO_DB_SERVER, D.V_INFO_DB_NAME FROM DSNMASTER D ORDER BY D.DSNID
Time taken for query execution -> 39 milliseconds
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Query -> SELECT DD.V_DB_SERVER, DD.V_DB_NAME, DD.V_DB_TYPE V.DEFAULT DB TYPE, DD.V_SCHEMA NAME, DP.V_DB_TYPE, DP.V_PROP
ERTY NAME, DP.V_PROPERTY VALUE FROM AAI_DB_DETAIL DD JOIN AAI_DB_PROPERTY DP ON DD.V_DB_SERVER = DP.V_DB_SERVER AND DD.V_DB_NAME = DP.V_DB_NAME WHERE DD.F_IS_DELETED =
'N' ORDER BY DD.V_DB_SERVER, DD.V_DB_NAME, DP.V_DB_TYPE
Time taken for query execution -> 1 milliseconds
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Query -> SELECT ADAA.V.AUTH ALIAS, ADAA.V.AUTH USERNAME, ADAA.V.AUTH STRING FROM AAI_DB_AUTH ALIAS ADAA
Time taken for query execution -> 2 milliseconds
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Query -> SELECT CONF.PARAMNAME, CONF.PARAMVALUE FROM CONFIGURATION CONF
Time taken for query execution -> 1 milliseconds
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Query -> SELECT parametername, value FROM localepository WHERE localecontext IN (SELECT namespace FROM il8nmaster) AN
D parametername = 'POSTFIXSTRING' AND localecontext = 'INSTALL' AND revlocale IN (SELECT DISTINCT revlocale FROM localepository a WHERE a.localecontext = 'INSTALL' AN
D a.localecontext IN (SELECT namespace FROM il8nmaster b WHERE a.revlocale = b.revlocale))
Time taken for query execution -> 2 milliseconds
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Information domain connection has been requested for Infodomain: OFSBSPINFO
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] DB connection has been requested for DBName: bspSofsaatm
[Wed Oct 16 15:42:54 IST 2019]-(INFO)-(NA) [NA] DB Connection has been requested for DBName: bspSofsaatm, DbType: null
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] DbDetail [dbName=bspSofsaatm, defaultDbType=ORACLE, schemaName=bspSofsaatm, dbTypeDetailMap={ORACLE=DbTypeDetail [dbT
ype=ORACLE, dbTypeProperties={JDBC_CONN_STR=jdbc:oracle:thin:@whf00d11.in.oracle.com:1521:ORCL, AUTH_ALIAS=bspSofsaatm, JDBC_DRIVER=oracle.jdbc.driver.OracleDriver, DA
TA_SOURCE_STR=bspSofsaatm, DB_DATE_FORMAT=mm-dd-yyyy, JNDI_NAME=OFBSBPINFO, AUTH_TYPE=DEFAULT}]]
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Connection Type getting used -> APACHE
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Apache Connection
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Maximum connection pool size is 15
[Wed Oct 16 15:42:54 IST 2019]-(DEBUG)-(NA) [NA] Initial connection pool size is 8
[Wed Oct 16 15:42:56 IST 2019]-(INFO)-(NA) [NA] DB connection fetched successfully for DBName: bspSofsaatm, DbType: ORACLE
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] Configuration connection has been requested.
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] DB connection has been requested for DBName: CONFIG
[Wed Oct 16 15:42:56 IST 2019]-(INFO)-(NA) [NA] DB Connection has been requested for DBName: CONFIG, DbType: null
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] DbDetail [dbName=CONFIG, defaultDbType=ORACLE, schemaName=bspSofsaatm, dbTypeDetailMap={ORACLE=DbTypeDetail [dbType=O
RACLE, dbTypeProperties={JDBC_CONN_STR=jdbc:oracle:thin:@whf00d11.in.oracle.com:1521:ORCL, AUTH_ALIAS=bspSofsaatm, JDBC_DRIVER=oracle.jdbc.driver.OracleDriver, DATA_S
OURCE_STR=CONFIG, DB_DATE_FORMAT=mm-dd-yyyy, JNDI_NAME=FICMASTER, AUTH_TYPE=DEFAULT}]]
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] Connection Type getting used -> APACHE
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] Apache Connection
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] Maximum connection pool size is 15
[Wed Oct 16 15:42:56 IST 2019]-(DEBUG)-(NA) [NA] Initial connection pool size is 8
[Wed Oct 16 15:42:58 IST 2019]-(INFO)-(NA) [NA] DB connection fetched successfully for DBName: CONFIG, DbType: ORACLE
[Wed Oct 16 15:42:58 IST 2019]-(DEBUG)-(NA) [NA] DB connection fetched successfully for DBName: CONFIG
[Wed Oct 16 15:42:58 IST 2019]-(DEBUG)-(NA) [NA] Configuration connection fetched successfully.
[Wed Oct 16 15:42:58 IST 2019]-(DEBUG)-(NA) [NA] DB connection fetched successfully for DBName: bspSofsaatm
[Wed Oct 16 15:42:58 IST 2019]-(DEBUG)-(NA) [NA] Information domain connection fetched successfully for Infodomain: OFSBSPINFO
/scratch/sjayant/BSP_808/ficdb/bin>

```

### 2. Execution using ICC batch:

Batch Creation:

- a. Navigate to Common Object Maintenance > Operations > Batch Maintenance screen and click on “Add” link for adding the new batch definition.

Oracle Financial Services Analytical Applications - Google Chrome  
 Not secure | whf00lrm:7910/bsp808/main/home.jsp

Home  
 Operations  
 Batch Maintenance  
 Batch Execution  
 Batch Monitor  
 Batch Cancellation  
 Batch Scheduler  
 View Log  
 Batch Execution Rights

Batch Maintenance

Batch ID Like: OFSBSPINFO\_ Batch Description Like:   
 Module: Last Modification Date Between:

Batch Name Add View Edit Delete

Batch ID	Batch Description	Batch Edit/Non Edit
OFSBSPINFO_200266_EXEC	SDP-OCT-2017	NE
OFSBSPINFO_200273_EXEC	SDP-NOV-2017	NE
OFSBSPINFO_200273_EXEC	SDP-DEC-2017	NE
OFSBSPINFO_200321_STRAT	Borrowings	NE
OFSBSPINFO_BSP_FCAST_200275_200280	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200275_200284	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200275_200288	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200275_200292	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200275_200296	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200275_200300	Forecast Months of October-2017	NE
OFSBSPINFO_BSP_FCAST_200276_200441	Forecast Months of November-2017	NE
OFSBSPINFO_BSP_FCAST_200276_200513	Forecast Months of November-2017	NE
OFSBSPINFO_BSP_FCAST_200276_200517	Forecast Months of November-2017	NE
OFSBSPINFO_BSP_FCAST_200276_200521	Forecast Months of November-2017	NE
OFSBSPINFO_BSP_FCAST_200276_200533	Forecast Months of November-2017	NE

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- b. Provide the all necessary details in the “Batch Maintenance” popup screen and click on save button.

AddBatch Definition - Google Chrome  
 Not secure | whf00lrm:7910/bsp808/cc/Batch/Batch\_Definition.jsp

Batch Maintenance

Batch Maintenance

Batch Name: ForecastSetExport\_200275 Batch Description: Export of Dimensions and Forecast set cash flow results of the Forecast set definition id 200275

Duplicate Batch: Sequential Batch:

Batch ID:

Save Cancel

- c. Select the new batch definition in the “Batch Name” grid.

Batch Maintenance

Batch ID Like: OFSBSPINFO\_      Batch Description Like: dimension

Module:      Last Modification Date: Between      And

Batch Name: + Add View Edit Delete

Batch ID	Batch Description	Batch Edit/Non Edit
<input checked="" type="checkbox"/> OFSBSPINFO_ForecastSetExport_200275	Export of Dimensions and Forecast set cash flow results of the Forecast set definition id 200275	E

Page 1 of 1 (1-1 of 1 items) K < > X

Records Per Page 15

Task Details: + Add View Edit Delete

Task ID	Task Description	Metadata Value	Component ID	Precedence
No data found				

Page 0 of 0 (0-0 of 0 items) K < > X

Records Per Page 0

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- d. Click on “Add” link in the “Tasks Details” grid for adding the task details. Provide the following details in the “Task Definition” popup screen and click on save button.

Components: RUN EXECUTABLE

Executable: bsp\_forecastset\_export.sh,<Infodomain Name>,<Forecast set id>

Example: bsp\_forecastset\_export.sh,OFSBSPINFO,200275

Task Definition

Task ID: Task1 Description: Export

Components: RUN EXECUTABLE

Dynamic Parameters List

Property	Value
Datastore Type	EDW
Datastore Name	OFSBSPINFO
Primary IP For Runtime Processes	whf00lrm
Executable	bsp_forecastset_export.sh,OFSBSPINFO
Wait	N
Batch Parameter	N
Optional Parameters	

Audit Panel

Created By: BSPSADMIN Creation Date: 16 oct 2019 15:54:11

Last modified by: BSPSADMIN Last Modification Date: 16 oct 2019 15:54:54

---

Oracle Financial Services Analytical Applications - Google Chrome

Not secure | whf00lrm:7910/bsp808/main/home.jsp

ORACLE Financial Services Balance Sheet Planning

US-English BSPSADMIN

Batch Maintenance

Batch ID Like: OFSBSPINFO\_ Batch Description Like: dimension

Module: Last Modification Date: Between And

Batch Name: + Add View Edit Delete

Batch ID	Batch Description	Batch Edit/Non Edit
OFSBSPINFO_ForecastSetExport_200275	Export of Dimensions and Forecast set cash flow results of the Forecast set definition id 200275	E

Page 1 of 1 (1-1 of 1 items) K < > X Records Per Page 15

Task Details: + Add View Edit Delete

Task ID	Task Description	Metadata Value	Component ID	Precedence
Task1	Export	bsp_forecastset_export.sh,OFSBSPINFO,200275	RUN EXECUTABLE	START

Page 1 of 1 (1-1 of 1 items) K < > X Records Per Page 15

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### Batch Execution:

- e. Navigate to Common Object Maintenance > Operations > Batch Execution screen. Select the new batch definition in “Batch Details” grid and also provide date and click on “Execute Batch” button for executing the batch.

**NOTE** The selected date is not used anywhere so it can be any date.

The screenshot displays the Oracle Financial Services Balance Sheet Planning Batch Execution interface. The top section shows the 'Batch Execution' header with a 'Batch Mode' dropdown set to 'Run'. Below this is a search bar with 'Batch ID Like' set to 'OFSBSPINFO\_'. The 'Batch Details' section shows a table with one row: 'OFSBSPINFO\_ForecastSetExport\_200275' with a description 'Export of Dimensions and Forecast set cash flow results of the Forecast set definition id 200275'. The 'Task Details' section shows a table with one row: 'Task1' with a description 'Export', metadata value 'bsp\_forecastset\_export.sh,OFSBSPINFO,200275', component ID 'RUN EXECUTABLE', precedence 'START', and task status 'N'. A message dialog box is overlaid on the task details, stating: '[2139] Batch triggered successfully. The Batch Run Identification is: OFSBSPINFO\_ForecastSetExport\_200275\_20191016\_1'.

This batch execution will export the dimensions and forecast set cash flow results.

**NOTE** <ftpshare>/logs/bsp\_export\_log.log file can be referred for detailed log information's.

## 32 Appendix F: OFS BSP Error Messages

Error Messages in this appendix apply generally to OFSAA Cash Flow Engine processes. Some errors in this appendix could never be generated by BSP.

Error Message	Error Condition	Error Code	Effect of Error on Processing
<Assumption rule type> in Oracle BSP Process Rule <Assumption rule name> not found in database	Assumption Rule cannot be found in the database.	105	If rule is critical for processing, processing is stopped.
No Match for IRC	Interest Rate Code cannot be found in the active Historical Rates database.	110	When the instrument reprices, it will receive a zero rate.
No Data for IRC	Interest Rate Code exists in the active Historical Rates database, but there are no corresponding rate values.	115	When the instrument reprices, it will receive a zero rate.
Dimension Types mismatch: COL vs. Application Preference for dimension: <dimension number>	Definition for dimension chosen as product dimension in Application Preferences has changed or no longer exists in the database. Also can relate to Organizational Unit dimension if two-dimension output processing is defined.	120	Processing is stopped.
No of Buckets mismatch Time Bucket in <Assumption Rule>	Assumption Rule was created when the active Time Bucket Rule held more/less buckets than it has currently; therefore, the Assumption Rule contains more/less bucket information than necessary.	325	If Assumption Rule holds more buckets than what currently exists, only the buckets within the current modeling term will be used. If Assumption Rule holds less buckets than what currently exists, the assumption for the last bucket will be carried forward for the remainder of the modeling term.
Distributed Option in Forecast Balance Assumptions not applicable for buckets with a term of 1 Day. Defaulted to Bucket End.	New Business timing is "Distributed" and bucket end date is same as bucket start date.	326	New Business timing is defaulted to Bucket end.
Inconsist. Run: MattStrat FcstBal PrMrgn must be def together	New business assumption rules (Pricing Margin, Maturity Strategy, Forecast Balance) are incomplete, some but not all have been defined.	330	Processing is stopped.
Inconsist. Run: Missing stochastic process assump.	Missing stochastic process assumptions.	330	Processing is stopped.
Inconsist. Run: Stochastic Rate Index Rule is not defined	The Stochastic Rate Rule is not defined in the Process Rule.	330	Processing is stopped.

Inconsist. Run: No Options Selected for Sel. Reproc.	No Options Selected for Selective Reprocessing in the Process Rule.	330	Processing is stopped.
Inconsist. Run: No Instrument Tables selected	There are no Instrument Tables selected in the Process Rule.	330	Processing is stopped.
Inconsist. Run: Inconsistent Sel. Reproc. buckets	Number of modeling buckets in results is not consistent with the number of modeling buckets in the active Time Bucket Rule during a selective reprocessing run.	330	Processing is stopped.
Inconsist. Run: Duplicate AutoBal leaves	Duplicate Auto Balance leaves defined in Application Preferences.	330	Processing is stopped.
Inconsist. Run: Not all AutoBal leaves defined	Not all Auto Balancing leaves are defined.	330	Processing is stopped.
Can't hit target for Leaf member: <leaf number> bucket: <bucket number>	It is impossible to calculate a new add balance that will satisfy the conditions required for new business balances.	335	No new business will be added for this bucket.
No Product Char. for leaf member: <leaf number>	Payment and repricing data have not been set up in the current Product Characteristics Rule for leaf member being processed.	340	Default characteristics will be used: <ul style="list-style-type: none"> <li>• amortization type = 700</li> <li>• payment frequency = original term</li> <li>• percent taxable = 100%</li> <li>• accrual basis = 30/360</li> <li>• repricing frequency = 0</li> </ul>
Invalid record: Invalid Amortization Code leaf member: <leaf number>	Amortization code is not equal to 100, 200, 400, 500, 600, 700, 710, 820, 830, 840, 850	345	Oracle BSP will assume an amortization code of 700
Invalid record: Maturity Date in the past leaf member: <leaf number>	Maturity Date is less than the as of date	345	Record is not processed.
Invalid record: Remaining number of payments <= 0 leaf member: <leaf number>	Remaining number of payments is less than or equal to zero.	345	Record is not processed.
Invalid record: Pmt Freq = 0 leaf member: <leaf number>	Payment frequency is equal to zero on an amortizing instrument.	345	Record is not processed.
Invalid record: AmrtTerm < OrgTerm on amortizing instrument leaf member: <leaf number>	Amortization term is less than original term for amortizing instrument.	345	Re-amortization of payment will be affected.
Invalid record: Next payment date in the past leaf member: <leaf number>	Next payment date is less than the as of date.	345	If next payment date is much less than the as of date, it may cause the system to run out of memory.



Invalid record: Invalid net margin code leaf member: <leaf number>	Net margin code <> 0 or 1	345	Oracle BSP will default the net margin code to 0: Floating Net Rate
Invalid record: Current payment = 0 on amortizing instrument leaf member: <leaf number>	Current payment equal to zero and amortization code is other than simple / non amortizing.	345	For amortization codes of 100, 500, and 600, interest will be capitalized as principal. For amortization code of 820, no principal payments will be made.
Invalid record: Valid rate cap < current rate leaf member: <leaf number>	Rate Cap is not equal to zero and it is less than the current rate.	345	Rate cap will be imposed on first repricing date.
Invalid record: Valid rate floor > current rate leaf member: <leaf number>	Rate Floor is not equal to zero and it is greater than the current rate.	345	Rate floor will be imposed on first repricing date.
Invalid record: Next repricing date in the past on repricing instrument leaf member: <leaf number>	Repricing frequency is not equal to zero and next repricing date is less than the as of date.	345	If the next repricing date is very far in the past, it may cause the system to run out of memory.
Invalid record: Invalid int rate code on repr instr leaf member: <leaf number>	Reprice frequency is greater than zero and Interest Rate Code is not found in the active Historical Rates database.	345	Instrument will not reprice.
Invalid record: Original term = 0 leaf member: <leaf number>	Original term is equal to zero.	345	This will produce erratic results if instrument is Rule of 78's; amortization term is also zero; or payment frequency is also zero on a non amortizing instrument.
Invalid record: Current net rate <= 0 on amortizing instrument leaf member: <leaf number>	Amortization code is 100, 500, 600, 820 and current net rate <= 0.	345	Negative income will be generated for positive balances.
Invalid record: Inconsistency of reprice freq and amortization leaf member: <leaf number>	Amortization code is 500 or 600 and reprice frequency is zero or amortization code is 100 and reprice frequency is non zero.	345	Reprice frequency will overwrite characteristics defined by amortization type code.
Invalid record: No of Events>16000	Number of events is greater than 16,000.	345	
Invalid record: OrgTerm and PmtFreq = 0	Both original term and payment frequency are equal to zero.	345	Record is ignored.
Invalid record: Invalid Account Type	Invalid Account Type	345	Logs an error, continues execution.
Invalid record: Deferred calculations do not converge	Deferred calculations do not converge	345	Logs an error and recognizes all deferred income at maturity.
Invalid record: YTM Calculations do not converge. leaf: <leaf number>	YTM calculation do not converge	345	Logs an error and the YTM for the record is assumed to be zero.

Invalid record: EIR Calculations do not converge. leaf: <leaf number>	EIR calculation do not converge.	345	Logs an error and the EIR for the record is assumed to be zero.
Invalid record: Behavior Type definition is inconsistent between the Behavior Pattern and BEHAVIOR_TYPE_CD. Defaulted to the Behavior Type specified in the Behavior Pattern. leaf: <leaf number>	Behavior type code in the instrument record is not consistent with the behavior type specified in the behavior pattern definition.	345	Logs an error and the Behavior Type specified in the Behavior Pattern is used.
Invalid record: BEHAVIOR_SUB_TYPE_CD is invalid. Unable to process. leaf: <leaf number>	NPA or D and R behavior pattern is used but the behavior subtype code in the instrument record is invalid.	345	Logs an error and the Record is not processed.
Invalid record: Behavior pattern definition does not exist. Unable to process. leaf: <leaf number>	Behavior pattern definition doesn't exist.	345	Logs an error and the Record is not processed.
Invalid record: Accrued Interest <> 0 and (Last_payment_date < As_of_date) for Behavior pattern record. Accrued interest may be overstated. leaf: <leaf number>	Instrument record is using non-maturity behavior pattern and last payment date is less than as of date and Accrued interest is not 0.	345	Logs an error and the calculated accrued interest may be overstated.
Invalid record: Invalid Effective Interest Rate on instrument record; Market value, Yield to Maturity, Duration, Modified Duration, Convexity values have been calculated using 0 Effective Interest Rate. leaf: <leaf number>	Effective Interest Rate in the instrument record is less than 0 or greater than 99 and the discount method is EIR and in the calculation block Market value is selected and EIR is not selected.	345	Logs an error and the Market value, Yield to Maturity, Duration, Modified Duration, Convexity values will be calculated using 0 Effective Interest Rate.
Invalid record: Invalid Average Life. leaf: <leaf number>	Calculated Average life value for the record is 0.	345	Logs an error
Accrued Interest = 0 and (Last_payment_date < As_of_date) for Multiple Reprice Instrument record. Net interest on first payment event may be understated. Leaf <leaf number>	Last Payment Date/Last Reprice Date < As of Date and Accrued Interest is not supplied in the instrument	345	Logs an error, continues execution.
Interest in Advance is not supported for multiple reprice instruments. Hence defaulted to Interest in Arrears. Leaf <leaf number>	Multiple Reprice events with interest payment in advance.	345	Logs an error, continues execution.

For Multiple Reprice Instruments with repricing patterns, the compounding is defaulted to None. Leaf <leaf number>	If it is a multiple reprice instrument with repricing patterns	345	Logs an error, continues execution.
For Floating rate Multiple Reprice instruments, the compounding is defaulted to None. Leaf <leaf number>	For floating rate instruments with multiple reprice.	345	Logs an error, continues execution.
For Multiple reprice instruments where compounding frequency <> repricing frequency. The compounding is defaulted to None. Leaf <leaf number>	Compounding frequency <> Repricing frequency	345	Logs an error, continues execution.
Accrued Interest Gross = 0 and (Last_payment_date < As_of_date) for Multiple Reprice Instrument record. Gross interest on first payment event may be understated. Leaf <leaf number>	Last Payment Date/Last Reprice Date < As of Date and Accrued Interest Gross is not supplied in the instrument	345	Logs an error, continues execution.
Accrued Interest TRate = 0 and (Last_payment_date < As_of_date) for Multiple Reprice Instrument record. T rate interest on first payment event may be understated. Leaf <leaf number>	Last Payment Date/Last Reprice Date < As of Date and Accrued Interest Trate is not supplied in the instrument	345	Logs an error, continues execution.
Index Adjustment Type is Not Applicable and Capital Protection Category is filled in. Instrument processed without Inflation adjustment.	When Index Adjustment Type is Not Applicable and Capital Protection Category is filled in. Instrument processed without Inflation adjustment.	345	Logs an error, continues execution.
Index Adjustment Type is <> Not Applicable, and Base Index Value is not provided. Instrument processed without Inflation adjustment.	When Index Adjustment Type is <> Not Applicable, and Base Index Value is null. Instrument processed without Inflation adjustment.	345	Logs an error, continues execution.
No data available in Account Index History table.Hence Instrument processed without Inflation adjustment.	When Index Name filed is null and no data available in Account Index History table. Instrument is processed without Inflation adjustment.	345	Logs an error, continues execution.
Index Adjustment Type is <> Not Applicable, and Amortization code is other than 100, 500, 700, 800, 801, 802, 820. Instrument	When Index Adjustment Type is <> Not Applicable, and Amortization code <> 100, 500, 700, 800, 801, 802, 820.	345	Logs an error, continues execution.

processed without Inflation adjustment.	Instrument processed without Inflation adjustment.		
Index value has data type other than 'Numeric' in Rate Management Economic Indicator. Instrument processed without Inflation adjustment.	When a record has Index Name filed in and Index value has data type other than 'Numeric' in Rate Management Economic Indicator. Instrument processed without Inflation adjustment.	345	Logs an error, continues execution.
Capital Protection Category is Max during life, and Maximum Index value not provided. Maximum Index value to be calculated from AS_OF_DATE.	Capital Protection Category is Max during life, and Maximum Index value is not provided. Maximum Index value to be calculated from AS_OF_DATE.	345	Logs an error, continues execution.
Payment date does not have Index value in Account Index History table. Index Factor of 1 will be considered on those payment dates.	When Index Name field is null and Payment date does not have Index value in Account Index History table. Index Factor of 1 will be considered on those payment dates.	345	Logs an error, continues execution.
Bucket Number Mismatch	Assumption Rule was created when the active Time Bucket Rule held more/less buckets than it has currently; therefore, the Assumption Rule contains more/less bucket information than necessary.	350	If Assumption Rule holds more buckets than what currently exists, only the buckets within the current modeling term will be used. If Assumption Rule holds less buckets than what currently exists, the assumption for the last bucket will be carried forward for the remainder of the modeling term.
No Target for Roll/Auto leaf member: <leaf number> bucket: <bucket number>	Forecast Balance methods of Target Average or Target End cannot be used for a Leaf member value used as a roll-into leaf or as an auto-balancing leaf member.	360	Targeting methods cannot be used for leaves specified as roll-into or autobalancing. The targeted balances will be ignored.
Res_det: Security violation	Current user does not have rights to create an Oracle BSP results table.	365	Processing is stopped.
Res_det: Truncate fail	Results table for current processing rule could not be cleared of old data.	365	Processing is stopped.
Res_det: Creation fail	Results table for new processing Rule could not be created.	365	Processing is stopped.
Res_det the structure of the result_detail table was invalid for selective reprocessing	The structure of the current Result Detail table does not match the IDT Result Detail Table Template.	365	Processing is stopped.

Account Type not defined for leaf member (leaf number)	In Dimension Member Set-Up, an account type attribute has not been specified for the current leaf member.	370	Account type will default to Earning Assets.
No. of scen in results > expected leaf member: <leaf number>	Number of scenarios in results set is greater than number of scenarios expected from querying the current Forecast Rates Assumption Rule while processing Auto-balancing.	380	Auto-balancing will only be processed for the scenarios included in the current Forecast Rates Assumption Rule.
Invalid interest type - defaulted to interest in arrears	Interest type code is not equal to 0 or 1.	385	Instrument is defaulted to "interest in arrears".
Invalid Pmt pattern: pmt pattern code. <Payment Pattern Code>for new business - abs val	Payment Pattern assigned to new business has a constant payment amount.	390	Error is logged.
No Amrt Type in Product characteristics for leaf member:<leaf number>	No amortization type code has been assigned in Product Characteristics for the current leaf member.	395	An error message is logged and instrument is defaulted to simple interest.
No Amrt Type in Trans. Str. for leaf member:<leaf number>	No amortization type code has been assigned in Transaction Strategy for the current leaf member.	396	An error message is logged and instrument is defaulted to simple interest
Formula Results Error: Mismatch in buckets number	The number of modeling buckets in result set does not match the number of modeling buckets defined in Formula Results.	397	Error is logged.
Invalid Currency Gain/Loss Basis. Defaulted to "Temporal"	fi	406	fi
Pay-Equivalent Compounding Convention. Defaulted to "Do Not Adjust"	fi	407	
Negative FullIndexGrs Rate for leaf member: <leaf number>	A negative fully indexed gross rate was calculated on a repricing event.	505	The negative rate will be assigned to the instrument.
Negative FullIndexNet Rate for leaf member: <leaf number>	A negative fully indexed net rate was calculated on a repricing event.	505	The negative rate will be assigned to the instrument.
Negative CurGrsRate Rate for leaf member: <leaf number>	A negative current gross rate was calculated on a repricing event.	505	The negative rate will be assigned to the instrument.
Negative CurNetRate Rate for leaf member: <leaf number>	A negative current net rate was calculated on a repricing event.	505	The negative rate will be assigned to the instrument.

Negative CurTrRate Rate for leaf member: <leaf number>	A negative current transfer rate was calculated on a repricing event.	505	The negative rate will be assigned to the instrument.
Spread rate not found in Pricing Margins Rule	There is no pricing margin defined for the current leaf member.	515	Zero will be defaulted as the pricing margin.
Rate Not Found	Forecasted rates do not exist for interest rate code on current instrument.	520	When the instrument reprices, it will receive a zero rate.
1st point used	Reprice date occurs before forecasting period; forecasted rates do not exist.	525	This may occur if the data holds a reprice date which is less than the As of Date. Instrument will reprice to the rate as of the As of Date.
Last point used	Reprice date occurs beyond forecasting period; forecasted rates do not exist.	530	This may occur when calculating market values beyond the modeling term or calculating the last reprice/payment event for accruals in the last bucket. Instrument will reprice to the rate as of the last forecasted date.
Code found only	Interest rate code exists in Forecast Rates Assumption Rule, but no rates have been forecast.	535	When the instrument reprices, it will receive a zero rate.
Prepayment tier not selected, zero prepayment rate used.	Market Rate and Quote Basis have been defined in the Prepayment Rule, but no tiers or prepayment percents have been created.	540	No prepayments will occur on this Leaf member.
Last payment date is before origination date.	The last payment date from instrument record is prior to the origination date on the instrument record.	545	Logs error and continues. For Transaction Strategy, last reprice date is set to origination date.
No reprice frequency for adjustable record.	Instrument is coded as adjustable, but the reprice frequency is equal to zero.	550	Instrument will be treated as fixed rate.
No schedule found for record.	No match can be found in the payment schedule table for the current record.	555	Logs error and defaults to simple interest record if payment frequency does not = 0.
Pattern data can not be found for AMRT_TYPE:<payment pattern code>	No payment pattern information has been defined for the documented amortization type code.	560	Log error and default to simple interest.
No pattern information found for record.	Documented amortization type code exists in database, but no supporting details are available.	565	Currently is used to notify users about invalid adjustable type code. Record defaults to fixed.

Maturity date from record does not match schedule data.	The maturity date on instrument record does not exist in the payment schedule table for the current record.	570	Logs error. Uses maturity date for schedule.
Conv amrt with interest in advance, defaulted to arrears.	Conventionally amortizing instrument is classified as interest in advance. This combination is not supported.	575	The instrument will be defaulted to interest in arrears.
Invalid Amrt. Type detected. Defaulted to Simple Int.	An unknown Amortization Type Code was used.	585	Instrument will be defaulted to simple interest.
No Repricing Pattern found for record.	An unknown Adjustable Type Code was used.	600	Instrument will be defaulted to Other Adjustable.
Invalid Event_Det_Seq (Adj_Type_CD:<Adjustable type code>); Evnt_dtl_seq should start from 0.	For an Event Sequence, Event Detail Sequence has started from a non-zero value.	635	Repricing pattern is ignored and will produce erratic results if this repricing pattern is used.
1st point used.	Reprice date occurs before forecasting period; forecasted rates do not exist.	725	This may occur if the data holds a reprice date which is less than the As of Date. Instrument will reprice to the rate as of the As of Date.
Last point used.	Reprice date occurs beyond forecasting period; forecasted rates do not exist.	730	This may occur when calculating market values beyond the modeling term or calculating the last reprice/payment event for accruals in the last bucket. Instrument will reprice to the rate as of the last forecasted date.
Negative Transfer Rate.		740	
Invalid duration generated for this row.	810	795	
Divide by zero			
Invalid record:Engine calculated Market Value (MARKET_VALUE_C) is more than its allowed size (9999.999999) hence resetting it as Market Value Clean (MARKET_VALUE_CLEAN_C). Leaf member:<<PLACEHOLDER>>.	If value of column MARKET_VALUE_C is beyond specified precision, then MARKET_VALUE_CLEAN_C value is considered for calculation (less than 9999.999999). If value of MARKET_VALUE_CLEAN_C is also beyond specified precision, then Engine will default this value to 100.	345	
Invalid record:Engine calculated Market Value Clean (MARKET_VALUE_CLEAN_C) is more than its allowed size (9999.999999) hence resetting it as Market Value	If value of column MARKET_VALUE_CLEAN_C is beyond specified precision, then MARKET_VALUE_C value is considered for calculation (less than 9999.999999). If value of	345	

(MARKET_VALUE_C).Leaf member:<<PLACEHOLDER>>.	MARKET_VALUE_C is also beyond specified precision, then Engine will default this value to 100.		
Invalid record:Both Engine calculated Market Value Clean (MARKET_VALUE_CLEAN_C) & Market Value (MARKET_VALUE_C) are more than its allowed size (9999.999999) hence updating value as 100. Leaf member:<<PLACEHOLDER>>.	If value of columns MARKET_VALUE_C and MARKET_VALUE_CLEAN_C are beyond specified precision, Engine will default these values to 100.	345	



## 33 Appendix G: Integrate OFS BSP 8.1.0.0.0 and Hyperion EPBCS

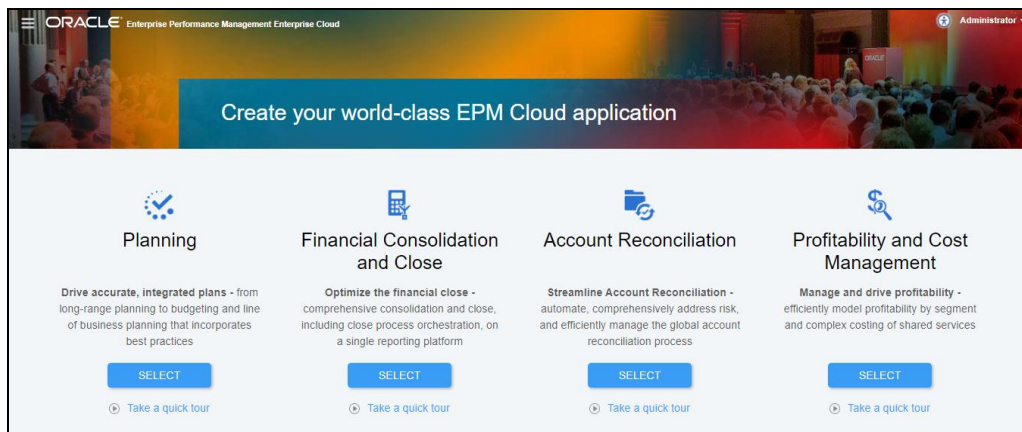
Integrating PFS BSP with Hyperion Enterprise Planning and Budgeting Cloud Service (EPBCS) involves the following procedures:

- [Creating an Application](#)
- [Creating Dimensions](#)
- [Exporting the Dimensions and Forecast Set Cash Flow Results](#)
- [Importing Dimensions](#)
- [Refresh the Database](#)
- [Importing the Data](#)

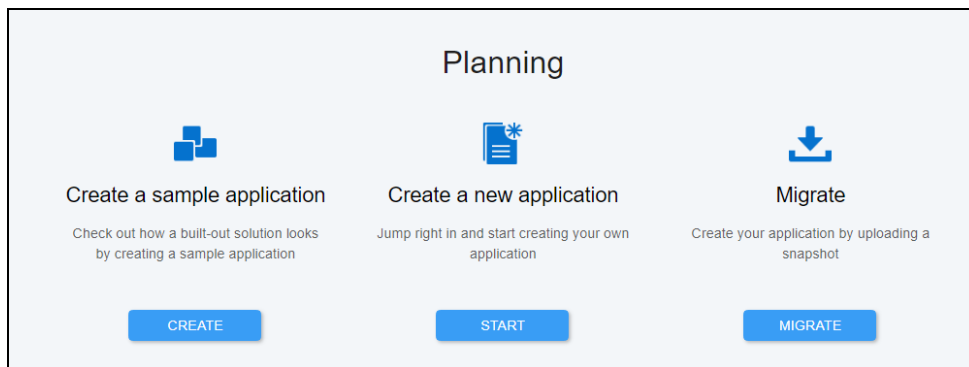
### 33.1 Creating an Application

To create an application, follow these steps:

1. Click **Select** under Planning.



2. Click **Start** to create a new Planning Application.



3. Enter an application name, description, select Application Type as Custom and then click **Next**.

**Create Application: General**

Back Cancel General Dimensions Mapping Details Customize Review Next

\* Name

\* Description

\* Application Type

4. Select the value of following options in Create Application: Details Wizard as specified below and click **Next**:
- Planning Frequency:** Monthly.
  - Start and End Year:** Make sure to include the year that contains the historic actuals required for planning and analysis.
  - First Month of Fiscal Year:** January.
  - Weekly Distribution:** Even Distribution.
  - Main Currency:** Reporting Currency in OFSAA.
  - Multicurrency:** uncheck.
  - Name of the input cube:** user defined.
  - Name of the reporting cube:** user defined.

**Create Application: Details**

Back Cancel General Dimensions Mapping Details Customize Review Next

**Planning Frequency**

☒ Monthly  
☐ Weekly  
☐ Quarterly  
☐ Custom

**Start and End year**  to

**First Month of Fiscal Year**

**Weekly Distribution**

**Rolling Forecast** ☐ Enable  Period Duration

**Other Details**

**Main Currency**

**Multicurrency** ☐ No

**\* Name of Input Cube**  
example: SalesPin

**\* Name of Reporting Cube**  
example: SalesPin

**Sandboxes** ☐

5. In the Metadata and Custom Dimensions tab change the Dimension Name of Entity to **Planning Center** and click **Next**.

### Create Application: Customize

Back Cancel General Dimensions Mapping Details **Customize** Review Next

#### Metadata and Custom Dimensions + Add Custom Dimension

Dimension Type	Dimension Name	Member Names	Metadata File	# of Records
Time Period	Period	Jan, Feb, Mar, Apr		12
Account	Account		<a href="#">Choose File</a> No file chosen	0
Year	Years	FY00		1
Scenario	Scenario		<a href="#">Choose File</a> No file chosen	0
Version	Version		<a href="#">Choose File</a> No file chosen	0
Entity	PlanningCenter		<a href="#">Choose File</a> No file chosen	0

6. Review all the details and click **Create**.

### Create Application: Review

Back Cancel General Dimensions Mapping Details Customize **Review** Create

BSP - Standard  
Balance Sheet P...

Planning Frequency : Monthly

Start and End Period	2000-2030 (31 Years )
First Month of Fiscal Year	January
Weekly Distribution	Even Distribution

Other Details

Currency	USD
Multicurrency	No

**Cubes**  
 ■ Input Cube : BSP (6) ■ Reporting Cube : BSP (3)

## 33.2 Creating Dimensions

To create the dimensions, follow these steps:

1. Click Application, click Overview, and then click Dimensions.
2. Select Input Cube from the Cube Dropdown.
3. Click Create.
4. Create the following additional dimension in the Input Cube:
  - a. Currency
  - b. LegalEntity
  - c. LegType
  - d. PlanningProduct
  - e. ResultType
  - f. ForecastSet

### NOTE

All the dimensions must be created with the below mentioned specifications:

- Alias Table: Default
- Data Storage: Never Share
- Input Cube Selection Enabled

Cube	Enabled
BSP1	<input checked="" type="checkbox"/>
BSP	<input type="checkbox"/>

## 33.3 Exporting the Dimensions and Forecast Set Cash Flow Results

Run the Export utility From OFS BSP. For information on running the Export Utility, see the [Appendix E: Export of Dimensions and Forecast Set Cash Flow Results](#) section.

As part of this step, import file for all the dimensions (CSV or TSV) and forecast set cash flow results(.txt) will be created. Move all the files from the server to the local system.

## 33.4 Importing Dimensions

To import the dimensions, follow these steps:

1. Click **Application**, and then click **Overview**.
2. Click **Dimensions**, and then click **Import**.
3. On the Import Metadata page, click **Create**.
4. Select the location of the import file or files as Local:

**Local:** Loads the import file or files from a location on your computer. For Import File, click **Choose File** to select the import file on your computer for the artifact you're importing.

Following are the files that must be used to load respective dimensions (file format can be CSV or TSV):

- **Currency:** Currency.csv
  - **ForecastSet:** ForecastSet.csv
  - **LegalEntity:** LegalEntity.csv
  - **LegType:** LegType.csv
  - **PlanningProduct:** PlanningProduct.csv
  - **PlanningCenter:** PlanningCenter.csv
  - **ResultType:** ResultType.csv
  - **Scenario:** Scenario.csv
  - **Version:** Version.csv
  - **Account:** FinancialElement.csv
5. For **File Type**, select **Comma delimited** or **Tab delimited** as per the format selected while exporting at **Step C**.
  6. Click **Import** to run the import Operation.

Import Metadata				
<div> <div>Location</div> <div> <input checked="" type="radio"/> Local           <input type="radio"/> Inbox         </div> </div> <div> <input type="button" value="Refresh"/> <input type="button" value="Save as Job"/> <input type="button" value="Validate"/> <input type="button" value="Import"/> <input type="button" value="Close"/> </div>				
Dimension	Import File	File Type	Clear Members	Last Validate/Import
<b>Account</b> 0 Members	FinancialElement.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>Period</b> 18 Members	<input type="button" value="Choose File"/> No file chosen	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>Years</b> 31 Members	<input type="button" value="Choose File"/> No file chosen	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>Scenario</b> 6 Members	Scenario.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>Version</b> 4 Members	Version.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>PlanningCenter</b> 0 Members	PlanningCenter.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>PlanningProduct</b> 0 Members	PlanningProduct.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>LegType</b> 0 Members	LegType.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>Currency</b> 0 Members	Currency.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.
<b>LegalEntity</b> 0 Members	LegalEntity.csv	<input checked="" type="radio"/> Comma delimited <input type="radio"/> Tab delimited <input type="radio"/> Other	<input type="checkbox"/>	No details are available.

7. Go to **Application**, and the select **Jobs** and check the status if all the dimensions are successfully imported or not.

## 33.5 Refresh the Database

To refresh the database, follow these steps:

1. Click **Application**, and then click **Overview**.
2. Click **Actions**, and then **Refresh Database**.
3. On the **Refresh Database** page, click **Create**.
4. To refresh the database now, click **Refresh Database**.

## 33.6 Importing Data

To import the data, follow these steps:

1. Click **Application**, and then click **Overview**.
2. Click **Actions**, and then click **Import Data**.
3. Click **Create**.
4. Select the location of the data import file as **Local**.
5. Select the Source Type of the data import file as **Essbase**.
6. Select Cube as **Input Cube**.
7. Click **Choose File** and navigate to the import file `MasterResultDetails.txt` and select it.
8. Click **Import**.
9. Go to **Application** and select **Jobs** and check the status if data is imported successfully or not.

### 33.7 Recurring Steps at different stages:

The following table list the recurring steps in the procedure for integrating OFS BSP 8.1.0.0.0 and Hyperion EPBCS:

Stage	Steps need to be performed
ForecastSet Finalization	<ul style="list-style-type: none"> <li>• <a href="#">Exporting the Dimensions and Forecast Set Cash Flow Results</a></li> <li>• <a href="#">Importing Dimensions</a></li> <li>• <a href="#">Refresh the Database</a></li> </ul>
Introduction of new hierarchy member	<ul style="list-style-type: none"> <li>• <a href="#">Exporting the Dimensions and Forecast Set Cash Flow Results</a></li> <li>• <a href="#">Importing Dimensions</a></li> <li>• <a href="#">Refresh the Database</a></li> </ul>
After every ForeCastSet export	<ul style="list-style-type: none"> <li>• <a href="#">Importing Data</a></li> </ul>

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- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
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