Oracle Financial Services Prepayments

User Guide

Release 22.09.01

September 2022

ORACLE
Financial Services

ORACLE

Prepayments

Document Control

Version Number	Revision Date	Change Log
1.0	June 2022	The first draft of the document is created.
2.0	September 2022	Updated document for Prepayment Rule and Prepayment Model Summary UIs.

Table of Contents

1 Get Help

Topics:

1.1 Get Help in the Applications

Use Help icons to access help in the application.

Note that not all pages have Help icons. You can also access the Oracle Help Center to find guides and videos.

1.1.1 Additional Resources

- Community: Use Oracle Cloud Customer Connect to get information from experts at Oracle, the Partner Community, and other users.
- Training: Take courses on Oracle Cloud from Oracle University.

1.2 Learn About Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program. Videos included in this guide are provided as a media alternative for text-based topics also available in this guide.

1.3 Get Support

You can get support at My Oracle Support.

For accessible support, visit Oracle Accessibility Learning and Support.

1.4 Get Training

Increase your knowledge of Oracle Cloud by taking courses at Oracle University.

1.5 Join Our Community

Use Cloud Customer Connect to get information from industry experts at Oracle and in the Partner Community. You can join forums to connect with other customers, post questions, and watch events.

1.6 Share Your Feedback

We welcome your feedback about Oracle Applications User Assistance. If you need clarification, find an error, or just want to tell us what you found helpful, we did like to hear from you.

You can email your feedback to My Oracle Support.

Thanks for helping us improve our User Assistance!

1.7 Before You Begin

Refer to following Documents:

- See What's New
- Get started with Cash Flow Engine Cloud Service
- Take a quick tour

2 Prepayment Rules

This module describes the procedure for working with and managing Prepayment Rules. One of the major business risks faced by financial institutions engaged in the business of lending and borrowing is prepayment and early redemption risk. Prepayment risk is the possibility that borrowers might choose to repay part or all their loan obligations before the scheduled due dates. Prepayments can be made by either accelerating principal payments or refinancing. Prepayments cause the actual cash flows from a loan to a financial institution to be different from the cash flow schedule drawn at the time of loan origination. A Prepayment Rule contains methodologies to model the prepayment behavior of various amortizing instruments and quantify the associated Prepayment Risk.

Topics:

2.1 Prepayment Rule Summary Page

Prepayment Rules allow you to specify methodologies to model the loan prepayment and deposit early redemption behavior of products in your portfolio and quantify the associated prepayment risk in monetary terms. For more information, see Defining Prepayment Methodologies Section.

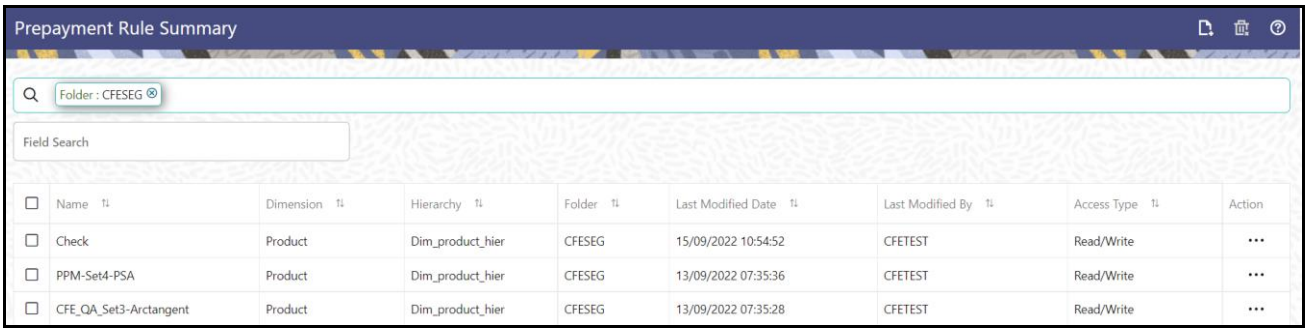
The Prepayment Rule Summary Table displays the following columns.

Table: Prepayment Rule Summary– Fields and Descriptions

Column	Description
Name	Displays the Prepayment Rule's short name. Mouse over the Name field to view the Code and Description details.
Dimension	Displays the Prepayment Rule's Dimension.
Hierarchy	Name of Hierarchy that is used to define prepayment Rule
Folder	Displays the Folder name where the Prepayment Rule is saved.
Last Modified By	Displays the Name of the user who last modified the Prepayment Rule.

Column	Description
Last Modified Date	Displays the Date and Time when Prepayment was modified last.
Access Type	Displays the access type of Rule. It can be Read-Only or Read/Write.
Action	Displays the list of actions that can be performed on the Prepayment Rule. For more information, see Prepayment Rule – Icons and Descriptions.

Figure 1: Prepayment Rule Summary page



The **Action** column on the **Prepayment Rule Summary** Page offers several actions that allow you to perform different functions. The following actions are available for the Prepayment Rules.

Table: Prepayment Rule – Icons and Descriptions

Fields	Description
Add	Click Add icon at the top right of the summary page to build a new Prepayment Rule.
Multiple Delete	Select one or more Rules in the table and then click the (-) icon at the top right of the Summary Page to delete more than one Rule at the same time.
View/Edit	Click ••• in the Action column and select View/Edit to view or edit the contents of a Prepayment Rule in Read/Write format. Depending on user privileges the Rule will open in either View or Edit Mode.
Save As	Click ••• in the Action column and select Save As to create a copy of an existing Prepayment Rule.
Delete	Click ••• in the Action column and select Delete to delete an existing Prepayment Rule.
Dependency Check	Click ••• in the Action column and select Dependency Check to generate a report on all Rules that utilize your selected Prepayment Rule.

For more information, see the following sections:

- Defining Prepayment Methodologies
- Defining the Constant Prepayment Method
- Defining the Prepayment Model Method
- Defining the PSA Prepayment Method
- Defining the Arctangent Calculation Method

You can 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 a set of products.

2.2 Search Prepayment Rule

Search for a Prepayment Rule to perform any of the following tasks:

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

Prerequisites

Predefined Prepayment Rule

Procedure

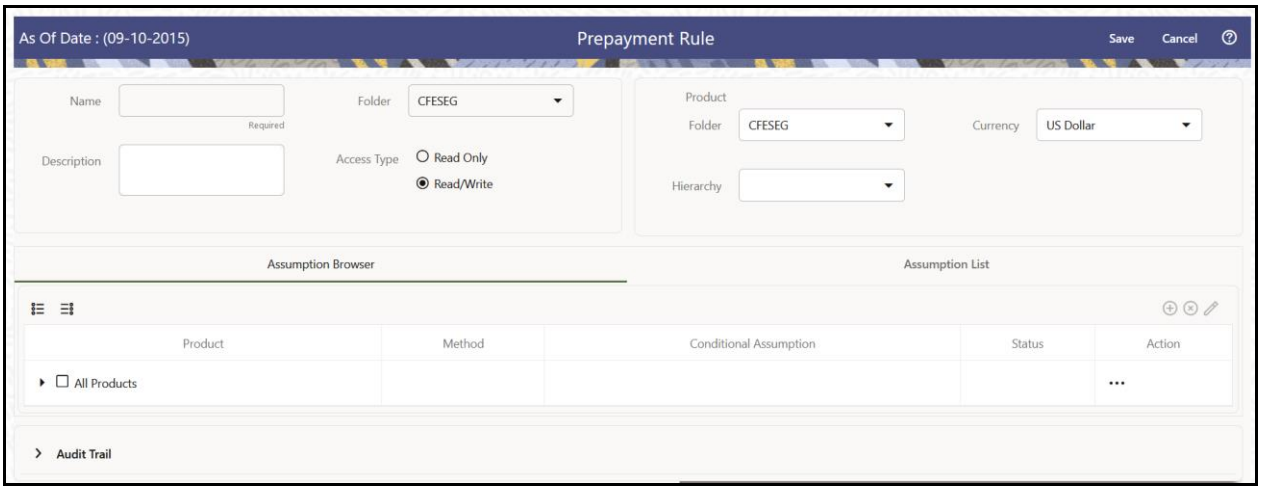
To search for a new Prepayment Rule, follow these steps:

1. Navigate to the **Prepayment Rule Summary** Page. This page holds all Prepayment Rules and related functionality. You can navigate to other pages relating to the Prepayment Rule from this page.
2. Enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Prepayment Rule and click **Search**  . Only Prepayment Rules that match the search criteria are displayed.

2.3 Create Prepayment Rules

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

Figure 2: Prepayment Rule Page



To create a new Prepayment Rule, follow these steps:

1. Click **Add** icon from the top of the **Prepayment Rule Summary** Page.
2. Enter the following Details.

Table: Create Prepayment Rule

Fields	Description
Name	Enter the name of the Prepayment Rule.
Description	Enter the description of the Prepayment Rule. This is an optional field.
Folder	Select the Folder where the Prepayment Rule needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/Write.

3. Select a **Product Hierarchy**. You can define methodologies at any level of the Hierarchical Product Dimension. The Hierarchical Relationship between the nodes allows the inheritance of methodologies from Parent nodes to Child nodes.
4. Select Product(s) from **Assumption Browser**.
5. Click **Add** from Assumption Browser Section. For more information, see the Defining Prepayment Methodologies.

2.3.1 Defining Prepayment Methodologies

The assignment of prepayment assumptions is part of the Create or Edit Prepayment Rule Process where assumptions about loan prepayments or deposit early redemptions are made for product-currency combinations. When you click Save in the Create Prepayment Rules Process, the Rule is saved and the Prepayment Rule Summary Page is displayed. However, prepayment assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your prepayment assumptions for product-currency combinations before clicking Save.

The Prepayment Rule supports the definition of prepayment assumptions for combinations of two dimensions: Product and Currency.

Once you have created a Prepayment Rule, you can assign prepayment methodologies to product-currency combinations using Node Level Assumption. For more information, see Defining Prepayments Using Node Level Assumptions Section.

2.3.1.1 Defining Prepayments Using Node Level Assumptions

Node Level Assumptions allow you to define assumptions at any level of the Product Dimension Hierarchy. The Product Dimension supports a hierarchical representation of your chart of accounts, so you can take advantage of the parent-child relationships defined for the various nodes of your product hierarchies while defining Rules. Children of Parent nodes on a hierarchy automatically inherit the assumptions defined for the Parent nodes. However, assumptions directly defined for a Child take precedence over those at the Parent level.

Prerequisites

Performing basic steps for creating or editing a Prepayment Rule.

Procedure

This table describes key terms used for this procedure.

Table: Key Terms used for Prepayment Rules

Terms	Description
Calculation Method	The method used to model prepayment behavior of instruments. You can choose from four prepayment calculation methods: Constant, Prepayment Model, PSA, and Arctangent.
Cash Flow Treatment	Allows you to specify one of the following two ways in which prepayments are made. • Refinance: This is the most used option. Select refinance to keep payment amounts after prepayment consistent with a portfolio-based assumption. This reduces the scheduled payment amount on each loan and maintains the same maturity term. • Curtailment: Select curtailment to change the periodic payment amounts due. The prepayments are treated as accelerated payments, with a payoff earlier than the originally scheduled term.
Prepayment Date	You can select when to calculate prepayment, either on normal payment dates or user-defined tenor.
Payment Event Type	When prepayment is calculated on payment dates then this option allows you to specify type of event when prepayment occurs. By default, “Principal and Interest” is selected.

Terms	Description
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. • Remaining Term: The number of months remaining until the instrument matures. • Reprice Frequency: The frequency with which the instrument reprices. This defaults to the original term for a fixed-rate instrument. • Original Term: The number of months that was the originally scheduled life of the instrument.
Prepayment Rate Definition	This table allows you to specify the constant annual prepayment rate, or the associated factors, that you want to apply to the instruments having origination dates in a particular date range.
Seasonality	This table allows you to specify seasonality adjustments. Seasonality refers to changes in prepayments that occur predictably at given times of the year. 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. 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. 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.

6. Navigate to the **Prepayment Assumption Details** Page after selecting a **Currency** and one or more products from the hierarchy.
7. Select a **Cash Flow Treatment type, Refinance** or **Curtailment**.
8. Refinance is the most used method.
9. Select a **Calculation Method** as Constant, Prepayment Model, PSA, or Arctangent.

> **NOTE** The default value for the Calculation Method drop-down list is Constant. If you select "Do not calculate" as the calculation method, no prepayment assumptions will be assigned to the particular product-currency combination. This is a particularly useful option when using node-level assumptions because it allows you to exclude a particular Child from inheriting a Parent assumption.

10. Define the parameters and annual prepayment rates for the selected **Calculation Method** as Constant, Prepayment Model, PSA or Arctangent.

> **NOTE** The parameters displayed on the Prepayment Methodology page vary depending on the Calculation Method (Constant, Prepayment Model, PSA, or Arctangent) that you have selected. For more information, see:
>
> - Defining the Constant Prepayment Method
> - Defining the Prepayment Model Method
> - Defining the PSA Prepayment Method
> - Defining the Arctangent Calculation Method

11. Click **Apply**.

    The **Assumption Browser Definition** Page is displayed.

    At this point you can:

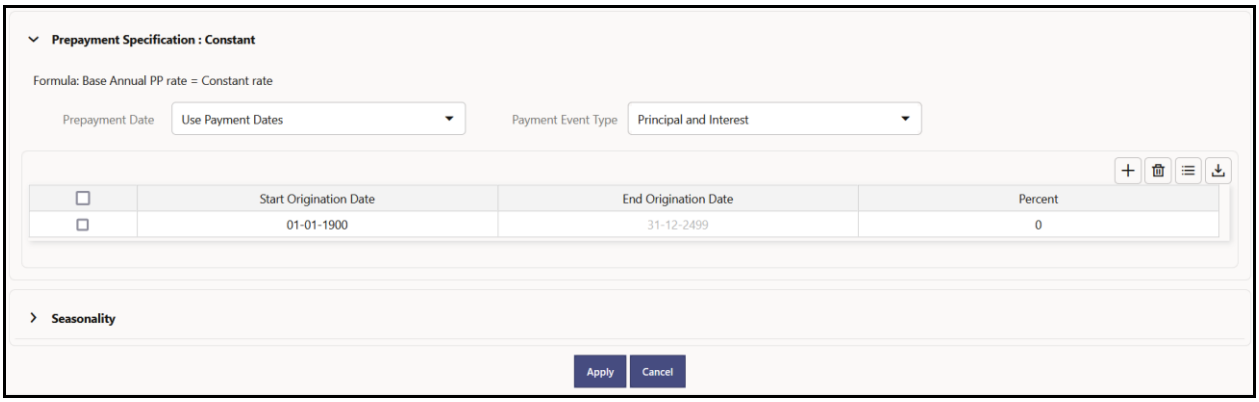
    - Continue defining additional methodologies for other product-currency combinations by repeating the above procedure.
    - Complete the process by clicking Save.

    When you click **Save**, the prepayment assumptions are saved and the Prepayment Rule Summary Page is displayed.

2.3.1.1.1 Defining Constant Prepayment Method

Use this procedure to define prepayment assumptions using the Constant Prepayment Method. The Constant Prepayment Method calculates the prepayment amount as a flat percentage of the current balance. You can create your own origination date ranges and assign a particular prepayment rate to all the instruments with origination dates within a particular Origination Date range.

Figure 3: Constant Prepayment Method



Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Users also have two options for determining the timing of the Constant Prepayment assumption. The options include:

- **Use Payment Dates:** This is the default option. If this option is selected, then Constant Prepayment Runoff will occur on scheduled payment dates only.
- **User Defined Prepayment Tenors:** If this option is selected, users can specify any runoff timing. For example, users might choose to define the prepayment to the Runoff on the first day of the forecast.

The above options will be available only for Asset Instrument types.

To define constant prepayment within the Prepayment Rule, follow the steps given in below sections:

- Use Payment Dates
- User Defined Prepayment Tenors

Use Payment Dates

1. Select the **Use Payment Dates** Option.
2. Select the **Payment Event Type** Option.
3. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.

   The first cell in the Start Origination Date Column and all the cells in the End Origination Date Column are read-only. This ensures that all possible origination dates must support reference values when Prepayment assumption lookups occur.

   Each row in the **End Origination Date** Column is filled in by the system when you click Add Row or save the Rule.

   The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date Field.

4. Enter the **Annual Prepayment Rate Percent** that you want to apply to the instruments having origination dates in a particular Start Origination-End Origination Date range.
5. The **Percent** column represents the actual annualized prepayment percentage that the system uses to generate the principal runoff during the Cash Flow calculations.
6. Click **Add** Row to add additional rows and click the corresponding Delete button to delete a row.
7. You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
8. You can also use the **Download Excel** feature to export the Prepayment rate information that is displayed on screen, modify, and copy-paste it back in the grid.
9. Define Seasonality assumptions if required to model date-specific adjustments to the annual prepayment rate. Inputs act as a multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

User Defined Prepayment Tenors

1. Select the **User Defined Prepayment Tenors** Option. This option allows you to specify the term and multiplier to the Prepayment Date for the row. The term is used to derive Prepayment Dates with reference to As of Date.
2. You can calculate the prepayment rate based on Current/Reducing Balance and Annual/De-annual Prepayment Rate.
3. Select the **Balance Type** as **Current Balance** or **Reducing Balance**.
   - If the **Balance Type** is selected as **Current Balance**, then the prepayment amount will be calculated using Principal Balance on As of Date. That is, without reducing the balance by any payment/prepayment that may have occurred between as of the date and prepayment date.
   - If the **Balance Type** is selected as **Reducing Balance**, then the prepayment amount will be calculated using balance as on Prepayment Date. That is, after reducing the Principal Balance by any payment/prepayment that may have occurred between as of date and prepayment date.
4. Select the **Prepayment Rate Type** as **Annual Prepayment Rate** or **De-annual Prepayment Rate**.

   When the Annual Prepayment Rate is selected then the prepayment rate entered in the screen is directly used.

   In the other case, the rate entered in the screen is de-annualized before calculating the prepayment amount.
5. Enter the **Start Origination Date** and **End Origination Date** ranges, add additional ranges as required using the **Add** Row button.
6. Enter the term to **Runoff Tenor** and **Multiplier** for each of the date ranges.
7. Enter the **Annual Prepayment Rate Percent** for each of the date ranges.
8. Enter 'Repeat' if you want the same prepayment to occur multiple times. By default, it is set to 1.
9. Click **Add Row** to add additional runoff % rows and click the corresponding Delete button to delete a row.

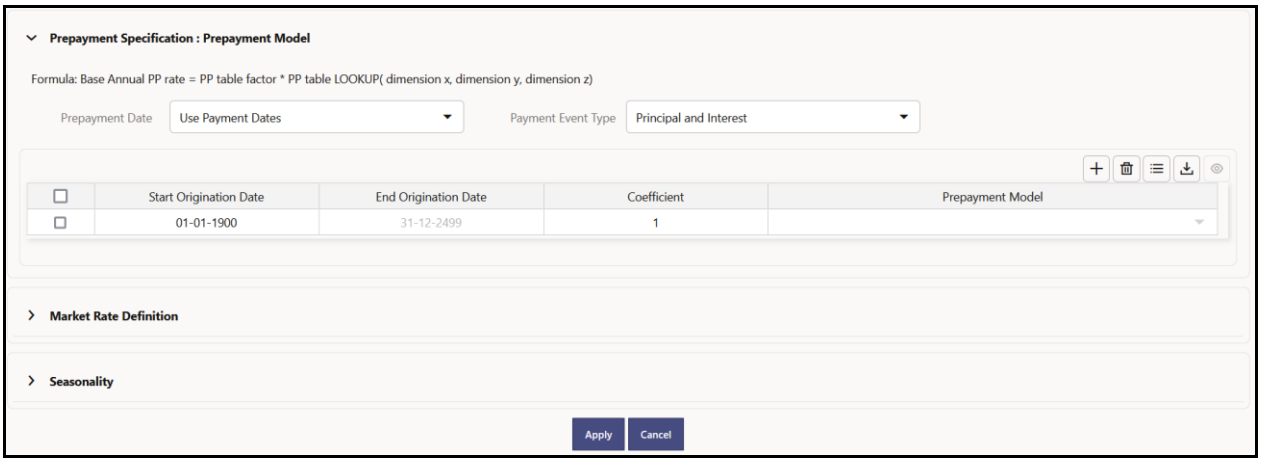
   You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.

10. Define Seasonality assumptions as required to model date specific adjustments to the annual Prepayment Rate. Inputs act as a multiplier, for example, an input of 2 will double the Prepayment Rate in the indicated month.

2.3.1.1.2 Defining Prepayment Model Method

Use this procedure to define prepayment assumptions using the Prepayment Model Calculation method. The Prepayment Model Method allows you to define more complex prepayment assumptions compared to the other Prepayment Methods. Under this method, prepayment assumptions are assigned using a custom Prepayment Model. You can build a Prepayment model using a combination of up to three Prepayment Drivers and define Prepayment Rates for various values of these drivers. Each driver maps to an attribute of the underlying transaction (age/term or rate) so that the Cash Flow Engine can apply a different Prepayment Rate based on the specific characteristics of the record. Note: All Prepayment Rates should be input as annual rate.

Figure 4: Prepayment Model Method



Prerequisites

- Prepayment Model must be created.
- Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Users also have two options for determining the timing of the Prepayment Model assumption. The options include:

- **Use Payment Dates:** This is the default option. If this option is selected, then Prepayment Model Runoff will occur on scheduled payment dates only.
- **User Defined Prepayment Tenors:** If this option is selected, users can specify any runoff timing. For example, users might choose to define the Prepayment to the Runoff on the first day of the forecast.

The above options will be available only for Asset Instrument Types.

To define Prepayment Model within the Prepayment Rule, follow the steps given in below sections:

- Use Payment Dates
- User Defined Prepayment Tenors

Use Payment Dates

1. Select the **Use Payment Dates** Option.
2. Select the **Payment Event Type** Option.
3. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.

   The first cell in the Start Origination Date Column and all the cells in the End Origination Date Column are read-only. This ensures that all possible origination dates must support reference values when Prepayment assumption lookups occur.

   Each row in the **End Origination Date** Column is filled in by the system when you click Add Row or save the Rule.

   The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date field.
4. Enter the **Coefficient** (if needed) by which the Prepayment Rate should be multiplied and select a predefined prepayment model that you want to apply to the instruments having origination dates in a particular Start Origination-End Origination Date range
5. Click **Add Row** to add additional rows and click the corresponding **Delete** Button to delete a row.
6. You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.

   You can also use the Download Excel feature to export the Prepayment rate information that is displayed on screen, modify, and copy-paste it back in the grid.
7. Define **Market Rate Definition.**
8. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
9. Enter the **Spread**. The spread is added to the rate from the underlying interest rate curve to determine the market rate.
10. Select an **Associated Term** as Remaining Term, Reprice Frequency, or Original Term.
11. Define Seasonality assumptions if required to model date-specific adjustments to the annual prepayment rate. Inputs act as a multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

User Defined Prepayment Tenors

1. Select the **User Defined Prepayment Tenors** Option. This option allows you to specify the term and multiplier to the prepayment date for the row.
2. You can calculate the Prepayment Rate based on **Current/Reducing Balance** and **Annual/De-annual Prepayment Rate**.
3. Select the Balance Type as Current Balance or Reducing Balance.

- If the **Balance Type** is selected as **Current Balance**, then the Prepayment Amount will be calculated using CUR_PAR_BAL on As of Date. That is, without reducing the balance by any payment/prepayment that may have occurred between as of the date and prepayment date.
- If the **Balance Type** is selected as **Reducing Balance**, then the prepayment amount will be calculated using balance as on Prepayment Date. That is, after reducing the CUR_PAR_BAL by any payment/prepayment that may have occurred between As of Date and Prepayment Date.

4. Select the **Prepayment Rate Type** as **Annual Prepayment Rate** or **De-annual Prepayment Rate**.

   When the Annual Prepayment Rate is selected then the prepayment rate entered in the screen is directly used.

   In the other case, the rate entered in the screen is de-annualized before calculating the Prepayment Amount.

5. Specify the **Prepayment Model** Parameters.
6. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
7. Enter the **Coefficient** (if needed) by which the Prepayment Rate should be multiplied.

   This multiple is applied to the instruments for which the Origination Date lies in the range defined in the Start Origination Date-End Origination Date fields.

8. Select a predefined prepayment model from the Prepayment model Rule list of values. Click the **View Prepayment Model**  icon to preview the selected Prepayment Model.

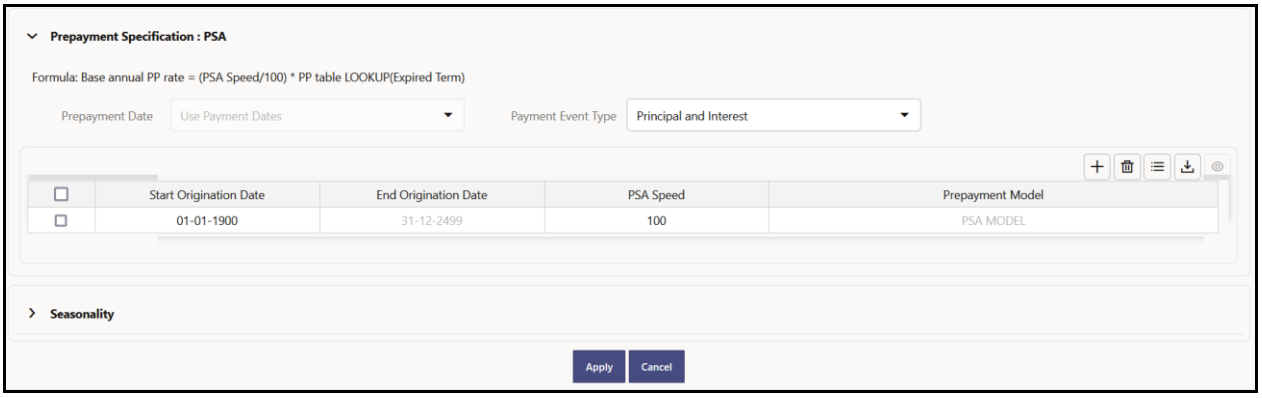
   The system uses the Prepayment Model assumptions to calculate the Prepayment Amounts for each period. You need to associate a prepayment model for every Start Origination-End Origination Date range.

9. Click **Add Another** Row to add additional rows and click the corresponding **Delete** button to delete a row.
10. You can add as many rows in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
11. You can also use the **Download Excel** feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.
12. Enter the term to runoff tenor and multiplier for each of the date ranges.
13. Enter 'Repeat' if you want the same prepayment to occurs multiple times. By default, it is set to 1.
14. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
15. Enter the **Spread**. The spread is added to the rate from the underlying Interest Rate Curve to determine the Market Rate.
16. Select an **Associated Term** as Remaining Term, Reprice Frequency, or Original Term.
17. Define Seasonality assumptions as required to model date specific adjustments to the annual Prepayment Rate. Inputs act as a multiplier, for example, an input of 2 will double the Prepayment Rate in the indicated month.

2.3.1.1.3 Defining PSA Prepayment Method

Use this procedure to define Prepayment Assumptions using the PSA Prepayment Method. The PSA Prepayment method (Public Securities Association Standard Prepayment Model) is a Standardized Prepayment Model that is built on a single dimension, 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. PSA Speed inputs can be between 0 and 1667.

Figure 5: PSA Prepayment Method



Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Prepayment under this method occurs on Payment Dates only.

1. Select the **Payment Event Type** option.
2. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.

   The first cell in the Start Origination Date Column and all the cells in the End Origination Date Column are Read-Only. This ensures that all possible Origination Dates have supporting reference values when Prepayment Assumption Lookups occur. Each row in the End Origination Date Column is filled in by the system when you click Add Row or save the Rule.

   The first Start Origination Date (in row 1) has a default value of January 1, 1900. When you enter a Start Origination Date in the next row, the system inserts a date that is a day before the previous End Origination Date Field.

3. Enter the PSA Speed that you want to apply to the instruments having Origination Dates in a particular Start Origination-End Origination Date range. The PSA Method is based on a standard PSA curve. You can view the seeded model by selecting the **View Prepayment Model** icon.

   The default value is 100 PSA and inputs can range from 0 to 1667.

4. Click **Add Row** to add additional rows and click the corresponding **Delete** Option to delete a row.

   You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.

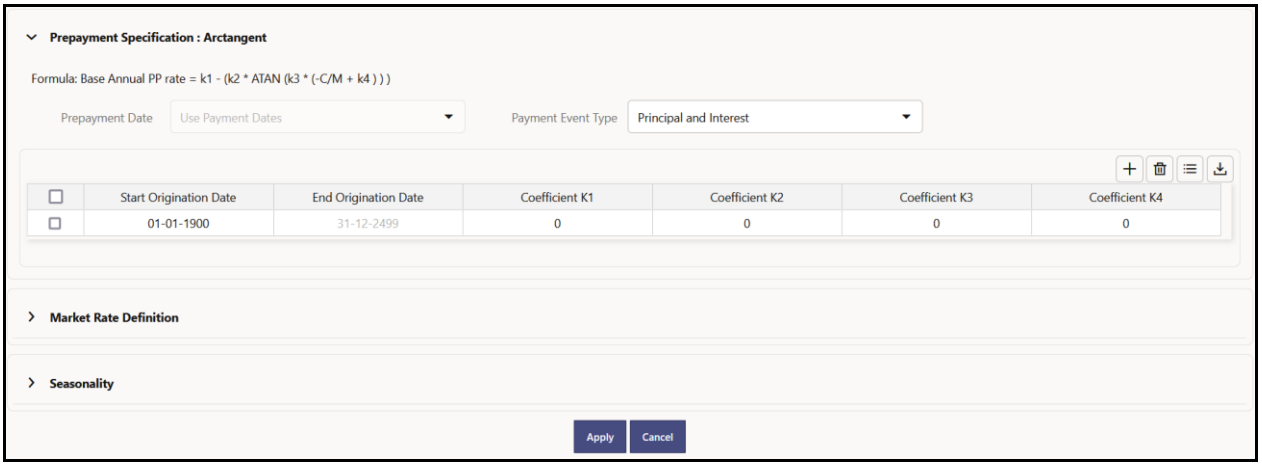
5. You can also use the **Download Excel** Feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.

6. Define Seasonality Assumptions as required to Model Date specific adjustments to the Annual Prepayment Rate. Inputs act as a multiplier, For example, an input of 2 will double the Prepayment Rate in the indicated month.

2.3.1.1.4 Defining the Arctangent Calculation Method

The Arctangent Calculation Method uses the Arctangent Mathematical Function to describe the relationship between Prepayment Rates and spreads (coupon rate less Market Rate). Use this procedure to define Prepayment Assumptions using the Arctangent Calculation Method.

Figure 6: Arctangent Calculation Method



Prerequisites

Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Prepayment under this method occurs on Payment Dates only.

1. Select the **Payment Event Type** Option.
2. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
3. Enter the values for the Arctangent Parameters (columns K1 through K4) for each Start Origination Date in the table. The valid range for each parameter is -99.9999 to 99.9999.

4. Click **Add Another Row**.

   You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.

5. You can also use the **Download Excel** Feature to export the Prepayment Rate Information that is displayed on screen, modify, and copy-paste it back in the grid.

6. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.

7. Enter the **Spread**.

   The spread is added to the rate from the underlying Interest Rate Curve to determine the Market Rate.

8. Select an **Associated Term** as Original Term, Reprice Frequency, or Remaining Term.

9. Define the Seasonality Assumptions as required to model date specific adjustments to the Annual Prepayment Rate. Inputs act as a multiplier, For example, an input of 2 will double the prepayment rate in the indicated month.

2.3.1.2 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 the product is an asset or liability (based on the account type attribute defined in dimension member management). If the product is an asset, then the Prepayments tab will be active in the Prepayment Assumption Detail Page. If the product is a liability, then the Early Redemption Tab will be active.

Prerequisites

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

Procedure

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

- The list of Calculation Methods is limited to Constant and Prepayment Models
- Cash Flow Treatment is always Curtailment
- 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 a Runoff on the first day of the forecast.

To define Early Redemptions within the Prepayment Rule, follow the steps given in above sections.

2.4 View and Edit Prepayment Rule

You can view existing Prepayment Rule, and you can edit existing Prepayment Rules, provided you have read/write privileges.

To view and edit a Prepayment Rule, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Rule**.
2. Search for a Rule.
   For further information, see the Searching for Rules Section.
3. Click ••• in the **Action** column and select **View/Edit** to open the Rule you want to update.
4. Update the Rule details.
5. Click **Apply** or **Save**, depending on the Rule type.

2.5 Copy Prepayment Rule

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

To copy a Prepayment Rule, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Rule**.
2. Search for a Rule.
   For more information, see the Searching for Rules Section.
3. Click ••• in the Action column and select **Save As** to duplicate the Rule.
4. Select a folder where you want to save the Rule copy.
5. Enter a unique name for the new Rule.
6. Enter a brief description of the Rule.
7. Click **Save**.

2.6 Delete Prepayment Rule

You can delete Prepayment Rules that are no longer required.

> **NOTE** A Prepayment Rule cannot be retrieved after deletion.
>
> Restrictions on deleting Prepayment Rules are:
>
> You cannot delete Prepayment Rules if you have only Read privileges. Only users with Read/Write privileges and Prepayment Rule owners can delete Prepayment Rules.
>
> You cannot delete a Prepayment Rule that has a dependency.

To delete a Prepayment Rule, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Rule**.
2. Search for a Rule.
   For more information, see the Searching for Rules section.
3. Click ••• in the **Action** column and select **Delete**.

2.7 Dependency Check

You can check dependencies for rules to know where a particular Prepayment Rule has been used. This also prevents accidental deletion of rules having dependencies.

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

1. Navigate to the **Assumption** and select **Prepayment Rule**.
2. Search for a rule. For further information, see the Searching for Rules Section.
3. Click ••• in the **Action** Column and select **Dependency Check** to the rule that you want to check for.

> **NOTE** This is functionality will be released in future.

3 Prepayment Models

This module describes the procedure to build Prepayment Models. These Prepayment Models can be referenced by a Prepayment Rule to Model Prepayment Behavior of instruments based on a range of instrument level attributes.

The Prepayment Model consists of the Prepayment Dimensions and the Bucket Values for these Dimensions. To define the Prepayment Model Structure, you can select a maximum of three prepayment dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

Topics:

3.1 Prepayment Model Summary Page

This page holds all Prepayment Models and related functionality. You can navigate to other pages relating to the Prepayment Model from this page. The **Prepayment Model Summary** Page displays the following columns.

Table: Prepayment Model Rule – Fields and Descriptions

Column	Description
Name	Displays the Prepayment Model Rule's short name. Mouse over the Name field to view the Code and Description details.
Rate Calculation Type	Displays the Prepayment Model type, such as Manual .
Folder	Displays the Folder name where the Prepayment Model Rule is saved.
Last Modified By	Displays the Name of the user who last modified the Prepayment Model Rule.
Last Modified Date	Displays the Date and Time when Prepayment Model was modified last.
Access Type	Displays the access type of Rule. It can be Read-Only or Read/Write.
Action	Displays the list of actions that can be performed on the Prepayment Model Rule. For more information, see Prepayment Model Rule – Icons and Descriptions.

Figure 7: Prepayment Model Summary page

The **Action** column on **Prepayment Model Summary** Page offers several actions that allow you to perform different functions. The following actions are available for the Prepayment Model Rule.

Table: Prepayment Model Rule – Icons and Descriptions

Fields	Description
Add	Click Add icon to build a new Prepayment Model Rule.
Multiple Delete	Select one or more Rules in the table and then click the (-) icon at the top right of the summary page to delete more than one Rule at the same time.
View/Edit	Click ••• in the Action Column and select View/Edit to view or edit the contents of a Prepayment Model Rule in read/write format. Depending on user privileges the Rule will open in either View or Edit mode.
Save As	Click ••• in the Action column and select Save As to create a copy of an existing Prepayment Model Rule.
Delete	Click ••• in the Action Column and select Delete to delete an existing Prepayment Model Rule.

3.2 Search Prepayment Models

Search for a Prepayment Model to perform any of the following tasks:

- View
- Edit
- Copy
- Delete
- Refresh

Prerequisites

Predefined Prepayment Model

Procedure

To search for a Prepayment Model Rule, follow these steps:

1. Navigate to the Prepayment Model Summary Page.
2. Enter the **Code, Name, Currency**, and **Description** of the Prepayment Model and click **Search** . Only Prepayment Model Rules that match the search criteria are displayed.

3.3 Create Prepayment Models

Creating a Prepayment Model comprises the following sub procedures:

1. Creating Prepayment Models
2. Defining the structure of the Prepayment Model.
3. Assigning Node Values

You can create Prepayment Models with following Rate Calculation options:

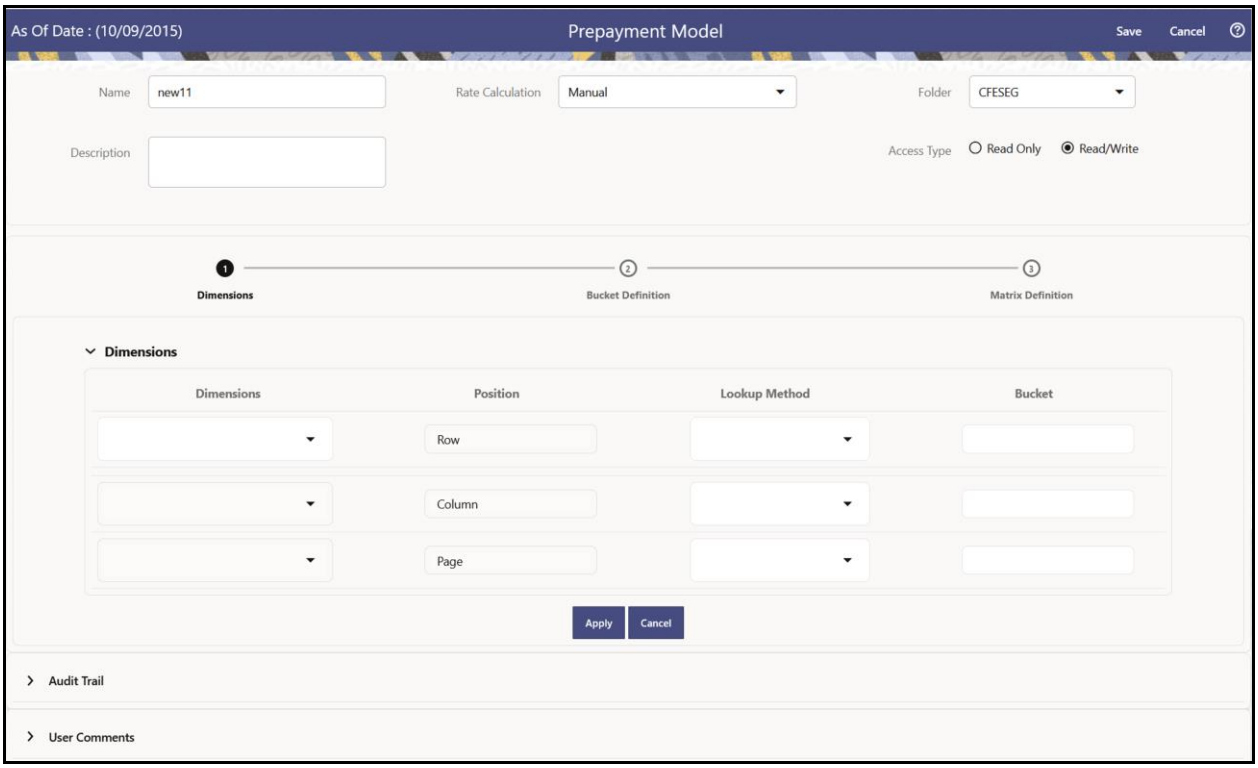
- Creating Prepayment Model with Rate Calculation as Manual
- Creating Prepayment Model with Rate Calculation as External Model

3.3.1 Creating Prepayment Model with Rate Calculation as Manual

To create a Prepayment Model Rule, follow these steps:

1. Navigate to the **Prepayment Model Summary** Page.
2. Click **Add**. The **Prepayment Model Details** Page is displayed.

Figure 8: Prepayment Model



3. Enter the following details:
   - **Name:** Enter the name and a brief description for the Prepayment Model. The name you assign to the Prepayment Model must be unique. The name can hold a maximum of 30 characters.
   - **Rate Calculation:** Select the Prepayment Model Rate Calculation Method as Manual. Using Manual Method, you can select maximum of three Prepayment Dimension and assign prepayment rates manually to selected dimension.
   - **Folder:** Select the Folder
   - **Description:** Enter the description of Prepayment Model Rule.
   - Select **Access Type.**

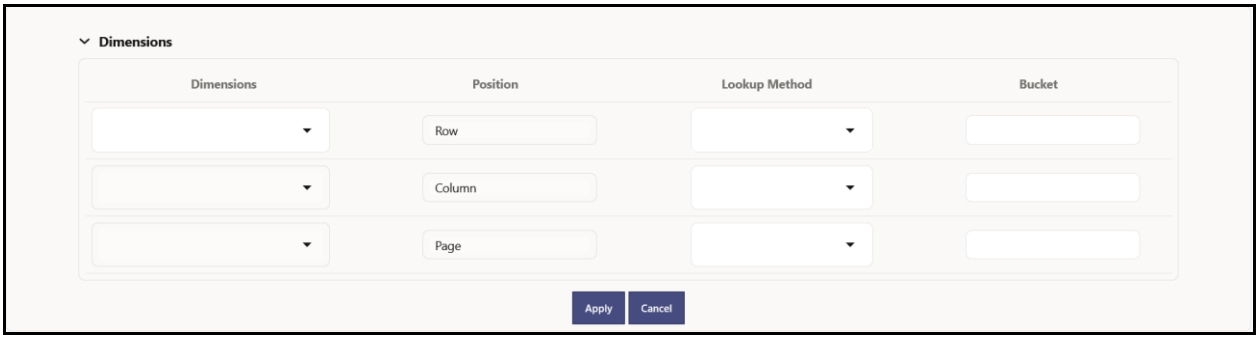
3.3.1.1 Defining the Structure of the Prepayment Model Using Dimensions section

This page consists of the Prepayment Dimensions and the Bucket Values for these Dimensions which you select on this page. To define the Prepayment Model Structure, you can select a maximum of three Prepayment Dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

NOTE You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).

The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 9: Dimensions section



1. Enter the following details in Dimension section:

   - **Dimensions:** Select the Dimension, such as Repricing Term, Rate Ratio, and others.

     The Dimension Section Influences the Prepayment Behavior of an instrument. You can build a Prepayment Model using up to three Prepayment Dimensions. Each dimension maps to an attribute of the underlying transaction (For example, age/term or rate and so on) so the Cash Flow Engine can apply a different Prepayment Rate based on the specific characteristics of the instrument.

   - **Position:** Shows the position of dimension as Row, Column or Page.
   - **Lookup Method:** Select the Lookup Method for selected Dimension. It is used to calculate Prepayment Rates for the Prepayment Dimension Values that do not fall exactly on the defined Prepayment Dimension Nodes. Oracle Asset Liability Management offers the following Lookup Methods:
   - **Interpolation:** Under this method, the Prepayment Rates are determined by calculating an exact value on an axis. This method assumes that Prepayment Speeds change on a straight-line basis between the two nodes and calculates accordingly.
   - **Range:** Under this method, the prepayment rates are determined by calculating a range of values on an axis. This method assumes that the Prepayment Speed will remain the same for the entire range.

     The following example explains the differences between these two Lookup Methods. The following lists show the age and corresponding Prepayment Rates of instruments.

     Age

     12

     24

     36

60

Prepayment Rates

5

10

15

20

Under the Interpolation method, the Prepayment Speeds increase gradually. In this example, the Interpolated Prepayment Rate of an instrument aged 30 months is 12.5%.

This is exactly halfway between the 10% and 15% rate. However, the Range Method, the Prepayment Speeds increase in steps. Using the Range method, the Prepayment Rate is 10%, as this rate percentage would apply to the range from 24 months to 35.9999 months.

- **Bucket:** Enter the number of Buckets for the Dimension. This number may vary from dimension to dimension. Exact points for each dimension where attribute information has been defined.

2. If required, repeat the previous three steps for up to two additional Dimensions.

NOTE There are certain restrictions while defining Dimensions:

- You must select the Dimension type for a row and define the values for that dimension.
- You cannot define the second (row) dimension until you have defined the first (row) dimension. Similarly, the third dimension cannot be defined until you have defined the first two dimensions.

The Define Dimensions Page is refreshed. You can now assign the Bucket Values for each dimension. At this point, you can also modify the structure of the table, if required.

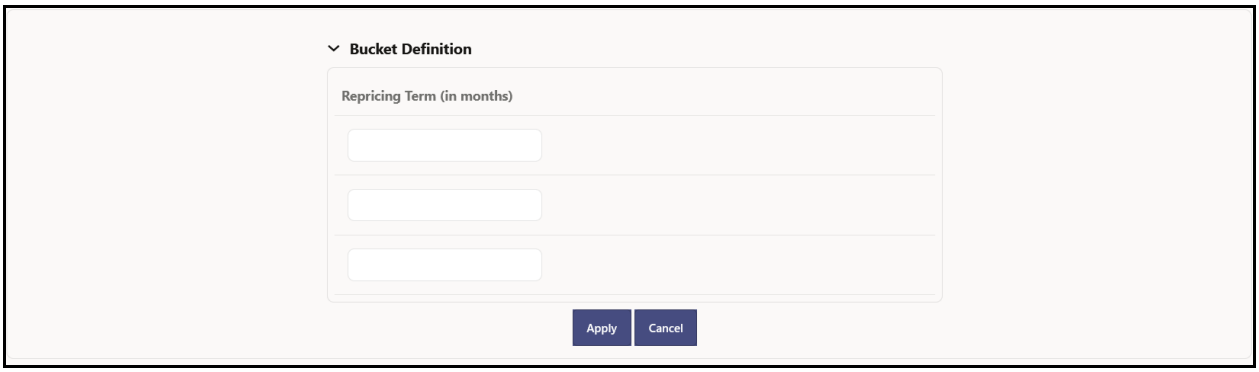
3.3.1.2 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition section is used to perform following tasks:

- To add more buckets to a particular Dimension, update the number of buckets for the Dimension and click **Apply**.
- To delete buckets from a particular Dimension, reduce the number of buckets to the desired value and click **Apply**.

To change the Lookup Method of a particular Dimension, select the required method from the corresponding list of methods from the Dimensions Tab.

Figure 10: Bucket Definition Section



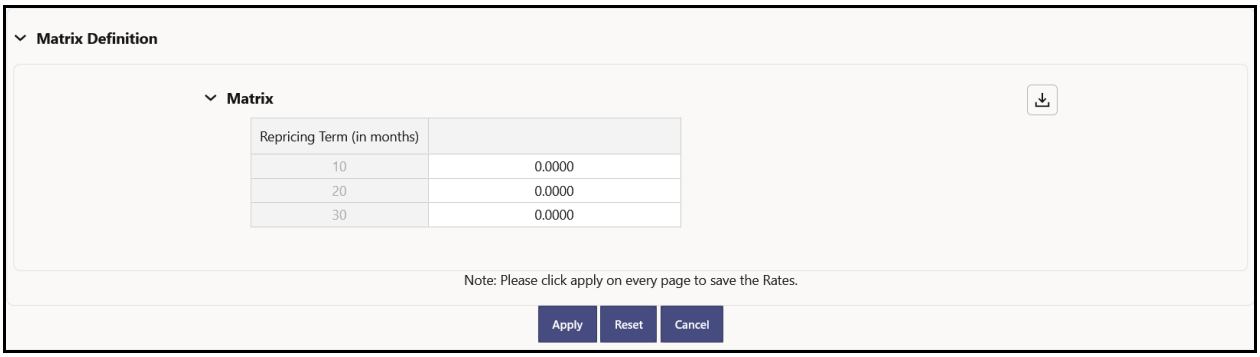
1. Assign values for each of the buckets.
2. Click **Apply**. The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

3.3.1.3 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

   Bucket Values for the row and column dimensions are displayed as a table, while the bucket values for the page dimensions (if selected) are shown in the drop down list.

Figure 11: Matrix Definition Section

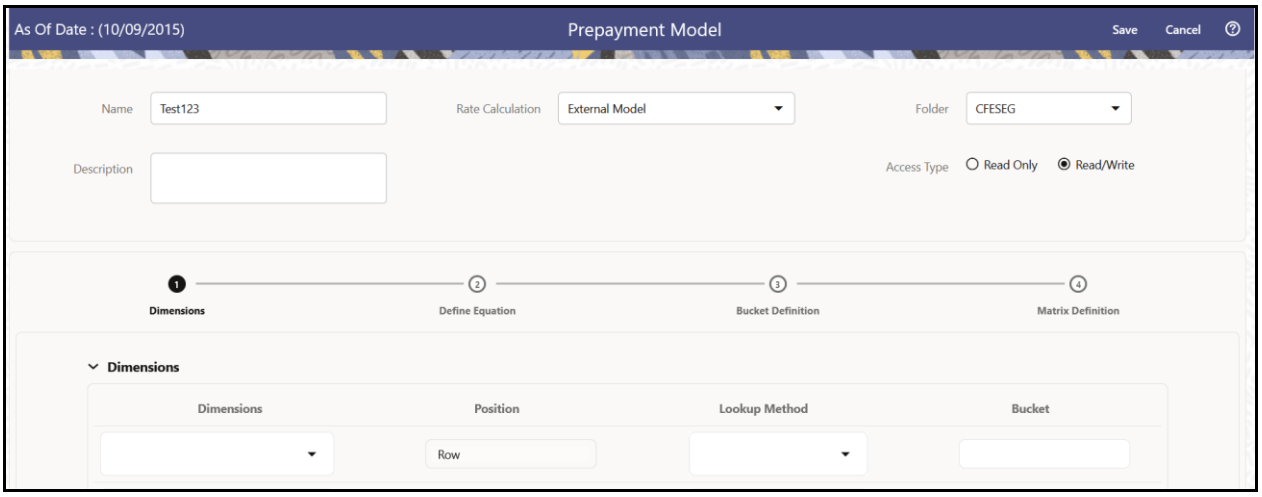


3.3.2 Creating Prepayment Model with Rate Calculation as External Model

To create a Prepayment Model Rule, follow these steps:

1. Navigate to the **Prepayment Model Summary** Page.
2. Click **Add**. The **Prepayment Model Details** Page is displayed.

Figure 12: External Model



3. Enter the following details:
   - **Name:** Enter the name and a brief description for the Prepayment Model. The name you assign to the Prepayment Model must be unique. The name can hold a maximum of 30 characters.
   - **Rate Calculation:** Select the Prepayment Model Rate Calculation Method as External Model. When you select External Model, Define Equation button will get activated to use External Prepayment Model. This is useful, when you want to do Prepayment Modelling outside PBSM and use the model equation to calculate Prepayment Rates.
   - **Folder:** Select the Folder
   - **Description:** Enter the description of Prepayment Model Rule.
   - Select **Access Type.**

3.3.2.1 Defining the Structure of the Prepayment Model Using Dimensions section

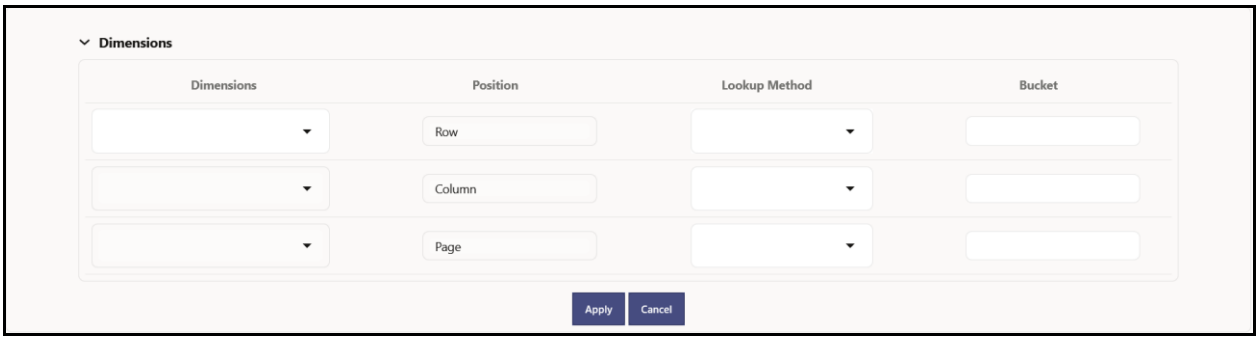
This page consists of the Prepayment Dimensions and the Bucket Values for these Dimensions which you select on this page. To define the prepayment model structure, you can select a maximum of three Prepayment Dimensions. After the dimensions and the number of buckets (tiers) are defined, you need to assign values to the buckets.

NOTE

You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).

The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 13: Dimensions Section



4. Enter the following details in Dimension section:

   - **Dimensions:** Select the Dimension, such as Repricing Term, Rate Ratio, and others.

     The Dimension Section Influences the Prepayment Behavior of an instrument. You can build a Prepayment Model using up to three Prepayment Dimensions. Each dimension maps to an attribute of the underlying transaction (For example, age/term or rate and so on) so the Cash Flow Engine can apply a different prepayment rate based on the specific characteristics of the instrument.

   - **Position:** Shows the position of dimension as Row, Column or Page.

   - **Lookup Method:** Select the Lookup Method for selected Dimension. It is used to calculate Prepayment Rates for the prepayment dimension values that do not fall exactly on the defined Prepayment Dimension Nodes. Oracle Asset Liability Management offers the following lookup methods:

   - **Interpolation:** Under this method, the Prepayment Rates are determined by calculating an exact value on an axis. This method assumes that Prepayment Speeds change on a straight-line basis between the two nodes and calculates accordingly

   - **Range:** Under this method, the Prepayment Rates are determined by calculating a range of values on an axis. This method assumes that the Prepayment Speed will remain the same for the entire range.

     The following example explains the differences between these two Lookup Methods. The following lists show the age and corresponding Prepayment Rates of instruments.

     Age

     12

     24

     36

     60

     Prepayment Rates

     5

     10

     15

20

Under the Interpolation Method, the Prepayment Speeds increase gradually. In this example, the Interpolated Prepayment Rate of an instrument aged 30 months is 12.5%.

This is exactly halfway between the 10% and 15% rate. However, the Range Method, the Prepayment Speeds increase in steps. Using the Range method, the Prepayment Rate is 10%, as this rate percentage would apply to the range from 24 months to 35.9999 months.

- **Bucket:** Enter the number of Buckets for the Dimension. This number may vary from dimension to dimension. Exact points for each dimension where attribute information has been defined.

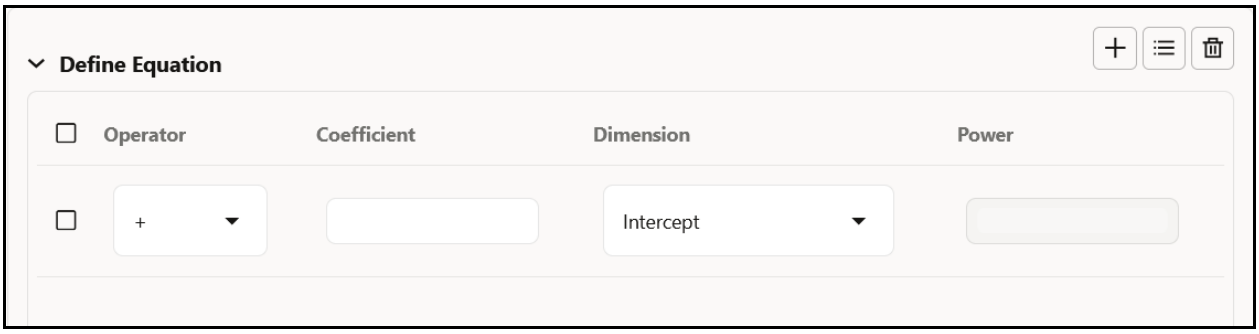
5. If required, repeat the previous three steps for up to two additional Dimensions.

> **NOTE** There are certain restrictions while defining Dimensions:
>
> - You must select the Dimension Type for a row and define the values for that dimension.
> - You cannot define the second (row) dimension until you have defined the first (row) dimension. Similarly, the third dimension cannot be defined until you have defined the first two dimensions.
>
> The Define Dimensions Page is refreshed. You can now assign the Bucket Values for each dimension. At this point, you can also modify the structure of the table, if required.

3.3.2.2 Defining Equation using Define Equation section

> **NOTE** This section is not applicable to Manual Models. This section appears when you select External Model from Rate Calculation drop-down list.

Figure 14: Define Equation Section



To define Equation, perform the following steps:

1. Click **Define Equation**. Enter following details:
   - **Operator:** Select operator as +, -, *, or /
   - **Coefficient:** Enter the value of Coefficient
   - **Dimension:** Select the Dimension
   - **Power:** Enter the power for selected Dimension.

   For Example:

   Equation becomes:

   2 + 1.5 * original Term ^ 2 + 3 * Rate Diff ^ 2

> **NOTE** Before defining equation, you must select dimensions and accordingly dimensions drop-down will display values along with Intercept. For example, if you have already chosen Original term and Rate Difference as dimensions, then Dimension drop-down list would displays the following three values:
>
> - Intercept
> - Original Term
> - Rate Difference

2. After defining all coefficients, Power, operators, click Equation to get the model equation. A confirmation message is displayed.
3. Click **Ok** to use the same for Prepayment Rate Calculations.
4. You can add new row for each term using **Add Row**. Multiple rows can be added using **Add Multiple** Rows.
5. Click **Apply**.

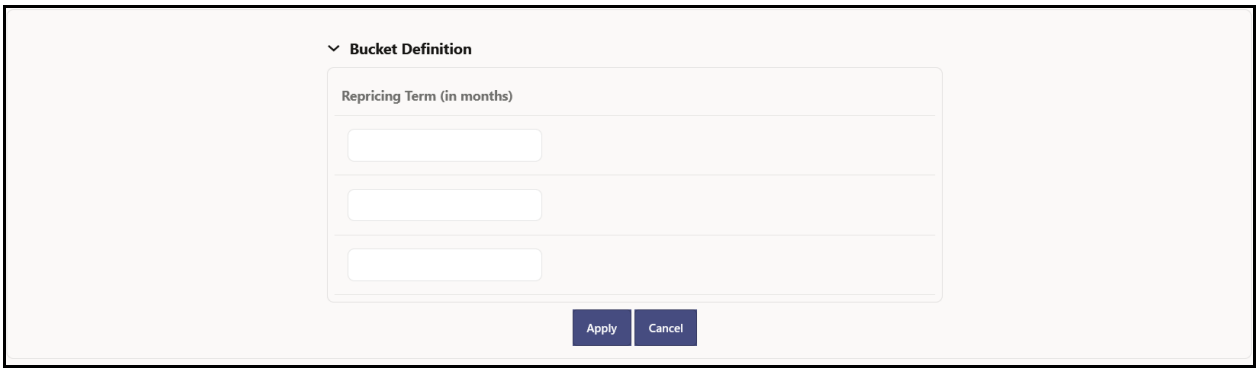
3.3.2.3 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition Section is used to perform following tasks:

- To add more buckets to a particular Dimension, update the number of buckets for the Dimension and click **Appl**y.
- To delete buckets from a particular Dimension, reduce the number of buckets to the desired value and click **Apply**.

To change the Lookup Method of a particular Dimension, select the required method from the corresponding list of methods from the Dimensions Tab.

Figure 15: Bucket Definition Section



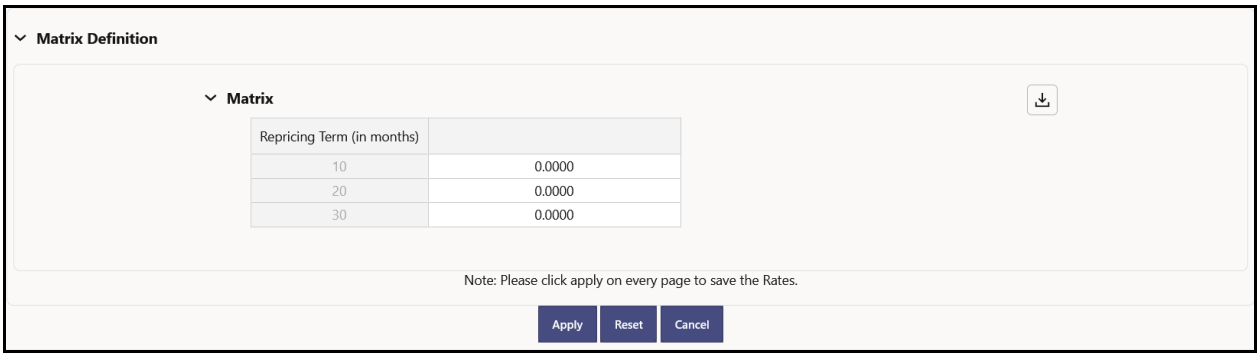
1. Assign values for each of the buckets.
2. Click **Apply**. The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

3.3.2.4 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

   Bucket Values for the row and column dimensions are displayed as a table, while the bucket values for the Page Dimensions (if selected) are shown in the drop down list.

Figure 16: Matrix Definition Section



3.4 View and Edit Prepayment Model Rule

You can view existing Prepayment Model, and you can edit existing Prepayment Model Rules, provided you have Read/Write privileges.

To view and edit a Prepayment Model, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Model**.
2. Search for a Rule.
   For further information, see the Searching for Rules Section.
3. Click ••• in the **Action** column and select **View/Edit** to open the Rule you want to update.
4. Update the Rule details.

5. Click **Apply** or **Save**, depending on the Rule Type.

3.5 Copy Prepayment Model Rule

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

To copy a Prepayment Model, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Model**.
2. Search for a Rule.
   For more information, see the Searching for Rules Section.
3. Click ••• in the **Action** column and select **Save As** to duplicate the Rule.
4. Select a folder where you want to save the Rule copy.
5. Enter a unique name for the new Rule.
6. Enter a brief description of the Rule.
7. Click the **Save** button.

3.6 Delete Prepayment Model Rule

You can delete Prepayment Model Rules that are no longer required.

> **NOTE** A Prepayment Model cannot be retrieved after deletion.
>
> Restrictions on deleting patterns are:
>
> You cannot delete Prepayment Model Rules if you have only Read privileges. Only users with Read/Write privileges and Prepayment Model owners can delete Prepayment Model Rules.
>
> You cannot delete a Prepayment Model that has a dependency.

To delete a Prepayment Model, follow these steps:

1. Navigate to the **Assumption** and select **Prepayment Model**.
2. Search for a Rule.
   For more information, see the Searching for Rules Section.
3. Click ••• in the **Action** column and select **Delete**.

3.7 Dependency Check

You can check dependencies for rules to know where a particular Prepayment Model Rule has been used. This also prevents accidental deletion of rules having dependencies.

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

1. Navigate to the **Assumption** and select **Prepayment Model**.
2. Search for a rule.
   For further information, see the Searching for Rules Section.
3. Click ••• in the **Action** column and select **Dependency Check** to the rule that you want to check for.

> **NOTE** This is functionality will be released in future.

.

OFSAA Support

Raise a Service Request (SR) in My Oracle Support (MOS) for queries related to the OFSAA Applications.

Send Us Your Comments

Oracle welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, indicate the title and part number of the documentation along with the chapter/section/page number (if available) and contact the My Oracle Support.

Before sending us your comments, you might like to ensure that you have the latest version of the document wherein any of your concerns have already been addressed. You can access My Oracle Support site that has all the revised or recently released documents.