Oracle Financial Services

Cash Flow Engine Cloud User Guide



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9 Technical Documents

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1

About This Content

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

Audience

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

Documentation Accessibility

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Related Resources

See these Oracle resources:

- What's New in Your Update
- Oracle Financial Services Profitability and Balance Sheet Management Cloud Service
- Oracle Financial Services Cash Flow Engine Cloud Service
- Public APIs for Profitability and Balance Sheet Management Cloud Service
- Data Security Management Guide

Conventions

The following text conventions are used in this document.

Table 1-1 Conventions

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

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2

Revision History

The following table describes revision history of the document beginning with 26C release.

Table 2-1 Document Control

Release and Version Number	Revision Date	Change Log
R 26D	November 2026	• Use supported database views as process data sources. See Create Cash Flow Process. • Open the latest execution log from the process status. Use **Execution Details** for earlier executions. See View Cash Flow Process Log and Viewing Execution Details of Cash Flow Edits Process. • Generate cash flow insights when you execute a Cash Flow Process. See Using Cash Flow Process UI. • Review execution summaries, account details, calculation steps, and instrument and cash-flow lifecycles. Check the access prerequisites before you review insights. See Cash Flow Generation Insights Summary. • Use the Cash Flow Edits Process section under Cash Flow Edits. The guide presents this section once.
R 26C	August 2026	For more information, see Learn What's New in Your Update

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3
Getting Started

This section includes the following topics:

- Get Started with Oracle Cloud Service: Oracle Cloud is the industry's broadest and most integrated cloud provider, with deployment options ranging from the public cloud to your data center. Oracle Cloud offers best-in-class services across Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).
- Get Started with Cash Flow Engine Cloud Service: Cash Flow Calculation is an integral part of finance and risk solutions. Cash Flow Engine (CFE) of Profitability and Balance Sheet Management Cloud Service is designed to help institutions to take a fresh and granular look at their cash inflows and outflows. It allows you to calculate Cash Flows of their Assets, Liabilities, and Off-Balance Sheet Products at instrument level. The service measures and models every loan, deposit, and off-balance sheet instrument individually, using Deterministic Methods.
- Introduction to Admin Console: Use the Admin Console to perform System Configuration and Identity Management. It is a single point of access to manage identity functions and view administrative features such as Metering, Audit Trail Report and other miscellaneous configuration details in the Profitability and Balance Sheet Management Cloud Service (PBSMCS).
- Getting Started with Oracle Cloud
  This chapter introduces to the Oracle Cloud, Users and Roles, User Groups, User Management, and Session Time Out configuration.
- Introduction to Oracle Cash Flow Engine Cloud Service
- Introduction to Admin Console
  Use the Admin Console to perform System Configuration and Identity Management.
- System Configuration
  Administrators can monitor the usage of service units and user activities through the System Configuration.
- Allowing Domains to Receive Email Notifications
  The application sends email notifications from the following domain. To receive these notifications, you must add this domain to your Allow List: `no-reply-fsgbu-erfplatform@ps1.erf.<region>.ocs.oraclecloud.com`
- Identity Management
  Using Identity Management, administrators can manage fine-grained and coarse-grained entitlements. Coarse-grained entitlements consist of fewer functions than fine-grained entitlements. Authorizers can authorize the entitlement mappings.

3.1 Getting Started with Oracle Cloud

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

Topics:

- Managing Application Users

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- Managing User Groups
- User Management
- Configuring Session Timeout
- Welcome to Oracle Cloud
  Oracle Cloud is the industry's broadest and most integrated cloud provider, with deployment options ranging from the public cloud to your data center.
- Getting Started with your Cloud Service
  To get started, you must activate the subscribed Cloud Service.
- Managing Application Users
  An application user can access the subscribed cloud services, based on the roles and groups assigned to them
- Managing User Groups
  User groups are seeded (available out-of-the-box) by the cloud service. Groups are mapped to roles using the cloud service by the same user that was created using IAM.
- User Management
  During implementation, you prepare your Oracle Application's Cloud Service for the Service Users. The decisions made during this phase determine how you manage users by default. Most of these decisions can be overridden. However, for efficient User Management, Oracle recommends that you configure your environment to reflect both enterprise policy and support most or all users.
- Configuring Session Timeout
  Session timeout automatically signs you out of a logged in session after a set time period, for various reasons such as inactive session for a specific time frame.
- Ways to Generate Access Token
  An authenticated bearer token is required to invoke an API. The Authentication Process for token generation utilizes cURL Commands in a CLI Tool to generate the access token and invoke REST APIs.

3.1.1 Welcome to Oracle Cloud

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

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

- About Oracle Cloud
  Oracle Cloud is one of the few cloud providers that can offer a complete set of cloud services to meet all your enterprise computing needs.
- Supported Web Browsers
  Oracle Financial Services Cloud Services support the latest version of Google Chrome, Microsoft Edge and Mozilla Firefox.
- Order Oracle Cloud Applications
  You can order Oracle Cloud Applications (Software as a Service) offerings by contacting Oracle Sales. After your order is processed, you can then activate your services.

3.1.1.1 About Oracle Cloud

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

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

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

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

3.1.1.2 Supported Web Browsers

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

For more details, see Oracle Software Web Browser Support Policy.

3.1.1.3 Order Oracle Cloud Applications

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

To order a subscription to Oracle Cloud Applications:

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

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

3.1.2 Getting Started with your Cloud Service

To get started, you must activate the subscribed Cloud Service.

After activating the cloud service, you can log in as an administrator and perform the following tasks.

- Create and Activate New Cloud Account
- Access the Cloud Account
- Access Oracle Identity and Access Management (IAM) Console
- Onboard new application users for the subscribed cloud services.

After the administrator successfully adds an application user, they can log in and activate their cloud account and use the subscribed cloud services provisioned by the administrator.

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Choosing Between a New or Existing Cloud Account

Every administrator in a cloud account (tenancy) has access to all subscriptions within that account. To ensure that new administrators cannot access existing subscriptions, you should activate new subscriptions in a separate tenancy by creating a new Oracle Cloud Account. If separate access controls are not needed, you may add new subscriptions to an existing Oracle Cloud Account.

- Create and Activate New Cloud Account
  After you subscribe to the cloud service, you will receive a **Welcome to Oracle Cloud** email with details to create and activate your cloud account.
- Add to an Existing Oracle Cloud Account
  If you already have a cloud account associated with your administrator user name, you can add the newly subscribed cloud service to that account.
- Accessing the Cloud Account
  An Administrator can access the Cloud Account activated and associated with their email address.
- Creating Co-Administrator Users
  After you log in to the IAM console, the first task is to create additional user accounts.
- Subscribing to a Disaster Recovery Infrastructure Region
  In Oracle Cloud Infrastructure (OCI), a Disaster Recovery (DR) region is a secondary, geographically separate region that helps ensure service continuity.
- Creating Custom Domain
- Create an Environment
  After logging into the Oracle Cloud Infrastructure Console, an Administrator can create one or multiple environments/instances for different user groups.
- Access Oracle Identity and Access Management
  Oracle Cloud Infrastructure Identity and Access Management (IAM) provides identity and access management features such as authentication, single sign-on (SSO), and identity life cycle management for Oracle Cloud as well as Oracle and non-Oracle applications, whether SaaS, cloud-hosted, or on-premises. Employees, business partners, and customers can access applications at any time, from anywhere, and on any device in a secure manner.
- Activate Application User Account
  A user provisioned by their administrator can use the specific cloud services they have subscribed to.

3.1.2.1 Create and Activate New Cloud Account

After you subscribe to the cloud service, you will receive a **Welcome to Oracle Cloud** email with details to create and activate your cloud account.

To create and activate a new cloud account:

1. Click **Create New Cloud Account** in the email.
2. Complete the **New Cloud Account Information** to sign up.
3. Enter the following details:
   - **First Name** and the **Last Name** of the person who will be the cloud administrator.
   - **Email** address of the person who will be the cloud administrator. Instructions to log into the new Oracle Cloud Account will be sent to this email address.
   - **Password** to access the new cloud account.

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- **Tenancy Name**: New **Tenancy Name** to be associated with the cloud account.

> **Note**
>
> You cannot modify the tenancy name after it is created. Hence, ensure to provide a valid tenancy name, based on your organization's requirements and naming conventions.

- **Home Region**: Select the **Home Region**, where the account is located. Check the service availability before selecting the home region.
  For assistance regarding home region selection, contact Oracle support. Existing customers have to ensure that the identity resources are located in the home region.

> **Note**
>
> You can subscribe to additional regions but you cannot modify the home region, after provisioning your tenancy.

4. Click **Create Tenancy** to access the **New Cloud Creation Confirmation** page.

   After successful activation, the cloud account administrator will receive a **Get Started Now with Oracle Cloud** email.

3.1.2.2 Add to an Existing Oracle Cloud Account

If you already have a cloud account associated with your administrator user name, you can add the newly subscribed cloud service to that account.

To add an existing Cloud account:

1. In the welcome email, click **Add** to add an existing cloud account.
2. Perform the steps as mentioned in the Access the Oracle Cloud Infrastructure Identity and Access Management (IAM) console.

3.1.2.3 Accessing the Cloud Account

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

After your new cloud account is created and activated, you will receive a **Get Started Now with Oracle Cloud** email, to the email address provided while creating the account.

To access your Cloud account:

1. In the **Get Started Now with Oracle Cloud** email, click **Sign In**.
2. Enter the **Tenancy** name and click **Continue**.
3. Enter the **Username** and **Password** to log in to the **OCI Console** .

   Use the same **Username** and the **Password** that you provided during activation setup.
4. After successful login, proceed with the multi-factor authentication. Select the configured authentication mode and enter the OTP generated using the Oracle Mobile Authenticator application.

   Once the MFA is successfully completed, you can access the **Environment Page**.

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3.1.2.4 Creating Co-Administrator Users

After you log in to the IAM console, the first task is to create additional user accounts.

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

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

> **Note**
>
> A co-administrator will have the same privileges as the existing administrator.

To create a co-administrator user in the IAM Console:

1. In the IAM Console, select **Domains** (Identity domain) to view the list existing domains.
2. Click the required **Domain Name**, to access the **Domain Details** page.
3. In the left pane, click **Users** and select **Create user**, to proceed with the user creation.
4. Enter the following details:
   - **First Name**, **Last Name** and a valid **Username** and the **Email ID**.

     > **Note**
     >
     > – The username should be alphanumeric and cannot exceed 20 characters. You can enter only hyphen (-) and underscore (_) as special characters.
     >
     > – Uncheck the **Use the email address as the username** check box, as you can only set the username as the login ID and currently setting the email address as the login ID is not supported.
5. Select the **Administrator Group**.

   > **Note**
   >
   > After a user logs in to a specific cloud service, the user to user-group mapping created in the **IAM Console** will onboard into the master and mapping tables. Later, if you deselect (remove) a user from a group in **Assign User to Groups** after provisioning, ensure that you also unmap the user from the corresponding user-group in the **Admin Console**. This is a mandatory step to complete the unmapping process.
6. After entering the required information, click **Create** to create and add the new user to the User Summary.

You can also batch import several users using a `.CSV` file.

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3.1.2.5 Subscribing to a Disaster Recovery Infrastructure Region

In Oracle Cloud Infrastructure (OCI), a Disaster Recovery (DR) region is a secondary, geographically separate region that helps ensure service continuity.

To maintain high availability, you must subscribe to a DR region as part of your disaster recovery strategy.

For information on how to subscribe to a DR Infrastructure region, see Subscribing to an Infrastructure Region.

3.1.2.6 Creating Custom Domain

This section provides step-by-step instructions for creating and configuring a custom Domain in Oracle Cloud Infrastructure (OCI). Custom domains allow you to manage users, groups, authentication policies, and integrations within your OCI environment.

To create a custom domain, follow these steps:

1. Navigate to **Identity & Security**and select Domains. The Domains page displays all existing identity domains.
2. Click **Create Domain**.
3. Follow the steps as mentioned in Creating an Identity Domain.

> **Note**
>
> For more information on creating the Custom Domain, see Creating an Identity Domain.

3.1.2.7 Create an Environment

After logging into the Oracle Cloud Infrastructure Console, an Administrator can create one or multiple environments/instances for different user groups.

To create an environment/instance:

1. Log in to **Oracle Cloud Infrastructure Console** (OCI).

   You can view the list of all the environments (instances) provisioned for the one or multiple cloud applications, with the following details:

   - **Name**: The cloud application's instance name.
   - **Type**: The instance type.
   - **Life cycle status**: The instance status.
   - **Region**: The region from where the specific instance is active.
   - **Application URL**: The URL to access the instance.
2. From **My Applications**, click the application in which you want to create an environment.
3. On the **Overview** page, click **Environments**.
4. From the **Compartments** drop-down list, select the compartment in which you want to create an environment.

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5. From the **Domain** drop-down list, select the domain in which you wish to create an environment.

   To use a custom domain, ensure that the custom domain is created before creating the environment. For more information, see the Creating Custom Domain section.

6. Select **Subscription ID** for your cloud service.

   Click **Show Subscription details** to view the details of all the subscription of your service.

7. (Optional). Select the **Region** to host the OCI environment/instance, from the drop-down list.

   If you are not sure about the region, contact My Oracle Support (MoS).

   > **Note**
   >
   > You can select the region only for the first environment/subscription and for the additionally added instances, the region cannot be modified.

8. Enter the following **Environment Details**:

   - **Name**: The name of the new environment or instance.

     > **Note**
     >
     > You cannot modify the environment name after the environment is created. Hence, ensure to provide a valid environment name, based on your organization's requirements and naming conventions.

   - **Admin user name:** The user name of administrator.
   - **Instance type**: Select one of the following instances:
     - **Production**: If the environment is used for Production activities.
     - **Non-production**: If the environment is used for testing and development purposes. For example, a sandbox environment.
   - **Admin email**: The administrator email ID used to log in to the Cloud Console. You can also enter a different email ID that needs to be part of the cloud tenancy. For more details, see Managing Users.
   - **Admin first name** and **Admin last name**: The first and last names of the Administrator.
   - (Optional) Navigate to **Advanced Options** section and select Compartment and Domain from Compartments and Identity Domains tab. To use a custom domain, ensure that the custom domain is created before creating the environment. For more information, see the Creating Custom Domain section.

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

9. Click **Create**

After the environment is set to **Active**, click the environment name to view the **Environment details**. Click the Service console URL under **Environment Information** to create users and groups.

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3.1.2.8 Access Oracle Identity and Access Management

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

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

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

To access the **IAM** Console:

1. Log in to Cloud.Oracle.com, to view all the details pertaining to your cloud order.

   Access the service link from the console to start using your subscriber cloud service.
2. Enter the **Cloud Account Name** and click **Next** to access the **IAM Console**.
3. Click **Change tenancy** option if you want to use a different tenancy.
4. Ensure that the displayed identity domain matches the expected value.
5. Log in with your **Username** and **Password**.

As an Administrator, you can create and manage users with different access rights to the Cloud Service.
For example, the IAM Administrator has superuser privileges for an Oracle Identity and Access Management Domain. This administrator can create users, groups, group memberships, and so on.

3.1.2.9 Activate Application User Account

A user provisioned by their administrator can use the specific cloud services they have subscribed to.

When an administrator completes provisioning an application user, the user receives an account activation email from Oracle.

To log in and activate your application user account:

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

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5. Enter your credentials to sign in to your account and access the **Welcome Page**.

3.1.3 Managing Application Users

An application user can access the subscribed cloud services, based on the roles and groups assigned to them

An administrator can create application users using IAM. They can also batch import several users using a .CSV file.

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

You can map the application users to existing groups based on the roles that they require and their access levels. The access level provided to an application user is based on the following:

- **Groups**: Groups are seeded (available out-of-the-box) by your cloud service. Administrators can also create new groups in IAM. After groups are created, they are synced from IAM to the cloud service. You can map the groups to roles using the subscribed cloud service.
- **Roles**: Roles are seeded by the cloud service. Administrators can also create new roles using the cloud service and assign existing functions to these new roles.
- **Functions**: Functions are seeded by the cloud Service. Administrators cannot create new functions; however, they can use the existing functions.
- User Summary- Application Users
  View the list of existing application users in the User Summary.
- Creating New Application Users
- Creating a New User Group
  Create groups to manage user access to applications and resources.
- Assign Groups to Users
  Assign a specific group to a user, based on the roles required for the user.
- Map Application to the User
  Once user is created and mapped to user groups, you can map the user to application.
- Bulk Import Application Users
  As an administrator, you can batch import user accounts using a .CSV file.

3.1.3.1 User Summary- Application Users

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

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

- To view the **User ID** and **Username** of the selected User - Select the **Username** in the **User Summary** page and select **Details**.
- To search for a specific User, type the first few letters of the required **Username** in the **Search** box and click **Search**.
- Using the navigation buttons at the bottom of the summary page, you can browse to the different pages. Also, you can enter the number of entries to be listed on a single page in the **Records** box or use the buttons to increase or decrease the number of entries.
- Enter the page number in the **View Bar Control** and jump to the required page.

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3.1.3.2 Creating New Application Users

After you log in to the IAM console, the first task is to create additional user accounts.

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

For example, you can create a user for each member of your team. Each member can then sign into the account with their credentials. You can also assign each user to specific user groups and apply specific security policies or roles to each group.

You can create the users and map the users to groups for your service. After creating the users, the users will receive a Welcome email. The users must activate their accounts and enter a new password to access the services.

To create users in the IAM Console:

1. In the IAM Console, select **Domains** (Identity domain) to view the list existing domains.
2. Click the required **Domain Name**, to access the **Domain Details** page.

> **Note**
>
> If you are using a custom domain, select the custom domain name before proceeding with the steps below. For more information, see the Creating Custom Domain section.

3. On the details page, perform one of the following actions depending on the option that you see:
   - Select the **User management** tab, and then go to the **User** section of the tab.
   - Under **Identity domain** on the left side of the page, select **Users**.
4. Under **Users** and select **Create**, to proceed with the user creation.
5. In the **First name** and **Last name** fields enter the user's name.
6. To have the user sign in with their email address, follow these steps:
   a. Leave the **Use the email address as the username** checkbox selected.
   b. In the **Username / Email** field, enter the email address for the user account.
7. To have the user sign in with their username, follow these steps:
   a. Clear the **Use the email address as the username** checkbox.
   b. Enter the unique name for the user. You cannot change this value later.

> **Note**
>
> The name must meet the following requirements: No spaces. Only Basic Latin letters (ASCII), numerals, hyphens, periods, underscores, +, and @.

   c. In the **Email** field, enter the email address for the user account.

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> **Note**
>
> If the **Primary email address required** checkbox is selected on the **Domain settings** page, then you must provide an email address in the **Email** field to create the user account.
>
> If the **Primary email address required** checkbox is not selected, then you can create the account without entering an email address in the **Email** field.

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

> **Note**
>
> After a user logs in to a specific cloud service, the user to user-group mapping created in the **IAM Console** will onboard into the master and mapping tables. Later, if you deselect (remove) a user from a group in **Assign User to Groups** after provisioning, ensure that you also unmap the user from the corresponding user-group in the **Admin Console**. This is a mandatory step to complete the unmapping process.

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

You can also batch import several users using a `.CSV` file.

3.1.3.3 Creating a New User Group

Create groups to manage user access to applications and resources.

To create a user group :

1. In the IAM Console, select **Domains** (Identity domain) to view the list existing domains.
2. Click the required **Domain Name**, to access the **Domain Details** page.

> **Note**
>
> If you are using a custom domain, select the custom domain name before proceeding with the steps below. For more information, see the Creating Custom Domain section.

3. On the details page, perform one of the following actions depending on the option that you see:
   - Select the **User management** tab, and then go to the **Groups** section of the tab.
   - Under Identity domain on the left side of the page, select Groups.
4. Under Groups select **Create group**.
5. Enter the **Group Name** and the **Group Description**.
6. Select **User can request access**, to allow users to request access to this group.
7. To add users to the group while creating the group, select the checkbox for each user that you want to add to the group.

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> **Note**
>
> To search for a user, select the text box, enter all or part of the beginning of the username, first name, or last name of the user, and then press **Enter**.

8. (Optional) In the **Tags** section, add one or more tags to the group. If you have permissions to create a resource, then you also have permissions to apply free-form tags to that resource. To apply a defined tag, you must have permissions to use the tag namespace. If you're not sure whether to apply tags, skip this option or ask an administrator. You can apply tags later.
9. Click **Create** to create the new user group with the selected users.

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

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

3.1.3.4 Assign Groups to Users

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

Ensure to create a group, before assigning users to the group.

To map a user to a group using the IAM Console :

1. In the IAM Console, select **Domains** (Identity domain) to view the list existing domains.
2. Click the required **Domain Name**, to access the **Domain Details** page.

> **Note**
>
> If you are using a custom domain, select the custom domain name before proceeding with the steps below. For more information, see the Creating Custom Domain section.

3. On the details page, perform one of the following actions depending on the option that you see:
   - Select the **User management** tab.
   - Under Identity domain on the left side of the page, select **Groups**.
4. Find the **Groups** table listing and select the group to which to add users.
5. On the group details page, perform one of the following actions depending on the option that you see
   - Select the **Users** tab.
   - Under Resources, select **Users**.
6. Click **Assign User to Groups** to view the list of available groups.
7. To add users to the group, select the checkbox for each user that you want to add to the group

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> **Note**
>
> To search for a user, select the text box, enter all or part of the beginning of the username, first name, or last name of the user, and then press **Enter**.

8. After selecting all the required Groups, click **Add**.

   The user is assigned to the selected groups. You can access the list of groups associated with a user, in the respective **User Details** page.

   To dissociate an user from a group, select the group and click **Remove User from the Group**.

3.1.3.5 Map Application to the User

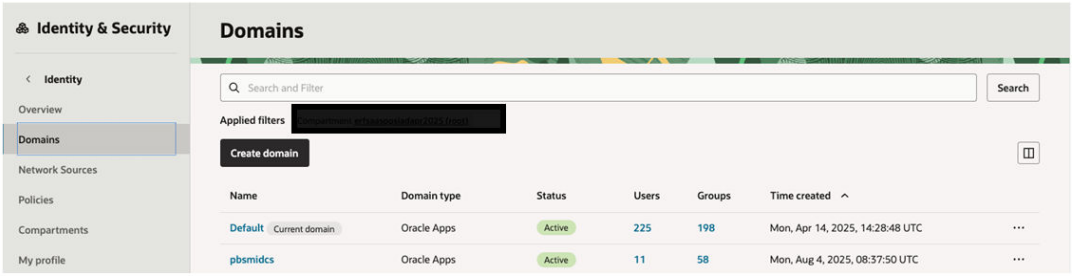
Once user is created and mapped to user groups, you can map the user to application.

To map the application to a user group, log in to IAM and follow these steps:

1. Search for **Domain**.
2. Select the required **Domain** from list.

> **Note**
>
> If you are using a custom domain, select the custom domain name before proceeding with the steps below. For more information, see the Creating Custom Domain section.

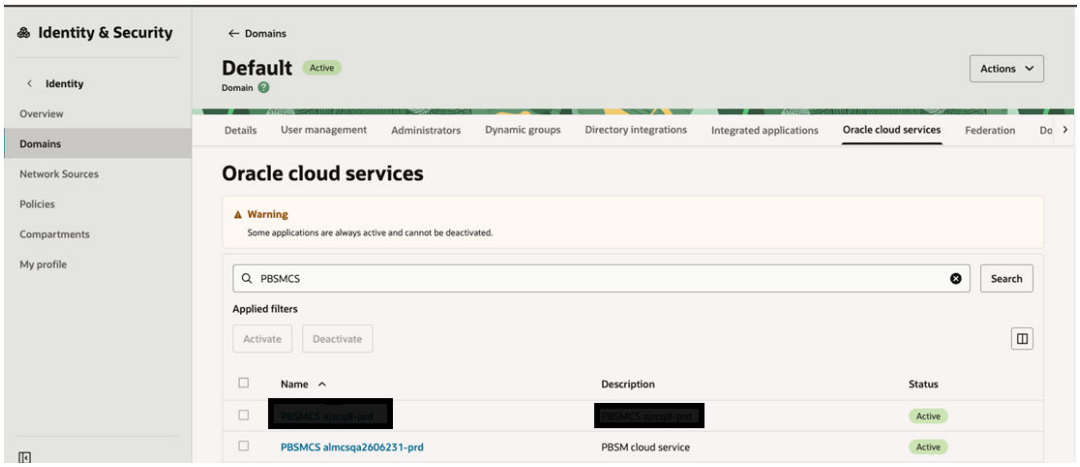
Figure 3-1 Domain Selection



3. Select **Oracle Cloud Services** tab.
   The screen displays the various Oracle Cloud Services.

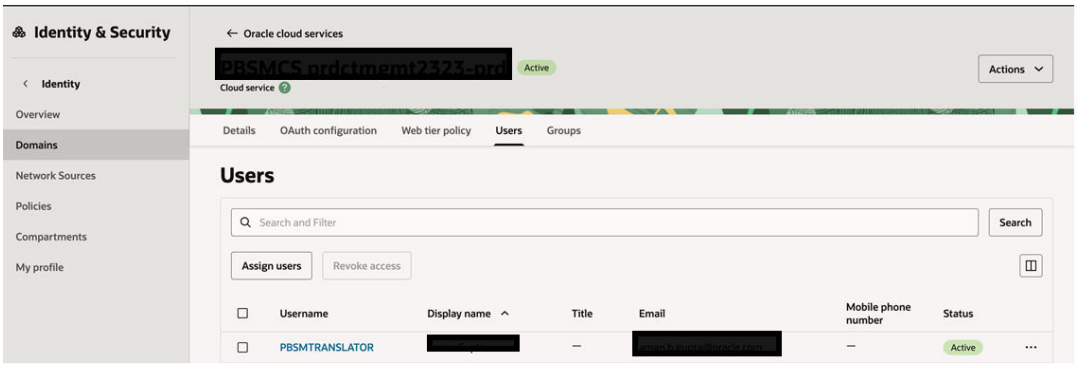
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Figure 3-2 Oracle Cloud Services



4. Select the Cloud Services you are subscribed to like, **<Cloud_service_Name> xxxx-prd** and **<Cloud_Service_Name> xxxx-nprd**.
   Where Description is mentioned as your registered Cloud Service.
5. Select **Users** tab.
6. Click **Assign users**, and then select the relevant **User**.

Figure 3-3 Assign users



7. Click **Assign**.

3.1.3.6 Bulk Import Application Users

As an administrator, you can batch import user accounts using a `.CSV` file.

> **Note**
>
> Before importing the user accounts, create a `.CSV` file that is properly formatted for the import.

To import user accounts :

1. In the IAM Console left pane, click **Users** and select **More Actions** and select **Import Users**.

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2. Click **Browse** to locate and select the .CSV file containing the user accounts to import.

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

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

> **Note**
>
> Oracle IAM cannot import a user account if a mandatory value such as user's first name, last name, or username, is missing. In such cases, Oracle IAM will skip the incomplete account and proceed to the next account in the .CSV file.

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

For information on how to import and export users, groups, and Oracle application roles into and out of an identity domain, see Transferring Data.

3.1.4 Managing User Groups

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

Administrators can also create new groups in IAM. After groups are created, they are synced from IAM to the cloud service. You can map the groups to roles using the subscribed cloud service.

For the complete list of Out-of-the-Box (OOTB) user groups available across all PBSM Cloud Services, see Appendix A: OOTB User Groups.

- Map Application to the User Groups
  After creating a group, you can map the required applications with the group.
- Map Users to Groups
  Log in to IAM as an administrator, and map users to user groups.
- Map Roles to User Group
  You can map roles to a user group using Admin Console.
- Unmap User from Groups
  Unmap a user from a specific group to revoke the associated functions.

3.1.4.1 Map Application to the User Groups

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

To map the application to a user group, log in to IAM and follow these steps:

1. Go to the Navigation menu in the enter the **Domains** in the Search bar to view the **Domains** list.
2. Select the **Domain** and then from the LHS menu,

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> **Note**
>
> If you are using a custom domain, select the custom domain name before proceeding with the steps below. For more information, see the Creating Custom Domain section.

3. Select **Oracle Cloud Services** tab, to view the list of Cloud Services.

   The screen displays the various Oracle Cloud Services.

4. Select the Cloud Services you are subscribed to (Syntax: **<Cloud_service_name>xxxx-prd** and **<Cloud_service_name>xxxx-nprd**, where **Description** is mentioned as your registered cloud service).

5. Select **Groups** and click **Assign Groups**.

6. Select the user and click **Assign**.

3.1.4.2 Map Users to Groups

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

To map a user to a user group:

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

> **Note**
>
> To select a user group, select the check-box corresponding to the user group. To select all user groups displayed on the page, select the check-box marked **Select All**.

4. Click **New Mapping** to map the user to the selected user group.

   Or

   Click **Unmap** to remove the user group-role mapping.

   If you need to authorize an unmap request, refer to Unmap User from Group.

> **Note**
>
> User-group mapping changes from IAM will take some time to sync with your Cloud Service. If these changes are made during the active user session, then it will be reflected on the next login.
> After a user signs into the cloud service, the user to user-group mapping created in the IAM Console will onboard into the master and mapping tables. If you unmap a user from a group in the Admin Console, navigate to the associated console and open **Assign User to Groups**. Deselect the user corresponding to the user group and click **Finish**. This is a mandatory step to complete the unmapping process.
>
> For more information, refer to Unmap User from Group.

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

5. Select a **User Group**.

> **Note**
>
> If the logged-in user has both administration and authorization entitlements, an authorization view toggle button is available. Enable this button to complete the authorization.

6. Click **Map**.

> **Note**
>
> If the logged-in user has both administration and authorization entitlements, an authorization view toggle button is available. Enable this button to complete the authorization.

3.1.4.3 Map Roles to User Group

You can map roles to a user group using Admin Console.

To map roles to the user group:

Before mapping the roles to an user group, ensure that the roles are created in the Admin console.

1. From the **Identity Management** tab, Click **Groups** to access the **Groups Management** page.
2. Search for the specific group.
3. Click the **User Group** and click **New Mapping** under the **Mapped Roles** tab.
4. Search for required role names created in **Roles Management** and click **New Mapping** to map each role.
5. Log in as a user with the authorization role and authorize the mapped roles in the **Authorization View**.

A user group is created in the IAM Portal and is mapped to a role created in the Admin Console.

3.1.4.4 Unmap User from Groups

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

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

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

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

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3.1.5 User Management

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

For more information, see the View List of Application Users and User Roles and Privileges.

- Application Users
  During implementation, you can use the Create User task to create Test Service Users. By default, this task creates a minimal person record and a user account. After implementation, you should use the Hire an Employee Task to create Service Users. The Create User Task is not recommended after the implementation is complete.
- User Roles and Privileges
  Oracle Financial Services Cash Flow Engine Cloud Service (CFECS) Users are assigned roles through which they gain access to functions and data. Users can have any number of roles.

3.1.5.1 Application Users

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

For more information, see Create Application Users.

3.1.5.2 User Roles and Privileges

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

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

Figure 3-4 User Roles and Privileges



IAM Administrator
- Create User
- Map Users to OOB User Groups
- Create User Groups



Identity Administrator
- Map Users to OOB User Groups
- Create User Groups and Roles
- Map Users to User Groups
- Map Roles to User Group
- Map Functions to Roles



Identity Authorizer
- Manage Authorization



Application Users
- Manage Cash Flow Engine
- Setup Dimensions, Rule, Assumptions, and Processes
- Execute Processes
- Generate Reports
- Review and Analysis Reports

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To view Cash Flow Generation Insights, ask your administrator to map the following role to your user group. Obtain execution permissions separately to run a Cash Flow Process.

Table 3-1 Cash Flow Generation Insights Role

Role	Role Code	Access Code	Access
Cash Flow Generation Insights Role	CFGIROLE	CFGIVIEW	View cash flow generation insights.

For the insights workflow, see Cash Flow Generation Insights Summary.

- Role Based Access Control
  Role-based security in Oracle Financial Services Cash Flow Engine Cloud Service Controls who can do what and to which data.
- User Groups and Activities
  The following table provides the information on the User Groups and related activities.
- User Roles and Activities
  The following User Roles are seeded in the Cash Flow Engine Cloud Service to facilitate the activities expected from the users mapped to the seeded User Groups:
- User Persona and Analytics Menu Access Details
  The following table provides the information on the User Persona and access within Analytics menu.
- User Group and User Role Mapping
  The following table lists the seeded mapping of User Groups to the User Roles.

3.1.5.2.1 Role Based Access Control

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

The following table provides examples of role-based access.

Table 3-2 Examples of Role Based Access

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

3.1.5.2.2 User Groups and Activities

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

User Groups	Activities

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Identity Administrator	· View Reports · View Object Storage · View OAuth Credentials · Perform Identity and Access Management Operations
IAM Administrator	· Create Users · Map Users to the Instance
CFE Admin Group	· Configure the Folders · Configure Application, Global and User Preferences · View or Edit Cash Flow Engine Configuration Parameters
CFE Analyst Group	· Extend Data Model · Setup Dimension Management · Create/import members · Create/import hierarchy · Setup Interest rate curve · Setup Currency · Setup Economic Indicators · Setup Holiday Calendar · Setup Behavior Pattern · Setup Repricing Pattern · Prepayment Rule · Prepayment Model · Forecast Rates · Discount Methods · Setup Filters · Cash Flow Process · Cash Flow Edits Configuration · Cash Flow Edits Process · Data File Specification · Data Loader · Create and Execute Batches · Generate Reports
CFE Auditor Group	· Review/Analyze Results · Review Process Logs · View reports
Job Administrator Group	Manage Jobs
Scheduler Administrator Group	Manage Batches
CFE BI Administrator	• Review/Analyze Results • Review Process Logs • View Reports
CFE BI Analyst	• Review/Analyze Results • Review Process Logs • View Reports
CFE BI Auditor	• Review/Analyze Results • Review Process Logs • View Reports

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

3.1.5.2.3 User Roles and Activities

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

CFE Administrator

· CFE Analyst

· CFE Auditor

· CFE BI Administrator

· CFE BI Analyst

· CFE BI Auditor

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

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

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

3.1.5.2.4 User Persona and Analytics Menu Access Details

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

Table 3-3 User Persona and Analytics Menu Access Details

User Group Code	Mapped Role Code	User Access Type	Persona	Analytics Application Role
CFEBIADMINGRP	CFEBIADMIN	R/W	Data Steward	DV Content Author
CFEBIANALYSTGRP	CFEBIANALYST	R/W	Application Analyst	DV Content Author
CFEBIAUDITORGRP	CFEBIAUDITORGRP	R	Application Auditor	DV Consumer

Table 3-4 Analytics Menu Access Privileges

level 1 menu	level 2 menu	level 3 menu	level 4 menu	Persona
Cash Flow Engine >	**Analytics >**	**BI Home Page**		**Data Steward, Application Analyst, Application Auditor**

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Table 3-4 (Cont.) Analytics Menu Access Privileges

	SQL Query Browser		Data Steward, Application Analyst
	Raw Data Analysis		Data Steward, Application Analyst, Application Auditor
	Operational Analysis	Dimensions Registry	Data Steward, Application Analyst, Application Auditor
		Currency Rates	Data Steward, Application Analyst, Application Auditor
		Interest Rates Curves	Data Steward, Application Analyst, Application Auditor
		Data Quality Checks	Data Steward, Application Analyst, Application Auditor
		File Uploads	Data Steward, Application Analyst, Application Auditor
		Groups and Roles	Data Steward, Application Analyst, Application Auditor.
	Data Insights		Data Steward, Application Analyst, Application Auditor
	Processed Data Insights >	Processed Data Insights	Data Steward, Application Analyst, Application Auditor
	Processing Analytics >	Processing Analytics	Data Steward, Application Analyst, Application Auditor

3.1.5.2.5 User Group and User Role Mapping

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

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Table 3-5 User Group and User Role Mapping

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

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

3.1.6 Configuring Session Timeout

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

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

When you sign in using your credentials, you are authenticated to use the application, and a session is established. But, for security purposes, your session is configured to be active for a predefined duration, which is called the session timeout period. Your sessions can expire due to various reasons, such as an inactive session for a specific time period. In such cases, you are automatically signed out of the application. Your timeout periods may vary on certain pages. For example, you may observe a longer timeout period on pages that automatically refresh or user portal/tabs that open in separate windows or tabs.

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

Timeout Type	Description	Configurable	Timeout Duration
Session Lifetime Timeout	After authenticating to the application, your current session remains active for a predefined duration, referred to as the session lifetime timeout period. Your session ends after this period, even if you're using the application.	Yes	8 Hours (Default value)

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Timeout Type	Description	Configurable	Timeout Duration
Inactive Session Timeout	After authenticating to the application, if your session is idle or inactive for a specific time, the System automatically terminates the session, and you are signed out of the session.	No	60 Minutes
Browser Inactivity Timeout	After authenticating to the application, if your browser session is idle or inactive for a specific time, the System automatically terminates the session, and you are signed out of the session.	No	60 Minutes

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

3.1.6.1 How to configure Session Lifetime Timeout?

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

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

To configure the session timeout:

1. Log in with your **Security Administrator Account**.
2. Navigate to the Domain page. Click **Settings** and select **Session Settings**.
3. Specify the **Session Duration** under **Session Limits**. Enter the required value. By default, this is set to 480 Minutes.

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Figure 3-5 Session Settings



3.1.7 Ways to Generate Access Token

An authenticated bearer token is required to invoke an API. The Authentication Process for token generation utilizes cURL Commands in a CLI Tool to generate the access token and invoke REST APIs.

The Authentication Token is generated through the OAuth Client ID and Secret Credentials. The Authentication Token does not require that you log in to the required Cloud Service to invoke the REST APIs from external applications.

Ensure that you have the appropriate log-in credentials to access the required Cloud Service and the appropriate roles to perform specific operations using the API Resources. Below is a list of authentication steps, with subsequent sections offering detailed information:

1. Create an Integrated (Confidential) Application.
2. Get the OAuth Client ID and Client Secret
3. Generate the access token

After generating an access token, proceed to invoking the APIs.

- Create an Integrated (Confidential) Application
  You can create an Integrated (Confidential) Application in Oracle Identity / IDCS (OCI IAM) to generate OAuth tokens for making public API calls.
- Get the OAuth Client ID and Client Secret
  An OAuth Cliend ID and Client secret are required to generate an access token.
- Generate Access Token Using Different Grant Types
  An access token is required to invoke APIs and you can generate the access token using different grant types.
- Invoke the API using the Access Token
  After creating an access token using OAUth Client ID and Client secret, you can invoke the Specific API.
- Generate Access Token to Execute a Public RESTful API
  You can generate access token using TLS to execute a public RESTful API.

3.1.7.1 Create an Integrated (Confidential) Application

You can create an Integrated (Confidential) Application in Oracle Identity / IDCS (OCI IAM) to generate OAuth tokens for making public API calls.

OPC Applications Overview
An OPC app is a pre-created application that's provisioned automatically. The app name uses the following format: the cloud service name followed by your tenant ID. Example: AMLCS bccb73-prd.

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> **Note**
>
> The Admin Console previously displayed the Oracle Public Cloud (OPC) application client ID and client secret for token generation purposes. As token generation using the OPC application will be deprecated in a future release, customers can continue to retrieve the client ID and client secret from the Oracle Cloud Infrastructure (OCI) Console, if required. Customers are encouraged to transition using integrated applications for token generation and API access going forward.

To view your available OPC apps:

1. In the OCI Console, select Domains from the menu on the left.
2. Open the Oracle Cloud Services tab.
3. Review the list to see all OPC apps available to you.

Currently, Oracle Public Cloud (OPC) app client credentials are used to generate OAuth token and make public API calls. It is recommended to use Integrated App instead of OPC app for token generation, and maps grant types to typical use cases (service-to-service vs user-role tokens).

Prerequisites

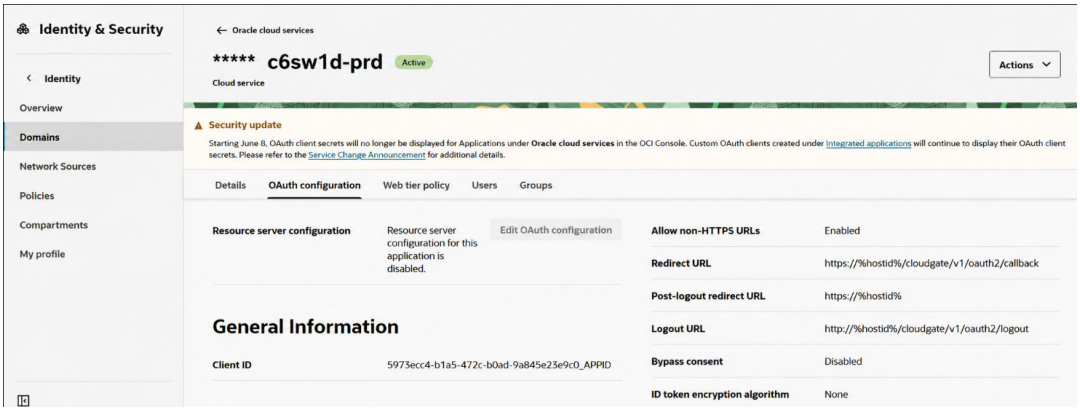
1. Administrative access to your OCI Identity Domain / IDCS console.
2. Appropriate tenancy/domain selected in the Console.
3. If enabling TLS Client Authentication, private key and certificates are required.

Perform the following steps to create an integrated application

1. Sign in to the Oracle Cloud Console and go to Identity -> Identity Domains.
2. Select the domain where you want to create the application.>
3. On the domain details page, choose 'Integrated Applications'.
4. Click 'Add Application' and select 'Confidential Application'.
5. Click 'Launch workflow'.
6. Provide application details such as Name, Description, and Application URL (Redirect URL).
   - Application name: You can use the Tenant ID as your application name.
   - Redirect URL. Example: `https://%hostid%/cloudgate/v1/oauth2/callback`

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Figure 3-6 Integrated application



7. Click **Submit**. The integrated application is created now.
8. Click the **OAuth configuration** tab.
9. Select 'Configure this application as a client now'.
10. Under Grant Types, at minimum enable:
    - Client Credentials
    - Authorization Code
    - Resource Owner

    > **Note**
    >
    > Enable **Allow Non-HTTPS URLs.**.

    - Optionally, enable:
        a. Refresh Token (to obtain refresh tokens alongside access tokens).
        b. TLS Client Authentication (for certificate-based client auth).
11. Complete the workflow and select **Finish**. The application is added in a deactivated state.
12. In the 'Application added' dialog, record the Client ID and Client Secret. Store these securely (Example: Vault).
13. On the application details page, click 'Activate' and confirm activation.
14. Post activation: If enabling TLS Client Authentication, import and register client certificate and key. For more information, see Generate Access Token to Execute a Public RESTful API.

Note:

- Client Credentials, Authorization Code and Resource Owner are default/commonly required grant types. You can enable other grants as needed.
- To support renewing access tokens, enable the Refresh Token grant type.
- Optionally, enable TLS Client Authentication for certificate-based client authentication.

This topic provides enough information to complete the task. However, for a deeper understanding of creating an integrated app, see Adding a Confidential Application.

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3.1.7.2 Get the OAuth Client ID and Client Secret

An OAuth Cliend ID and Client secret are required to generate an access token.

You can obtain the OAuth client ID and client secret from:

1. **Integrated application (recommended)**: Obtain the `Client ID` and `Client Secret` from the newly created Integrated (Confidential) Application.
2. **OPC application (will be deprecated in a future release)**: From the **Oracle cloud services** tab in your OCI Console, open your tenant-specific application and obtain the client ID and client secret.

Once you obtain the client ID and client secret, proceed to generate the access token

3.1.7.3 Generate Access Token Using Different Grant Types

An access token is required to invoke APIs and you can generate the access token using different grant types.

Click a link for more information on each of these grant types:

1. Client Credentials Grant Type
2. Authorization Code Grant Type
3. Resource Owner Password Credentials Grant Type
4. TLS Client Authentication Grant Type
5. Refresh Token Grant Type

> **Note**
>
> Token requests using TLS Client Authentication (Mutual TLS) must be made over HTTPS. The client is required to present a valid client certificate and the corresponding private key during the TLS handshake. The client certificate must be registered with Oracle IAM (Identity Domain), and the server certificate must be trusted by the client. Token issuance occurs only after successful TLS authentication and certificate validation.

For more information, see TLS Client Authentication Grant Type.

Obtaining the IDCS Secure Domain URL

An IDCS secure domain URL is the web address used to access Oracle Identity Cloud Service (IDCS) over a secure HTTPS connection.

To obtain the IDCS secure domain URL:

1. Sign in to the Oracle Cloud Console and go to **Identity -> Identity Domains**.
2. From the **Details** tab, copy the Domain URL.
3. Append `/.well-known/idcs-configuration` after the URL.
   Example: `<idcs_domain_URL>/.well-known/idcs-configuration`
4. Search for `secure_token_endpoint` to get the IDCS secure domain URL.

Procedure to obtain a ca.crt file

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The following procedure uses FireFox as the web browser.

1. Obtain your secure IDCS URL.
2. Open Firefox and enter the URL in the address bar, then press **Enter**.
3. Click the padlock icon to the left of the URL in the address bar.
4. Select **Connection secure** (or similar option) and then click **More Information**.
5. In the window that opens, select the **Security** tab and click **View Certificate**.
6. Under the **Miscellaneous** section, download either the **PEM (cert)** or **PEM (chain)** file as needed.

- Client Credentials Grant Type
  When to use: For non-interactive backend services or internal automation tasks.
- Authorization Code Grant Type
  When to use: For web or client apps that require secure user login flow with redirect.
- Resource Owner Password Credentials Grant Type
  When to use: When user credentials are available, and the client is trusted to store them securely.
- TLS Client Authentication Grant Type
  When to use: For high-security backend integrations using mutual TLS.
- Refresh Token Grant Type
  When to use: To obtain a new access token without requiring user login.

3.1.7.3.1 Client Credentials Grant Type

When to use: For non-interactive backend services or internal automation tasks.

Sample code

```
curl --location 'https://<idcs_domain>/oauth2/v1/token' \
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
--data-urlencode 'grant_type=client_credentials' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```

Sample code with mTLS enabled

```
curl --location 'https://<idcs_domain>/oauth2/v1/token' \
--cacert ./ca.crt \
--cert ./client.crt \
--key ./client.key \
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
--data-urlencode 'grant_type=client_credentials' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```

Sample response

```
{ "access_token": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9...", "token_type":
"Bearer", "expires_in": 3600, }
```

For more details, see Client Credentials Grant Type

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3.1.7.3.2 Authorization Code Grant Type

When to use: For web or client apps that require secure user login flow with redirect.

> **Note**
>
> - Provides user identity and roles via id_token.
> - Both access and refresh tokens are issued.
> - Ideal for user-based API calls or delegated permissions.

Perform the following steps to enable authorization code grant type:

1. Run the following URL in a browser.

   > **Note**
   >
   > Replace the domain URL and client_id in the address below. Ensure the redirect URI matches the one configured when creating the application

   Sample code:

   ```
   https://<idcs_domain>/oauth2/v1/authorize?
   client_id=<client_id>&
   response_type=code&
   redirect_uri=<redirect_uri>&
   scope=openid%20urn:opc:idm:__myscopes__%20offline_access&
   nonce=<random_nonce>&X-HOST-IDENTIFIER-NAME=<idcs_domain>
   ```

2. After logging in with your username and password, copy the redirected URL that contains the authorization code.

   ```
   https://<idcs_domain>/cloudgate/v1/oauth2/callback?
   code=AgAgYzVhNWQ5NDQ0YjU1NDgxYTg4MDQ3N2QyZjU3ZWU1MWUIABBv5NfO37CVTXCBTYWgc2
   dfAAAAMGK7dvN2a7dm9U9Z1m4oUTfXyEl5pYV9jCOj3JN38b8UrZwO383E7Zysz-ZDesv8eg==&
   X-HOST-IDENTIFIER-NAME=<idcs_domain>
   ```

3. Use the following code in the curl request to obtain the access token.
   Sample code:

   ```
   curl --location 'https://<idcs_domain>/oauth2/v1/token' \
   --header "Authorization: Basic <base64Encoded clientid:secret>" \
   --header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
   --data-urlencode 'grant_type=authorization_code' \
   --data-urlencode 'code=<authorization_code_from_step2>'


   curl --location 'https://<idcs_secure_domain>/oauth2/v1/token' \
   --cacert ./ca.crt \
   --cert ./client.crt \
   --key ./client.key \
   ```


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```
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
--data-urlencode 'grant_type= authorization_code' \
--data-urlencode 'code=<authorization_code>'
```

Sample response

```
{ "access_token": "eyJraWQiOiJrZXkxIiwiYWxnIjoiUlMyNTYifQ...", "refresh_token":
"bc12cde3-xxxx-xxxx-xxxx-xxxx", "token_type": "Bearer", "expires_in": 3600, }
```

For more details, see Authorization Code Grant Type.

3.1.7.3.3 Resource Owner Password Credentials Grant Type

When to use: When user credentials are available, and the client is trusted to store them securely.

> **Note**
>
> - If MFA is enabled for the application, the **Authorization Code Grant Type** must be used to get the token.
> - Suitable for generating user-level tokens tied to roles.

Sample code

```
curl --location 'https://<idcs_domain>/oauth2/v1/token' \
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'grant_type=password' \
--data-urlencode 'username=<assigned_user_name>' \
--data-urlencode 'password=<assigned_password>' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```

Sample code with mTLS enabled

```
curl --location 'https://<idcs_domain>/oauth2/v1/token' \
--cacert ./ca.crt \
--cert ./client.crt \
--key ./client.key \
--header "Authorization: Basic $encoded" \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'grant_type=password' \
--data-urlencode 'username=<assigned_user_name>' \
--data-urlencode 'password=<assigned_password>' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```

Sample response

```
{ "access_token": "eyJraWQiOiJrZXkxIiwiYWxnIjoiUlMyNTYifQ...", "refresh_token":
"bc12cde3-xxxx-xxxx-xxxx-xxxx", "token_type": "Bearer", "expires_in": 3600, }
```

For more details, see Resource Owner Password Credentials Grant Type.

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3.1.7.3.4 TLS Client Authentication Grant Type

When to use: For high-security backend integrations using mutual TLS.

> **Note**
>
> - Access token represents the application, not a user.
> - Refresh token returned only if `offline_access` is enabled in app configuration.

Sample code with mTLS enabled

```
curl --location 'https://<idcs_secure_domain>/oauth2/v1/token' \
--cacert ./ca.crt \
--cert ./client.crt \
--key ./client.key \
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
--data-urlencode 'grant_type=tls_client_auth' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__' \
--data-urlencode 'client_id=<client_id>'
```

Sample response

```
{ "access_token": "eyJhbGciOiJIUzI1NiIsInR5cCI6...", "token_type": "Bearer",
"expires_in": 3600, "refresh_token": "9e7d8f4a-xxxx-xxxx-xxxx-xxxx", }
```

For more details, see TLS Client Authentication Grant Type.

3.1.7.3.5 Refresh Token Grant Type

When to use: To obtain a new access token without requiring user login.

> **Note**
>
> - New tokens issued without user intervention.
> - Ideal for maintaining long-running sessions securely.
> - Refresh token validity is managed by IDCS configuration.

Sample code

```
curl --location 'https://<idcs_domain>/oauth2/v1/token' |\
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'grant_type=refresh_token' \
--data-urlencode
'refresh_token=<your_refresh_token_generated_by_authorization>' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```


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Sample code with mTLS

```
curl --location 'https://<idcs_secure_domain>/oauth2/v1/token' \
--cacert ./ca.crt \
--cert ./client.crt \
--key ./client.key \
--header "Authorization: Basic <base64Encoded clientid:secret>" \
--header 'Content-Type: application/x-www-form-urlencoded;charset=UTF-8' \
--data-urlencode 'grant_type=refresh_token' \
--data-urlencode
'refresh_token=<your_refresh_token_generated_by_authorization_grant_type>' \
--data-urlencode 'scope=urn:opc:idm:__myscopes__'
```

Sample response

```
{ "access_token": "eyJraWQiOiJrZXkxIiwiYWxnIjoiUlMyNTYifQ...", "refresh_token":
"9b53e4a2-xxxx-xxxx-xxxx-xxxx", "token_type": "Bearer", "expires_in": 3600, }
```

For more details, see Refresh Token Grant Type.

3.1.7.4 Invoke the API using the Access Token

After creating an access token using OAUth Client ID and Client secret, you can invoke the Specific API.

To invoke the API using the generated Access Token, refer to the following example executed using cURL Commands in the CLI Tool:

```
curl -iL -H "Authorization: Bearer <access token>" -H "Content-Type:
<content_type>" -d "<request_body>" --cacert <certificate(.pem)> -X
<http_verb> <api_url>

curl -iL -H "Authorization: Bearer <AUTH_TOKEN>"

-H "Content-Type: application/json" -d "{\"type\":\"files\",\"data\":
[{\"fileName\":\"testtoken\",\"mimeType\":\"text/plain\",\"fileSize\":

123}]}" --cacert outcert.pem -X POST https://<OCI-URL>/<TENANT><APP_ID>/dsa/
utils/getObjStoreParUrl
```

3.1.7.5 Generate Access Token to Execute a Public RESTful API

You can generate access token using TLS to execute a public RESTful API.

Prerequisite: Organization-wide `ca.crt`, `client.crt`, and `client.key` (you can generate `client.crt` and `client.key` using `openssl`.)

Create a `client.crt` using `openssl`

Run the following command:

```
openssl req -x509 -new -nodes -key ca.key -sha256 -days 3650 -out ca.crt
```

Create a `client.key` using `openssl`

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Run the following command:

```
openssl genrsa -out client.key 2048
```

Create an Integrated Application

> **Note**
>
> If you have already completed this task, skip this section and proceed to the next task.

1. Log in to Admin Console.
2. Under **Domains**, go to **Integrated Applications**.
3. Create a confidential application with an app name. Example: TLS_APP_<tenant.
4. After creating the application, edit the OAuth configuration as follows:
   a. Under the Client configuration, Select "Configure this application as a client now"
   b. Enable the below Auth grant types(TLS should be checked for TLS authorization)
   c. Enable Allow non-HTTPS URLs
   d. Add the redirect URL: http://%hostid%/cloudgate/v1/oauth2/callback
   e. Add the Logout URL: http://%hostid%/cloudgate/v1/oauth2/logout
   f. Set the client type as "Confidential"
   g. Under **Certificate file**, import the `client.crt` generated earlier.
   h. Click **Submit.**
5. Import the following Webtier policy:

```
{
    "cloudgatePolicy": {
        "version": "2.6",
        "requireSecureCookies": true,
        "disableAuthorize": false,
        "allowCors": true,
        "webtierPolicy": [
            {
                "policyName": "default",
                "comment": "",
                "resourceFilters": [
                    {
                        "filter": "/.*",
                        "comment": "Protect all resources",
                        "type": "regex",
                        "method": "oauth",
                        "headers": [
                            {
                                "user_groups": "$subject.user.groups"
                            },
                            {
                                "ofs_remote_user": "$subject.user.userName"
                            },
                            {
```


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```
                                "ofs_remote_username": "$subject.user.name"
                            },
                            {
                                "ofs_mapped_groups": "$subject.user.groups"
                            },
                            {
                                "ofs_remote_user_email":
"$subject.user.emails"
                            }
                        ],
                        "authorize": false
                    }
                ]
            }
        ]
    }
}
```

6. Activate the application.

Creating custom scopes for the Integrated Application (Optional)

After creating the Integrated Application, edit the OAuth configuration as follows:

1. Under Resource Server Configuration, select "Configure this application as a resource server now".
2. Set the access token expiration.
3. Set the primary audience.
4. Under the **Scopes**, click **Add**.
5. Under **Add Scope**, provide the following details:
   a. Scope: `urn:app:tls.test` **Note:** Should begin with `urn` and delimited by ":"(colon)).
   b. Display name: Custom scope.
   c. Click **Add**.
6. Click **Submit**.

Set up Postman to get the TLS token

1. Get the IDCS Host URL from the domain.
2. Click on the URL to get the IDCS configuration details.
   Example: `https://idcs-8523776c08804de1b5613af6d662f94e.identity.oraclecloud.com:443/.well-known/idcs-configuration`
3. Search for "secure_token_endpoint" to get the secure token endpoint.
   Example: `https://idcs-8523776c08804de1b5613af6d662f94e.us-ashburn-idcs-1.secure.identity.oraclecloud.com/oauth2/v1/token`
4. In the Postman, paste the `secure_token_endpoint` in the address bar as follows:
   a. Method: POST
   b. Body:
      i. grant_type: tls_client_auth

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ii. scope: urn:opc:idm:__myscopes__ # if the custom scope is required, the change the scope to <primary_audience><new_scope>

iii. client_id: caf14860726e48a18b76b80704987285 #(Client ID from the above generated app)

c. Content-type: `x-www-form-urlencoded` as header.

d. For custom scope, provide the details as follows:

i. grant_type: tls_client_auth

ii. scope: urn:app:tls.auth.test

iii. client_id: ecccdd63304a4483a9f2bb8e1fdfe45a

5. Click on postman settings and navigate to certificates tab.
6. Enable the CA certificates and upload the ca.crt under the PEM file
7. Click **Add Certificate**.
8. Paste the IDCS host URL of the `secure_token_endpoint` under the Host column
9. Upload the cert and key file downloaded from openSSL.
10. Click the **Add** button to add the certificates and close the dialog box.
11. Select **No Auth** for Authorization.
12. Click the **Send** button to get the token,

Send the request via postman with TLS token and client.crt

1. Paste the endpoint in the address bar with appropriate method type.
2. On the **Authorization** tab, select Auth type as "Bearer token" and paste the token generated.
3. In **Headers** column, set the header as `X-Forwarded-Tls-Client-Cert: <url_encoded_client_crt>`

a. Only encode the cert part excluding the --Begin – and – end – from the certificate.

b. For the cert url, encode - https://www.urlencoder.org/

4. Click **Send** for the response.

Invoke the API through the Access Token using TLS

To invoke the API through the generated Access Token using TLS, refer to the following example executed using cURL Commands in the CLI Tool:

3.2 Introduction to Oracle Cash Flow Engine Cloud Service

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

- Key Features

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- User Groups
- Guidelines for Working with a Cash Flow Engine
- Launching Cash Flow Engine
- Quick Tour
- Key Terms

3.2.1 Key Features

The Key Features are as follows:

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

For more information, see the Cash Flow Engine Reference Guide.

3.2.2 User Groups

Table 3-6 User Groups

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

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Table 3-6 (Cont.) User Groups

User Group	Description
For Reports	View and analyze reports
CFE BI Administrator	
CFE BI Analyst	
CFE BI Auditor	

3.2.3 Guidelines for Working with a Cash Flow Engine

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

For CFE Administrators

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

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

For CFE Analysts

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

- Activate one or multiple Currency
- Define dimensions (such as business dimensions, and so on) using Dimension Management to build the main objects within the application.
- Define Global, User, and Application Preferences
- Define the Interest Rates and Economic Indicators
- Create assumptions and rules.
- Define Cash Flow Process and Cash Flow Edits Processes
- Load the data.
- Create and execute the batches
- Validate the Cash Flow Engine Application Structure to ensure that the application structure confirms to Validation Rules.
- Set up analysis views and other analytic tools so those with User and Viewer Roles can use them.
- Analysis the results.

For CFE Auditor

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

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

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3.2.4 Launching Cash Flow Engine

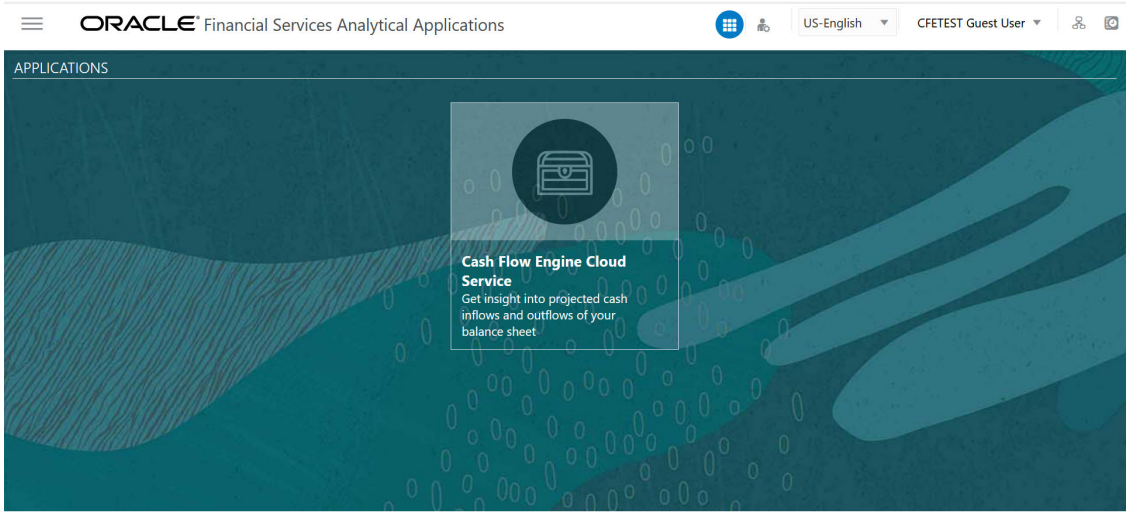
You can launch Cash Flow Engine from the Web Browser.

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

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

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

Figure 3-7 Cash Flow Engine Home Page



- Cash Flow Engine Home Page
- Common Icons
- Common Feature Controls

3.2.4.1 Cash Flow Engine Home Page

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

The Home page contains these main areas:

- **Figure 3-8 Navigator Screen**



Navigator Screen to access menu items.

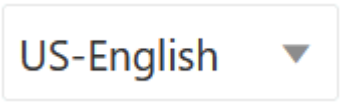
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- **Figure 3-9 Admin Console**



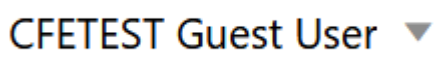
to Navigate to Admin Console.

- **Figure 3-10 Language of service**



Displays the language of service.

- **Figure 3-11 User Name**



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

- **Figure 3-12 View Setup Information**



Click it to view setup information.

- **Figure 3-13 Last Login Date and Time**



Shows the details of Last Login Date and Time.

Click

Figure 3-14 Navigation Screen

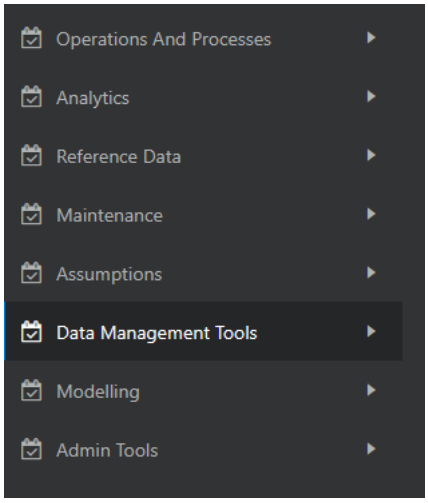


to display the Navigator Screen. This screen serves as a sitemap of the application features and displays links to all of the pages you can access. Use the Navigator Screen to navigate

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among the rules and processes required to define, review, and analyze the application, and to report results.

Figure 3-15 Navigation Path



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

Table 3-7 List of Navigation Paths for Cash Flow Engine Cloud Service

Page	Navigation Path
Operations and Processes	
Cash Flow Process	Select **Cash Flow Engine Cloud Service** menu, select **Operations and Processes**, and then select **Cash Flow Process**
Cash Flow Edits Process	Select **Cash Flow Engine Cloud Service** menu, select **Operations and Processes**, and then select **Cash Flow Edits Process**
Scheduler	Select **Cash Flow Engine Cloud Service** menu, select **Operations and Processes**, and then select **Scheduler**.
Object Administration	Select **Cash Flow Engine Cloud Service** menu, select **Operations and Processes**, and then select **Object Administration**. Following sub-menus are available under Object Administration: Export Object Import Object
Analytics	
Report Home Page	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **Home Page**
SQL Query Browser	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **SQL Query Browser**

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Table 3-7 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

Page	Navigation Path
Raw Data Analysis	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **Raw Data Analysis**
Operational Analysis	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **Operational Analysis**
Cash Flow Report	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select C**ash Flow Report**
Processed Data Insights	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **Processed Data Insights**
Data Insights	Select **Cash Flow Engine Cloud Service** menu, select **Analytics**, and then select **Data Insights**
Reference Data	
Economic Indicator	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Economic Indicators**
Interest Rates	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Interest Rates**.
Currency	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Currency**.
Currency Rates	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Currency Rates**
Dimension Management	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Business Management**. Following sub-menus are available under Dimension Management: Attribute Member Hierarchy
Holiday Calendar	Select **Cash Flow Engine Cloud Service** menu, select **Reference Data**, and then select **Holiday Calendar**
Maintenance	
Preferences	Select **Cash Flow Engine Cloud Service** menu select **Maintenance**, and then select **Preferences**
Payment Patterns	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Payment Patterns**.
Behavior Patterns	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Behavior Patterns**.
Repricing Patterns	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Repricing Patterns**.
Cash Flow Edits	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Cash Flow Edits** .

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Table 3-7 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

Page	Navigation Path
Filter	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Filter**.
Management Ledger Configuration	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Management Ledger Configuration**.
Ledger Load History	Select **Cash Flow Engine Cloud Service** menu, select **Maintenance**, and then select **Ledger Load History**.
Assumption	
Prepayment Rule	Select **Cash Flow Engine Cloud Service** menu, select **Assumption**, and then select **Prepayment Rule**
Prepayment Models	Select **Cash Flow Engine Cloud Service** menu, select **Assumption**, and then select **Prepayment Models**
Forecast Rates	Select **Cash Flow Engine Cloud Service** menu, select **Assumption**, and then select **Forecast Rates**
Discount Methods	Select **Cash Flow Engine Cloud Service** menu, select **Assumption**, and then select **Discount Methods**
Behavior Pattern Rule	Select Cash Flow Engine Cloud Service menu, select **Assumption**, and then select **Behavior Pattern Rule**
Data Management Tools	
Data Model Extension	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Model Extension**
Data File Administration	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data File Administration**. Following sub-menus are available under Data File Administration: Data File Specification File Upload and Download Data File History
Data Management Interface	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Management Interface**. Following sub-menus are available under Data Management Interface: Data View Designer View

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Table 3-7 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

Page	Navigation Path
Data Quality Framework	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Quality Framework**. Following sub-menus are available under Data Quality Framework: Data Quality Rules Data Quality Groups Execution Summary
Data Verification	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Verification**.
Balance Reconciliation	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Balance Reconciliation**
Data Housekeeping	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Housekeeping**.
Redaction Framework	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Redaction**. Following sub-menus are available under Redaction: Redaction Functions Redaction Policies Redaction Approval
Data Stratification	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Data Stratification**. Following sub-menus are available under Data Stratification: Stratification Rules Stratification Tiers
Extract Data	Select **Cash Flow Engine Cloud Service** menu, select **Data Management Tools**, and then select **Extract Data** . Following sub-menus are available under Extract Data : Datasets Export Data
Modelling	
Prepayment	Select **Cash Flow Engine Cloud Service** menu, select **Modelling**, and then select **Prepayment**. Following sub-menus are available under Prepayment: Prepayment Data Creation Process Prepayment Model Analysis

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Table 3-7 (Cont.) List of Navigation Paths for Cash Flow Engine Cloud Service

Page	Navigation Path
Non Maturity	Select **Cash Flow Engine Cloud Service** menu, select **Modelling**, and then select **Non Maturity**. Following sub-menus are available under Non Maturity: Non Maturity Data Creation Process Non Maturity Products Model Analysis
Admin Tools	
Custom PLSQL	Select **Cash Flow Engine Cloud Service** menu, select **Admin Tools**, and then select **Custom PLSQL**.
PLSQL Archive Summary	Select **Cash Flow Engine Cloud Service** menu, select **Admin Tools**, and then select **PLSQL Archive Summary**.
Data Foundation Integration	Select **Cash Flow Engine Cloud Service** menu, select **Admin Tools**, and then select **Data Foundation Integration**. Following sub-menus are available under Data Foundation Integration: Data Services Subscriptions ADS Run History

3.2.4.2 Common Icons

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

Table 3-8 Common Icons

Icon Name	Icon	Uses
Add		Click Add icon to build a new rule.
Refresh		Click to refresh the Summary Page.

Figure 3-16 Add icon



Figure 3-17 Refresh icon



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Table 3-8 (Cont.) Common Icons

Icon Name	Icon	Uses
Help	**Figure 3-18 Help icon** 	Click to view the Holiday Calendar Rule Help.
Multiple Delete	**Figure 3-19 Multiple Delete icon** 	Select one or more rules in the table and then click the (-) icon at the top right of the Summary Page to delete more than one rule at the same time.
Search	**Figure 3-20 Search icon** 	To Search the rule(s)
List View	**Figure 3-21 List View** 	To view the Rule Summary Page items in List View.
Table View	**Figure 3-22 Table View** 	To view the Rule Summary Page items in Table View.

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Table 3-8 (Cont.) Common Icons

Icon Name	Icon	Uses
Ascending and Descending	**Figure 3-23 Ascending icon**  and **Figure 3-24 Descending icon** 	To sort the rules on Rule Summary Page.
Action	**Figure 3-25 Action icon** 	Click to perform view various action options.
View/Edit	**Figure 3-26 Edit icon** 	Click in the Action column and select View/Edit to view or edit the contents of a rule in Read/ Write format. Depending on User Privileges, the rule will open in either View or Edit mode.
Copy or Save As	**Figure 3-27 Save As icon** 	Click in the Action column and select Save As to create a copy of an existing rule.

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Table 3-8 (Cont.) Common Icons

Icon Name	Icon	Uses
Delete	**Figure 3-28 Delete icon** 	Click in the Action column and select Delete to delete an existing rule.
Execute	**Figure 3-29 Execute icon** 	To execute a process
Execution Details	**Figure 3-30 Execution Details icon** 	To view the execution details of the process.
Add New	**Figure 3-31 Add New icon** 	Click Add icon to add new items on Rule screen.
Add Multiple Rows	**Figure 3-32 Add Multiple Rows** 	Click Add Multiple Rows to add multiple rows at a time.

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Table 3-8 (Cont.) Common Icons

Icon Name	Icon	Uses
Add Row		This allows you to Add one Row at a time.

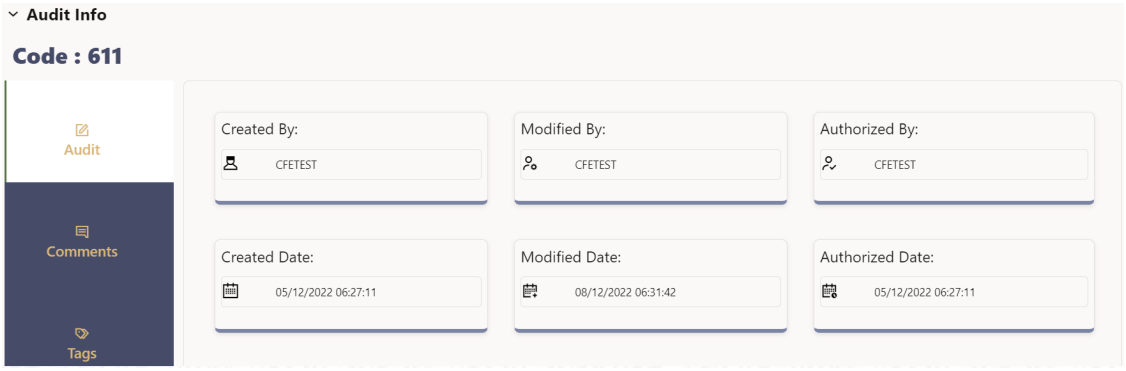
Figure 3-33 Add Row



3.2.4.3 Common Feature Controls

PBSM Cloud Service includes many common feature controls.

Figure 3-34 Audit Info



Audit

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

User Comments

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

Tags

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

3.2.5 Quick Tour

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

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Table 3-9 Quick Tour

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

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Table 3-9 (Cont.) Quick Tour

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

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Table 3-9 (Cont.) Quick Tour

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

3.2.6 Key Terms

As of Date

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Date at which the data is current.

At-Risk Period

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

Balance Sheet Planning

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

Base Rates

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

Basis Points

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

Cash Flow Instrument Table

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

Cash Flow Column

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

CPR

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

Credit Risk

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

Data Filter Rule

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

De-annualize

To compute the monthly equivalent rate of an Annual Rate.

Duration

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

Funding Center

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

Funds Transfer Pricing

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

General Ledger

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

Grid

A logical grouping of cells often surrounded by scroll bars.

Hierarchy

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

Historical Rates Table

PBSM repository for all historical actual interest rates.

Instrument

Synonymous with an account record or an individual contract.

Instrument Table

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

Interest Rate Code

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

Last Repricing Date

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

Liquidity Premiums

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

Log in

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

Market Price of Risk

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

Market Value

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

Next Repricing Term

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

Profitability Management

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

Prepayment

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

Present Value

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

PSA

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

Reconciliation

The process of comparing information from one data source to another

Reporting Currency

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

Single Rate

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

3.3 Introduction to Admin Console

Use the Admin Console to perform System Configuration and Identity Management.

Admin Console is the single point of access to manage identity functions and view administrative features such as Metering, Audit Trail Report and other miscellaneous configuration details in the Cloud Service.

The Admin Console has been updated for an improved user experience.

- Accessing Admin Console
  Access Admin Console from the home page of Financial Services Analytical Applications.

3.3.1 Accessing Admin Console

Access Admin Console from the home page of Financial Services Analytical Applications.

To access the Admin Console, ensure that the cloud administrator grants you administrative privileges by mapping your user account to the Identity Administrator and Identity Authorizer user groups. These user groups are seeded in Oracle Identity and Access Managment (IAM).

Before logging into the Admin Console, ensure that:

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> **Note**
>
> - If the Cloud Administrator has granted only Identity Management privileges and no other cloud application privilege, you will be automatically redirected to the Admin Console specific to subscribed cloud service, after a successful login.
> - After a user signs in to the Cloud Service, the user to user-group Mapping created in the IAM Console will onboard into the Master and Mapping Tables. If you unmap a user from a group in the Admin Console, go to the IAM Console and open the **Assign User to Groups**. Unselect the user corresponding to the user group and click **Finish**. This step is mandatory to unmap the user.

To access the Admin Console:

1. Enter the application URL in the browser's address bar to access the Oracle Cloud Account Sign In page.
2. Enter the username and password on the Login page to log in to the **Financial Services Analytical Applications**.

   After successfully logging in, you can view the **Financial Services Analytical Applications** homepage and the list of subscribed cloud applications. Click **Navigation** to hide the Applications Navigation List.
3. Click **Admin Console** at the top of the Financial Services Analytical Applications home page.

   In the Admin Console, you can view the **System Configuration** and **Identity Management** tabs. Use these tabs to perform the following tasks:

   - **Administrator Tasks**:
     - View the **Metering Report**, **Audit Trial Report**, **Object Storage**, and **Object Authentication (OAUTH)** credential details in the **System Configuration** tab.
     - Perform the Identity and Access Management operations in the **Identity Management** tab.
   - **Authorizer Tasks**:
     - Authorize the Identity and Access Management Operations in the **Identity Management** tab.

   Role-Based Access

   Access to Admin Console functionalities is controlled through role-based function mappings. The System Configuration and Identity Management options are displayed only if the user has the corresponding role and function mapping assigned (as shown in the table below). You can customize access to each Admin Console functionality by assigning appropriate role-function mappings. As a result, each administrator may have access only to specific functionalities based on their assigned role.

Admin Console functionality	Required Function Code/ Function Name	Required Role Code (Role Name)
System Configuration Tile	ADMIN_SYS_UI (Admin System Config Tile)	ADMIN_SYS_UI (Admin System Config Tile Role)
Identity Management Tile	ADMIN_IDNTY_UI (Admin Identity Config Tile)	ADMIN_IDNTY_UI (Admin Config Tile Role)
Configurations	ADMN_CONFIG_UI (Admin Configuration Viewer)	ADMN_CONFIG_UI (Admin Configuration Viewer Role)

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Admin Console functionality	Required Function Code/ Function Name	Required Role Code (Role Name)
Component Details	ADMN_COMPONENT_UI (Admin Component Details Viewer)	ADMN_COMPONENT_UI (Admin Component Details Viewer Role)
User Report	ADMN_USR_REPORT_UI (Admin User Report Viewer)	ADMN_USR_REPORT_UI (Admin User Report Viewer Role)
Audit Report	ADMN_AUDIT_UI (Admin Audit Report Viewer)	ADMN_AUDIT_UI (Admin Audit Report Viewer Role)
Notifications Broadcast	ADMN_NOTIF_SEND_UI (Admin Notification Broadcast Viewer)	ADMN_NOTIF_SEND_UI (Admin Notification Broadcast Viewer Role)

3.4 System Configuration

Administrators can monitor the usage of service units and user activities through the System Configuration.

With System Configuration, administrators can view the consumption of service units. You can also view the following:

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

The components are as follows:

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

- Metering
  View annual usage of transactions and report types.
- Component Details
  Use Component Details to view the object storage standard and archive details, and OAUTH authentication details.
- Audit Trail Report
  Use the Audit Trail Report to check user activities, including logins, added actions, their status, and associated machine names.
- Configurations
  Use the Configurations page to update user preferences, master encryption key, notification preferences, and allowed email domains.
- Reports For Download

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3.4.1 Metering

View annual usage of transactions and report types.

Use the **Metering** page to view the annual unit usage of the number of transactions and the number of report types within your cloud service.

The following table shows the methodology employed to measure the usage of each of the products.

Table 3-10 Metering Methodology

Product	Metering Methodology
Profitability and Balance Sheet Management Base	Per 100k Records Processed
Cash Flow Engine	Per 100k Records Processed
Funds Transfer Pricing	Per 100k Records Processed
Profitability Management	Per 100k Records Processed
Asset Liability Management	Per 100k Records Processed
Profitability Analytics	Per Hosted Named User

3.4.2 Component Details

Use Component Details to view the object storage standard and archive details, and OAUTH authentication details.

Object storage is used for data to which you require fast, immediate, and frequent access. Archive storage is used for data which you do not access regularly but must be retained and preserved for long periods of time.

With every instance of the application provisioned, two buckets are provisioned: a standard storage bucket and an archive storage bucket. The data files that you want to load into the application for processing must be uploaded to the standard storage bucket. The files are automatically moved to the archive storage bucket after a period of 7 days.

To access Component Details:

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

   You can access the following tabs from the Component Details tab:

   - **OCI Console** : Access the **OCI Console URL** from the **OCI Console** tab.
   - **Object Storage Standard** : When you provision an instance of the application, two buckets, a standard storage bucket and an archive storage bucket are automatically provisioned. The objects data that you want to load into the application for processing must be uploaded to the standard storage bucket.
     Access and copy the following details related to the objects which are currently in use and require fast, immediate, and frequent access.
     - **Object Store Bucket Name**: The logical container in which objects are stored
     - **Pre-Authenticated URL (PAR URL)**: Request that enables you to access a bucket without providing any credentials

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- **Object Storage Archive** : Archive storage is used for storing objects that are not actively in use but need to be retained and preserved for extended periods. Objects are automatically moved from standard to archive storage after 7 days.
  Access and copy the following details related to the archived objects.
  - **Object Store Bucket Name**: The logical container in which objects are stored
  - **Pre-Authenticated URL (PAR URL)**: Request that enables you to access a bucket without providing any credentials
- **OAUTH Creds** : Use OAUTH credentials (Client ID and Client secret) are used for implementing authentication in cloud services.
  Access and copy the following OAUTH credentials:
  - **OAUTH Client ID**: ID of the OAuth client used for OAuth authentication performed by IAM during any API calls.
  - **OAUTH Client Secret**: Password of the OAuth client secret used for OAuth authentication performed by IAM during any API calls

3.4.3 Audit Trail Report

Use the Audit Trail Report to check user activities, including logins, added actions, their status, and associated machine names.

To generate an Audit Trail Report:

1. Log in to the **Admin Console**.
2. Go to **System Configuration** and click **Audit Trail Report** to access the **Audit Trail Report** page.
3. Enter the following values and click **Search** to generate the **Audit Trail Report** for all users or a specific user, to view a specific audit trail report.

Table 3-11 Audit Trail Report Filters

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

You can get the following details from an **Audit Trail Report**.

Table 3-12 Audit Trail Report Details

Field	Description
User Name	The user name selected in the **User Name** filter field.
Action Details	The action selected in the **Action Detail** filter field.
Action Code	The type of action performed by the user.

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Table 3-12 (Cont.) Audit Trail Report Details

Field	Description
Status	The status of the action performed. The values are **Successful** or **Failure**.
Action Subtype	The sub type of the action.
Operation Time	The date and time of the action performed.

4. To download the report, click **Download** and select your preferred file format (PDF or Excel). The report will be saved automatically to your system's default download folder.
5. Click **Reset** to clear all values from the filter fields and enter new search criteria.

3.4.4 Configurations

Use the Configurations page to update user preferences, master encryption key, notification preferences, and allowed email domains.

You can set the user preferences such as time zone and locale, master encryption key, notification configuration details, and update allowed email domains using the **Configurations** page.

To update the configuration details from the **System Configuration** tab:

> **Note**
>
> The availability of tabs varies by SaaS application. Some tabs described in this section might not appear in your application. Disregard any tab that is not available.

1. Click the **Configurations** tile.
2. Click the required tab and modify the details.

- Preferences
- Master Encryption Key
- Notification Configuration
- Email Domains
- IDCS Sync Details
- Environment Display Name

Preferences

Select the following details in the **Preferences** tab and click **Save** to update the details.

- **Time Zone** - The time zone displayed in the application.
- **Locale** - The language to access the application. The default value is **en - US English**.
- **Date Format** - The format in which the date is displayed.

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Master Encryption Key

Enter the **Master Encryption key** and click **Save** to update the key value.

Notification Configuration

Enter the number of days after which the notification will be deleted automatically, and click **Save**.

Email Domains

Enter the allowed email domains, and click **Save**. Separate domains with commas, omitting the '@' symbol. Example: oracle.com, gmail.com.

> **Note**
>
> Only users with the domains specified here will receive email notifications. To allow all domains, leave the field blank.

IDCS Sync Details

- **Enforce Identity Group Membership Sync:**
  By default, this option is turned off. Turn it on if you want the application to remove user-to-group assignments based on Oracle IAM/IDCS updates. After you enable it, the application automatically unmaps any custom application groups that do not exist in IAM/IDCS. This setting keeps user and group mappings fully synchronized with IDCS.
- **Refresh Identity Groups:** Click **Sync** to retrieve the latest group descriptions from Oracle IAM/IDCS and update matching existing groups in the application.

> **Note**
>
> This does not create or delete custom/existing groups or user-group mappings.

Environment Display Name

Enter the required value in the **Environment Display Name** field and click **Save**. The updated value appears as the environment name in the application header.

3.4.5 Reports For Download

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

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

- Prerequisites
- Access Reports for Download

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- Data Reporting - Data View
  You can view the list of reports available for download, from the Data Entry window. Use one of the following criteria to view various reports.
- View the Report Details
  The Data Entry window is the interface where you can apply filter conditions (optional) on the reports and export the details.
- Apply a Custom Filter to the Data View
  In addition to the reports that you can view, you can also use the filter provided in the Data View window to custom filter the data in the reports for analysis purposes.

3.4.5.1 Prerequisites

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

3.4.5.2 Access Reports for Download

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

3.4.5.3 Data Reporting - Data View

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

- To search reports, click the Search field to display the search criteria pop-up. Enter search terms in the Name, Description, or Created By fields, or use a combination of the fields, and click Search.
  The search result displays reports that match the criteria.
- To sort reports, click the Sort By drop-down and select from the options: Name, Description, or Created By.
  The reports are displayed in ascending order for the selected option.
- To view the report creation and modification details, click the More Options (three dots) icon of a report to display the pop-up with the details for the following:
  - **Created By** - Displays the User ID of the user who created the report.
  - **Created Date** - Displays the date and time of the creation of the report.
  - **Last Modified By** - Displays the User ID of the user who last modified the report.
  - **Last Modified Date** - Displays the date and time of the last modification of the report.
  - **Authorizer** - Displays the User ID of the authorizer who approved the report to be displayed in the window.
  - **Authorizer Comments** - Displays the comments entered by the authorizer when approving the report to be displayed in the window.
- To view a report, mouse over the record, and the hidden menu appears. Click View from the menu.
  The details for the selected report are displayed in the Data Entry window.

3.4.5.4 View the Report Details

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

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

The procedure to view report details is described as follows:

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

3.4.5.5 Apply a Custom Filter to the Data View

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

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

1. Click **Launch Filter** Condition to display the Filter Condition window.
2. Select **AND** or **OR** from the drop-down.
3. Select the required report column from **Select a Column**.
4. Select the required condition from **Select a Condition**.
5. Click **+ Condition** to add more conditions and click **+ Group** to add more groups.

   Repeat the selection procedure to add details. To remove a condition or group, click Remove.
6. Click **Apply** in the **Filter Condition** window to save the custom filter condition.
7. Click **Apply** in the **Attributes Selection** tab.

   The Data Preview tab displays the results of the Attributes filtered in the Attributes Selection tab. The number of records displayed in the preview is pre-configured in the system. However, you can export the details in the CSV format by clicking Download CSV.

3.5 Allowing Domains to Receive Email Notifications

The application sends email notifications from the following domain. To receive these notifications, you must add this domain to your Allow List: `no-reply-fsgbu-erfplatform@ps1.erf.<region>.ocs.oraclecloud.com`

Replace `<region>` with the value appropriate for your region. Contact Support for details.

3.6 Identity Management

Using Identity Management, administrators can manage fine-grained and coarse-grained entitlements. Coarse-grained entitlements consist of fewer functions than fine-grained entitlements. Authorizers can authorize the entitlement mappings.

The various **components** of Identity Management are:

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- **Users**: A user is a person who has access to **Admin Console** and can perform specific actions based on the user group or groups they are mapped to. Before you can map a user to a user group, your Administrator must have created and authorized the user. After the user is authorized, they are added in the Users Summary. Click **Users** to access the **Users Summary** page.
- **Groups**: Groups are a set of users who can perform specific activities. For example, the administrator role performs administrative activities. Any user who belongs to a specific user group can access the roles mapped to that user group.
  To add a user group, click **Add** in the **Groups** tile. Click **Groups** to view the list of user groups in Groups Summary.
- **Roles**: Roles are a set of functions grouped together and having specific privileges. Any user who belongs to a specific role can access functions mapped to that role. Click **Add** to add a role or click **Roles** to view the list of roles in **Roles Summary**.
  To add a user role, click **Add** in the **Roles** tile. Click **Roles** to view the list of user groups in Roles Summary.
- **Folders**: Folders are used to control access rights on defined list of objects. They are mapped to a specific Information Domain. Click **Folders** to view the list of folders and edit the access rights in Folders Summary.
- **Functions**: Functions enable users to perform a specific activity. Any user who belongs to a specific function can access the folders mapped to the function. Click **Functions** to view the list of functions in Functions Summary.

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

Use the following guidelines to manage user creation and group mappings between IDCS/OCI and the Admin Console.

- Create users only in IDCS/OCI.
- You can map users to groups in IDCS/OCI, in the Admin Console, or in both. The system automatically syncs user-to-group mappings from IDCS/OCI to the Admin Console, but not the other way around.
- To unmap a user from a group, manually remove the mapping in both IDCS/OCI and the Admin Console.

> **Note**
>
> Just-in-Time (JIT) provisioning occurs when a user logs in. Therefore, user groups appear in the Admin Console only after they are associated with a user who has logged in at least once. To map groups to roles before associating them with users in Oracle IAM/IDCS, you must create the corresponding group in the Admin Console as well as in Oracle IAM/IDCS. This applies only to custom groups. Application-seeded groups are automatically available in both Oracle IAM/IDCS and the application.

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

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- Groups Summary Page
  The Groups Summary page shows the list of available groups. You can view the details of a group and map the group to one or more user roles.
- Roles Summary Page
  The Roles Summary page shows the list of available user roles. You can view the details of a role and map the role to one or more user functions.
- Functions Summary Page
  The **Functions Summary** page shows the list of available functions. You can view the function details.
- Folders Summary Page
  Create multiple folders, store objects and assign access rights based on the security level of the user.

3.6.1 Users Summary Page

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

To access the Users Summary page:

1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Users** tile to access the **Users Summary** page.
3. Select a specific user name in the **Users Summary** page and then click **Details** to view the associated **User ID** and **User Name**.
4. Select a user name and click **Mapped Groups** to view the list of groups that are mapped to the particular user.

   To map/unmap a user group, refer to Mapped and Unmapped Groups.

   To search for a specific user, type the first few letters of the user name that you want to search in the Search box and click **Search**. The results will show users matching your input.

   At the bottom of the page, adjust the number of entries displayed per page using the up and down arrows in the Records box. To navigate between pages in the View bar, use these buttons:

   - **First page** to go to the first page.
   - **Previous page** to go back.
   - **Next page** to move to the next page.
   - **Last page** to go to the last page.

   You can directly navigate to a specific page by entering its number in the View bar and pressing **Enter**.

- User Details
  In the User Details, you'll find the User ID and User Name of the selected user from the User Summary page.
- Mapped/Unmapped Groups
  As an Administrator, you can map/unmap a user to/from a user group from the **Users Summary** page.
- Available Groups
  Click New Mapping to view the list of user groups you can map to the user.

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3.6.1.1 User Details

In the User Details, you'll find the User ID and User Name of the selected user from the User Summary page.

- Click a specific user listed in the **User Summary** page and then click **Details** to view the **User ID** and the **User Name** of that user.

3.6.1.2 Mapped/Unmapped Groups

As an Administrator, you can map/unmap a user to/from a user group from the **Users Summary** page.

To map/unmap a user to a user group:

1. Select the user name in the **Users Summary** page.
2. Select **Mapped Groups** to access the list of groups mapped to the selected user.
3. To map a user group:
   a. Click **New Mapping**.

      The list of user groups you can map the user to appears in the **Available Groups** page.

   b. Click **Map**.

      A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.
4. To unmap a user group:
   a. Select the check box corresponding to a user group or click **Select All** to choose all available user groups.

   b. Click **Unmap**.

      A confirmation message will be displayed after successful unmapping. The unmapping will be completed after authorization.
5. After mapping/unmapping a user group, ensure to authorize it accordingly. To authorize a mapping/unmapping:
   a. In **Mapped Groups**, select the user-user group mapping or unmapping that requires authorization. Each identity object displays the current status of its mapping. The status can be one of the following:
      - Approved
      - Waiting for Mapping
      - Waiting for Unmapping

   b. Click **Authorize/Reject** to approve or cancel the mapping/unmapping request.
6. Click on **New Mapping** and then switch to **Authorization View** to retrieve the pending authorization.

> **Note**
>
> Any other user from the requestor is required to authorize any new mapping requests.

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3.6.1.3 Available Groups

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

To select a user group, select the check box corresponding to the user group. To select all user groups, click **Select All**.

3.6.2 Groups Summary Page

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

To access the Groups Summary page:

1. Click the **Identity Management** tab in the **Admin Console** page.
2. Click the **Groups** tile, to access the **Groups Summary** page.
3. Select a specific group name in the **Groups Summary** page and then click **Details** to view the associated **Group ID**, **Group Name** and Group Description.
4. Select a group name and click **Mapped Roles** to view the list of roles that are mapped to the particular group.

   To map/unmap roles, refer to mapped/unmapped roles.

   To search for a specific user group, type the first few letters of the user group name that you want to search in the Search box and click **Search**. The results will show users matching your input.

   At the bottom of the page, adjust the number of entries displayed per page using the up and down arrows in the Records box. Use the navigation buttons, to go to the first page, last page, previous page and next page. You can also directly navigate to a specific page by entering its number in the View bar and pressing **Enter**

- Group Details
  In the Group Details, you'll find the Group ID, Group Name, and Group Description of the selected user group.
- Mapped/Unmapped Roles
  As an Administrator, you can map/unmap a role to/from a user group from the **Groups Summary** page.
- Available Roles
  Click New Mapping to view the list of roles you can map to the user group.
- Create custom groups
  You can create custom groups to cater to specific tasks within the application.

3.6.2.1 Group Details

In the Group Details, you'll find the Group ID, Group Name, and Group Description of the selected user group.

- Click a specific group name listed in the **Group Summary** page and then click **Details** to view the **Group ID**, **Group Name**, and **Group Description** of that user group.

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3.6.2.2 Mapped/Unmapped Roles

As an Administrator, you can map/unmap a role to/from a user group from the **Groups Summary** page.

To map/unmap roles to user groups:

1. Select the user group in the **Groups Summary** page.
2. Select **Mapped Roles** to access the list of roles mapped to the user group. Each identity object displays the current status of its mapping. The status can be one of the following:
   - Approved
   - Waiting for Mapping
   - Waiting for Unmapping
3. To map roles to user groups:
   a. Click **New Mapping**.

      The list of user roles you can map the group to is displayed in the **Available Roles** page.

   b. Select the check box corresponding to a user role or click **Select All** to select all the available user roles.

   c. Click **Map**.

      A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.
4. To unmap roles from user groups:
   a. Select the check box corresponding to a user role or click **Select All** to select all the available user roles.

   b. Click **Unmap**.

      A confirmation message is displayed after successful unmapping. The unmapping will be completed after authorization.
5. After mapping/unmapping a role, ensure to authorize it accordingly. To authorize a mapping/unmapping:
   a. In **Mapped Roles**, select the role-user group mapping or unmapping that requires approval.

   b. Click **Authorize/Reject** to approve or cancel the mapping/unmapping request.

3.6.2.3 Available Roles

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

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

3.6.2.4 Create custom groups

You can create custom groups to cater to specific tasks within the application.

While seeded groups support a broader range of application and scenarios, custom groups enable the precise grouping of users for targeted and specialized application usage.

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Example: You can create a user group which assigns the role of uploading files. This way you have a dedicated user or a standalone user that is not accessing the application but is just ingesting data.

You can create new groups using the following:

1. PBSM Admin Console

   When you create a custom group in the PBSM Admin Console, you must also create the same group in the IDCS Admin Console and add the user to it for the group assignment to persist in PBSM across logins.

2. IDCS Admin Console

   When you create a new group in IDCS Admin Console and map it to a user, this will automatically create the group in the application after the login.

   After creating the group, assign the required permissions to it and add the roles. For information, see Creating a New User Group.

3.6.3 Roles Summary Page

The Roles Summary page shows the list of available user roles. You can view the details of a role and map the role to one or more user functions.

To access the **Roles Summary** page:

1. Click the **Identity Management** tab in the **Admin Console** page.
2. Click the **Roles** tile, to view the **Roles Summary** page.
3. Select a specific role name in the **Roles Summary** page and then click **Details** to view the associated **Role Code**, **Role Name**, and Role Details.
4. Select a role name and click **Mapped Functions** to view the list of functions that are mapped to the particular role.

   You can also unmap a role from a specific function. To map/unmap functions, refer to mapped/unmapped functions.

   To search for a specific role, type the first few letters of the role name that you want to search in the Search box and click **Search**.

   At the bottom of the page, adjust the number of entries displayed per page using the up and down arrows in the Records box. To navigate between pages in the View bar, use these buttons:

   - **First page** to go to the first page.
   - **Previous page** to go back.
   - **Next page** to move to the next page.
   - **Last page** to go to the last page.

   You can directly navigate to a specific page by entering its number in the View bar and pressing **Enter**.

- Roles Details
  Access Roles Details, to view the Role Code, Role Name, and Role Description of the selected role.
- Mapped/Unmapped Functions
  As an Administrator, you can map/unmap a role to/from a function user group from the **Roles Summary** page.

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- Available Functions
  Click New Mapping to view the list of functions that you can map to a role.

3.6.3.1 Roles Details

Access Roles Details, to view the Role Code, Role Name, and Role Description of the selected role.

- Click a specific role listed in the **Roles Summary** page and then click **Details** to view the **Role Code**, **Role Name**, and **Role Description** of that role.

3.6.3.2 Mapped/Unmapped Functions

As an Administrator, you can map/unmap a role to/from a function user group from the **Roles Summary** page.

To map/unmap roles to functions:

1. Select the role name in the **Roles Summary** page.
2. Select **Mapped Functions** to access the list of functions mapped to the specific role. Each identity object displays the current status of its mapping. The status can be one of the following:
   - Approved
   - Waiting for Mapping
   - Waiting for Unmapping
3. To map roles to functions:
   a. Click **New Mapping**.

      The list of user functions you can map the role to appears in the **Available Functions** page.

   b. Select the check box corresponding to a function or click **Select All** to select all the available functions.

   c. Click **Map**.

      A confirmation message is displayed after successful mapping. The mapping will be completed after authorization.
4. To unmap roles from functions
   a. Select the check box corresponding to a function or click **Select All** to select all the available functions.

   b. Click **Unmap**.

      A confirmation message is displayed after successful unmapping. The unmapping will be completed after authorization.
5. After mapping/unmapping a function, ensure to authorize it accordingly. To authorize a mapping/unmapping:
   a. In **Mapped Functions**, select the role-function mapping or unmapping that requires approval.

   b. Click **Authorize/Reject** to approve or cancel the mapping/unmapping request.

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3.6.3.3 Available Functions

Click New Mapping to view the list of functions that you can map to a role.

To select a function, select the check box corresponding to the function. To select all functions, click **Select All**.

3.6.4 Functions Summary Page

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

To access the **Functions Summary** page:

1. Click the **Identity Management** tab in the **Admin Console** page.
2. Click the **Functions** tile to access the **Functions Summary** page.
3. Select a specific function name in the **Functions Summary** page and then click **Details** to view the associated **Function ID**, **Function Name**, and **Function Description**.

   To search for a specific function, type the first few letters of the function name that you want to search in the search box and click **Search**.

   At the bottom of the page, adjust the number of entries displayed per page using the up and down arrows in the Records box. Use the navigation buttons, to go to the first page, last page, previous page and next page. You can also directly navigate to a specific page by entering its number in the View bar and pressing **Enter**.

- Function Details
  Using the Function Details options, you can view the Function ID, Function Name, and Function Description from the Functions Summary page.

3.6.4.1 Function Details

Using the Function Details options, you can view the Function ID, Function Name, and Function Description from the Functions Summary page.

- Click a specific function listed in the **Functions Summary** page and then click **Details** to view the **Function ID**, **Function Name**, and the **Function Description** of that function.

3.6.5 Folders Summary Page

Create multiple folders, store objects and assign access rights based on the security level of the user.

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

To access the **Folders Summary** page:

1. Click **Identity Management** tab in the **Admin Console** page.
2. Click the **Folders** tile to access the **Folders Summary** page.

   The **Folders Summary** page is displayed.

   Select a specific folder name in the **Folders Summary** page and then click **Details** to view the associated **Folder ID**, **Folder Name** and **Folder Type**. For more information refer to Folder Details

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To search for a specific folder, type the first few letters of the folder name that you want to search in the search box and click **Search**.

At the bottom of the page, adjust the number of entries displayed per page using the up and down arrows in the Records box. Use the navigation buttons, to go to the first page, last page, previous page and next page. You can also directly navigate to a specific page by entering its number in the View bar and pressing **Enter**.

- Folder Details
  In the Folder Details, you'll find the Folder ID, Folder Name, and Folder Type of the selected folder from the Folders Summary page.
- Editing Folder Details
  You can edit the Folder Type from the folder details page.

3.6.5.1 Folder Details

In the Folder Details, you'll find the Folder ID, Folder Name, and Folder Type of the selected folder from the Folders Summary page.

- Click a specific folder name listed in the **Folders Summary** page and then click **Details** to view the **Folder ID**, **Folder Name**, and **Folder Type** of that user.

3.6.5.2 Editing Folder Details

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

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

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4

Data Administration

This chapter introduces the following Data Administration tools:

- Data Model Extension: The PBSM Cloud Service provides OOTB placeholder Columns and Tables that can be configured to use as custom Columns, Custom Dimensions, and Custom Management Ledger Tables as suitable to the business requirements. However, these Columns and Table are placeholder items and must be registered before use. The Data Model Extension module enables you to register these Columns and Tables.
- Data File Administration: This topic covers the Data File Specification, Data File History, and File Upload and Download functionalities.
- Data Maintenance Interface: Data Maintenance Interface (DMI) helps to design a Data Form in a user-specified format. Further, it allows to perform maintenance activities using the Designed Form.
- Data Quality Framework: Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.
- Data Verification: Data Verification UI allows you to carry out small edits on the imported data. You can also add few entries manually using this UI.
- Data Housekeeping: The Data Housekeeping UI helps you to delete data, drop partitions and truncate sub-partitions, and archive the data from selected tables.
- Balance Reconciliation: Balance Reconciliation module helps you to Reconcile the selected processing/instrument/account balances against the Management Ledger. If any differences are found, you will have the flexibility to choose significant differences and create plug entries for those in the Ledger_Instruments table.
- Redaction Framework: Oracle Data Redaction provides selective, on-the-fly redaction of sensitive data in database query results prior to display by applications.
- Data Retention: Data Retention enables you to view policies that manage data lifecycle by archiving or deleting data based on retention criteria, and to monitor execution history.
- Data Stratification: Data Aggregation and Stratification enables you to summarize large volumes of financial instruments to a manageable scale for processing and reporting purposes.
- Data Model Extension
- Data File Administration
  This topic covers the following sub-topics:
- Data Maintenance Interface
- Data Quality Framework
  Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.
- Data Verification
  The Data Verification UI helps you to verify the data that is loaded from the source systems to the Cloud Service's stage and processing tables, make minor corrections/adjustment to the data, and add new data directly into the tables. This UI allows you to add one record at

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a time and is not recommended for high volume additions as entering data is a lengthy process.

- Lookup Tables
  Lookup Tables are user-defined database tables created to hold user data for matching instrument-level measures or attributes and returning a corresponding value. The user data is matched conditionally with columns from a Profitability Management Cloud Service instrument table, and a user-specified return value is stored in the return columns of the Lookup table.
- Data Housekeeping
- Balance Reconciliation
  The Profitability and Balance Sheet Management Cloud Service's Balance Reconciliation module helps you to Reconcile the selected processing/instrument/account balances against the Management Ledger. If any differences are found, you will have the flexibility to choose significant differences and create plug entries for those in the Ledger_Instruments table.
- Datasets
  The Dataset UI enables an Admin to specify the selection of tables and columns.
- Rules Framework
  The Rules Framework provides a user-friendly interface for creating, managing, and executing business rules without requiring direct SQL knowledge. It enables you to define rule logic using datasets, conditions, hierarchies, and expressions, and preview the impact before execution.
- Data Extraction
- Data Redaction
  PBSMCS is enhanced to enable masking of sensitive data and Personal Identification Information (PII) to adhere to Regulations and Privacy Policies.
- Data Mapping
- Data Stratification
- Account Summary
- Cash Flow Edits
  In this section, you can find the details about all Cash Flow Edits.
- Cash Flow Table Cleanup
- Cash Flow Output Export
  This module discusses the procedure to download the Cash Flow Output details. When you download the data, it moves to Object Store. To export the Cash Flow Output, follow these steps:

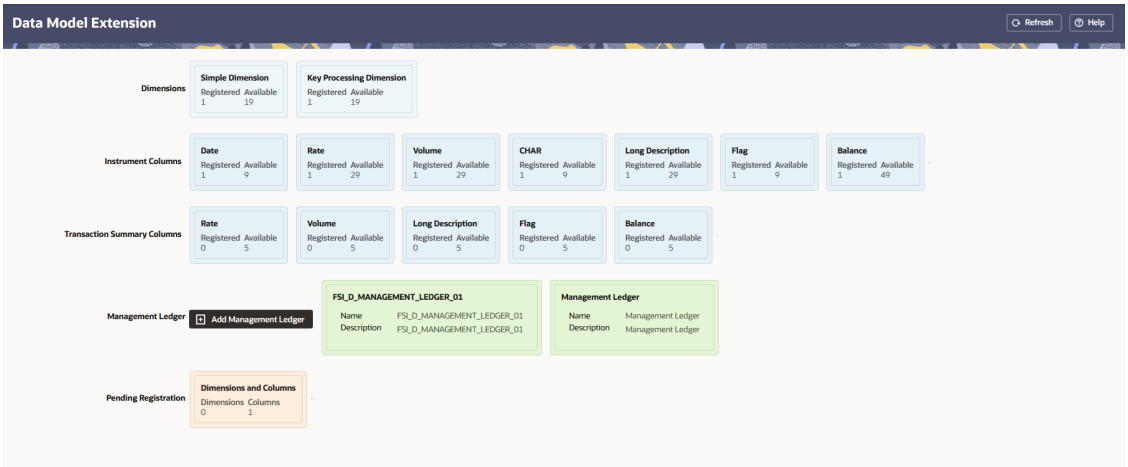
4.1 Data Model Extension

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

The Data Model Extension summary screen displays the available registration categories as tiles. Each tile shows the number of objects that are already registered and the number of placeholder objects still available for registration.

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Figure 4-1 Data Model Extension summary screen



The summary screen displays the following sections:

- **Dimensions:** Displays Simple Dimension and Key Processing Dimension tiles.
- **Columns:** Displays placeholder column categories such as Rate, Volume, CHAR, Long Description, Flag, and Balance. Use the navigation arrows to view additional column categories, if available.
- **Management Ledger:** Displays existing Management Ledger registrations and the Add Management Ledger option.
- **Pending Registration:** Displays pending Dimension and Column registration counts.

The Data Model Extension summary screen also provides Refresh and Help options, available at the top-right of the screen, to reload the latest registration counts and access contextual help.

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

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

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

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

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

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

The Data Model Extension summary screen displays the following tiles:

- Dimensions
- Columns
- Management Ledger
- Pending Registration

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

> **Note**
>
> Configuration of custom columns, dimension and tables must be same across all your environments. For example: If 'Key Placeholder Dimension 01' is registered as 'Custom Dimension One' in development environment then it must be same in all other environments to avoid logical mismatches. Hence, it is recommended to always use Object Migration for Data Model Extensions to keep environments synchronized.

- Registering Dimensions
  Through the Dimension Registration UI, you register two types of Dimensions; Simple Dimensions and Key Processing Dimensions that are explained in the following topics.
- Registering Columns
  There exists two types of Placeholder Columns available for PBSMCS Data Model - Instrument Columns and Transaction Summary Columns. These are further categorized under the different domains to be used for different purposes. Users can use the Instrument Columns to register a placeholder column for the Instrument tables whereas they can use the Transaction Summary Columns to register a placeholder column for the Transaction Summary tables.
- Registering a Management Ledger
  This is applicable only to Profitability and Balance Sheet Management Cloud Services.
- Approving or Rejecting the Registrations
  The Supervisor or Approver can see the Dimensions or Columns or Management Ledgers that are ready for approval on the Data Model Extension summary screen.

4.1.1 Registering Dimensions

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

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

- Register a Simple Dimension
  Simple Dimensions are list of values that support neither attributes nor hierarchies.

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- Register a Key Processing Dimension

4.1.1.1 Register a Simple Dimension

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

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

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

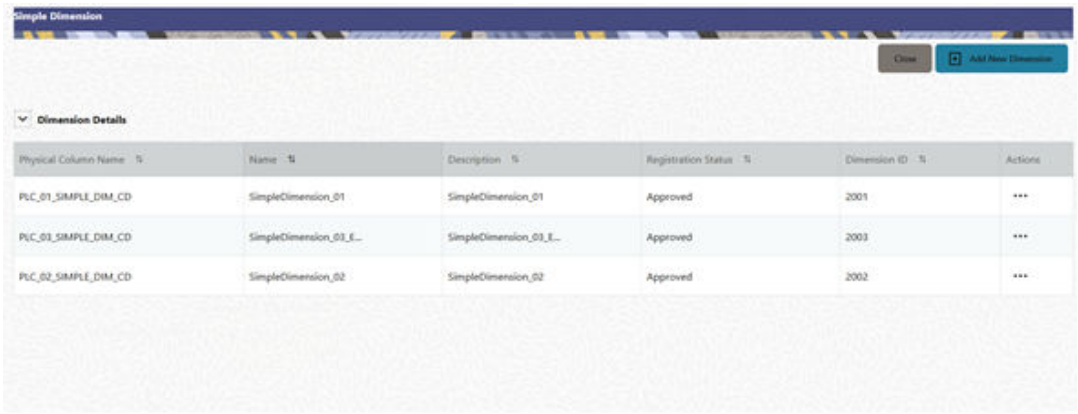
The Cloud Service Data Model comes with a set of placeholder Simple Dimensions for configuration and use. The member details of simple dimensions are stored in two tables:

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

To register a Simple Dimension:

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

Figure 4-2 Simple Dimension summary screen



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

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

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

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

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

4. Click **Save**. The details are saved as a Draft and displayed on the summary screen. You can change the Name, Description, and Comments later by double clicking the details.
5. Click **Submit for Approval** to send the Dimension Details for approval. Or select a Name from the list and click the Actions icon to View, View, Edit, Submit for Approval or Delete the simple dimension.

   Or

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

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

- View a Simple Dimension
  To view a Simple Dimension, perform the following steps.
- Edit a Simple Dimension
- Delete a Simple Dimension

4.1.1.1.1 View a Simple Dimension

To view a Simple Dimension, perform the following steps.

To view a Simple Dimension, perform the following steps:

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

4.1.1.1.2 Edit a Simple Dimension

To edit a Simple Dimension, perform the following steps:

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

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

4.1.1.1.3 Delete a Simple Dimension

To delete a Simple Dimension, perform the following steps:

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

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

4.1.1.2 Register a Key Processing Dimension

Key Processing Dimensions have the following features:

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

Metadata for Key Processing Dimensions is stored in four tables:

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

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

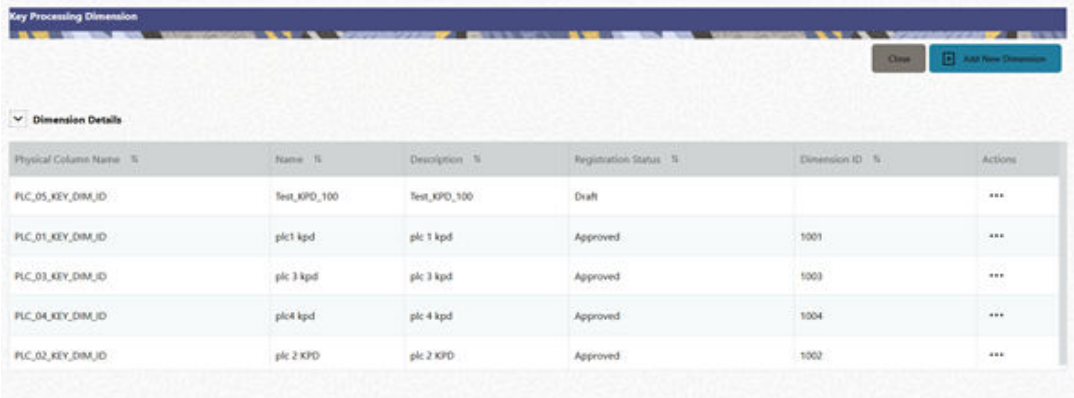
Attribute Tables store one or many attribute values for each Dimension Member. Hierarchy Tables store one or more hierarchies for each dimension (you may define as many hierarchies as you wish for any dimension that supports hierarchies).

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

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

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Figure 4-3 Key Processing Dimensions summary screen



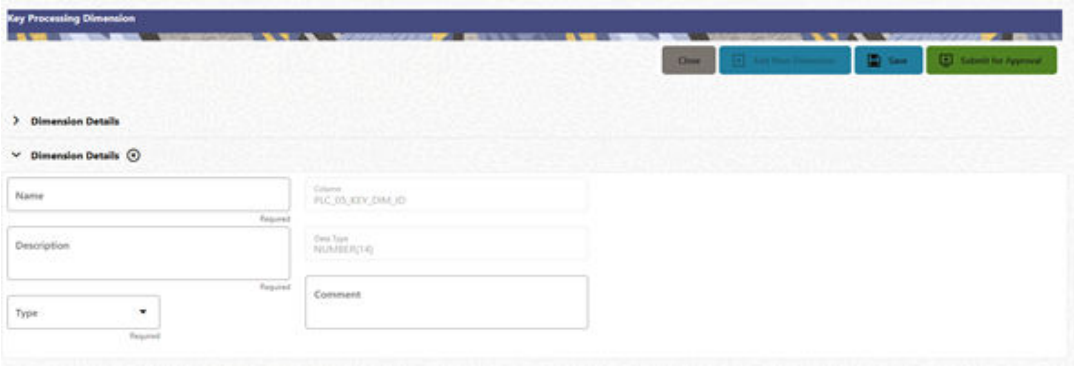
The summary screen displays the summary of existing Key Processing Dimensions with the details Physical Column Names, Name, Description, Registration Status, Dimension ID, and Actions icon.

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

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

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

Figure 4-4 Key Processing Dimension screen



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

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  - **Other**: Select this option if you want to use the placeholder Dimension for any other purpose.

- **Comment** Specify the required maker/checker comment. Note that special characters *, newline, and double quotes are not allowed.

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

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

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

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

4.1.2 Registering Columns

There exists two types of Placeholder Columns available for PBSMCS Data Model - Instrument Columns and Transaction Summary Columns. These are further categorized under the different domains to be used for different purposes. Users can use the Instrument Columns to register a placeholder column for the Instrument tables whereas they can use the Transaction Summary Columns to register a placeholder column for the Transaction Summary tables.

The Data Model screen provides the following 7 different domain types to register a placeholder for the Instrument Columns:

- Date
- Rate
- Volume
- Char
- Long Description
- Flag
- Balance

It provides the following 5 domain types to register a placeholder for the Transaction Summary Columns:

- Rate
- Volume
- Long Description
- Flag

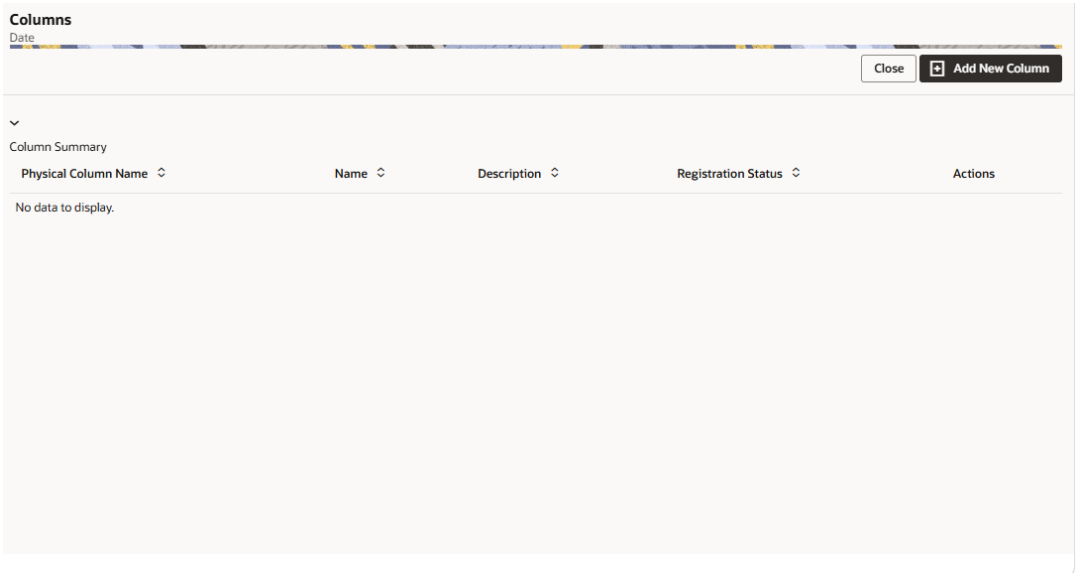
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- Balance

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

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

Figure 4-5 Column Summary screen



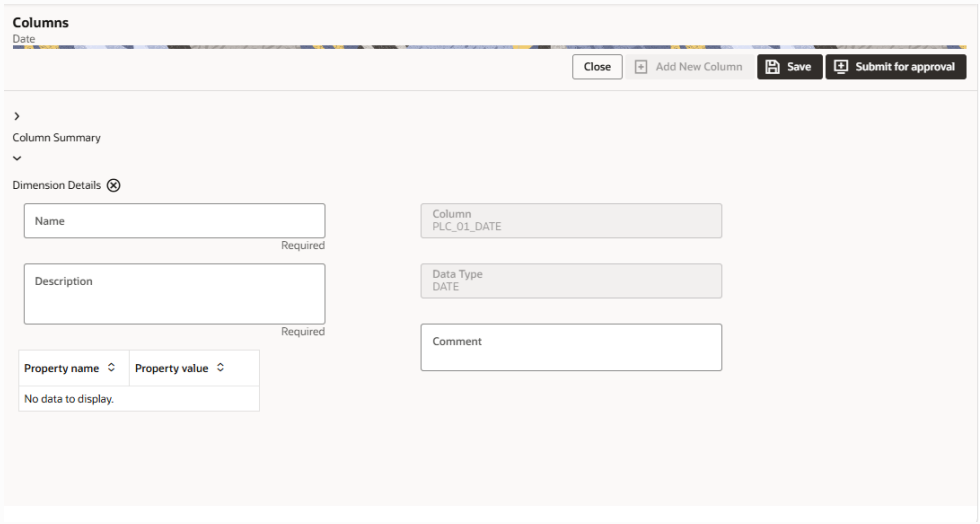
The summary screen displays the summary of existing Columns with the details Physical Column Names, Name, Description, Registration Status, and Actions icon.

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

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

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Figure 4-6 Add Column Screen

> **Note**
>
> 
>

3. Enter the following details:

- **Name**: This is mandatory. Specify the required logical name of the column.

  > **Note**
  >
  > Special characters (*, &, newline, double quote) are not allowed, and the maximum length is 150 characters.

- **Description**: This is a mandatory field. Specify the required description of the column.
- **Data Type**: Displays the data type of the underlying physical column, for example, NUMBER(30,11). This field is read-only and is shown for reference.
- **Required**: Select this check box if the column must be mandatorily populated when data is loaded.
- **Property Name**: This is an optional field used to select a relevant Property from the drop-down list, as applicable to the Column.
  For example, for a Rate column, the available Property Name values include `TRANSFER_PRICING_OUTPUT`, `OPTION_COST_OUTPUT`, and `OTHER_ADJ_SPREAD_OUTPUT`, used to flag the column as a specific Funds Transfer Pricing calculation output.
- **Property Value**: Double click to display a drop-down where you can select Yes if it is applicable to the Column.
- **Comment**:Specify any maker/approver comment. Note that special characters *, newline, and double quotes are not allowed.
  The **Details** section displays the Physical Column and Data Type Information that the column uses for user reference. As and when a registration takes place successfully and the Physical Column is utilized, the next registration process proceeds to take the next-in-numerical-order physical column available for registration.

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

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

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

Domain Types

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

Table 4-1 Domain Types

Profitability and Balance Sheet Management Cloud Service Domain Types	Accounting Standards Cloud Service Domain Types	Climate Change Analytics Cloud Service Domain Types
• DATE • RATE • VOLUME • CHAR • LONG_DESCRIPTION • FLAG • BALANCE	• DATE • RATE • VOLUME • CHAR • LONG_DESCRIPTION • FLAG • BALANCE • SHORT_NAME • SHORT_NUMBER • SHORT_DESCRIPTION • CODE_CURRENCY • PERCENT • LOCALE_CD • TIMESTAMP • NAME • LEAF • OBJECT_ID • SYSTEM_IDENTIFIER	• BALANCE • CHAR • CODE • DATE • FLAG • LEAF • NUMBER • RATE • PERCENT • LONG_DESCRIPTION • SHORT_DESCRIPTION • COUNTERPARTY_BALANCE • COUNTERPARTY_RATE • COUNTERPARTY_PERCENT • COUNTERPARTY_CHAR

4.1.3 Registering a Management Ledger

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

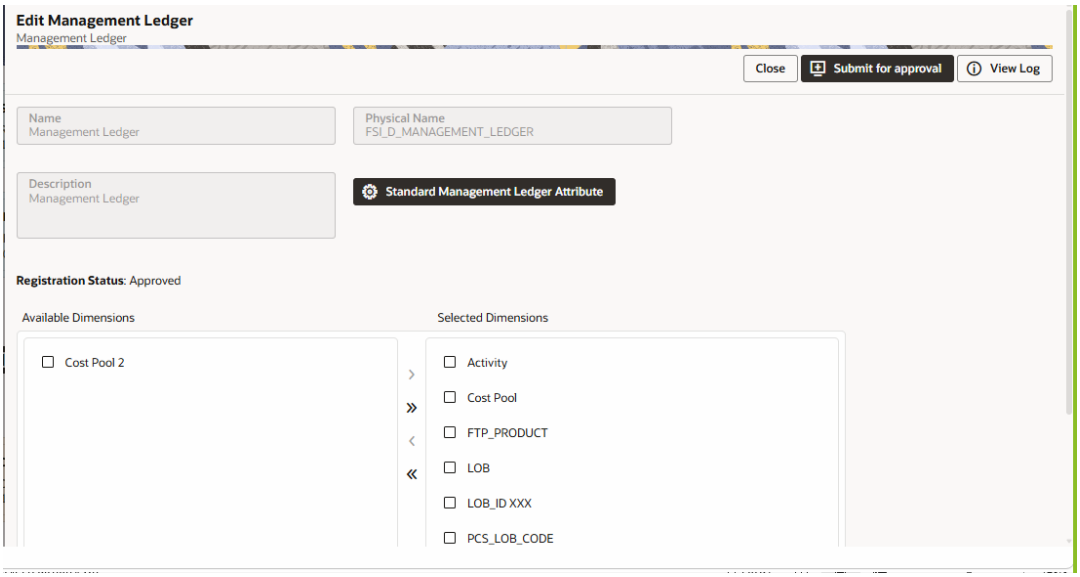
PBSM Cloud Service is contains the default Management Ledger (FSI_D_MANAGEMENT_LEDGER). However, you can add up to five other Management Ledgers to the Service.

To view and edit the Management Ledger:

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

Figure 4-7 Edit Management Ledger Screen



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

- **Name** (non-editable)
- **Physical Name** (non-editable)
- **Description** (non-editable)

> **Note**
>
> When you create the custom Key Processing Dimensions, these dimensions are available for mapping to Management Ledger table and available in the **Available Dimensions** box. You must select them and move to **Selected Dimension** box, then send for approval. After approval, you can see the custom Key Processing Dimensions in the Data File Specification UI while loading the data.

2. Click **Standard Management Ledger Attribute** to collapse and see the available Standard Dimensions, Standard Columns, and Approved Dimensions.

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

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

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

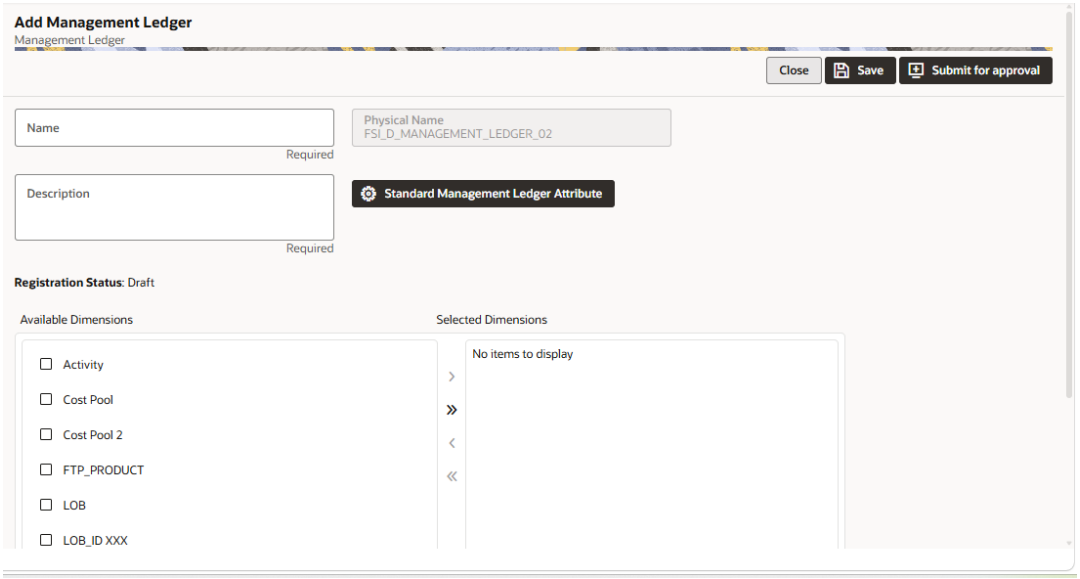
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4.1.3.1 Adding a Management Ledger

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

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

Figure 4-8 Add Management Ledger Screen



The **Add Management Ledger** screen is displayed. The Registration Status is set to Draft.

2. Enter the following details:
   - **Name**: This is a mandatory field. Specify the logical name of the Management Ledger.
   - **Physical Name**: System-generated field. This value is displayed automatically and cannot be edited.
   - **Description**: This is a mandatory field. Specify the description of the Management Ledger.
   - **Registration Status**: Displays the current status of the registration (for example, Draft) for reference. This field is read-only and updates automatically as the registration moves through the approval workflow.
3. To configure standard ledger attributes, click **Standard Management Ledger Attribute**.
4. In the **Available Dimensions** section, select the required dimensions.
5. Use the move buttons to transfer dimensions between the lists:
   - > moves the selected dimension to Selected Dimensions.
   - >> moves all available dimensions to Selected Dimensions.
   - < removes the selected dimension from Selected Dimensions.
   - << removes all selected dimensions.
6. Click **Save** to save the details as a Draft.

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The Management Ledger is displayed on the Summary screen, and you can return to edit the Name, Description, and Selected Dimensions later.

7. Click **Submit for Approval** to send the column details for approval.

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

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

4.1.4 Approving or Rejecting the Registrations

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

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

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

Figure 4-9 Data Model Extension Summary Screen



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

2. Click on any Tile to open to the **Pending Dimension** and **Column Registration** screen or **Approve Management Ledger Registration** screen.
3. Enter a comment and click the **Approve** or **Reject** buttons.
4. Select **OK**.
   a. The approved Dimension or Column or Management Ledger is displayed in the summary screen with *Approved* status.
   b. Select **Cancel** to keep the Dimension or Column or Management Ledger in a Pending for Approval Status.

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5. Click **Reject** to reject the registration. Complete the approval process. The Registration will be marked with status Rejected in the summary screen.
6. After it is approved or rejected, the registration is available for further modification by the Maker and can be submitted again.

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

> **Note**
>
> After approval, you can use them in the Data File Specifications and start loading the data in the selected placeholder Columns and Tables. The physical columns and tables pre-exist in the Data Model and mapped in loaders, registration just enables them for your use. Hence, apart from registering and approving them no other change is expected to be be performed.

4.2 Data File Administration

This topic covers the following sub-topics:

- Data File Specification: The Data File Specification module helps you to load the data from your systems to the PBSM Cloud Services.
- Data Loaders The Data Loaders module to move the data from one stage to another stage and in turn update the underlying Database Tables.
- Data File History: The Data File History UI allows you to see the data files that are uploaded to the staging tables and their status.
- File Upload and Download Utility: The File Upload and Download Utility enables you to upload or download files to the Object Store.
- Data File Specification
  The PBSM Cloud Services use following categories of data:
- Data Loaders
  Oracle Financial Services Cloud Service's Data Loaders are used to move the data from one stage to another stage and in turn update the underlying Database Tables.
- Data File History
  The Data File History screen in the OFS Cloud Service allows you to see the data files that are uploaded to the staging tables and their status.
- File Upload and Download
- AutoObjectStore Utility
- File Upload Automation
  To simplify the file upload process, configure and execute the File Upload automation utility.
- Generating PAR URL for File Operations
- Deleting A File
  Delete (DELETE) API helps to delete an uploaded file.

4.2.1 Data File Specification

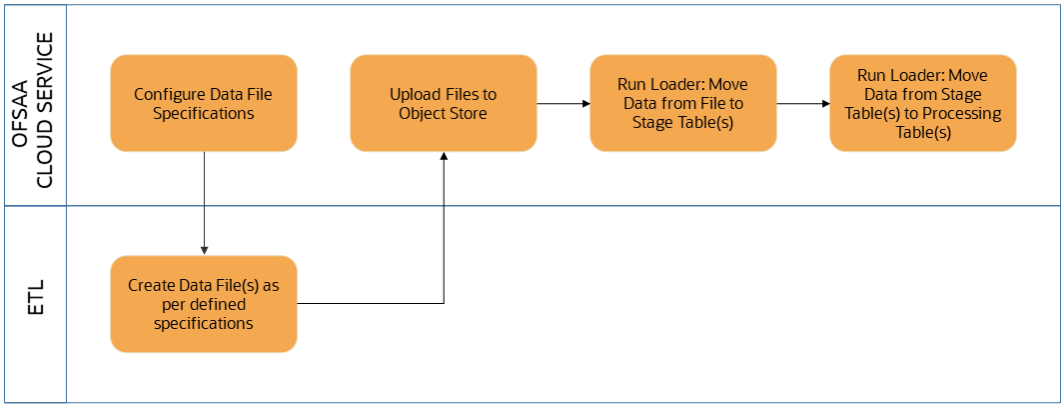
The PBSM Cloud Services use following categories of data:

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- Account or Instrument
- Management Ledger
- Transaction Summary
- Dimensions and Hierarchies
- Market data like Interest Rate, Currency Exchange Rate

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

Figure 4-10 Loading External Data



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

Uploaded data files are temporarily stored in the Object Storage for data loaders to read and move them to the corresponding database tables for further use by the individual services.

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

For information on uploading files, see the File Upload and Download section. For information on running the Data Loaders, see the Data Loaders section.

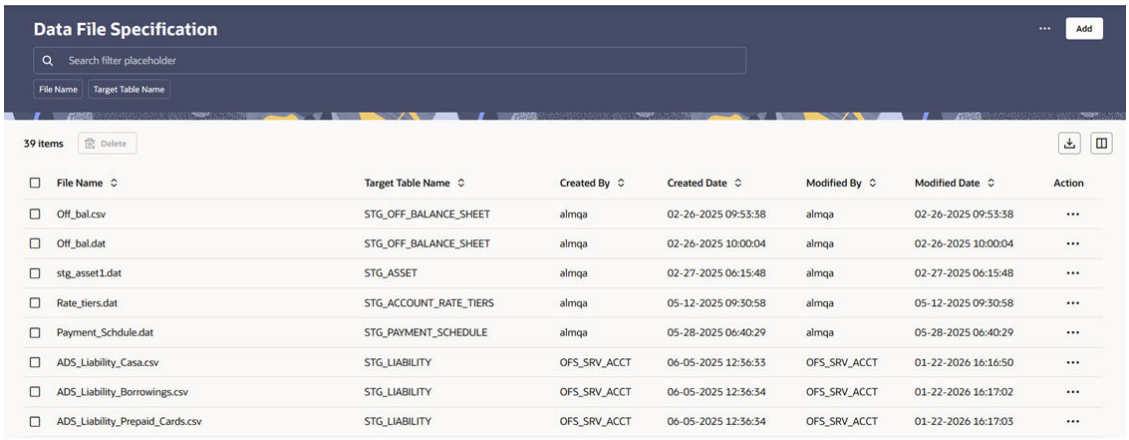
The three supported formats for the data files are TXT, DAT, and CSV. These files contain the name of the table for which the specifications are being created.

Ensure that there are no duplicate records in a single data file. If there are duplicate records, then the data file upload results in a failure.

To open the Data File Specification window, navigate to the **Data Management Tools**, select **Data File Administration**, and then select **Data File Specification** to display the Data File Specification summary page.

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Figure 4-11 Data File Specification summary screen



The summary page of Data File Specification displays the Search Criteria pane, Specific Search pane, and the already created data files and their details.

The Data File Specification Summary page displays the following information:

Add: Click the **Add** icon on the page header to build a new Data File Specification rule.

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Data File Specification Summary table displays the following information:

- **Data File Name**:The name of the data file.
- **Target File Name**:The target file name.
- **Created By**:Displays the name of the user who created the data file.
- **Created Date**:Displays the date and time at which the data file was created.
- **Modified By**:Displays the name of the user who last modified the data file.
- **Modified Date**: Displays the date and time at which a data file was last modified.
  - Click on the **Action** icon against the Data File Name to do further actions as follows:
- Click on the **Action** icon against the Data File Name to do further actions as follows:
  - **View**: Click View to view the contents of a data file in read-only format.
  - **Edit**: Click the Edit icon to modify a previously saved data file. Note that you cannot change the file name.
  - **Save As**: Click Save As to create a copy of the selected data file.

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- **Delete** :Click Delete to delete the selected data file.
- **Dependency Information**: Click Dependency Information to view the data loader tasks or batches that reference the selected data file specification.

> **Note**
>
> If a data file specification is referenced in other modules, the system prevents deletion.

> **Note**
>
> In Release 26A (26.02.01), Batch and Data File Specification (DFS) objects must be selected explicitly during export and import operations. Dependency information between these objects is not included in the exported dump.
> Starting with Release 26B (26.05.01), dependency information is introduced and validated during export operations.
>
> When you import a dump generated in Release 26A (26.02.01) into Release 26B (26.05.01) or later, ensure that you select both the Batch object and the associated DFS object for import. Since Release 26A (26.02.01) dumps do not include dependency metadata, importing only the Batch object does not automatically import the associated DFS object.
>
> Although the import operation completes successfully, the missing DFS object can cause failures during subsequent export operations in Release 26B (26.05.01) or later because the required DFS dependency is not available.

- Searching for a Data File Specification
  There are two Search Panes provided to search the data files on the summary Page.
- Creating a Data File Specification
  The Data File usually contains the Name of the Physical Table on which the specifications are being created and the columns included in the file.
- Creating the Data File
  After the Data File Specification is defined, follow the below mentioned guidelines to prepare the Data Files:
- Loading Multiple As-of-Date Data in a Single File

4.2.1.1 Searching for a Data File Specification

There are two Search Panes provided to search the data files on the summary Page.

To search the data file:

1. Click the **Search** icon to collapse (display) the Criteria window.
2. Data File Name and/or Target File Name and click **Search** to display the data file names that match the criteria.
3. Click **Cancel/Reset** to remove the filter criteria on the Search window and refresh the window.
4. Click **Search** after entering the search criteria.

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

4.2.1.2 Creating a Data File Specification

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

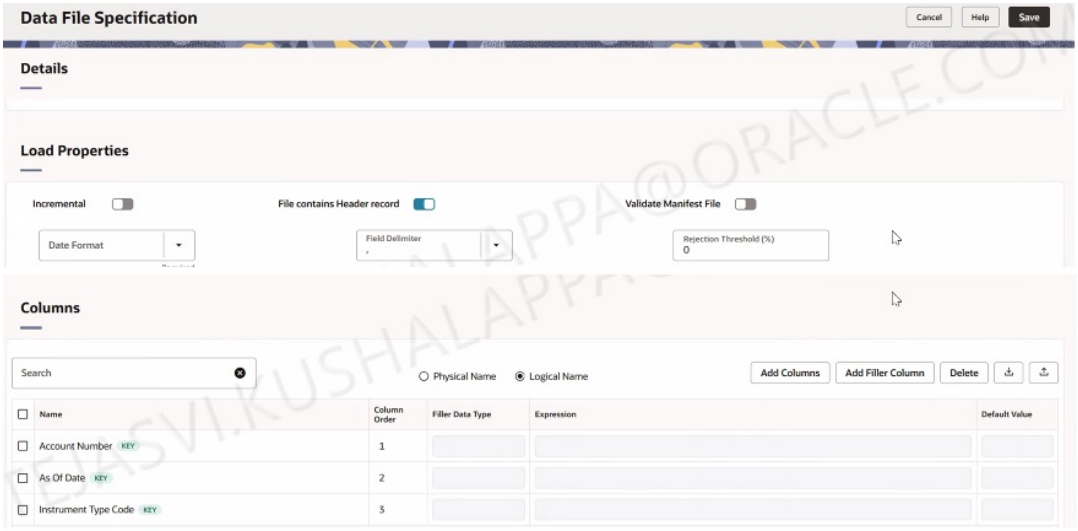
For the complete list of available columns, see the Data Requirements as follows:

- Profitability and Balance Sheet Management Cloud Service: Doc ID: 28694909.1
- IFRS 9 Cloud Service: Doc ID: 2959143.1

To create a new Data File Specification:

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

Figure 4-12 Data File Specification



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

      Each of the above **Categories** lists the **Tables** available for data loading. The list of categories is dependent on the Metadata from the Seeded Tables that come with the various Cloud Services and may differ from that shown above based on the services you have subscribed.
   b. Select a **Table** from the list for which you want to create the Data File Specification.
   c. Enter a unique **Name** for Data File Specification with an extension of the file format. The formats supported are TXT, CSV, and DAT types.

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3. Under the **Load Properties** Section of the screen, enter the following details:

   a. Select the **Incremental** toggle switch if the data in the file is incremental. If the data is a complete load, then do not select this switch.
   This flag identifies if the Data File is incremental or fresh accounts. In the case of incremental accounts, if account 1 is loaded as part of the Data File 1 and needs a correction. In that case, the account is corrected and will be uploaded as part of Data File 2. In this case, Data File 2 is the incremental file.

   b. Select **File contains Header record** toggle switch if the file contains a Header Record.

   c. Select **Validate Manifest File** toggle switch if you want to validate the data in the Data File. This validation checks the Checksum of the file, the number of records that are being loaded from the file and other additional details such as Date Format and so on. To use this toggle switch, a prerequisite is to generate a manifest file for the Data File that is being created and it must be uploaded using the File Upload process. For more details, see the File Upload and Download section.
   This validation checks the Checksum of the file using **MD5Sum** algorithm, the number of records that are being loaded from the file and other additional details such as Date Format and so on.

   This is an optional step. However, if you want to generate a manifest file in JSON format, then enter the following details and save it as a .manifest file. A sample JSON file format is as follows:

   ```
   {"file_name":"test.dat","as_of_date":"2022-03-24","checksum":"2587cdb6a2b8
   7835c6adfce627671486","record_count":"10","rejection_threshold":"0"}
   ```

   > **Note**
   >
   > Ensure that the name of the manifest file is same as the Data File with .manifest extension. For example, if the Data File Name is input_20241210_asset.csv, then the manifest file must be named input_20241210_asset.csv.manifest.

Table 4-2 MANIFEST File Details

Property Name	Notes
file_name	Full name of the file, without the leading path. Not validated; Only for information purposes.
as_of_date	Date for which file contains the data; Not validated; Only for information purposes.
checksum	Mandatory. The checksum of the file will be validated before loading commences.
record_count	The number of records in the file (ignoring header-record). It is for information purposes only.
rejection_threshold	Limit for % of records rejected. The rejection_threshold value given in the manifest file is for information purposes only. If validation for rejection threshold is required, it can be set from the Data File Specification UI.

   d. Select the **Date Format** from the drop-down list to indicate the Date Format used in the Data File.

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e. Select the **Delimiter** used in the Data File.

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

4. Under the **Columns** section of the screen, the following options are available:

- **Search**: Use the Search field to locate a specific column already added to the specification.\
- **Physical Name / Logical Name**: Select this option to toggle the column Name field between displaying the physical column name or the logical (business-friendly) name.
- **Add Columns**: Click Add Columns to open the Select Columns pop-up.
- **Other Columns**: If you select the Other Columns, all remaining columns (key dimensions, simple dimensions, dates, measures, and so on) for the selected Target Table are displayed. Select the applicable columns from the list and click the Move button to display them in the table on the right-hand side.
- Use the Column Type drop-down to filter the list by Key Columns or Other Columns:
  - **Key Columns**: The primary keys of the record for the selected Target Table Name. By default, the primary keys are pre-selected.
  - **Other Columns**: All remaining columns (simple dimensions, dates, measures, and so on) for the selected Target Table Name.
- Use the Search field to filter the available column list.
- Select the check box next to each Physical Name / Logical Name you want to add.
- Click **Ok** to add the selected columns to the specification, or Cancel to discard the selection.
- **Add Filler Column**: Click Add Filler Column to add a user-defined placeholder column that does not map to a physical column in the target table. A filler column is added as a new row in the Columns table where you must provide:
  - **Name**: A unique name for the filler column.
  - **Filler Data Type**: Select the data type for the filler column (for example, String).
  - **Expression**: Optional. An expression used to derive the value for this column.
  - **Default Value**: Optional. The value used when the source data is null.
- **Delete**: Select the check box next to one or more columns and click Delete to remove them from the specification.
- **Download / Upload icons**: Click the download icon to export the current column template, and the upload icon to re-import an arranged template.

Column Names can be re-ordered by dragging and dropping within their Column Type group — Key Columns always appear before Dimension Columns, which always appear before Other Columns.

a. Use the **Column Type** drop-down to filter the list by Key Columns or Other Columns.
   - **Key Columns**: The primary keys of the record for the selected Target Table Name. By default, the primary keys are pre-selected.

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- **Other Columns**: All remaining columns (simple dimensions, dates, measures, and so on) for the selected Target Table Name.

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

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

Figure 4-13 Column Preview



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

Figure 4-14 Columns Preview



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

The Columns table displays the following fields for each column:

- Name: The column name (physical or logical, based on the toggle).
- Column Order: The sequence position of the column in the Data File.
- Filler Data Type: Applicable only to filler columns; shows the assigned data type.
- Expression: The expression used to derive the column value, if defined.
- Default Value: The default value applied when the source value is null (not applicable to Date columns).

5. Select Logical Name or Physical Name to display the logical or physical names for the columns in the table.

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6. Click **Save**. The newly created file will be listed on the Data File Specification summary screen.
7. On the summary screen, click on the **Action** icon against the File Name to perform further actions **View**, **Edit**, **Save as**, and **Delete**.

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

4.2.1.3 Creating the Data File

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

- Columns to be included in the Data File must be as per the Data File Specification.
- Name of the Data File can be user defined. The following example gives an idea of what the Data File Name can be:
  - Data File Specification Name is “Asset.dat”
  - The As of Date is 06-July-2022
  - Name of file uploaded to object store can be like “input_20220706_loanasset.dat” or “input_20220706_asset.dat”

  The prefix (input_yyyymmdd) is mandatory in actual file name when uploaded to Object Store but is not required while you enter the name in the Task Parameters UI against the Data File Name.
- Unique Data Validations:
  - Instrument Data Files: Account Numbers must be unique across the data files for a single As of Date.
  - Management Ledger Data Files: The combination of AS_OF_DATE, CONSOLIDATION_CODE, ISO_CURRENCY_CD, all seeded and placeholder Key Processing Dimensions (KPDs), and DATA_SOURCE_CODE must be unique across the data files for a single As of Date. This allows loading logically identical Management Ledger data more than once for the same As of Date, provided a unique DATA_SOURCE_CODE value is used for each load. Beginning with release 26C Release, DATA_SOURCE_CODE is a mandatory (NOT NULL) column in all six Stage Management Ledger tables.
  - Transaction Summary Data Files: The combination of Account Numbers and KPDs must be unique across the data files for a single As of Date.
- Permitted Delimiters are comma (,) and pipeline (|).
- File Format: Due to inherent differences in plain text file line endings between UNIX (LF) and Windows/DOS (CRLF), all plain-text Data Files must be converted to UNIX format before uploading into PBSM, regardless of the file extension (.txt/.csv/.dat, etc.). If the manifest option is enabled in the Data File Specification, it is recommended that the manifest file also be converted to UNIX format.

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> **Note**
>
> – If the .csv and manifest files are packaged into a .zip, convert both files to UNIX format before creating the .zip archive.
>
> – While generating the MD5 checksum of the datafile for inclusion in the manifest, first perform the UNIX format conversion, then generate the MD5 checksum.

- Data Validations:
  - Number fields: only numbers and dot (.) are allowed.
  - Description fields: comma (,) pipeline (|), single quotes (‘’), and double quotes (“ “) are not supported.
  - Any nullable fields which are mapped in the Data File Specification definitions should not skipped in the Data File.
  - The Data Source column in all Stage Management Ledger and Processing Management Ledger tables defaults to -1. You can therefore choose not to include the Data Source column in the input Data File / Data File Specification.
  - The column order in the Data File should be in sync with the order defined in the Data File Specification definition.
  - Field Enclosures: Only double quotes (“”) are considered as Field Enclosures.

See the following sample files for your reference:

- input_20151009_asset.dat
- input_20150330_ASSETTXN.dat
- input_20220110_STGML.dat

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

4.2.1.4 Loading Multiple As-of-Date Data in a Single File

Loading data for multiple As-of-Dates within a single data file requires an accompanying Manifest File. The Stage Management Ledger loader program uses the Manifest File, loaded together with the input data file, to identify the As-of-Dates for which data must be loaded into the Stage Management Ledger tables. Loading the Manifest File is mandatory whenever a data file contains data for more than one As-of-Date. The Manifest File option in the Data File Specification definition screen must be selected.

Multiple As-of-Date load does not support parallel loading.

> **Note**
>
> - If a file has multiple As-of-Dates, each As-of-Date is loaded sequentially, one after the other.
> - When loading multiple files into the same stage table, and each file has multiple As-of-Dates, load those files sequentially — one after the other. Do not attempt to load them in parallel, as this can result in partially loaded files.

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By default, the Stage Management Ledger program assumes that the incoming data file contains data for only one As-of-Date. To override this assumption, include the following two additional properties in the Manifest JSON file:

- `load_type`: A value of MULTI_AS_OF_DATE for this property signifies to the loader program that the file has multiple As-of-Dates.
- `as_of_dates`: A comma-separated list of distinct As-of-Dates included within the data file. The list of dates need not appear in sorted order.

A sample structure of a file with multiple As-of-Dates is shown below:

```
{
      "file_name": "input_20001201_CASCN2AODSTGMGMTLDGR.csv",
      "as_of_date": "2000-12-01",
      "checksum": "9050e936d47bbb110bdebb799587b136",
      "record_count": "120",
      "rejection_threshold": "0",
      "load_type": "MULTI_AS_OF_DATE",
      "as_of_dates": [
            "2000-12-01",
            "2000-11-01",
            "2000-10-01"
      ]
}
```

To load multiple As-of-Date data:

1. Prepare a single data file containing records for one or more As-of-Dates.

   > **Note**
   >
   > If you are preparing the data file as a zip file, the zip file must contain both the Manifest File and the data file before you upload it.

2. If the file contains records for more than one As-of-Date, create an accompanying Manifest File listing each As-of-Date under as_of_dates, with load_type set to MULTI_AS_OF_DATE.
3. Upload one of the following to the object store:
   - The data file and its Manifest File
   - The zip file containing the Manifest File and the data file
4. The loader reads the Manifest File to identify the As-of-Dates present in the data file, then stages records into the Stage Management Ledger tables against the appropriate As-of-Date.

> **Note**
>
> Existing single-As-of-Date batches continue to function as before, whether or not a Manifest File is used.

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4.2.2 Data Loaders

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

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

- **Dimension Data Loaders**: The Dimension Data Loaders are used to populate the Dimension Members, Attributes, and Hierarchies from the Staging Dimension Tables to the Dimension Tables registered with the Cloud Services.
- **Instrument Data Loaders**: The Instrument Data Loaders are used to move the data from the files to the staging instrument tables.
- **Management Ledger Data Loaders**: The Management Ledger Data Loaders are used to move the data from the files to the staging Ledger tables and then to the processing Ledger tables.
  Beginning with release 26C, the Stage DATA_SOURCE_CODE value is passed through as-is to a new DATA_SOURCE column in each of the six processing (FSI) Management Ledger tables, with no validation. This field is a free-text pass-through and is not a lookup-validated dimension.
- **Transaction Summary Data Loaders**: The Transaction Summary Data Loaders are used to move the data from the files to the staging Ledger tables and then to the processing Transaction Summary tables.

> **Note**
>
> Ensure that the instrument and ledger data adhere to the following precision guidelines:All Balance columns – NUMBER(22,3), Rate – NUMBER(15,9), Frequency – NUMBER(5), Volume – NUMBER(30), Number – NUMBER(30), and Percent – NUMBER(10,6).

- Dimension Data Loader
  The Dimension Loader procedure populates Dimension Members, Attributes, and Hierarchies from Staging Dimension Tables into the Dimension Tables registered with the Cloud Services. You can view the Members and Hierarchies loaded by the Dimension Loader though the Cloud Service screens.
- Instrument and Ledger Data Loaders
  After the Data Files are uploaded to the Object Store, the Data Loaders are used to move the data from the files to the staging tables and then to processing tables.
- Generic Data Loader
- Interest Rates Loader
  The Interest Rates Data Loader allows the users to load the Interest Rate Curves that are consumed by the Oracle Financial Services Cloud Services.
- Interest Rates Definition Loader
  The Interest Rates Definition Loader allows the users to load the Interest Rate Curves definition that are consumed by the Oracle Financial Services Cloud Services.
- Rate Lock Option Volatility Loader
  This Loader is applicable only for Funds Transfer Pricing Cloud Service.

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

4.2.2.1 Dimension Data Loader

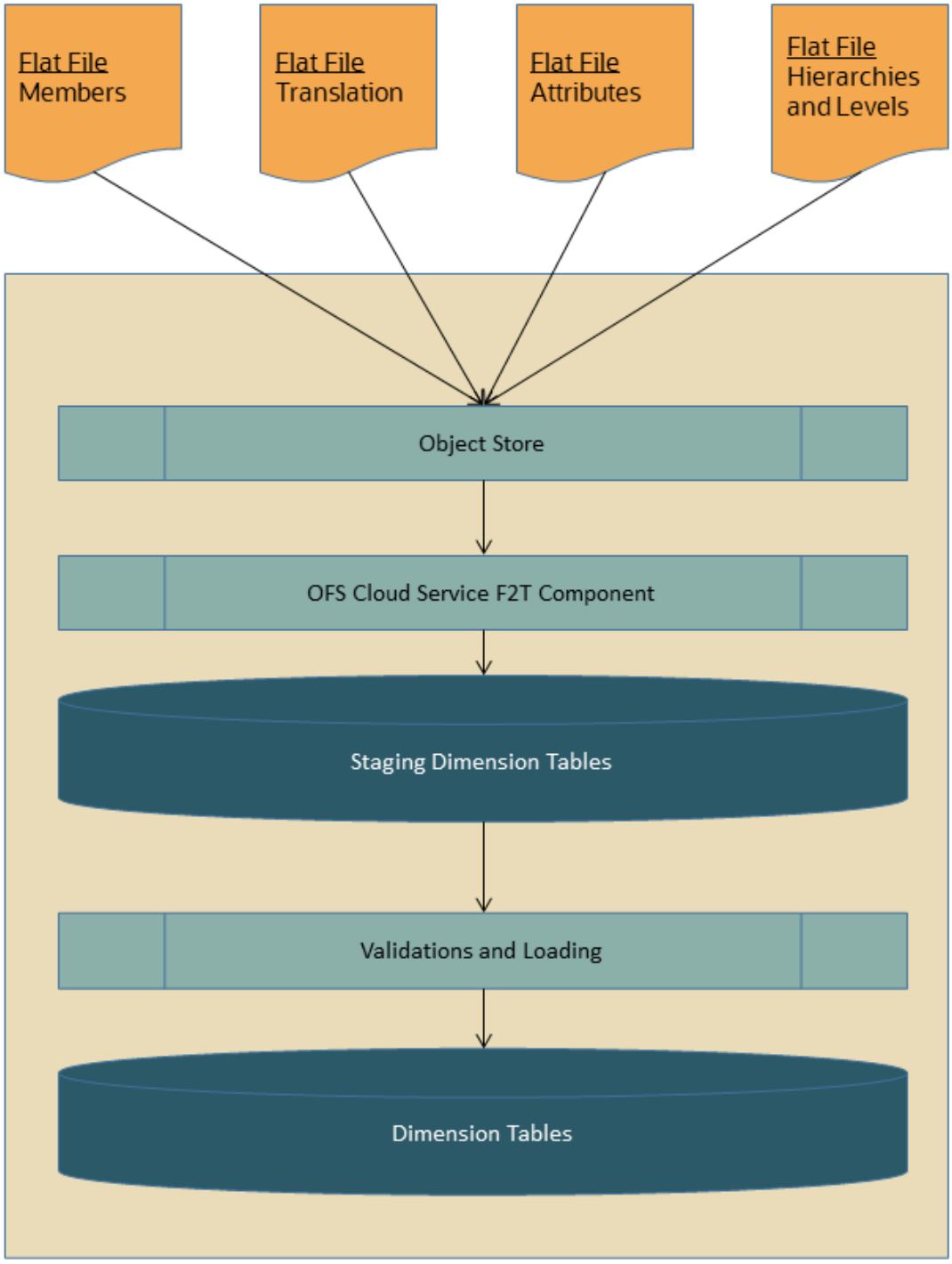
The Dimension Loader procedure populates Dimension Members, Attributes, and Hierarchies from Staging Dimension Tables into the Dimension Tables registered with the Cloud Services. You can view the Members and Hierarchies loaded by the Dimension Loader though the Cloud Service screens.

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

The following illustration depicts the process of Dimension Loading.

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Figure 4-15 Dimension Loading Process



The Dimension Loader is used to:

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

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- Load Hierarchical relationships between Key Dimension Members within the Hierarchies from the Staging area into the Cloud Service.

The following are the features of Dimension Loader:

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

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

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

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

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

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

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

- For Key Dimensions
  The following is a list of sample files that you can use to build the Dimension Data.
- For Simple Dimensions
  The following is a list of sample files that you can use to build the Dimension Data.
- Clear and Back up Dimension Data
  This process helps you to clear or delete the existing Dimension Data from the relevant Dimension tables using the Scheduler Services.
- Data Preparation Guidelines
  While creating the data files, ensure the following:

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4.2.2.1.1 For Key Dimensions

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

The name of the Data Files must be same as mentioned below and the file extension must be .DAT. The value of column HIERARCHY_CODE must not contain space in files STG_DIMENSIONS_HIER_INTF, STG_HIERARCHIES_INTF and STG_HIERARCHY_LEVELS_INTF. HIERARHY_CODE must be in capital letters. Click on each Data File Name to open a Sample Data File.

Stage Dimension Loaders (Task 1):

- input_stg_dimensions_attr_intf.dat
- input_stg_dimensions_b_intf.dat
- input_stg_dimensions_tl_intf.dat
- input_stg_dimensions_hier_intf.dat

Stage Hierarchy Loaders (Task 2):

- input_stg_hierarchies_intf.dat
- input_stg_hierarchy_levels_intf.dat

> **Note**
>
> Any column description that contains a ",", then it should be enclosed within "" (double quotes). For example, Account, Type should be "Account, Type".

To load the Dimensions:

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

Table 4-3 Dimension Loading Process Tasks

Task Code	Task Name	Component	Parameters	Parent Task
1	Stage Dimension Loader	Stage Dimension Loader	All parameters are automatically generated.	
2	Stage Hierarchy Loader	Stage Hierarchy Loader	All parameters are automatically generated.	1

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Table 4-3 (Cont.) Dimension Loading Process Tasks

Task Code	Task Name	Component	Parameters	Parent Task
3	Stage DRM Loader	Stage DRM Loader	• **Dimension Name**: Select the relevant one or more dimensions. • **Sync Stage and Dimension**: – **Yes**: The record(s) that is/are already present will be overwritten by the incoming dimension loader. – **No**: The new records will be merged to the existing records. • **Force Member Delete**: This is used only when the above flag is Yes. – **Yes**: This allows you to delete a members even if is referred in hierarchies. – **No**: No records will be deleted.	2

Note

The above Tasks must be executed in the same order.
The **File to Stage** task must precede the **Stage to Processing** task in a batch.

The Stage DRM Loader allows you to select a Dimension.

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3. Execute the Batch.

> **Note**
>
> This method of loading dimensions will be deprecated in future releases. Recommended approach is in the following section.

Dimension Loader with ZIP File Support

To to upload the Dimension data using a zip file:

1. Create a Folder.
2. Follow the naming convention for the DAT files as follows and save them:
   - DIMENSIONS_ATTRIBUTES
   - DIMENSIONS_BASE
   - DIMENSIONS_HIERARCHIES
   - DIMENSIONS_TRANSLATION
   - HIERARCHIES
   - HIERARCHY_LEVELS
3. Place all the DAT files inside the folder.
4. Zip the folder.
5. Create a Batch.
6. Create a Task with the Component name as **Dimension and Hierarchy Loader**.
7. Enter the Zipped Folder Name along with the extension. For example, DIMENSIONS.ZIP.
8. Execute the Batch.

For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see Scheduler Services.

Attributes Of Key Dimensions

Data for mandatory attributes of Key Dimensions must be provided in the *STG_DIMENSIONS_ATTR_INTF* file.

Table 4-4 Attributes of Key Dimensions

Dimension Id	Dimension Name	Attribute Id	Attribute Label	Attribute Name	Attribute Data Type	Attribute Dimension Name	Mandatory Attribute?
0	Financial Element	5000	WEIGHTING_FINANCIAL_ELEM_ID	Weighting Financial Element	Dimension	Financial Element	N
0	Financial Element	5001	ACCOUNT_TYPE_ID	Account Type	Dimension	Account Type	Y
0	Financial Element	5002	AGGREGATE_METHOD_ID	Aggregate Method	Dimension	Aggregate Method	Y
0	Financial Element	5004	COLUMN_PROPERTY_ID	Column Property	Dimension	FE Column Property	Y

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Table 4-4 (Cont.) Attributes of Key Dimensions

Dimension Id	Dimension Name	Attribute Id	Attribute Label	Attribute Name	Attribute Data Type	Attribute Dimension Name	Mandatory Attribute?
0	Financial Element	5050	ROLLUP_SIGNAGE_ID	Rollup Signage	Dimension	Rollup Signage	Y
1	Organizational Unit	5030	OFFSET_ORG_UNIT_ID	Offset Organizational Unit	Dimension	Organizational Unit	N
2	General Ledger Account	5020	ACCRUAL_BASIS_ID	Accrual Basis	Dimension	Accrual Basis	N
2	General Ledger Account	5021	COMMON_COA_ID	Common Chart of Account	Dimension	Common Chart of Accounts	Y
2	General Ledger Account	5052	ROLLUP_SIGNAGE_ID	Rollup Signage	Dimension	Rollup Signage	Y
2	General Ledger Account	5057	ACCOUNT_TYPE_ID	Account Type	Dimension	Account Type	Y
2	General Ledger Account	5058	RECONCILIATION_PRODUCT_ID	Reconciliation Product	Dimension	Product	Y
3	Common Chart of Accounts	5040	ACCOUNT_TYPE_ID	Account Type	Dimension	Account Type	Y
3	Common Chart of Accounts	5041	ACCRUAL_BASIS_ID	Accrual Basis	Dimension	Accrual Basis	N
3	Common Chart of Accounts	5053	ROLLUP_SIGNAGE_ID	Rollup Signage	Dimension	Rollup Signage	Y
4	Product	5010	ACCRUAL_BASIS_ID	Accrual Basis	Dimension	Accrual Basis	N
4	Product	5011	COMMON_COA_ID	Common Chart of Account	Dimension	Common Chart of Accounts	Y
4	Product	5054	ROLLUP_SIGNAGE_ID	Rollup Signage	Dimension	Rollup Signage	Y
4	Product	5059	ACCOUNT_TYPE_ID	Account Type	Dimension	Account Type	Y
4	Product	5060	AMENABILITY_CAT_ID	Amenability Category	Dimension	Product Amenability Category	Y
4	Product	5061	INT_SENSITIVE_CAT_ID	Interest Rate Sensitivity	Dimension	Product Interest Sensitive	Y
4	Product	5064	PRODUCT_LIFE_TIME_VALUE	Product Life Time Value	Number	Product	N
5	Legal Entity	5062	RATE_DATA_SOURCE_ID	Rate Data Source	Dimension	Rate Data Source	Y

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Table 4-4 (Cont.) Attributes of Key Dimensions

Dimension Id	Dimension Name	Attribute Id	Attribute Label	Attribute Name	Attribute Data Type	Attribute Dimension Name	Mandatory Attribute?
5	Legal Entity	5063	GROUP_COMPANY_PARTY_CODE	Group Company Party	String	Customer Affiliate Category	Y

> **Note**
>
> Ensure that attribute values are present as members in their corresponding dimensions when an attribute's data type is Dimension. For example, if the *COMMON_COA_ID* attribute for *PRODUCT_ID* 123 is 345, then 345 must be present as a member of the Common COA dimension.

4.2.2.1.2 For Simple Dimensions

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

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

Stage Dimension Loaders (Task 1):

- input_stg_dimensions_b_intf.dat
- input_stg_dimensions_tl_intf.dat

> **Note**
>
> Any column description that contains a ",", then it should be enclosed within "" (double quotes). For example, Account, Type should be "Account, Type".

To load the Dimensions, perform the following steps:

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

Table 4-5 Dimension Loading Process Tasks

Task Code	Task Name	Component	Parameters	Parent Task
1	Stage Dimension Loader	Stage Dimension Loader	All parameters are automatically generated.	

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Table 4-5 (Cont.) Dimension Loading Process Tasks

Task Code	Task Name	Component	Parameters	Parent Task
2	Stage DRM Loader	Stage DRM Loader	• **Dimension Name**: Select the relevant one or more dimensions. • **Sync Stage and Dimension**: – **Yes**: The record(s) that is/are already present will be overwritten by the incoming dimension loader. – **No**: The new records will be merged to the existing records. • **Force Member Delete**: This is used only when the above flag is Yes. – **Yes**: This allows you to delete a members even if is referred in hierarchies. – **No**: No records will be deleted.	1

Note

The above Tasks must be executed in the same order.
The **File to Stage** task must precede the **Stage to Processing** task in a batch.

The Stage DRM Loader allows you to select a Dimension.

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3. Execute the Batch.

> **Note**
>
> This method of loading dimensions will be deprecated in future releases. Recommended approach is in the following section.

Dimension Loader with ZIP File Support

To to upload the Dimension data using a zip file:

1. Create a Folder.
2. Follow the naming convention for the DAT files as follows and save them:
   - DIMENSIONS_BASE
   - DIMENSIONS_TRANSLATION
3. Place all the DAT files inside the folder.
4. Zip the folder.
5. Create a Batch.
6. Create a Task with the Component name as **Dimension and Hierarchy Loader**.
7. Enter the Zipped Folder Name along with the extension. For example, DIMENSIONS.ZIP.
8. Execute the Batch.

For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see Scheduler Services.

4.2.2.1.3 Clear and Back up Dimension Data

This process helps you to clear or delete the existing Dimension Data from the relevant Dimension tables using the Scheduler Services.

Before clearing the data from the Dimension tables, the service creates a back up of the table.

To clear the Dimension Data:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Create the Batch and save it.
3. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**.
4. Select the created Batch and create a Task with **Clear Dimension Members** as Component.
5. Select the Dimension Name that you want to delete. You can select one or more Dimension Names.
6. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
   The service first creates a backup of the existing Dimension table and then deletes the Dimension Member entries for the selected Dimensions.

While deleting the data from the tables, there are no validations. The back up files are suffixed with As Of Date and Current Time Stamp.

The following table gives the sample actual and backed up table names:

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Table 4-6 Sample Table Names

Dimension Type	Actual Table Name	Backup Table Name
Simple Dimension	FSI_ACCRUAL_BASIS_CD	FSI_ACCRUAL_BASIS_CD_<AS_OF_DATE>_<CURRENTTIMESTAMP>
	FSI_ACCRUAL_BASIS_MLS	FSI_ACCRUAL_BASIS_MLS_<AS_OF_DATE>_<CURRENTTIMESTAMP>
Key Dimension	DIM_COMMON_COA_ATTR	DIM_COMMON_COA_ATTR_<AS_OF_DATE>_<CURRENTTIMESTAMP>
	DIM_COMMON_COA_B	DIM_COMMON_COA_B_<AS_OF_DATE>_<CURRENTTIMESTAMP>
	DIM_COMMON_COA_HIER	DIM_COMMON_COA_HIER_<AS_OF_DATE>_<CURRENTTIMESTAMP>
	DIM_COMMON_COA_TL	DIM_COMMON_COA_TL_<AS_OF_DATE>_<CURRENTTIMESTAMP>

4.2.2.1.4 Data Preparation Guidelines

While creating the data files, ensure the following:

- Ensure the data files are in TXT, DAT, or CSV formats.
- Ensure that there are no duplicate records in a data file.
- Data file names are in the prescribed format.
- Use only comma (,) and/or pipeline (|) as delimiters.
- Only double quotes (“”) are used as Field Enclosures.
- The language code must be as per BCP 47 format. For example, **en-US**.
- In the file for hierarchies, there must be no empty space or special characters for HIERARCHY_CODE.
- Dimension member name must not contain **&** character.

4.2.2.2 Instrument and Ledger Data Loaders

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

File to Stage

To load the Data to Staging Tables:

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

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Table 4-7 Data Loader – File to Stage Data

Task Code	Task Name	Component	Parameters
1 *	Custom Task Name *	Stage Data Loader	**Table Name**: select the stage table name from the available list. **Data File Specification**: select the data file specification definition from the available list. **Data File Name**: free text where file name uploaded to the object store to be provided. This is optional. • When the Data File Name is not provided, Stage Loader fetches the file from object store with the selected Data File Specification name. • If name of file is different from Data File Specification, then put exact file name including extension but excluding the prefix. **Note** You can also zip the file and then upload. Ensure the file name in the zip file is inline with the Data File Name in the Task Parameters UI. • **Folder Name**: Enter the physical folder name. This is the location where file saved in

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Table 4-7 (Cont.) Data Loader – File to Stage Data

Task Code	Task Name	Component	Parameters
			the Object Store. For more information, see File Upload and Download Utility. You can use the MIS Date in the input file name for easier identification.

> **Note**
>
> Beginning with the 26B release, the Logical Unique Key used by the Stage Data Loader to identify duplicate Management Ledger records includes DATA_SOURCE_CODE, in addition to AS_OF_DATE, CONSOLIDATION_CODE, ISO_CURRENCY_CD, and all seeded and placeholder KPDs. This enhancement allows you to load the same logical data set more than once for the same As-of Date by providing a unique DATA_SOURCE_CODE value for each load.

> **Note**
>
> Beginning with 26C release, DATA_SOURCE_CODE is mandatory (NOT NULL) for all Stage Management Ledger loads.

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

Table 4-8 Sample Data File Specification and File Name

Data File Specification	Data File Name in Task Parameters UI	File in Object Store
Asset_Loan.dat	Asset_Loan_1.dat	input_yyyymmdd_Asset_Loan_1.dat
Asset_Loan.dat	Not entered	input_yyyymmdd_Asset_Loan.dat

To upload multiple files using same Data File Specification, add separate tasks for each file within the batch.

3. Execute the Batch for the As-of-Date used in the Data File.
   For detailed instructions on Creating a Batch, Defining a Task, Execute the Task, and Schedule a Batch, see Scheduler Services.

Stage to Processing

To load the Data from Staging Tables to Processing:

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

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Table 4-9 Data Loader – Stage to Processing Data

Task Code	Task Name	Component	Parameters
1 *	Custom Task Name *	Select the relevant Component depending on the Data that you want to process. The options are: • Instrument Data Loader • Ledger Data Loader • Transaction Summary Loader **Note** The system validates the DATA_SOURCE_CODE column from the staging table against the FSI_INSTRUMENT_DATA_SOURCE_CD table. If the data source is enabled, its INSTRUMENT_DATA_SOURCE_CD is pushed to the FSI tables; otherwise, a default value of -1 is assigned. This same default behavior applies to all Stage Management Ledger and Processing Management Ledger tables — the Data Source column defaults to -1 when not provided, so it does not need to be included	**Stage Table**: Select the stage table name from the available list. **Data File Specification**: Select the Data File Specification name from the available list. **Folder Name**: Enter the folder or prefix for the data file. This field is optional. A trailing / is automatically appended if missing. **Data File Name**: Enter the name of the data file to be processed. Supports / within the file name to represent subfolders.

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Table 4-9 (Cont.) Data Loader – Stage to Processing Data

Task Code	Task Name	Component	Parameters
		in the input Data File.	
		Note For the Ledger Data Loader, the DATA_SOURCE_CODE value from the staging Management Ledger table is copied as-is into the DATA_SOURCE column of the corresponding processing (FSI) Management Ledger table. Unlike the Instrument Loader, no validation against a Data Source dimension table is performed.	

4.2.2.3 Generic Data Loader

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

To load the data:

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

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- **Stripe Name**: The unique identifier for storing the files.
- **Uploaded Date**: The file upload date.
- **Download File**: Click the Download icon to download a copy of the file.
- **Delete**: Click Delete to delete the uploaded file.

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

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

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

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

Table 4-10 Data File

Loader type	Data File Name	Object Store File Name
Exchange Rates	stg_exchange_rates.dat	input_20230622_stg_exchange_rates.dat
Behavior Patters	stg_behavior_pattern.dat	input_20230502_stg_behavior_pattern.dat
Payment Patterns	stg_payment_pattern.dat	input_20241024_stg_payment_pattern.dat
Reprice Patterns	stg_reprice_pattern.dat	input_20241024_stg_reprice_pattern.dat
Customer Master	stg_customer_master.dat	input_20251231_STG_CUSTOMER_MASTER.dat
Customer Hierarchy	stg_customer_hier.dat	input_20260131_STG_CUSTOMER_HIER.dat
Volatility Surface Rate History	stg_vol_surface_rate_hist.dat	input_20241024_stg_vol_surface_rate_hist.dat
Economic Indicator Rate History	stg_eco_ind_rate_hist.dat	input_20241024_stg_eco_ind_rate_hist.dat
Prepayment model	stg_ppmt_model.dat	input_20260303_stg_ppmt_rule.dat
Prepayment Rule	stg_ppmt_rule.dat	input_20260303_stg_ppmt_model.dat

> **Note**
>
> The file name is case-sensitive.

For more information about File Upload and Download, see File Upload and Download Utility.

The following are the sample files for reference:

- stg_exchange_rates.dat
- input_20230701_bploaderdata.csv
- input_20241024_stg_payment_pattern.dat

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- input_20241024_stg_reprice_pattern.dat
- input_20260131_STG_CUSTOMER_MASTER.dat
- input_20260131_STG_CUSTOMER_HIER.dat
- input_20260321_stg_ppmt_rule.dat
- input_20260315_stg_ppmt_rule.dat

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

Table 4-11 Loader Type

Seeded Batch Component	Loader Type Parameter
Generic Data Loader	Exchange Rates
Generic Data Loader	Behavior Patterns
Generic Data Loader	Payment Patterns
Generic Data Loader	Reprice Patterns
Generic Data Loader	Customer Master
Generic Data Loader	Customer Hierarchy
Generic Data Loader	Volatility Surface Rate History
Generic Data Loader	Economic Indicator Rate History
Generic Data Loader	Prepayment model
Generic Data Loader	Prepayment rule

6. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
8. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Data Loader batch. Select the latest execution and click **Start Monitor**.
   The UI displays the status of the batch.

For more details about Scheduler processes, see the Scheduler Services.

4.2.2.4 Interest Rates Loader

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

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

- Stage Loader
- Stage Validator
- Processing Loader

To upload the Interest Rate Data file:

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

   Oracle supports the delimiters **,**(comma) and **|** (pipe) in the file.

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

   - A prefix as **INPUT_YYYYMMDD** where the date format is related to the As of Date (i.e., 02-October-2023 becomes 20231002).
   - A suffix as _**FILENAME.csv**.
   - An example of Data File Name could be:
     INPUT_20231002_IRC_<DATAFILENAME>.csv.
     The order of the columns in the input file must be as follows:
     - INTEREST_RATE_NAME
     - EFFECTIVE_DATE (Date format: MM-DD-YYYY)
     - INTEREST_RATE_TERM
     - INTEREST_RATE_TERM_MULT
     - INTEREST_RATE
     - RATE_DATA_SOURCE_CODE
     - MATURITY_DATE (Date format: MM-DD-YYYY) (Mandatory for Data based Term Point enabled IRC)

   For more information about File Upload and Download, see File Upload and Download Utility section.
3. After selecting the file to upload, click **Upload**.
   The UI displays a confirmation message: Upload successful and insert the data into the Stage tables.

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

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

   Warnings are displayed in the View Log.

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

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> **Note**
>
> The As of Date is used to load the file and the Effective Date in the file can be different. The data is loaded based on the Effective Date and if any value exists for corresponding Effective Date, then the loader will update. This also helps to push the IRC History data from on-prem to SaaS, and in the SaaS environments one tenant to other tenant.
> The Interest Rate Attribute must be created on the UI prior to loading the historical rates. Interest Rate loader is to load rates on pre-existing IRC.

If any new terms are found in the Data file, then loader will create the new terms and loads the data for those new terms also.

4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**. For more details, see Define Batch.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**. For more details, see Define Tasks.
   a. Task Type: REST
   b. Component:
      - IRC Data Loader (this component is a combination of Stage Loader, Stage Validator, and Processing Loader.
        or
      - Select the following components.
        – Stage Loader: IRCLoader Stage Loader
        – Stage Validator: IRCLoader Stage Validator
        – Processing Loader: IRCLoader Processing Loader

      > **Note**
      >
      > To simplify the flow, the above three components are merged into one task component 'IRC Data Loader'; you can configure your batches to use this integrated components as these three individual components will be deprecated Release 25B onwards.

   c. Loader Type: By default Interest Rate Loader is selected.

      > **Note**
      >
      > For Funds Transfer Pricing Cloud Service, Rate Lock Option Volatility is also available.

   d. File Name: INPUT_20231002_IRC_<DATAFILENAME>.csv
6. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant As-of-Date, and then save the batch.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.

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8. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
9. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Exchange Rate Data Loader batch. Select the latest execution and click **Start Monitor**.
   The UI displays the Status of the batch.

4.2.2.5 Interest Rates Definition Loader

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

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

- Stage Loader
- Stage Validator
- Processing Loader

To upload the Interest Rate Definition file:

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

   Oracle supports the delimiters **,**(comma) and **|** (pipe) in the file.

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

   - A prefix as **INPUT_YYYYMMDD** where the date format is related to the As of Date (i.e., 02-October-2023 becomes 20231002).
   - A suffix as _**FILENAME.CSV**.
   - An example of Data File Name could be:
     INPUT_20231002_IRCS_<DATAFILENAME>.csv.
     The order of the columns in the input file must be as follows:
     - INTEREST_RATE_CD
     - IRC_NAME
     - IRC_DESC
     - ISO_CURRENCY_CD
     - DATE_BASED_TERM_POINTS
     - DISPLAY_FOR_ALL_CCY_FLG
     - RISK_FREE_RATE_FLG
     - TERM o MULTIPLIER
     - RATE_FORMAT
     - COMPOUNDING_BASIS
     - ACCRUAL_BASIS

   For more information about File Upload and Download, see File Upload and Download Utility section.

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3. After selecting the file to upload, click **Upload**.
   The UI displays a confirmation message: Upload successful and insert the data into the Stage tables.

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

   - INTEREST_RATE_CD: Code does not exists. Allows only numbers, max 10 digits.
   - IRC_NAME: name don't exist. Allows only Alphanumeric space _ , . - &.
   - IRC_DESC: Description. Allow only - Alphanumeric space _ , . - & / ! # @ $ % ? ( ) [ ].
   - ISO_CURRENCY_CD: Only accept active currency.
   - DATE_BASED_TERM_POINTS: N or null for normal, Y for Date Base.
   - DISPLAY_FOR_ALL_CCY_FLG: Y for Display for all currency, N or null for not.
   - RISK_FREE_RATE_FLG: Y for Risk free rate, 0 or null for not.
   - TERM: Allows 1 to 9999.
   - MULTIPLIER: Allow D, M, Y.

   Warnings are displayed in the View Log.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**. For more details, see Define Batch.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**. For more details, see Define Tasks.
   a. Task Type: REST
   b. Component:
      - IRC Data Loader (this component is a combination of Stage Loader, Stage Validator, and Processing Loader.
      - Loader Type: By default **IRC Historical Data** is selected. You must select **IRC Definition** irc definition loader.
      - File Name: INPUT_20231002_IRCS_<DATAFILENAME>.csv
6. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant As-of-Date, and then save the batch.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
8. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
9. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Exchange Rate Data Loader batch. Select the latest execution and click **Start Monitor**.
   The UI displays the Status of the batch.

4.2.2.6 Rate Lock Option Volatility Loader

This Loader is applicable only for Funds Transfer Pricing Cloud Service.

The Volatility Rates Data Loader allows the users to load the Volatility Rate Curves that are consumed by the Oracle Financial Services Funds Transfer Pricing Cloud Service.

To upload the Interest Rate Data file:

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

   Oracle supports the delimiters **,**(comma) and **|** (pipe) in the file.

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

   - A prefix as INPUT_YYYYMMDD where the date format is related to the As of Date (i.e., 02-October-2023 becomes 20231002).
   - A suffix as _FILENAME.CSV.
   - An example of Data File Name could be: INPUT_20231002_ FTP_VOLATILITY _<DATAFILENAME>.csv. The order of the columns in the input file must be as follows:
     - RATE_LOCK_VOLITILITY_NAME
     - EFFECTIVE_DATE (Date format: MM-DD-YYYY)
     - CONTRACT_RATE_TERM
     - CONTRACT_RATE_TERM_MULT
     - EXPIRY_RATE_TERM
     - EXPIRY_RATE_TERM_MULT
     - INTEREST_RATE
     - RATE_DATA_SOURCE_CODE

   The following illustration is a sample Rate Lock Option Volatility loader data file.

Figure 4-16 Rate Lock Volatility Loader Sample File

RATE_LOCK_VOLITILITY_NAME	EFFECTIVE_DATE	CONTRACT_RATE_TERM	CONTRACT_RATE_TERM_MULT	EXPIRY_RATE_TERM	EXPIRY_RATE_TERM_MULT	INTEREST_RATE	RATE_DATA_SOURCE_CODE
Rate102	08-14-2023	1	Y	1	M	11.1411	TEST_LOADER
Rate102	08-14-2023	1	Y	6	M	16.1422	TEST_LOADER
Rate102	08-14-2023	3	Y	1	M	31.1433	TEST_LOADER
Rate102	08-14-2023	3	Y	6	M	36.1444	TEST_LOADER
Rate102	08-15-2023	1	Y	1	M	11.1555	TEST_LOADER
Rate102	08-15-2023	1	Y	6	M	16.1566	TEST_LOADER
Rate102	08-15-2023	3	Y	1	M	31.1577	TEST_LOADER
Rate102	08-15-2023	3	Y	6	M	36.1588	TEST_LOADER
Rate102	08-16-2023	1	Y	1	M	11.1699	TEST_LOADER
Rate102	08-16-2023	1	Y	6	M	16.161	TEST_LOADER
Rate102	08-16-2023	3	Y	1	M	31.1611	TEST_LOADER
Rate102	08-16-2023	3	Y	6	M	36.1612	TEST_LOADER
Rate102	08-16-2023	2	Y	1	M	31.1611	TEST_LOADER
Rate102	08-16-2023	3	Y	9	M	36.1612	TEST_LOADER
Rate106	08-14-2023	3	Y	1	M	31.143	TEST_LOADER
Rate107	08-14-2023	3	Y	6	M	36.144	TEST_LOADER
Rate107	08-15-2023	1	Y	1	M	11.155	TEST_LOADER
Rate108	08-15-2023	1	Y	6	M	16.156	TEST_LOADER
Rate1001	08-14-2023	1	M	15	D	111.101	TEST_LOADER
Rate1001	08-11-2023	1	M	15	D	112.101	TEST_LOADER
Rate1001	08-14-2023	3	M	25	D	111.101	TEST_LOADER
Rate1001	08-11-2023	5	M	45	D	112.101	TEST_LOADER

   For more information about File Upload and Download, see File Upload and Download Utility section.
3. After selecting the file to upload, click **Upload**.
   The UI displays a confirmation message: Upload successful and insert the data into the Stage tables.

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

   - **Records in the Stage table**: Stage Validation fails when no records are found in the uploaded file and no execution happens after this point.

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- **Rate Lock Volatility definitions exist**: If there are single Rate Lock Volatility definitions in the file, the validator passes and displays a warning message along with the Rate Lock Volatility Code for which definitions are missing.
- **Invalid Terms check** (Term details not found): If there are extra terms (Contract or Expiry terms) available in incoming file: A warning message is displayed in the View Logs: *Term details not found in the definition : Rate Lock Volatility : Rate101, Code : 101, Details : Effective Date :14-AUG-23, Contract Term :3 M, Expiry Term :25 D Effective Date :11-AUG-23, Contract Term :5 M, Expiry Term :45 D*

Warnings are displayed in the View Log.

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

> **Note**
>
> The As of Date is used to load the file and the Effective Date in the file can be different. The data is loaded based on the Effective Date and if any value exists for corresponding Effective Date, then the loader will update. This also helps to push the Rate Lock Volatility Historical data from on-prem to SaaS. Rate Lock Option Volatility loader is to load rates on pre-existing Rate Lock Option Volatility.

4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**. For more details, see Define Batch.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**. For more details, see Define Tasks.
   - **Task Type**: REST
   - **Component**: IRC Data Loader (this component is a combination of Stage Loader, Stage Validator, and Processing Loader.
   - **Loader Type**: By default Interest Rate Loader is selected. Select Rate Lock Option Volatility option.
   - **File Name**: INPUT_20231002_ FTP_VOLATILITY_<DATAFILENAME>.csv
6. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant **As-of-Date**, and then save the batch.
7. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**. For more information, see Execute Batch.
8. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
9. Select the **Batch**, **MISDATE** and the **Batch name**. There may be multiple executions of the Exchange Rate Data Loader batch. Select the latest execution and click Start Monitor. The UI displays the Status of the batch.

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4.2.2.7 Generating Holidays for Holiday Calendar using Scheduler

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

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

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

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Create a new Batch with a new Task with Holiday Generator as Component.

   For the selected From to To date parameters, you can generate Holidays for single or multiple calendar definitions.
3. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
5. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Data Loader batch. Select the latest execution and click **Start Monitor**.

   The UI displays the status of the batch.

   For more details about Scheduler processes, see the Scheduler Services.

4.2.3 Data File History

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

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

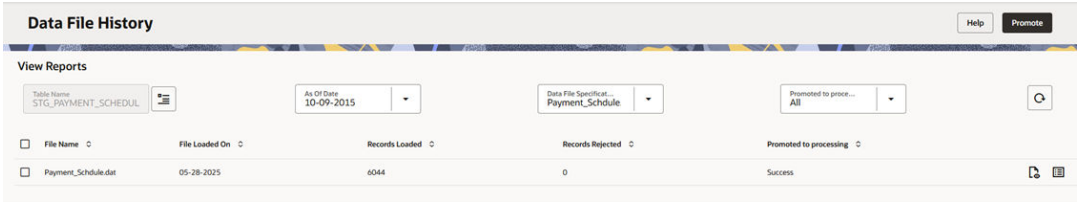
- Search for data files for which the stage data loader batch is already executed.
- Move the data from stage to processing tables.
- Delete the data from the stage or processing tables.
- Scan for invalid members.
- Create invalid members.

To open the Data File History window:

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

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Figure 4-17 Data File History summary page

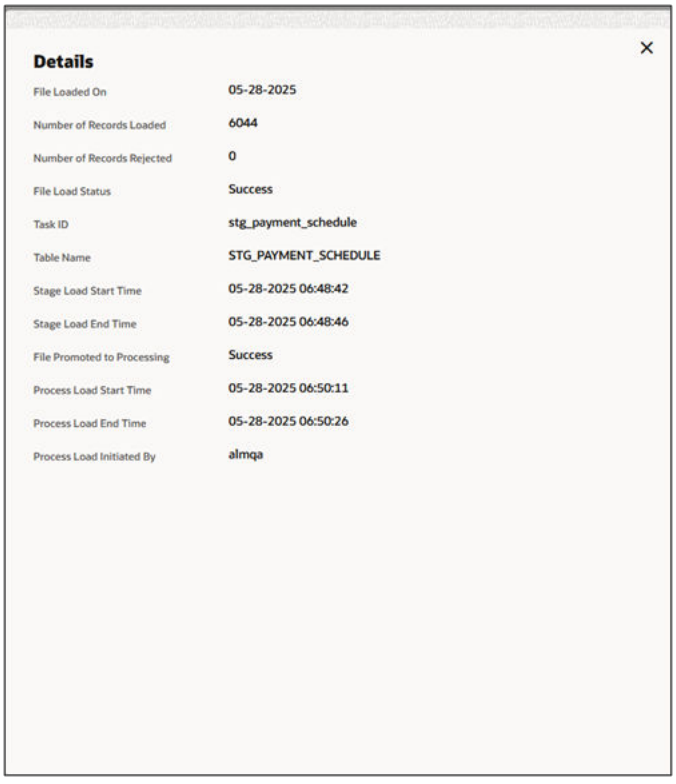


The summary screen displays the following information of the data files:

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

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

Figure 4-18 File Details



- **Promote selected files to Processing** (button): To promote the selected file or files for processing. This triggers the Batch Scheduler and queues the selected file or files for processing.

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- **Advanced Actions** (button): There are four options in the Advances Actions. The following table explains the four options and the related information that is required to complete the actions:

Table 4-12 Advanced Actions

Action	As Of Date	Table Name	Data File Specification	File Name(s)
Delete Data from Staging	Required	Required	Required	Optional
Delete Data from Processing	Required	Required	Required	Required
Scan for Invalid Members	Required	Required	Required	Optional
Create Invalid Members	Required	Required	Required	Optional

Selecting Scan for Invalid Members or **Create Invalid Members** opens a separate pop-up window requiring you to select one or more Dimension Name(s) before you can proceed. See the following sections for details.

– Click **Delete/Scan/Create** button as applicable.

  * **Delete Data from Staging**: The staging data uploaded from a data file will be deleted.
  * **Delete Data from Processing**: The processing data uploaded from a file will be deleted.
  * **Scan for Invalid Members**: To scan the staging data and identifying the dimension member codes present in the staging table, but not present in the corresponding dimension tables.
  * **Create Invalid Members**: To populate the dimension tables with members identified in the above scan.

Selecting **Scan for Invalid Members** opens the Scan For Invalid Members pop-up, used to scan the staging data and identify dimension member codes present in the staging table but not present in the corresponding dimension table(s).

2. In the **Dimension Name** field, select one or more dimensions to scan. This field is required. Available dimensions depend on your subscribed services and typically include options such as All, Branch, Common Chart of Accounts, Financial Element, General Ledger Account, Geographic Location, IFRS9 Stage, and Industry.
3. Click **Scan** to start the scan, or **Cancel** to close the window without scanning.
   The report displays the following columns:
   - **Data File Specification**: The Data File Specification associated with the scanned file.
   - **File Name**: The name of the staging file that was scanned.
   - **Dimension Name**: The dimension in which the invalid member was found.
   - **Member Code**: The invalid dimension member code identified in the staging data.
   - **No Of Occurrence**: The number of times the invalid member code occurs in the staging data.
   - **Scanned By**: The user who triggered the scan.
   - **Scanned On**: The date and time the scan was run.

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- **Is Member Created**: Indicates whether the invalid member has already been created in the dimension table (Y/N).

Click **Download** to export the report, or **Cancel** to close it.

Selecting Create Invalid Members opens the Create Invalid Members pop-up, used to populate the dimension table(s) with the invalid members identified during a scan.

4. In the **Dimension Name** field, select one or more dimensions for which the identified invalid members should be created. This field is required.
5. Click **Create** to populate the dimension table(s), or Cancel to close the window without creating them.

Help (Button): Click the Help icon to view the Data File History help.

Scan for Invalid Members, Create Invalid Members, and Delete operations are also possible using the Scheduler Services.

Table 4-13 Scan, Create, and Delete Operations Using Scheduler Services

Task Code	Task Name	Component	Parameters
1 *	Scan_Staging_for_Invalid_Members	Scan_Staging_for_Invalid_Members	• Table Name • Data File Specification: select the Data File Specification name from the available list. • Data File Name • Fail When Invalid Members • Dimension Name: select one or more dimensions to scan.
2	Create_Invalid_Members	Create_Invalid_Members	• Table Name • Data File Specification: select the Data File Specification name from the available list. • Data File Name • Dimension Name: select one or more dimensions for which to create invalid members.

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

Promoting a Data File for Processing

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

To promote a Data File for processing:

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1. Click on the **Table Name** icon to display the **Category – Table Names** window. This window displays the Stage Table Names where data is already loaded. The tables are categorized into different groups and are as follows:
   - Transaction Summary
   - Ledger
   - Others
   - Schedule
   - Instruments

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

Reloading a Data File

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

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

- Promoting a Data File for Processing
  By promoting a Data File for processing, you insert the Data from the Data Staging Tables to the Processing Tables.
- Reloading a Data File
  OFS Cloud Services allows you to reload a Data File.

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4.2.3.1 Promoting a Data File for Processing

By promoting a Data File for processing, you insert the Data from the Data Staging Tables to the Processing Tables.

To promote a Data File for processing, perform the following steps:

1. Click on the **Table Name** icon to display the **Category – Table Names** window. This window displays the Stage Table Names where data is already loaded. The tables are categorized into different groups and are as follows:
   - Transaction Summary
   - Ledger
   - Others
   - Schedule
   - Instruments

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

4.2.3.2 Reloading a Data File

OFS Cloud Services allows you to reload a Data File.

For the detailed instructions on Reloading the Data File, see the Scheduler Service section.

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

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4.2.4 File Upload and Download

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

- Upload or Download File from Object Store Using Console
- Uploading/Downloading a File Using Utility
- Uploading/Downloading a File Using PAR URL
- Upload or Download File Using Console
- Uploading/Downloading a File Using PAR URL
  Complete the following steps to upload or download a file using the PAR URL.
- Roles and Functions
  The following table lists the role codes and function codes required to configure the File Upload/Download Utility.

4.2.4.1 Upload or Download File Using Console

1. Click **Data Management** in the left navigation pane.

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

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

     > **Note**
     >
     > The timestamp is displayed according to the time zone selected on the **Preferences** screen. After selecting a time zone, users must log out and log back in for the change to take effect. This is a one-time configuration.

   - **Download File** - Click to download a copy of the uploaded file.
   - **Delete** - Click to delete the file.
2. Click **Upload** on the File Upload/Download Summary screen.
3. Click **Drag and Drop** to browse and select a file for upload from the local directory.

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

   The file name is automatically updated in the **Selected File** field.
4. **Prefix**: You can upload a file with or without a prefix. If you need to upload two files that have the same name, use different prefixes to keep them unique.

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Use the left pane to view the prefix hierarchy and identify the exact folder where your file is stored.

- By default, the **Summary** page shows only files without a prefix.
- To display all files (with and without prefixes), select the **Show All Files** check box.
  - While this check box is selected, the prefix navigation in the left pane is locked.
  - To resume using the left pane, clear the check box.

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

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

Downloading file(s)

Complete the following steps to download a single file.

a. Click the **Actions** menu corresponding to the file you want to download and select **Download.**
b. Specify a name (optional) and file type (optional).
c. Click **Save**.

Complete the following steps to download multiple files at once.

a. Select the checkbox corresponding to each file you want to download.
b. Click the **Download Multiple Files** icon (top right corner).
c. Specify a name for the compressed folder type.
d. Click **Save**

Deleting file(s)

Complete the following steps to delete single file.

a. Click the **Actions** menu corresponding to the file you want to delete and select **Delete.**
b. Select **Yes** to confirm the deletion.

Complete the following steps to delete multiple files at once.

a. Select the checkbox corresponding to each file you want to delete.
b. Click the **Delete Multiple Files** icon (top left corner).
c. Select **Yes** to confirm the deletion.

Related Topics

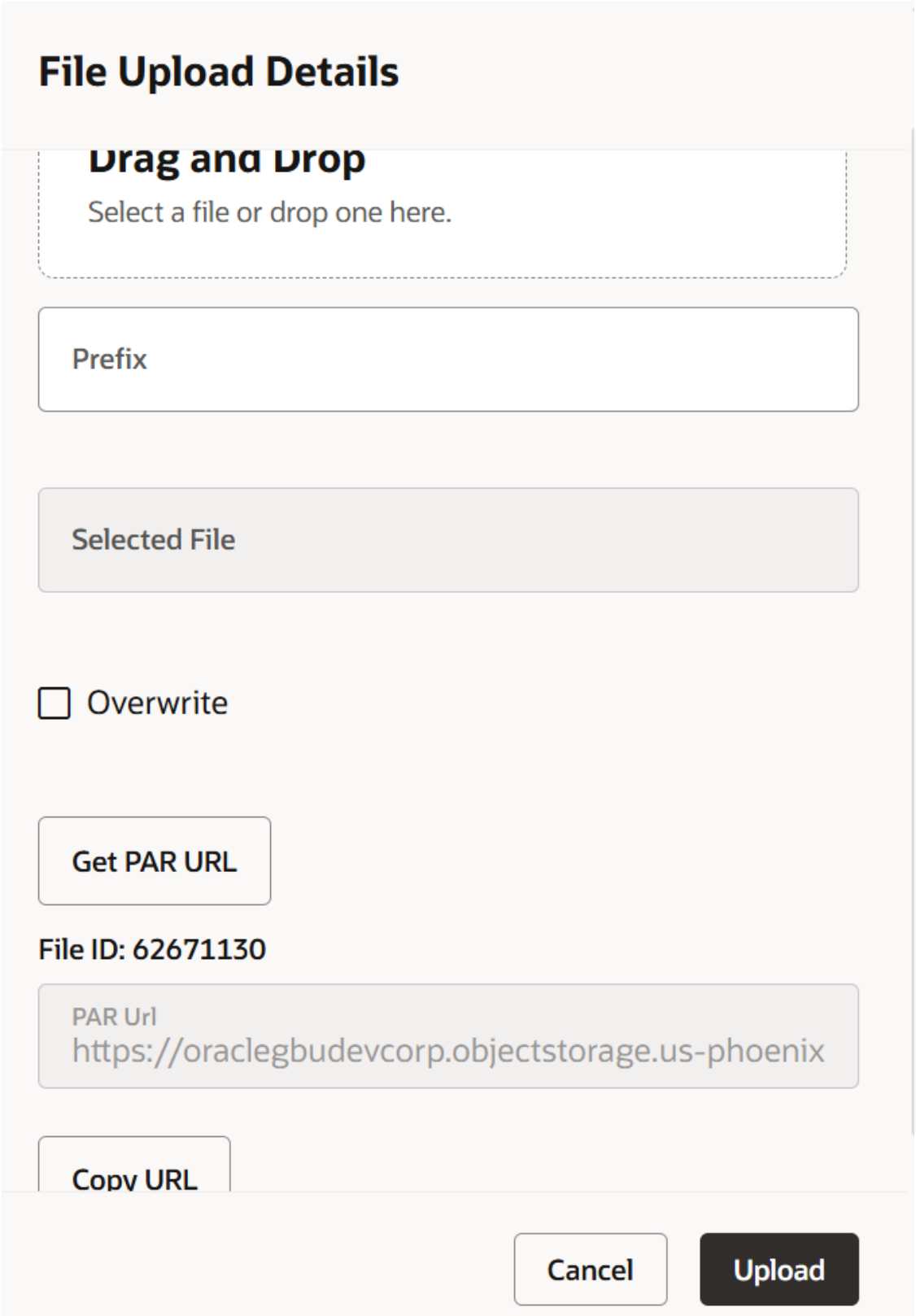
- Uploading/Downloading a File Using PAR URL
  Complete the following steps to upload or download a file using the PAR URL.

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4.2.4.2 Uploading/Downloading a File Using PAR URL

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

Figure 4-19 Get PAR URL



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

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

   > **Note**
   >
   > Upload only one file at a time. If multiple files are dragged and dropped, only the last file will be uploaded and processed.

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

   You can also generate PAR URL using Rest API. For more information refer to, Calling the API to Generate the URL.
4. Copy the PAR URL and note the related File ID.
5. Upload the file content referred with the specific PAR URL into the object store using the Console, CLI, or SDK.

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

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

   You can also use the following command.

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

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

   Use the following CURL command, to Scan using CLI:

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

   To generate a bearer token, refer to Generate access token.

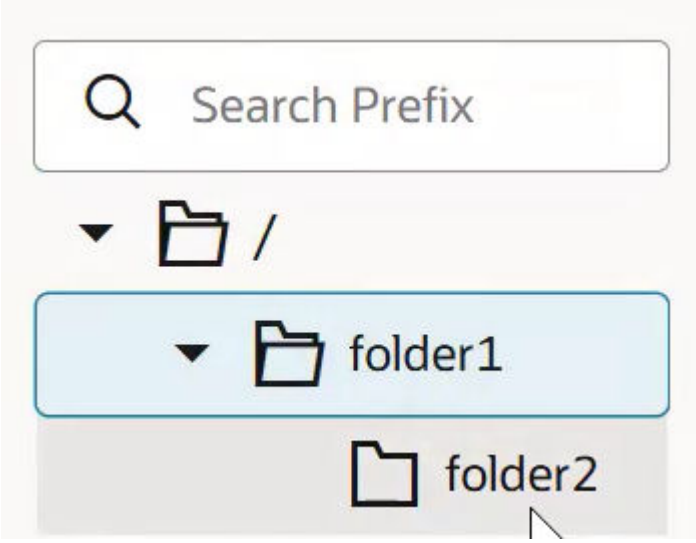
   A confirmation message is displayed after successful upload and the file is listed in the Uploaded Files list.

   Search Prefix

   Use the **Search Prefix** field on the left hand side to search and navigate records in a tree view folder structure. Enter the required prefix value to filter and display the relevant folders and associated records in the hierarchy. Expand or collapse folders to refine navigation and quickly access the required information.

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Figure 4-20 Prefix tree view



4.2.4.3 Roles and Functions

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

Role Codes

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

CEGBU File Prefix Access Control

Group-based access control is available for CEGBU file prefixes. Upload, download, and delete operations check the authenticated user's group memberships against the prefix-level access flags before continuing.

If access rules exist for the effective prefix, the user must belong to at least one group with the required access flag enabled.

If no effective prefix access rows are configured, access is allowed by default. A user can view the folder administration drawer only if the `FLDR_ACCESS` role code (`FLDR_ACCESS_ADMIN` group) is mapped to the user.

4.2.5 AutoObjectStore Utility

The AutoObjectStore utility is a command-line utility for automating object-store file operations and selected application operations. You can use the utility to upload, download, delete, and generate pre-authenticated request (PAR) URLs for files. It also supports batch execution and

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status monitoring, data loading, application as-of-date management, and data-export manifest retrieval.

Download the `AutoObjectStore.zip` utility from the **Data File Upload and Download** page. Extract the archive on a host from which you can access the service.

- Prerequisites
- Configuring output, logging, and properties files
- Running the utility
- Available operations
- File operations
- Batch and Data-Load Operations
- Application-Date and Configuration Operations
- Retrieving a Data-Export Manifest

4.2.5.1 Prerequisites

Before using the utility:

1. Download and extract `AutoObjectStore.zip` from the **Data File Upload and Download** page.
2. Download the `user-input.properties` archive from the same page.
3. Extract the properties archive and complete the properties file as described in the `README` file in the `conf` directory of the `AutoObjectStore` archive.
4. Open a command prompt, terminal, or shell in the extracted AutoObjectStore directory, and change to the `bin` directory.

4.2.5.2 Configuring output, logging, and properties files

> **Note**
>
> For information about generating the Client ID and Client Secret values required in user-input.properties, see Create an Integrated (Confidential) Application. This topic explains how to create a Confidential Application in Oracle Identity Domains / IDCS (OCI IAM) and retrieve the credentials needed to generate OAuth tokens for public API calls.

All three environment variables below are mandatory — earlier default fallback paths (*conf/pbsm-automate.props*, *./pbsm-automate.out*, *./pbsm-automate.log*) have been removed. If a variable is unset, empty, or invalid, the utility throws an error and exits before any API call is made. Using distinct paths per environment also lets you run multiple *pbsm-automate* instances in parallel without their output/log files interfering with each other.

The utility requires the following environment variables:

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Table 4-14 Environment Variables

Environment Variable	Value	Behavior
pbsm_automate_props	Absolute path to the properties file	Used to connect to the target tenant environment. Invalid or empty value → error and exit.
pbsm_automate_output	Absolute path to the output file	Holds only the raw JSON response of the last command — not beautified. The file is overwritten on every run. Write-permission is validated before any API call. Invalid or empty value → error and exit.
pbsm_automate_log	Absolute path to the log file	Console log entries are appended, each prefixed with a timestamp. Write-permission is validated before any API call. Invalid or empty value → error and exit.

For example:

```
pbsm_automate_props='C:\\Users\\user\\Downloads\\user-
input.properties'
```

Example — configuring all three variables (Linux/macOS):

```
export pbsm_automate_props=./conf/pbsm-prod.props
export pbsm_automate_output=/scratch/pbsm/prod/pbsm-prod.out
export pbsm_automate_log=./log/pbsm-prod.log
```

The utility returns exit status `0` when an operation succeeds and `1` when it fails.

4.2.5.3 Running the utility

To start the interactive utility, run the following commands from the extracted directory:

```
cd bin
```

```
./pbsm-automate
```

The utility displays the available operations. Operation names are not case-sensitive.

To run an operation without using the interactive menu, use this syntax:

```
./pbsm-automate <operation> <parameters>
```

For example:

```
./pbsm-automate push File1
```

Run one operation for one input at a time. Do not use comma-separated multiple inputs in a single invocation. When an operation requires a file path, specify the path using double forward slashes, for example `*//path//to//file*`.

All API calls made by the utility are synchronous — the utility never exits before the call has returned a response. When called with parameters, it writes the response to the console and to the output file, and updates the log file, before exiting. If the parameters passed are invalid or

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insufficient, the utility writes the error to the console and the log file, and deletes (or empties) the output file so it never holds stale content.

Scripting example — because output and log file locations are configurable per environment, pbsm-automate calls can be chained in a shell script, reading the output file between calls to drive conditional logic:

```
./pbsm-automate EXECUTE <batch-id> <date>
## read $pbsm_automate_output to extract the batch-run-id

./pbsm-automate STATUS <batch-run-id> [<optional-task-id>]
## read $pbsm_automate_output to get the batch status and proceed
```

4.2.5.4 Available operations

Table 4-15 Available operations

Operation	Description
PUSH	Uploads a file to the object store.
DELETE	Deletes a file by name.
DELETE_BY_ID	Deletes a file by file ID.
DOWNLOAD	Downloads a file by name.
DOWNLOAD_BY_ID	Downloads a file by file ID.
GET_PAR	Generates a PAR URL for a file name.
GET_PAR_BY_ID	Generates a PAR URL for a file ID.
EXECUTE	Executes a batch.
STATUS	Returns the status of a batch or selected tasks.
DATALOAD	Loads a data file to a stage table.
GET_PREF_DATE	Returns the as-of date for an application ID.
SET_PREF_DATE	Sets the as-of date for an application ID.
CREATEPROPS	Creates a properties-file template.
GETMANIFEST	Retrieves the manifest for a data-export run.

4.2.5.5 File operations

- Uploading a file
- Deleting a file
- Downloading a file
- Generating a PAR URL

4.2.5.5.1 Uploading a file

Use `PUSH` to upload a file. You can optionally supply a prefix.

```
./pbsm-automate push <file-name-or-path> [-p <prefix>]
```

Example:

```
./pbsm-automate push //path//to//file -p xyz
```

A successful request returns a response containing the file ID.

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4.2.5.5.2 Deleting a file

Use `DELETE` to delete a file by name. Supply `-p <prefix>` when the file was uploaded with a prefix.

```
./pbsm-automate delete <file-name> [-p <prefix>]
```

Example:

```
./pbsm-automate delete file1 -p xyz
```

Use `DELETE_BY_ID` to delete a file by its file ID. A prefix is not required.

```
./pbsm-automate delete_by_id <file-id>
```

4.2.5.5.3 Downloading a file

Use `DOWNLOAD` to download a file by name. You can specify a prefix and an optional destination or save-as path.

```
./pbsm-automate download <file-name> [-p <prefix>] [-s <save-as-path>]
```

Example:

```
./pbsm-automate download filename_2 -p abc -s //path//to//file
```

Use `DOWNLOAD_BY_ID` to download a file by file ID.

```
./pbsm-automate download_by_id <file-id> [-s <save-as-path>]
```

4.2.5.5.4 Generating a PAR URL

Use `GET_PAR` to generate a browser-downloadable PAR URL by file name. Supply a prefix when applicable.

```
./pbsm-automate get_par <file-name> [-p <prefix>]
```

Use `GET_PAR_BY_ID` to generate the PAR URL by file ID.

```
./pbsm-automate get_par_by_id <file-id>
```

4.2.5.6 Batch and Data-Load Operations

- Executing a batch
- Checking Batch Status
- Loading a data file

4.2.5.6.1 Executing a batch

Use `EXECUTE` to run a batch. The as-of date is optional; when it is omitted, the current date is used.

```
./pbsm-automate execute <batch-code> [-d <yyyy-mm-dd>]
```

Example:

```
./pbsm-automate execute Batch1 -d 2024-10-04
```


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4.2.5.6.2 Checking Batch Status

Use `STATUS` to return the status of a batch run. You can optionally request the status of named tasks.

```
./pbsm-automate status <batch-run-id> [-t [task1] [task2]]
```

4.2.5.6.3 Loading a data file

Use `DATALOAD` to load a file to a stage table.

```
./pbsm-automate dataload <yyyy-mm-dd> <table-name> <data-file-specification-file> [file-name]
```

Example:

```
./pbsm-automate dataload 2024-09-20 STG_ASSET_TXN STG_ASSET.csv 'tsd 23.csv'
```

4.2.5.7 Application-Date and Configuration Operations

Use `GET_PREF_DATE` to retrieve an application's as-of date:

```
./pbsm-automate get_pref_date <app-id>
```

Use `SET_PREF_DATE` to set an application's as-of date:

```
./pbsm-automate set_pref_date <app-id> -d <yyyy-mm-dd>
```

Use `CREATEPROPS` to create a properties-file template at an absolute path:

```
./pbsm-automate createprops //path//to//file
```

4.2.5.8 Retrieving a Data-Export Manifest

Use `GETMANIFEST` to retrieve the manifest JSON for a data-export object and batch run:

```
./pbsm-automate getmanifest <code> <batch-run-id>
```

The response includes export file details, execution information, row count, as-of date, PAR URL expiry, and run status.

4.2.6 File Upload Automation

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

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

- Step 1: Generate Access Token
- Step 2: Generate PAR URL
- Step 3: Upload file to Object Store
- Step 4: Scan the file to ensure Upload was Successful
- Step 1: Generate Access Token
  Generate the Access Token for your Profitability and Balance Sheet Management Cloud Service by:

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- Step 2: Generate PAR URL
  Generate the PAR URL for your Profitability and Balance Sheet Management Cloud Service by:
- Step 3: Upload file to Object Store
  Upload the file to the Object Store of your Profitability and Balance Sheet Management Cloud Service by:
- Step 4: Scan the file to ensure Upload was Successful
  Scan the file that was uploaded to the Object Store of your Profitability and Balance Sheet Management Cloud Service by:
- Automating the File Upload Process Using File Upload Utility
  This section provides the procedure including the script to automate the process of uploading input data files using the File Upload utility.

4.2.6.1 Step 1: Generate Access Token

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

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

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

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

4.2.6.2 Step 2: Generate PAR URL

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

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

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

PAR URL Generation Code Snippet

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


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PAR URL Variable Assignment Code Snippet

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

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

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

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

4.2.6.3 Step 3: Upload file to Object Store

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

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

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

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

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

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

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

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

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


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```
    else
        echo "Scan failed"
        exit -2;
    fi
else
    echo "Upload failed"
    exit -3;
fi
```

4.2.6.5 Automating the File Upload Process Using File Upload Utility

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

You can download this script from this MoS Doc ID 2927077.1.

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

4.2.6.5.1 Executing the File Upload Automation Script

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

Complete the following procedure to execute the file upload automation script.

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

1. Extract the **FILEUPLOAD_UTIL.zip** file located in the **$HOME** directory.
2. Copy the Data Loader input file (text file) to the **$HOME/FILEUPLOAD_UTIL** directory.
3. Edit the script **Env_setup.sh** file to update the following environment variables.
   - **IAM URL** - The Service Instance URL to access your IAM console.
     You can get the IAM URL from the following menu:

     Oracle Cloud Infrastructure Console > Identity Cloud.

     Syntax: `<IAM-url>/oauth2/v1/token`
   - **Encoded** - The **<OAuth Client ID>:<OAuth Client Secret>** encoded using **base64encode**
     To extract and encode the Client ID and Client Secret, refer to the following steps:
     a. Login to **Admin Console**.
     b. Go to **System Configuration** tab, and click **Component Details** tile.
     c. Click **OAUTH Creds** tab to view and copy the **OAUTH Client ID** and **OAUTH Client Secret** details.
     d. Using any **base64encode** utility, encode <OAUTH Client ID>:<OAUTH Client Secret>.
        Example (Input OAUTH Client ID and Client Secret):

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

        Example (Encoded OAUTH Client ID and Client Secret):
        `ZnRwcWExMDEyMzEtcHJkX0FQUElEOjBkMmU5MDBiLTlhYjItNGFmOS05OWM0LTEwNTYyMDVkYWYwNQ==`
   - **Username** - The Username to access the application.

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> **Note**
>
> The user should have appropriate roles and privileges. For more information about roles and priveleges, refer to Roles and Functions.

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

```
IDCS_URL=https://idcs-xyz123.identity.c9xyz.oc9xyz.com/oauth2/v1/token
ENCODED=ZnRwbWFydXAxNDIyMzEtcHJkX0FQUElOjk5MTQwZTE0LTRkMzAtNGU4Ni04NWZi
LTA5NTAxZmU0NWZlMA==
USERNAME=<user_name>
PASSWORD=<password>
TENANT=<tenant-prd>
PBSMHOST=dc.pbsmcloud.us-xxxxx -1.ocs.oc-test.com
```

4. Execute **PBSMCS_PAR_fileupload.sh** with the following parameters –
   - **filename** - The file to be uploaded
   - **filesize** - The file size in Bytes
   - **Mimetype** - The mimetype of the file.

   Format: `Filename<space>Filesize<space>mimetype`

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

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

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

   Once the script is executed succesfully, the file is uploaded and added to the list of files in the File Upload/Download page. To access the File Upload/Download page refer to Upload or Download File Using Console.

4.2.7 Generating PAR URL for File Operations

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

- Generating PAR URL for File Upload
  Generate PAR URL for File Upload
- Viewing List of Uploaded Files
  Run the following cURL command to generate and view all the files that are uploaded using PAR URL.
- Generating PAR URL For File Download

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4.2.7.1 Generating PAR URL for File Upload

Generate PAR URL for File Upload

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

- End Point Details
- Calling the API to Generate the URL
- End Point Details
- Calling the API to Generate the URL

4.2.7.1.1 End Point Details

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

4.2.7.1.2 Calling the API to Generate the URL

To call the API:

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

   Syntax

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

   Example (truncated)

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


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```
eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0hadk4wWkk
iLCJ4
...
...
sQXj0iohsSIEmQXVwwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7USxHv-6Lh
Bzw'
```

- Request JSON Parameters
  This section provides the list of parameters in the JSON Request.
- Response JSON Parameters

4.2.7.1.2.1 Request JSON Parameters

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

Table 4-16 Request JSON Parameters

Name	Type	Required	Description
fileName	STRING	Yes	The name of the file to be uploaded. The following are the conditions for to enter in this field: • Must start with an Alphanumeric Character • Allowed characters are alphabets, numbers, and special characters - hyphen(-), dot(.), and underscore(_) • Length of characters must not be greater than 255 characters
fileSize	INTEGER	Yes	The size of the file (in Bytes) to be uploaded. The size of the file should be greater than 1 Byte and should be less than 10 TB. It is recommended to use multipart upload for uploading files of size more than 100 MB. For more information about uploading large objects and multipart uploads, refer to Working with Pre-Authenticated Requests.
mimeType	STRING	Yes	The mime type to be uploaded. The following mime types are allowed: • Text/CSV • Text/plain • DAT

Request JSON Sample

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

4.2.7.1.2.2 Response JSON Parameters

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

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Table 4-17 POST JSON Response

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

Response JSON Sample

```
{
   "payload": {
       "uploadURL": "https://objectstorage.us-phoenix-1.oraclecloud.com/p/
bdSI-hzigiAoUU0lyEKnuk0YGs05L172gt_woZAgqNFYmUFQeexV3BDfTO97mhBI/n/
oraclegbudevcorp/b/fsgbu_pbsm_cndevcorp_ftpqa101231-prd_default/o/default/
2023-01-31/jfr/f9ce031f-4a42-471d-b4da-d0577f3eca15",
       "createUser": "user1",
       "stripeName": "default",
       "fileId": 5025,
       "createDate": "2023-01-31T09:14:16",
       "token": "",
       "status": "success"
   }
}
```

4.2.7.2 Viewing List of Uploaded Files

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

Syntax

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

Example

```
curl -k --location --request GET 'https://dc.pbsmcloud.us-phoenix-1.ocs.oc-
test.com/aaitestdev1001-prd/utils-service/v1/listfiles?stripeName=default' \
--header 'locale: en-US' \
--header 'ofs_remote_user: cneadmin' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header "Authorization: Bearer ${TOKEN}"
```


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Response

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

4.2.7.3 Generating PAR URL For File Download

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

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

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

To call the API:

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

   Syntax

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

   Example

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

   Response

   ```
    {"payload":{"downloadURL":"https://objectstorage.us-
   phoenix-1.oraclecloud.com/p/8R68eVcQAxQjNjK__S04MZjS-
   v4BqEbWSILvu0w40kJNrzfKeCB8vWBwugW5XvsK/n/oraclegbudevcorp/b/
   fsgbu_pbsm_cndevcorp_aaitestdev1001-prd_default/o/default/2023-01-20/rnz/
   ```


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```
6c023e75-09e2-4265-815e-32cedcd2415e?
httpResponseContentDisposition=ATTACHMENT%3B%20filename%3Dtest3GB.xml"}}
```

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

To call the API, follow these steps:

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

Syntax

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

Example

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

Response

```
{"payload":{"downloadURL":"https://objectstorage.us-
phoenix-1.oraclecloud.com/p/
gTxxzhqLEea4Or2TRkBqTqHxt_JogVFa9G_0wtN8NYy_op0Zk4lvKGDxxeXGhLq7/n/
oraclegbudevcorp/b/fsgbu_pbsm_cndevcorp_aaitestdev1001-prd_default/o/
default/2023-01-31/fae/2d63d2fe-2090-4fb7-a4c8-9940d22987db?
httpResponseContentDisposition=ATTACHMENT%3B%20filename%3DIdcs_log3.txt"}}
```

4.2.8 Deleting A File

Delete (DELETE) API helps to delete an uploaded file.

For more information about the Delete API, refer to Endpoint Details.

You can delete a file using one of the following methods:

- Using File ID
- Using File Name
- Delete multiple Files using File Names
- Delete files using a prefix value

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- Endpoint Details
  Delete (DELETE) API helps to delete an uploaded file.
- Deleting a File Using the File ID
  Delete a file from the object store, using the file ID as the reference.
- Deleting a File Using Filename
  Delete a file from the object store, using the file name as the reference.
- Deleting Multiple Files Using Filenames
  Delete multiple files from the object store, using the file names as the reference.
- Delete files using a prefix value
  Delete files from the object store, using a prefix value as the reference.

4.2.8.1 Endpoint Details

Delete (DELETE) API helps to delete an uploaded file.

- **HTTP Method** - Delete
- **Header Parameters**
  - **ofs_remote_user** - User ID of the user mapped to `'BATCH_EXEC'` function.
  - **locale** - locale in `languageCode-countryCode` format. For example, `en-US`.
  - **ofs_tenant_id** - Tenant ID of the Application
  - **ofs_workspace_id** - Workspace ID of the Application. It is defaulted to `WS001` and same should be passed each time.
  - **Content-type** - The media type of the body of the request. The content-type details are required for POST and PUT requests, and the supported types vary with each endpoint. The value is `application/json`.
  - **Authorization** - Access token required to authenticate the API. If this token is not provided, `401 Unauthorized error` is generated. For more information about Bearer token, refer to Generate the Access Token.

4.2.8.2 Deleting a File Using the File ID

Delete a file from the object store, using the file ID as the reference.

To delete a file:

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

   Syntax

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/deletefile/{fileId}
--header 'ofs_remote_user: <USERID>' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: <TENANT-ID>' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer <TOKEN>'
```


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Example (truncated)

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/deletefile/5
--header 'ofs_remote_user: cneadmin' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer
eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0hadk4wWkk
iLCJ4
...
...
sQXj0iohsSIEmQXVwwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7USxHv-6Lh
Bzw'
```

Response

```
{"payload":"File Deleted Successfully"}
```

4.2.8.3 Deleting a File Using Filename

Delete a file from the object store, using the file name as the reference.

To delete a file:

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

   Syntax

   ```
   curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
   service/v1/file/deletefilename/{filename}?prefix=<foldername>
   --header 'ofs_remote_user: <USERID>' \
   --header 'locale: en-US' \
   --header 'ofs_tenant_id: <TENANT-ID>' \
   --header 'ofs_workspace_id: WS001' \
   --header 'content-type: application/json' \
   --header 'Authorization: Bearer <TOKEN>'
   ```

   > **Note**
   >
   > Prefix is an optional parameter.

   Example (truncated)

   ```
   curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
   service/v1/file/deletefilename/test.txt?prefix=folder1
   --header 'ofs_remote_user: cneadmin' \
   --header 'locale: en-US' \
   --header 'ofs_tenant_id: aaitestdev1001-prd' \
   ```


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```
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer
eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0hadk4wWkk
iLCJ4
...
...
sQXj0iohsSIEmQXVwwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7USxHv-6Lh
Bzw'
```

Response

```
{"payload":"File Deleted Successfully"}
```

4.2.8.4 Deleting Multiple Files Using Filenames

Delete multiple files from the object store, using the file names as the reference.

To delete multiple files:

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

   Syntax

   ```
   curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
   service/v1/file/deletefilenames/{filenames}
   --data-raw '[filenames]' \
   --header 'ofs_remote_user: <USERID>' \
   --header 'locale: en-US' \
   --header 'ofs_tenant_id: <TENANT-ID>' \
   --header 'ofs_workspace_id: WS001' \
   --header 'content-type: application/json' \
   --header 'Authorization: Bearer <TOKEN>'
   ```

   Example (truncated)

   ```
   curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
   service/v1/file/deletefilenames
   --data-raw '["filename1.txt","filename2.txt","filename3.txt"]' \
   --header 'ofs_remote_user: cneadmin' \
   --header 'locale: en-US' \
   --header 'ofs_tenant_id: aaitestdev1001-prd' \
   --header 'ofs_workspace_id: WS001' \
   --header 'content-type: application/json' \
   --header 'Authorization: Bearer
   eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0hadk4wWkk
   iLCJ4
   ...
   ...
   sQXj0iohsSIEmQXVwwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7USxHv-6Lh
   Bzw'
   ```


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Response

```
{"payload":"File Deleted Successfully"}
```

4.2.8.5 Delete files using a prefix value

Delete files from the object store, using a prefix value as the reference.

To delete files using a prefix value:

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

Syntax

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/deleteprefix/<prefix_value>
--header 'ofs_remote_user: <USERID>' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: <TENANT-ID>' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer <TOKEN>'
```

Example (truncated)

```
curl -k --location --request POST 'https://<hostname>/<TENANT-ID>/utils-
service/v1/file/deleteprefix/prefixvalue1
--header 'ofs_remote_user: cneadmin' \
--header 'locale: en-US' \
--header 'ofs_tenant_id: aaitestdev1001-prd' \
--header 'ofs_workspace_id: WS001' \
--header 'content-type: application/json' \
--header 'Authorization: Bearer
eyJ4NXQjUzI1NiI6Ildia25rQUR5TUZIMlhlQ1pKcTY1c3o4VzdEVWhKa0s4MldYY0hadk4wWkk
iLCJ4
...
...
sQXj0iohsSIEmQXVwwjhhqnc4eJNnmCjx8Tb7TXjx1MIQLeOIcfrIj5gkzoMKX94_7USxHv-6Lh
Bzw'
```

Response

```
{"payload":"Files Deleted Successfully"}
```

4.3 Data Maintenance Interface

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

Form Builder

Form Builder allows the user to build a form to maintain the underlying data.

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Data Entry

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

Guidelines for Data Entry and Excel Upload Forms

When creating Data Entry or Excel Upload forms, ensure that all required columns are included in the form definition. This includes:

- Columns defined as NOT NULL
- Primary key columns
- Columns used for partitioning and sub-partitioning

> **Note**
>
> Missing mandatory columns might result in data load failures or processing errors.

Staging tables are those prefixed with STG. When creating forms for staging tables, ensure all mandatory columns — including partition, sub-partition, and other required columns — are included in the form definition.

Table 4-18 Mandatory Columns for Staging Tables

Column Name	Description	Example
INPUT_FILE_NAME	Specifies the name of the source file associated with the data load.	stg_asset.csv
DATA_FILE_SPEC_ID	Identifies the Data File Specification corresponding to the input file	
LOAD_IDENTIFIER	A unique identifier for the data load. This can be any numeric value	12345

> **Note**
>
> - Staging tables (STG_*) are internally partitioned and sub-partitioned.
> - Sub-partitioning is based on the *INPUT_FILE_NAME* column.
> - If *INPUT_FILE_NAME* is not included in the form or is left NULL, the system cannot map the record to a valid partition.

Processing tables generally refer to tables such as *FSI_D_ (for example, FSI_D_LOAN_CONTRACTS, FSI_D_ASSET)**.

These tables are internally partitioned and sub-partitioned as follows:

- Partitioning is based on AS_OF_DATE
- Sub-partitioning is based on instrument or domain-specific identifiers (for example, INSTRUMENT_TYPE_CD or similar columns)

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When creating forms for processing tables:

- Ensure all NOT NULL columns are included (for example, identifiers such as account ID, instrument ID, or similar keys)
- Include all partition and sub-partition columns

Table 4-19 Mandatory Columns for Staging Tables

Column Name	Description	Example
AS_OF_DATE	Specifies the business date for the record. Used as the primary range partition key.	01-JAN-2024
INSTRUMENT_TYPE_CD	Identifies the instrument type associated with the record. Used as the sub-partition key.	BOND
ID_NUMBER	A unique numeric identifier for the record. All NOT NULL columns of this type must be included.	98765
IDENTITY_CODE	A code identifying the entity or instrument. All NOT NULL columns of this type must be included.	CORP_001

> **Note**
>
> - Processing tables (FSI_D_*) are internally partitioned by AS_OF_DATE (RANGE partition) and sub-partitioned by INSTRUMENT_TYPE_CD (LIST sub-partition).
> - All NOT NULL columns (for example, ID_NUMBER, IDENTITY_CODE) must be included in the form definition.
> - If any partition or sub-partition column is not included in the form or is left NULL, the system cannot map the record to a valid partition.

If mandatory partition-related columns are not populated, the following error may occur during data entry or Excel upload:

```
ORA-14400: inserted partition key does not map to any partition
```

In such cases:

- Records may initially appear as **Created** in the Audit Trail.
- They are subsequently marked as **Rejected** due to partition mapping failure.

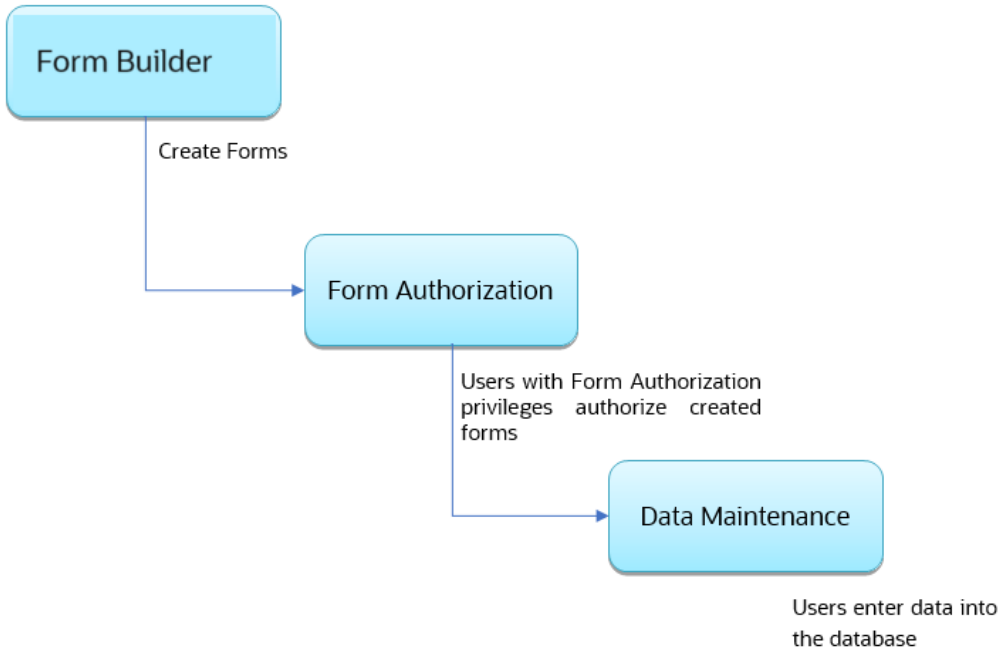
> **Note**
>
> For a complete list of all partitioned tables, their partition columns, sub-partition columns, and valid LOV values, see the Partition Reference file hosted on MOS (*Doc ID: 2869409.1*).

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Process of DMI Windows

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

Figure 4-21 DMI Process Flowchart



User Role Mapping and Access Rights

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

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

Table 4-20 User Role Mapping for Data Maintainence Interface

Role Code	Role Name	Functionality
DMIDSGNREAD	Data Designer Read	Assign this role to the user to access the Configure View menu from Navigation Tree. NOTE: The mapping of this role does not allow view, edit, and add actions.
DMIDSGNAUTH	Data Designer Auth	Assign this role to the user to Authorize, Excel Upload, and Designer Summary.

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Table 4-20 (Cont.) User Role Mapping for Data Maintainence Interface

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

Note

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

- Access the Data Maintenance Interface

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- User Role Mapping and Access Rights
- Form Builder
  Access the list of Form definitions already created in the environment.
- Data Entry
- Adding DMI Tasks in Scheduler Service
  The Data maintenance Interface is now integrated with the Scheduler services and you can use Scheduler services, to process form definitions created using Data Exporter.

4.3.1 Access the Data Maintenance Interface

To access the Data Maintenance Interface (DMI):

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

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

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

3. Click **Data Management Tools** and click **Data Management Interface**, to access DMI menu.
4. Click one of the following menu items to access the respective pages:
   - Form Builder - Access form definition summary and also create various types of form definitions.
   - Data Entry

4.3.2 User Role Mapping and Access Rights

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

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

Table 4-21 User Role Mapping for Data Maintainence Interface

Role Code	Role Name	Functionality
DMIDSGNREAD	Data Designer Read	Assign this role to the user to access the Configure View menu from Navigation Tree. NOTE: The mapping of this role does not allow view, edit, and add actions.
DMIDSGNAUTH	Data Designer Auth	Assign this role to the user to Authorize, Excel Upload, and Designer Summary.

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Table 4-21 (Cont.) User Role Mapping for Data Maintainence Interface

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

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Table 4-21 (Cont.) User Role Mapping for Data Maintainence Interface

Role Code	Role Name	Functionality
DATASECURITY	Data Security	Assign this role to the user to view unredacted data in the Personal Information (PI) columns (if the **Redaction** toggle is turned on in the **Data Exporter** UI). If this toggle is turned off, data appears redacted for all users regardless of their role. For information on how full and partial redaction are performed, see Redaction Functions in Data Security Management Guide.

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

4.3.3 Form Builder

Access the list of Form definitions already created in the environment.

The Form Definitions Summary lists all the existing Form Definitions in the application.

You can create forms from the Form Designer View. The forms in the application are created with details configured for data maintenance and require authorization for use after creation. You can also edit, view, and delete forms, from the Forms Definitions Summary, based on the assigned roles and privileges. For more information, refer User Role Mapping and Access Rights.

To view the Form Definitions Summary:

1. Click **Data Maintenance Interface**.
2. Click **Form Builder** in the DMI navigation list to access the **Form Definitions Summary**.

   The following details are included the Summary page.

   - **Name** - The unique name of the Form Definition
   - **Description** - The Form Definition description.
   - Type - The form definition type:
     - **Excel Upload** – creates form based on uploaded Excel Sheet.

       > **Note**
       >
       > Microsoft Office 2016 Standard version as well as Office 365 version are supported.

     - **Data Exporter** – creates form based on an entity table.

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  - **Data Entry** – creates the form based on the entities, attributes and rulesets provided by the user.
- **Status** - The processing status of the form definition. The various processing statuses are:
  - **Draft** – when the form is under development and is yet to be submitted for approval.
  - **Pending Approval** – When the approval is pending.
  - **Approved** – When the form definition is approved.
- **Created By** - The Username of the logged in User who created the form.
- **Actions** - View, copy or edit or amend a form definition.
- **Info** - The form definition details including:
  - Created Date
  - Last Modified By
  - Authorizer
  - Authorizer comments

Use **Search** to quickly access the required forms or check the Forms tile to view a list of existing forms. To search for a specific Form Definition, input search terms in the **Form Name** or **Description** field, or use a combination of both, and click **Search**. Click **Cancel** to clear the search criteria and view all form records.

Sort the Form Definition based on **Name**, **Description**, and **Created By** fields. You can also sort the page in ascending/descending order.

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

- Creating New Forms in Form Builder
  Form creation involves selecting entities, displaying columns with attributes on the form, and if required, selecting authorization of data. Security settings provide for the creation of specific-user access for the forms and authorization.
- Approving and Rejecting New Form Definitions
  You can validate and approve the new Forms Definition if you have the required role assigned to you.
- Managing Form Definitions
  You can view, edit, copy, and delete the existing Form Definitions from the Form Definition Summary Page, based on the assigned roles.
- Viewing Form Definitions
  You can view the form definition details using the View option, based on the assigned roles.
- Editing/Amending Form Definitions
  You can modify both approved and rejected form definitions, based on the assigned roles.
- Copying Form Definitions
  You can copy individual Definition Details, to recreate another new Definition, if you have assigned roles.
- Deleting Form Definitions
  You can delete the form definitions that are in Draft status, based on the assigned roles.

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4.3.3.1 Creating New Forms in Form Builder

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

To add a form :

1. In the **DMI Summary** page, click **Add**, to access the **Designer - Configure page**.
2. Select the form definition type as follows:
   - **Excel Upload** – creates form based on uploaded Excel sheet.
   - **Data Exporter** – creates form based on an entity table.
   - **Data Entry** – creates the form based on the entities, attributes and rulesets provided by the user.

   For more information about creating various form definitions:
   - Creating Forms Using Excel Upload
   - Creating forms using Data Exporter
   - Creating Forms Using Data Entry

- Creating Forms Using Excel Upload
  Excel Upload Definition Type creates new forms based on the uploaded Excel file that has column names as per the table in the application data source.
- Creating Forms Using Data Entry Option
  Use the Data Entry option to create a Forms Definition and select the table and attributes that you want to modify.
- Creating Forms Using Data Exporter
  Forms created using Data Exporter are used to export table data to `CSV` or `JSON` format.
- Creating Data Filters for New Form Definitions
  Filters help to view and export specific set of data from data exporter forms.
- Enabling Data Security for New Form Definitions
  Data security conditions allows you to apply certain filters when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry page.
- Enabling User Security for New Form Definitions
  The User Security option helps you to select the users/user groups who can add, edit, delete and/or authorize data entry.

4.3.3.1.1 Creating Forms Using Excel Upload

Excel Upload Definition Type creates new forms based on the uploaded Excel file that has column names as per the table in the application data source.

While creating forms using Excel Upload, you can also modify the mapping for the attributes. After the new form is approved from the Forms Definition Summary Page, users with the necessary role and permission can perform Data Entry for the records updated by the Excel file.

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> **Note**
>
> Microsoft Office 2016 Standard version as well as Office 365 version are supported.

You can view/modify data in the personal information (PI) columns based on the assigned roles. For more information about the roles, refer to User Role Mapping and Access Rights.

To create forms using Excel Upload:

1. Select Excel Upload in the Create Form Definition page and add the following details.
   - **Code** - The unique Form code. This value is auto-generated.
   - **Name** - The Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
   - **Description** - The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed
   - **Auto Map Entities** - Enable this option to to auto map the attributes in the Excel file with the attributes in the Entity Table.

   At any point of time during the form creation, click **Save** to add the new form to the Form Summary. The form is saved in the **Draft** format. Click **Actions** and select **Edit**, to update the form definition.
2. Click **Continue** to access the **File Upload** tab.
3. In the **File Upload** tab, enter the following details:
   - **Template Name** and **Description** for the excel template.
   - Click **Drag and Drop** and select the excel file to update the required table.

   > **Note**
   >
   > You can also drag and drop the required excel file to the **Drag and Drop** area.

   The excel file is uploaded and a confirmation box is displayed, and the **Mapped Entities Tab** is displayed.
4. After entering the **File Upload** information, click **Continue** to access the **Mapped Entities** tab.
5. In the **Mapped Entities** tab, select the **Primary Entity** name of the table that needs to be modified.

   > **Note**
   >
   > Only the tables data which can be edited are displayed in the **Entity** drop-down list.

   If the table has Child tables, the Child tables are displayed in the **Mapped Entities** tab. You can select the required child tables for which data should be input during data entry.
6. Select **Enable Bulk Authorization** if you want to enable the bulk authorization of all the records when you edit an approved Form from Data Entry.

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7. Enable **Auto Approve** if you want the Forms Definition to be automatically approved from Forms Definition Summary page and is enabled for data entry.

   Alternatively, you can also get the form approved manually. For manual approval, disable the auto approve option.

   A user with the required role can then perform the data entry without the need for an approval process. For more information, see User Role Mapping and Access Rights.

8. Click **Continue**, to proceed with the **Mapped Attributes** tab.
9. Click the drop-down arrow corresponding to the table in the Entity Name.

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

10. Click the required mapping in the **Override Mapping Column** and enter the required attribute name if you want to change the default mapping.
11. To activate data security, Select the check box next to the **Attribute Name**, in the **Mapped Attributes** Column.
12. Click the **Lock** icon adjacent to a specific attribute name, to configure a specific data security condition.

    The condition that you configure is applicable when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry Page. For more information, refer Enabling Data Security for New Form Definitions.

13. Click **Continue** to proceed to the **User Security** tab.
14. Select the user or user groups who can perform data entry to maintain the data in the table.

    For more information about adding user security, refer to Enabling User Security for New Form Definitions.

15. Click **Data Preview** to preview the form data.
16. Click **Save** if you want to save the forms definition in draft format. The form is added to the **Form Summary** with **Draft** status.
17. Click **Submit** if you want to submit the Forms Definition for manual/auto approval.

    For more information refer to Approving and Rejecting New Form Definitions. After approval/auto approval, the form is added to the **Form Definition Summary**.

4.3.3.1.2 Creating Forms Using Data Entry Option

Use the Data Entry option to create a Forms Definition and select the table and attributes that you want to modify.

You can enter the values for the table records in the approved Forms Definition from Data Entry, after the new Forms Definition is approved from the Forms Definition Summary Page.

You can view/modify data in the personal information (PI) columns based on the assigned roles. For more information about the roles, refer to User Role Mapping and Access Rights.

To create a forms definition:

1. Select **Data Entry** in Create New Form Definition page and enter the required details.
2. Enter the following details:
   - **Code** - Unique form code. This value is auto-generated.

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- **Name** - The form name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
- **Description** - The form definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
- **Threshold** - The maximum number edits allowed per row.

3. Click **Continue** to access the **Entities tab**.
4. Select the table that you want to modify in the **Primary Entity** Field.

> **Note**
>
> Only the tables data which can be edited are displayed in the **Entity** drop-down list.

If the selected table have child tables, the child tables is also displayed. You can select the required Child tables for which you wish to input the data during data entry.

> **Note**
>
> You can select up to four child tables only for each master table.

5. Select **Enable Bulk Authorization**, if you want to enable the bulk authorization of records while performing data entry.
6. Enable **Auto Approve** if you want the Forms Definition to be automatically approved from Forms Definition Summary page and is enabled for data entry.

   Alternatively, you can also get the form approved manually. For manual approval, disable the auto approve option.

   A user with the required role can then perform the data entry without the need for an approval process. For more information, see User Role Mapping and Access Rights.
7. Click **Continue**, to proceed with the **Attributes** tab.
8. Select the **Filter** from the existing filters in the drop-down list or click **Filter** to apply a new attribute filter to the form definition.
9. Click the drop-down arrow corresponding to the table in the **Entity Name**, to view the attributes in the entity table.

   If your table has child tables, the Child tables that you select from the Entities tab also gets displayed in the Attributes tab.
10. Select the attributes for which you want to modify the data from the **Attribute Name**.
11. Select **Participate in Data Security** if you want to configure a specific condition.
12. Click the **Lock** icon adjacent to a specific attribute name, to configure a specific data security condition.

    The configured condition is applicable when a user enters data in table for each approved Forms Definition from the Data Entry Page. For more information, refer Enabling Data Security for New Form Definitions.
13. Enter **Select Columns** to search and select specific columns.
14. Click **Continue** to access the **Ruleset** tab.

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The list of attributes associated with the parent and the Child tables are displayed in the Ruleset tab.

15. Assign permission to add data during data entry for those attributes that are set to Editable/Read-only mode. You cannot modify the key fields set in read-only mode.
16. Click Continue and proceed to the **User Security** tab.
17. Click **User Security** to select the user or user groups who can perform data entry to maintain the data in the table.

    For more information about adding user security, refer to Enabling User Security for New Form Definitions.
18. Click **Submit** if you want to submit the Forms Definition for manual/auto approval.

    For more information refer to Approving and Rejecting New Form Definitions. After approval/auto approval, the form is added to the **Form Definition Summary**.

4.3.3.1.3 Creating Forms Using Data Exporter

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

While creating forms using Data exporter, you can also include filters and dynamic placeholders to view and export specific set of data.

To create forms using Data Exporter:

1. Select **Data Exporter** in Create New Form Definition page.
2. Enter the following details:
   - **Source** - Select the input source as table/view.
   - **Code** - Unique Form Code. This is auto-generated.
   - **Name** - The name of the form in Form Name. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
   - **Description** - The Form Definition description. You can enter between 3 to 100 characters. Only alphabets, numbers, spaces, and underscores are allowed.
   - **Row Limit Per File** - The number of maximum table rows allowed per file. The minimum number of rows is 100 and the maximum limit is 100000.

     For example, if you have 500 rows in a table and the row limit is set to 100, then the table is split into 5 files.
3. Click **Continue** to proceed with the **Entity and Attributes Details** tab.
4. **Compress File**: Keep this option selected to automatically compress files into a .zip archive when downloading. Example: If you have 500 rows in a table and the row limit is set to 100, then the table is split into 5 files. With the **Compress File** option enabled, the user can download these 5 files compressed into a single .zip file.
5. **Redaction**: Keep this option selected to redact personal information (PI) from users who do not have the DATASECURITY role. For more details, see User Role Mapping and Access Rights.

   For information on how full and partial redaction are performed, see Redaction Functions in Data Security Management Guide.
   - The redacted data is displayed as stored in the database. Example: For the number data type, if the redacted data is appearing as 0, the Data Preview window shows the data as 0. Similarly, for the VARCHAR data type, if the redacted data is appearing empty in the database, the Data Preview window shows the data as empty.

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- If the report contains redacted data, the user must have the DATASECURITY role to download it from the **Forms Definition – Summary** page.

6. Select the table that you want to modify in the **Entity** Field.

   If the selected table have child tables, the child tables is also displayed. You can select the required Child tables for which you wish to input the data during data entry.

   > **Note**
   >
   > You can select up to four Child tables only for each Master table.

7. Select the **Filter** from the existing filters in the drop-down list or click **Filter** to apply a new attribute filter to the form definition.
8. Click **Select columns** to view only specific columns.
9. Enable **Auto Approve** if you want the Forms Definition to be automatically approved from Forms Definition Summary page and is enabled for data entry.

   Alternatively, you can also get the form approved manually. For manual approval, disable the auto approve option.

   A user with the required role can then perform the data entry without the need for an approval process. For more information, see User Role Mapping and Access Rights.
10. Click the drop-down arrow corresponding to the table in the **Entity Name**, to view the source attributes from the table and the mapped attributes from the Excel file.

    If the selected table has Child tables, the Child tables that you select from the Mapped Entities tab are also displayed in the **Attributes** tab. You can configure the attributes for the master table and its child tables.
11. Click **Continue** to access the **Data Preview** tab preview the form data.
12. Click **Submit** if you want to submit the Forms Definition for manual/auto approval.

    For more information refer to Approving and Rejecting New Form Definitions. After approval/auto approval, the form is added to the **Form Definition Summary**.

4.3.3.1.4 Creating Data Filters for New Form Definitions

Filters help to view and export specific set of data from data exporter forms.

Complete the following steps if you want to add filters to the Forms Definition:

1. Click **Filter**, to access the **Filter Condition** pane.
2. Enter/ select the following details.
   - **Column** - Select the column from the applying the filter.
   - **Condition** - Select one of the following filter conditions, to filter the column data.
     - **Comparison** - '=', '!=', '< >', '>', '<', >=, <=,'IN', 'NOT IN', 'ANY', 'BETWEEN', 'LIKE', 'IS NULL', and 'IS NOT NULL'.
   - **Type** - Select one of the following filter types.
     - **Static** - Select Static, to enter a value and execute the filter using only one value. You cannot change the value at a later point.
     - **Dynamic** - Select Dynamic, to change the filter value when needed.
       After setting the filter type to Dynamic, select the **Placeholder** and set one of the default seeded values, to process the filter.

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> **Note**
>
> Only values that are already seeded in the Database table, are displayed in the Placeholder drop-down list.

- **Filter Value** - Select/enter the filter value.

> **Note**
>
> For Language Placeholder the default locale language is displayed and cannot be modified.

3. Click **Add** to add a new Filter expression. You can add multiple Filter expressions to the same filter.

   The filter is added to the list of filters.

   Mouse-over the place holder filter, to view more details about the filter.
4. Click **Validate** to verify the filter condition is valid.

   A confirmation is message is displayed, if the filter is valid.
5. Click **Apply**, to add the new filter to the filter condition.
6. Click **Reset**, to clear all the filter expressions and create a new expression.
7. Click **Delete** to delete an existing filter expression.
8. Click **Edit** to modify a filter expression. After editing the expression, click **Validate**, to verify if the condition is valid.
9. Click **Apply** to add the filter expression to the form definition.

4.3.3.1.5 Enabling Data Security for New Form Definitions

Data security conditions allows you to apply certain filters when a user performs the data entry for the table records for each approved Forms Definition from the Data Entry page.

Consider that you configure the condition `COUNTRY_NAME = 'INDIA'` for the reference table **DIM_COUNTRY**. When a user performs the data entry for this Forms Definition from the Forms Definition - Summary Page and enters a country name other than 'INDIA', the record gets rejected by the application when another user approves this record.

Complete the following steps to configure Data Security for the Forms Definition:

1. Select the check box next to the **Attribute Name**, in the **Mapped Attributes** Column.

> **Note**
>
> Data Security information must be configured for each attribute name, separately.

2. Click the **Lock** icon, to access the **Data Security page**.
3. Select the **Reference Table** based on which you want to build your condition from the Reference Table drop-down list.
4. Select the required column, condition, and filter value, and build the required expression.
5. Click **Apply**, to enable the data security for the new form definitions.

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4.3.3.1.6 Enabling User Security for New Form Definitions

The User Security option helps you to select the users/user groups who can add, edit, delete and/or authorize data entry.

To enable user security:

- Select the required user group or user to assign permissions from the **Map Users / Groups**, to complete the user security configuration.

  When you select the user group or user, the permissions for each approved Forms Definition are displayed. These permissions are the actions that the selected user group or user can perform while performing Data Entry.

Table 4-22 Permissions in the Map Users / Groups Pane

Option	Description
Add /Edit	Add or modify records in an approved Forms Definition
Delete	Delete records in an approved Forms Definition
Authorize	Authorize the records in an approved Forms Definition
Duration From	Optional. Select the start date for which the permissions are available to the user or user group.
Duration To	Optional. Select the end date for which the permissions are available to the user or user group.

> **Note**
>
> If you select a user group for User Security, you can view the users mapped to that group by clicking the **Users** icon.

4.3.3.2 Approving and Rejecting New Form Definitions

You can validate and approve the new Forms Definition if you have the required role assigned to you.

If the configuration in the Forms Definition is incorrect, you can reject the Forms Definition. The rejected Forms Definition changes into Draft status. You can then request the required user to edit the Forms Definition and submit it for approval again.

You can also view, copy, and edit each Forms Definition from the Forms Definition – Summary page by clicking Menu. These actions are available based on the roles assigned to you. For more information, refer User Role Mapping and Access Rights.

- Approving a Forms Definition
  You can approve new forms based on the assigned roles.
- Rejecting a Forms Definition
  You can reject new forms based on the assigned roles.

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4.3.3.2.1 Approving a Forms Definition

You can approve new forms based on the assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights.

To approve a Forms Definition:

1. In the Form Builder, click **Menu** in the Forms Definition that is in **Pending Approval** status, and then click **Approve**, to access the **Configure page**.
2. Click **Approve** and then enter the required description for the approval in the Comments field.
3. Click **Submit**, to approve the form definition and view it in the **Data Entry page**.

   Once the form is approved, you can edit/amend the approved forms if you have **DMIDGNAMND** role assigned.

4.3.3.2.2 Rejecting a Forms Definition

You can reject new forms based on the assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights.

To reject a Forms Definition:

1. In the Form Builder, click **Menu** in the Forms Definition that is in **Pending Approval** status, and then click **Reject**, to access the **Configure page**.
2. Click **Reject** and then enter the required description for the approval in the Comments field.
3. Click **Submit**.

   The Forms Definition is rejected, moved to **draft** status. The form definition is displayed in Forms Definition Summary page. You can then edit the Forms Definition in draft status and submit it for approval again.

   For more information on editing a Forms Definition, see Editing Form Definitions.

4.3.3.3 Managing Form Definitions

You can view, edit, copy, and delete the existing Form Definitions from the Form Definition Summary Page, based on the assigned roles.

To check about the assigned roles, refer to User Role Mapping and Access Rights.

In the Summary Page, highlight a specific Definition and click **Action**. The following options are displayed:

Table 4-23 Action Details

Action	Description
View	View the **Member details** for a specific Member Definition.
Edit/Amend	Edit/amend the **Member details** of a form definition.
Copy	Copy the Member Definition Details and create another Member Definition by changing Alphanumeric Code, Numeric Code and Name.

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Table 4-23 (Cont.) Action Details

Action	Description
Re-Upload	Upload a new Excel sheet for an Excel upload form definition. You need to delete the attached excel sheet before uploading the new data.
Delete	
Approve	If you have the required role, you can approve a new Form that is in Awaiting Approval status. For more information, refer to Approving a Forms Definition.
Reject	If you have the required role, you can approve a new Form that is in Awaiting Approval status. For more information, refer to Rejecting a Forms Definition.

4.3.3.4 Viewing Form Definitions

You can view the form definition details using the View option, based on the assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights.

You can view the details of an individual Form Definition:

1. Highlight the Form Definition and click **Action**.
2. Click **View**, to access the **Form Definition page** with the selected Form definition details.

4.3.3.5 Editing/Amending Form Definitions

You can modify both approved and rejected form definitions, based on the assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights. Forms that are already approved cannot be edited. You can amend the approved forms if you have **DMIDGNAMND** role assigned.

> **Note**
>
> You cannot amend an approved form, if the form has any pending data entry activity.

To edit individual form details:

1. Highlight the form definition and click the **Action**.
2. Click **Edit**, to access the **Form Definition page** with the details.

   To modify an approved form, click **Amend**.
3. Update the required information and click **Submit**.

   You can also **auto-approve** the form during submission.

   The modified form definition is updated in the form design summary.

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4.3.3.6 Copying Form Definitions

You can copy individual Definition Details, to recreate another new Definition, if you have assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights.

To copy an existing form definition:

1. Highlight the Definition and click **Action**.
2. Click **Copy**, to view the **Form Definition Page**.
3. Edit the unique information and modify details like entity table, attribute filters, user and data security details and click **Save**, to create a new form definition.

4.3.3.7 Deleting Form Definitions

You can delete the form definitions that are in Draft status, based on the assigned roles.

To check about the assigned roles, refer User Role Mapping and Access Rights.

To delete a form definition :

1. Highlight the form definition and click the **Action**
2. click **Delete**.

   The selected form definition is deleted after confirmation.

4.3.4 Data Entry

The Data Entry feature of Data Maintenance Interface (DMI) enables you to maintain or modify the table data by using the Forms Definition that is created and approved from Forms Definition Summary page. For more information on Forms Definitions, see Creating Forms Definition.

If the approved Forms Definition is created by using the designer option, a user with the necessary role can add or modify the records in the table as per the configuration in the Forms Definition. These records are then sent to another user with the necessary permission for final approval.

If the approved Forms Definition is created by using an Excel file, a user with the necessary permission can verify and approve the records that are modified with the values from the Excel file. If the records modified by the Excel file are incorrect, the user can reject the records. The rejected record can be modified by a different user with the necessary role and can be sent for the final approval again. The Forms Definitions that are created by using an Excel file are labeled with an Excel icon in Data Entry.

- Viewing Data Entry
- Adding Data to Table – Forms Created Using Data Entry
  If the Forms Definition is created using the designer option, the user with the necessary role can add or delete records and also update the values for the table records as per the configuration in the Forms Definition.
- Forms Created Using Excel Upload
  When a Forms Definition created using an Excel file is approved from Forms Definition Summary Page, the table records in the selected table are updated using the data in the Excel file.

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- Approving and Rejecting Records
  A user with the necessary role can approve or reject the edited records.
- Exporting Data Exporter Form Definitions
  After creating data exporter form definitions, you can export or download the reports to CSV or JSON format.
- Perform Excel Re-upload on an Approved Excel Form Definition
  After an Excel form definition is uploaded and approved using the Form Designer/Builder screen, you can re-upload the Excel file with additional data, if needed.

4.3.4.1 Viewing Data Entry

You can view records based on the assigned roles. For more information about the roles, refer to User Role Mapping and Access Rights.

Complete the following steps to view Data entry:

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

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

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

3. Click **Data Management Tools** and click **Data Management Interface**.

   The **Navigation List** is displayed.

4. Click **Data Entry**.

   The **Data Entry page** is displayed. All the approved forms are displayed in the Data Entry page. Forms in Draft and Awaiting Approval status can be accessed from the Form Builder page.

4.3.4.2 Adding Data to Table – Forms Created Using Data Entry

If the Forms Definition is created using the designer option, the user with the necessary role can add or delete records and also update the values for the table records as per the configuration in the Forms Definition.

These records are then submitted for approval to another user with the necessary role. For more information, refer to User Role Mapping and Access Rights.

To update/delete data in the table records:

1. Highlight the record and click the **Action**.
2. Click **Edit**, to update the records.

   The records are classified based on the following Status:

   - **Draft** – Records that are created but not submitted. In Draft state, you can add new rows or delete/edit an existing row submitted for auto-approval.
   - **Ready** – Records that are approved. You can only edit the records.

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For adding/deleting records and editing existing draft or Ready records, refer to the following sections:

- Adding/Editing a Draft Record
  You can add a record to the table or edit a record set in the Draft status. The added record is set to Draft status.
- Deleting Draft Records
- Editing Approved Records
  The approved records are set to Ready Status.

Related Topics

- Adding/Editing a Draft Record
  You can add a record to the table or edit a record set in the Draft status. The added record is set to Draft status.
- Deleting Draft Records

4.3.4.2.1 Adding/Editing a Draft Record

You can add a record to the table or edit a record set in the Draft status. The added record is set to Draft status.

When adding/editing a draft record, the data is displayed as entered in the UI. You can view/ modify data in the personal information (PI) columns based on the assigned roles. For more information about the roles, refer to User Role Mapping and Access Rights.

To add or edit a draft record:

1. Select **Draft** from the **Status** drop-down list, to view all the entity records set to **Draft** status.
2. To add a new record, click **Add**.

   A new entry set to **Draft** status is added to Entity details page. This entry is empty. Edit the record to add the attribute details.
3. To edit a record, click **Edit** next to the record.
4. In the **Edit** page, enter the values in the attributes that you want to modify and click **OK**.

   You can repeat the steps for all the records for which the data needs to be entered.
5. To modify all the entries in a specific column, click **Bulk Update**.
   a. Select the column to modify the data.
   b. Enter the new value and click **OK**.
6. Click the modified record in draft status, and then click **Submit for Approval** or **Submit with Auto Approval**.

   If the record is submitted with auto approval, it is approved instantaneously.

   If the record is submitted for approval, is sent for approval, and is changed to **Awaiting status**. A user with the necessary role can approve these records. For more information, see Approving and Rejecting Records after Data Entry.

   After approval, the status is changed from **Draft** to **Ready** status. Refer Editing Approved Records, to edit the records in **Ready** status.

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> **Note**
>
> If the user has configured the **Participate In Data Security** option while creating a Forms Definition, you must enter the value as per the configured condition. If you enter a value that does not meet the condition, then the record is rejected by the application and the approval gets failed. You can view the details of the rejection by using the Audit trail option for each record. For information on the Participate In Data Security option, see Enabling Data Security for New Form Definitions.

4.3.4.2.2 Deleting Draft Records

You can delete the records in Draft status. If the record is approved and moved to Ready status, it cannot be deleted.

1. Select **Draft** from the Status drop-down list.

   The entity records with Draft status are displayed for entering data are displayed.

2. Select a record and click **Delete**.

   To delete multiple records, select all the required records and click **Delete**.

   To bulk delete all the records, select the Check box on the Header. All the records are selected. Then, click **Delete**.

4.3.4.2.3 Editing Approved Records

The approved records are set to Ready Status.

When editing records in Ready Status, the data is displayed as stored in the database. You can view/modify data in the personal information (PI) columns based on the assigned roles. For more information about the roles, refer to User Role Mapping and Access Rights.

When you edit the record, it is moved to Draft Status.

1. Select **Ready** from the Status drop-down list, to view the entity records with Ready status are displayed.
2. To edit a record, click **Edit** next to the record.
3. Update the values for the attributes that you want to modify and click **OK**.

   You can repeat the steps for all the records for which the data needs to be entered.

4. To modify all the entries in a specific column, click **Bulk Update**.
   a. Select the column to modify the data.
   b. Enter the new value and click **OK**.
5. Click the modified record in draft status, and then click **Submit for Approval** or **Submit with Auto Approval**.

   To submit multiple records, select all the required records and click **Submit**.

   To bulk submit all the records, select the check-box on the header. All the records are selected. Then, click **Submit**.

   If the record is submitted with auto approval, it is approved instantaneously. The record is sent for approval and is changed to Awaiting status. A user with the necessary role can approve these records. For more information, see Approving and Rejecting Records after Data Entry.

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> **Note**
>
> If the user has configured the Participate In Data Security option while creating a Forms Definition, you must enter the value as per the configured condition. If you enter a value that does not meet the condition, then the record is rejected by the application and the approval gets failed. You can view the details of the rejection by using the Audit trail option for each record. For information on the Participate In Data Security option, see Enabling Data Security for New Form Definitions.

4.3.4.3 Forms Created Using Excel Upload

When a Forms Definition created using an Excel file is approved from Forms Definition Summary Page, the table records in the selected table are updated using the data in the Excel file.

The records are set to **Awaiting** status for the approved forms definition in data entry page. You can verify the records modified by the Excel file records and approve them if you are assigned to the necessary role. If the records modified by the Excel file are incorrect, you can reject the records. The status of the rejected records is changed to Draft. A user with the necessary role can edit the records in draft status and submit them for approval again.

- To approve records, see Approving a Draft Record.
- To reject records, see Rejecting a Record.
- To edit a record in draft status, see Editing a Rejected Record.

4.3.4.4 Approving and Rejecting Records

A user with the necessary role can approve or reject the edited records.

For more information related to user roles, refer to User Role Mapping and Access Rights.

- Approving Draft Records
  You can approve the records set to Draft status.
- Rejecting a Record
  You can reject an record set to Awaiting status.
- Editing a Rejected Record
  You can edit the records that are in draft status and send them approval to the user with the necessary role.

4.3.4.4.1 Approving Draft Records

You can approve the records set to Draft status.

To approve records :

1. In the **Data Entry** page, select **Draft** from the **Status** drop-down list.

   The entity records with Draft status are displayed.
2. Select the required record.

   You can select multiple records, to perform bulk Approval. Bulk Approval is enabled only if Bulk Authorization is activated during Form Creation.
3. Enter the required comment in the Comments Field, and then click **Approve**.

   The record is approved successfully with the values from the Excel file.

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4.3.4.4.2 Rejecting a Record

You can reject an record set to Awaiting status.

To reject a record :

1. Click **Menu** in the required Forms Definition from the Data Entry page.
2. Click **Edit**.

   The Entity Details page is displayed. The records that are waiting for the final approval are displayed here.

   Select the required record, and then click **Reject**.

   You can select multiple records to perform bulk rejection. Bulk rejection is enabled only if Bulk Authorization is activated during Form Creation.
3. Enter the required comment in the Comments field, and then click **Reject**.

   The record is rejected, and the status is changed to **Draft**. A user with the necessary role can now edit the record.

4.3.4.4.3 Editing a Rejected Record

You can edit the records that are in draft status and send them approval to the user with the necessary role.

To edit a record:

1. Select **Draft** from the **Status** drop-down list.
2. Click **Edit** in the record that you want to edit.
3. Modify the required attributes, and click **OK**.
4. Select the record and then click **Send for Approval**.

   The modified record is now moved to **Awaiting** status. A user with the necessary role can approve the record.

> **Note**
>
> If the user has configured the **Participate In Data Security** option while creating a Forms Definition, you must enter the value as per the configured condition. If an incorrect value is entered, the record gets rejected by the application and the approval is failed. You can view the details of the rejection by using the Audit Trail option for each record. For information on the Participate In Data Security option, see Enabling Data Security for New Form Definitions.

4.3.4.5 Exporting Data Exporter Form Definitions

After creating data exporter form definitions, you can export or download the reports to CSV or JSON format.

To export or download a report:

- In the Data Entry summary page, click **Action** next to the data exporter form to be exported and select one of the following options

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- Custom Export - export the report only for selected attributes. You can also create and apply filter conditions to specific columns to generate customized reports.
- Export - export the report for all the attributes. A complete report including all the records and attributes is generated.

- Custom Exporting Data Exporter Forms
  When you create forms using Data Exporter option, you can export the report to .CSV format.
- Exporting Data Exporter Forms
  Forms created using Data Export option can be exported as a .CSV file or a JSON file.
- Viewing Data Exporter Report Status
  View the status of all the reports generated based on a Data Exporter form.
- Downloading Reports
  You can download the reports exported as .CSV file.

4.3.4.5.1 Custom Exporting Data Exporter Forms

When you create forms using Data Exporter option, you can export the report to .CSV format.

To custom export data exporter forms :

1. Click **Action** next to the form to be exported and click **Custom Export**, to view the **Data Exporter - Configure** page.
2. Click **Start**, to access the **Entity and Attributes** tab.
3. Select the attributes to be added to the custom report.
4. Click **Continue**, to view the **Filters** tab.
5. Set the filter conditions for specific columns and click Continue to view the **Data Preview** tab.
6. Select the report file format (.CSV or JSON) and also the number of records per page.
7. View the list of records to validate the data.
8. Click **Export** to export the report in CSV format.

   The Data export request will be submitted.
9. Proceed to the Data entry page to view the status of the form and download the report.

4.3.4.5.2 Exporting Data Exporter Forms

Forms created using Data Export option can be exported as a .CSV file or a JSON file.

Export Data Exporter forms:

1. Click **Action** next to the form to be exported and click **Export**.

   The Data export request is submitted.
2. Proceed to the Data entry page to view the status of the form and download the report.

4.3.4.5.3 Viewing Data Exporter Report Status

View the status of all the reports generated based on a Data Exporter form.

To view report status:

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- Click **Action** next to the form to be exported and click **Status/Download**, to view the status of all the reports generated for a specific data exporter form.

4.3.4.5.4 Downloading Reports

You can download the reports exported as .CSV file.

If the report contains redacted data, you must have the DATASECURITY role to download it. See User Role Mapping and Access Rights.

To download a report:

1. Click **Data View**.

   The **Data Entry page** is displayed.

2. Click **Action** next to the form to be exported and click **Status/Download**, to access the **Data exporter Report Status** page.

3. Click the **Download** icon adjacent to a report to download the report to the local directory in `.CSV` format.

   You can also copy the link to download the report. Enter the link in a Web browser, to access the report.

4.3.4.6 Perform Excel Re-upload on an Approved Excel Form Definition

After an Excel form definition is uploaded and approved using the Form Designer/Builder screen, you can re-upload the Excel file with additional data, if needed.

To do this, use the **Data View** screen.

> **Note**
>
> - You can re-upload Excel files for both manual and auto approved forms.
> - This action depends on your assigned user role. To verify your permissions, refer to User Role Mapping and Access Rights.

To perform an Excel re-upload

1. On the Data View screen, click the action button corresponding to the Excel form and select **Excel Upload**. The **Excel Upload** UI appears.

   > **Note**
   >
   > If you have records in draft or awaiting status, you cannot re-upload the Excel file.

2. Click **Drag and Drop** and select the Excel file you want to upload. Note: Make sure the file matches the correct form definition. To ensure your file uses the right format, download the template using the **File Template** button.
3. Review the information shown in the Data Preview section.
4. Click **Submit** for approval.

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- Approving and Rejecting Re-Uploaded Excel Forms
  You can approve or reject re-uploaded Excel form definitions, but only for forms that were uploaded and approved manually. (The Maker-Checker validation applies to this action).

4.3.4.6.1 Approving and Rejecting Re-Uploaded Excel Forms

You can approve or reject re-uploaded Excel form definitions, but only for forms that were uploaded and approved manually. (The Maker-Checker validation applies to this action).

Forms that were auto-approved cannot be manually approved or rejected.

To approve or reject Excel Upload records

1. On the Data View screen, click the action button corresponding to the Excel form and select **Approve/Reject** Files.

   The **Pending Approval** page appears.
2. Click Preview to review the record being approved or rejected.
3. Enter your review comments.
4. Click **Approve** or **Reject** as appropriate.
5. Click the refresh button to view the status, once the process is completed.

The **Excel Upload** UI appears, displaying the Upload History, including:

- File Name
- Processing Status
- Uploaded Data Count
- Approval Comments
- Date of creation
- Total Number of Uploads
- Completed Uploads

4.3.5 Adding DMI Tasks in Scheduler Service

The Data maintenance Interface is now integrated with the Scheduler services and you can use Scheduler services, to process form definitions created using Data Exporter.

By using Scheduler Services for DMI automation, you can automate and streamline the data processing for form definitions created using the Data Exporter options.

Ensure that you have the assigned roles to perform automated data exporter form download.

To schedule a DMI task for form definitions created using Data Exporter:

1. Log in to your **Cloud services** and access **Scheduler Services**.
2. Select **Define Batch**, to view the list of existing batches.
3. In the Define Batch page, click **Create**, to access the **Create Batch** page.
4. Enter the generic Batch information (**Code, Batch Name, Batch Description, and Batch Parameters**), and click **Save** to create a new Batch and proceed with creating a new Task.
5. In the **Left Navigation list**, select **Define Tasks**, to access the list of existing tasks.
6. In the Define Task page, select the **DMI Batch** to associate the new task

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7. Click **Add**, to **Create a new task**.
8. Enter the generic Task details (**Task Code, Task Name and Task Description**), and the following DMI specific details:
   - **Component** - Select Data Maintenance Interface, to assign this as a DMI specific task.
   - **Report Template** - Select **Pre-defined template**, to access the following DMI specific template parameters.
     - **App ID** - The unique application ID of the application utilizing the Scheduler services for task automation.
     - **Module Name** - Select the module required for the DMI tasks, from the list of Seeded modules.
     - **Report Code** - Select the Report code to be added to the generated report.
     - **Report Type** - Set the report type to `CSV/JSON`.
     - **Available Place holders** - (Optional). Select the placeholder required for the report.
     - **Placeholder Values** - (Optional). Enter the placeholder values to be included in the generated report.
     - **Additional Filters** - (Optional). Enter the filters to be applied to the data, to generate reports with specific information. For details, see Dynamically export relevant records.
     - **Report Name Prefix** - (Optional). Enter the unique prefix to be added to the report name for easy identification of the report.
     - **Report Name** - (Optional). Provide a name for the report to be generated.

   > **Note**
   >
   > If the export definition was created before 24D release, you must recreate it. This is required because an enhancement in Scheduler Services now captures the base URL as part of the definition.

9. Click **Save** to create a new DMI specific task, and proceed with scheduling the batch.
10. In the Left Navigation list, select **Schedule Batch**, to access the list of batches.
11. Select the DMI batch for execution and click **Execute**.
12. During batch execution, click **Monitor Batch**, to check the progress.
13. Select the **Batch** and the **Run ID** to access the required task, and click **Start Monitor** to view the task execution progress in the **Visualizations** tab.
14. Click **List View** to view the task execution details of all the executed tasks.

    After the task execution is complete, the generated report is saved to the object store.
15. Click **View Execution Logs** corresponding to the DMI task, to view the execution log information.
16. Scroll to the required **Batch Run Id** and **copy the log details to clipboard**.
17. Paste the copied log information to a notepad, to get the PAR URL for downloading the report.
18. Paste the PAR URL in a Web browser, to download the report to the local directory.

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- Dynamically export relevant records
  When creating a DMI task, you can use filters to dynamically export only the relevant records.

4.3.5.1 Dynamically export relevant records

When creating a DMI task, you can use filters to dynamically export only the relevant records.

The following dynamic filters are available:

- Additional Filter
- Placeholder Filter

In addition to static values, these filters accept the following dynamic variables:

- $FICMISDATE$
- $BATCHRUNID$

Set the filters in the following format:

```
DATA_TABLE.<AS_OF_DATE> = $FICMISDATE$ AND DATA_TABLE.<EXECUTION_ID>
= $BATCHRUNID$
```

Example: FSI_ALM_CASHFLOW_OUTPUT_HIST.AS_OF_DATE = $FICMISDATE$ AND FSI_ALM_CASHFLOW_OUTPUT_HIST.EXECUTION_ID = $BATCHRUNID$

Date format supplied by scheduler for $FICMISDATE$ is YYYY-MM-DD.

4.4 Data Quality Framework

Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.

Topics:

- Introduction to Data Quality Framework
- Roles and Functions for Managing DQ Framework
- Data Quality Rules
- Data Quality Groups
- Adding a DQ Check Task
- Execution Summary
- Introduction to Data Quality Framework
  Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.
- Roles and Functions for Managing DQ Framework
  The following roles and function are required to create, view and manage the Rules and Groups in DQ Framework.
- Data Quality Rules
  Data Quality Rules allows you to create a DQ (Data Quality) definition using data quality checks based on single column or multiple columns of a single base table. The defined Data Quality Rules can be logically grouped and executed together.

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- Data Quality Groups
  Data Quality Groups facilitates you to logically group the defined DQ Definitions .
- Adding a DQ Check Task
  You can add a new DQ check Task in the Scheduler Services and add the task to a Batch Definition, for execution.
- Execution Summary
  The Execution Summary provides the consolidated list of executed DQ batches, for the last 30 days .
- Interrupting DQ Group Execution in a Batch
  You can interrupt an ongoing execution of a DQ group in a batch using the **Interrupt** option on the **Scheduler Services Monitor** screen.

4.4.1 Introduction to Data Quality Framework

Data Quality Framework consists of a scalable rule-based engine which uses a single-pass integration process to standardize, match, and duplicate information across global data.

Data Quality Framework within the Infrastructure system facilitates you to define rules and execute them to query, validate, and correct the transformed data existing in an environment. This framework includes the following components:

- Data Quality Rules - Data Quality Rules allows you to create a DQ (Data Quality) definition and perform Data Quality checks using Single column and Multi-column checks.
- Data Quality Groups - Data Quality Groups facilitates you to logically group the defined DQ definitions.

4.4.2 Roles and Functions for Managing DQ Framework

The following roles and function are required to create, view and manage the Rules and Groups in DQ Framework.

Role	Action
DQACC - DQ Access	Data Quality Rule Access Role
DQADVND - DQ Advanced	Data Quality Rule Advanced Role
DQAUTH - DQ Authorize	Data Quality Rule Authorize Role
DQAUTOAUTHR - DQ Auto Authorize Rulw	Data Quality Auto Authorize Rule
DQREAD - DQ Read	Data Quality Rule Read-only Role
DQWRITE - DQ Write	Data Quality Rule Write Role

Functions	Action
DQ_SUMM - Data Quality Rule Summary	Access DQ Rule Summary
DQ_GP_EXEC - Execute Data Quality Group	Execute DQ Rule Group
DQ_GP_ADD - Add Data Quality Group	Add DQ group
DQ_ADD - Add Data Quality Rule	Add DQ Rule
DQ_EDT - Data Quality Edit Rule	Edit DQ Rule
DQ_VIW - Data Quality View Rule	View DQ Rule
DQ_GP_VIW - Data Quality View Rule Group	View DQ Rule Group
DQ_GP_DEL - Data Quality Delete Rule Group	Delete DQ Rule Group
DQ_DEL - Data Quality Delete Rule	Delete DQ Rule

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Functions	Action
DQ_AUTH - Data Quality Authorisation Rule	Authorize DQ Rule
DQ_GP_EDT - Data Quality Edit Rule Group	Edit DQ Rule Group
DQ_GP_ADD -Data Quality Add Rule Group	Add DQ Rule Group
DQAUTOAUTH - Data Quality Auto Authorize	Save the Rule/Group in authorized state
DQ_PURGE - DQ Rule Purge	Purge the DQ Rule
DQ_GP_SUMM - Data Quality Group Summary	Access DQ Group Summary
DQ_GP_EXEC - Data Quality Execute Rule Group	Execute DQ Rule
DQ_GP_PURGE - DQ Group Purge	Purge the DQ Group
DQ_GP_AUTH - DQ Group Authorisation	Authorize DQ Group
DQ_EXE_SUMMARY- DQ Execution Summary	Access DQ Execution Summary
DQ_EXE_ASSIGN - DQ Execution Assignment	Enable Data correction in the execution summary

4.4.3 Data Quality Rules

Data Quality Rules allows you to create a DQ (Data Quality) definition using data quality checks based on single column or multiple columns of a single base table. The defined Data Quality Rules can be logically grouped and executed together.

- Data Check Definitions
  Data Check definitions included the Data Quality Rules help in performing data quality check and correction.
- Creating Expressions
  You can define an expression in the Expression Builder to combine two selected tables.
- DQ Rules Summary
  The Data Quality Rule Summary page contains the list of user-defined Data Quality Rules with details such as Name, Status, Folder, Is Executed, Version, Is Grouped, Check Type and Base table.
- Creating DQ Rule
  You can create a Data Quality Rule Definition by specifying the DQ Definition details along with the entity details and the type of data quality check to be performed on the selected base table. You can also define the required search conditions to query and correct the transformed data.
- Editing DQ Rules
  You can update all the definition details except for the Definition Name, Check Type, Table, and the Base Column selected.
- Approving/Rejecting a Data Quality Rule
  An authorizer can approve a user-defined Data Quality Rule definition or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.
- Deleting a Data Quality Rule
  You can remove the Data Quality Rule definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).
- Purging a Data Quality Rule
  You can delete a Data Quality Rule definition permanently from the setup.

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4.4.3.1 Data Check Definitions

Data Check definitions included the Data Quality Rules help in performing data quality check and correction.

You can include the following Data quality checks in the DQ Rule.

- **Single Column Check** - You can set the Check Type to Single Column Check during DQ Rule creation. This check will perform Data Quality Check on only one column selected during Rule creation. For more details about the various Single column Checks, refer to Single Column Data Check Definitions.
- **Multi Column Check** -You can set the Check Type to Multi Column Check during DQ Rule creation. This check will perform Data Quality Check on one or more columns of a single base table, selected during Rule creation. For more details about the various Multi-column Checks, refer to Multi Column Data Check Definitions.
- Single Column Data Check Definitions
  Single Column Data Checks help to perform data quality check on only one column selected during DQ Rule creation.
- Multi Column Data Check Definitions
  Multi Column Data Check definitions help in data quality checks and correction of one or more columns of a single table, selected during Rule creation.
- Assignment Types
  To populate the Assignment Type details, select any of the below Assignment Type option from the dropdown list and do the following:

4.4.3.1.1 Single Column Data Check Definitions

Single Column Data Checks help to perform data quality check on only one column selected during DQ Rule creation.

You can include the following Data Quality checks in the DQ Rule, if the check type is set to Single Column Check.

- **Range Check** - Range Check identifies if the base column data falls outside a specified range of Minimum and Maximum value. Range check can be enabled only if the base column has date or number value.
  - Select the check-box to enable the Range check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - If the selected Base Column is of **Date** type, select Minimum and Maximum date range. If the selected base column is of **Number** type, enter the Range value. You can specify numeric, decimal, and negative values for number Data type.
  - Check the Inclusive check-box, to include the specified date/value during the data check.
  - Click **Edit** to add specific filter expressions, as additional conditions. For more information, refer to Creating Expressions.
  - Select the **Assignment** option. The Assignment option is enabled only if Warning/ Information is selected as the Warning level.
    * Select the Assignment Type from the drop-down list. For more information, see Assignment Types.
    * Specify the **Assignment Value**.

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    * Select the **Message Severity** as 1 or 2 from the drop-down list.
    * Select a pre-defined Message to be displayed from the drop-down list.
      To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.

- **Null Value Check** -Null Value Check checks identifies if there is any null value in the selected column.
  - Select the check-box to enable the Null Value check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - Click **Edit** to add specific filter expressions, as additional conditions.
  - Select the **Assignment** option. The Assignment option is enabled only if Warning/ Information is selected as the Warning level.
    * Select the Assignment Type from the drop-down list. For more information, see Assignment Types.
    * Specify the **Assignment Value**.
    * Select the **Message Severity** as 1 or 2 from the drop-down list.
    * Select a pre-defined Message to be displayed from the drop-down list.
      To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Blank Value Check** -Null Value Check checks identifies if there is any entry in the selected column is blank.
  - Select the check-box to enable the Blank Value check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - Click **Edit** to add specific filter expressions, as additional conditions.
  - Select the **Assignment** option. The Assignment option is enabled only if Warning/ Information is selected as the Warning level.
    * Select the Assignment Type from the drop-down list. For more information, see Assignment Types.
    * Specify the **Assignment Value**.
    * Select the **Message Severity** as 1 or 2 from the drop-down list.
    * Select a pre-defined Message to be displayed from the drop-down list.
      To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **Data Length Check** -Data Length Check checks for the length of the base column data using a minimum and maximum value and identifies if it falls outside the specified range.
  - Select the check-box to enable the Data Length check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - Enter the Minimum and maximum values for validation.
  - Click **Edit** to add specific filter expressions, as additional conditions.
- **Duplicate Check** - Duplicate Check can be used when a combination of column is unique and identifies all the duplicate data of the base table in terms of the columns selected for the duplicate check.

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- Select the check-box to enable the Duplicate Check.
- Set the warning level to **Severity**, **Warning** or **Information**.
- Click **Edit** to add specific filter expressions, as additional conditions.
- Click **Edit** and select the required column to be added to the **Column List**, for duplicate check validation.

- **Custom Check/Business Check**- Custom Check/Business Check is a valid SQL query to identify the data with the query specified as the Custom/business SQL. You can define the SQL, but the Select clause of the query has to follow the order as specified in the template of the Custom Check panel.
  Sample Template : `"SELECT 'N_COUNTRY_SKEY' PKNAMES, N_COUNTRY_SKEY PK1, null PK2, null PK3, null PK4, null PK5, null PK6, null PK7, null PK8, V_COUNTRY_DESC ERRORCOL FROM DIM_COUNTRY WHERE N_COUNTRY_SKEY >50"`
  - Select the check-box to enable the Custom Check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - Enter the SQL Query to perform the custom check.
- **Column Reference/Specific Value Check** - Column Reference / Specific Value Check compares the base column data with another column of the base table or with a specified direct value using the list of pre-defined operators.
  - Select the check-box to enable the Column Reference check.
  - Set the warning level to **Severity**, **Warning** or **Information**. Column reference check can be enabled only if the base column has date or number value.
  - Select the **Mathematical Operator** from the drop-down list.
  - Select the **Filter Type** as one of the following:
    - Select **Specific Value** and specify the Value. You can specify numeric, decimal, and negative values for number Data type.
    - Select **Another Column** and select Column Name from the drop-down list.
  - Click **Edit** to add specific filter expressions, as additional conditions.
  - Select the **Assignment** option. The Assignment option is enabled only if Warning/ Information is selected as the Warning level.
    - Select the Assignment Type from the drop-down list. For more information, see Assignment Types.
    - Specify the **Assignment Value**.
    - Select the **Message Severity** as 1 or 2 from the drop-down list.
    - Select a pre-defined Message to be displayed from the drop-down list.
      To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.
- **List of Value** - List of Value Check verifies the values where a dimension / master table is not present. This check identifies if the base column data is not matching with any value or code specified in a list of values.
  - Select the check-box to enable the List of Value check.
  - Set the warning level to **Severity**, **Warning** or **Information**.
  - Select **Input Values** and specify the List of Values. You can specify numeric or String values.

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  - Click **Edit** to add specific filter expressions, as additional conditions.
  - Select the **Assignment** option. The Assignment option is enabled only if Warning/ Information is selected as the Warning level.
    * Select the Assignment Type from the drop-down list. For more information, see Assignment Types.
    * Specify the **Assignment Value**.
    * Select the **Message Severity** as 1 or 2 from the drop-down list.
    * Select a pre-defined Message to be displayed from the drop-down list. To enter a specific message other than the listed pre-defined messages, select **Custom Message**, in the Message drop-box and enter the required **Custom Message**.

- **Referential Integrity Check** - Referential Integrity Check identifies all base column data which has not been referenced by the selected column of the referenced table. Here, the reference table and columns are user specified.
  - Select the check-box to enable the Referential Integrity Check.
  - Set the warning level to **Severity**, **Warning** or **Information**. Column reference check can be enabled only if the base column has date or number value.
  - Select the **Table** (Referential Integrity Check dimension table) from the drop-down list. The base table selected under the Select grid is excluded from the drop-down list.
  - Select the Column from the drop-down list. The list displays those columns that have the same Data Type as that of the Base Column selected under Select grid.
  - Select the **Is Composite Key** check-box if the base column is part of a Composite Key.
  - Click **Edit** to add specific filter expressions, as additional conditions.

The following table lists the supported checks based on the data type.

Table 4-24 Data type and applicable checks

Data Type	Applicable Checks
Number	• Range • Null Value • Data Length • Duplicate • Custom/Business • Column Reference/Specific Value • List of Value • Referential Integrity
Varchar/Char	• Null Value • Blank Value • Data Length • Duplicate • Custom/Business • List of Value • Referential Integrity

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Table 4-24 (Cont.) Data type and applicable checks

Data Type	Applicable Checks
Date	• Range • Null Value • Data Length • Duplicate • Custom/Business • Column Reference/Specific Value • Referential Integrity

4.4.3.1.2 Multi Column Data Check Definitions

Multi Column Data Check definitions help in data quality checks and correction of one or more columns of a single table, selected during Rule creation.

4.4.3.1.3 Assignment Types

To populate the Assignment Type details, select any of the below Assignment Type option from the dropdown list and do the following:

- **No Assignment** - This assignment is selected by default and does not have any target column update, but the message details are pushed.
- **Direct Value** - Enter the **Assigned Value**. You can specify number, date or string values, as required.
- **Another Column** - Select the required Column as **Assigned Value** from the drop-down list.
- **Expression** - Specify the required expression in the Specify Expression Page. For more information, refer to Creating Expressions.

4.4.3.2 Creating Expressions

You can define an expression in the Expression Builder to combine two selected tables.

The expression builder includes the following sections:

- **Entities** - consists of the Entities folder with the list of tables that you selected from the Entity Groups folder. Double-click the Entities folder to view the selected dimension tables (Product and Segment tables).
- **Functions** – The 2 types of functions are,
  - **Database Functions** - consists of functions that are specific to databases.
  - **User Defined Functions** - use these functions along with Operators to specify the join condition.
- **Operators** - Consists of the function operators categorized into folders. The various types of operators are,
  - **Arithmetic** - +, -, %, * and /
  - **Comparison** - '=', '!=', '< >', '>', '<', >=, <=,'IN', 'NOT IN', 'ANY', 'BETWEEN', 'LIKE', 'IS NULL', and 'IS NOT NULL'.
  - **Logical** - 'NOT', 'AND' and 'OR'

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- **Set** - UNION, UNION ALL, INTERSECT and MINUS
- **Other** - The Other operators are 'PRIOR', '(+)', '(' and ')'.

To specify the join condition:

1. Select the **Entity** of the fact table to which you want join the dimension entities.
2. Select a **Function** depending on the database type.
3. Select the **Operator** you want to use for the join condition.
4. Select the **Second Entity** from the Entities pane that you want to join with the first entity. You can also select more than one table and link to the fact table.

   The defined expression is displayed in the Expression pane. Click **Reset** to reset the values.
5. Click **OK**.

   The defined expression is validated as per the selected table and entity definition and on successful validation, it is added to the DQ Rule.

4.4.3.3 DQ Rules Summary

The Data Quality Rule Summary page contains the list of user-defined Data Quality Rules with details such as Name, Status, Folder, Is Executed, Version, Is Grouped, Check Type and Base table.

Refer to the following procedure to view DQ Rules Summary and the relevant details:

- Click **Data Quality Rules**, to access the Data Quality Rules Summary.

  The Data Quality Rules Summary page with the following details is displayed.
  - **Name** - The Unique Identifier Name of the Data Quality Rule.
  - **Status** - The Approval status of the specific rule.
    - **Approval** - The Rule is approved and ready for execution. The approved rules can be grouped further for execution.
    - **Pending for Approval** - The rule requires approval and can be executed only after approval.
    - **Draft** - A defined rule is set to**Draft** status until it is submitted for approval by the creator.
    - **Rejected** - The rejected rules are sent back to the creator with the Approver comments.
  - **Folder** - The folder associated with the rule.
  - **Version** - The current active version of the rule.
    When a new definition is created, it will be saved as version 1 and once it is authorized, it will be in Active status. After you modify any DQ Rule and save, it will be saved with version as highest available version +1. For example, if you modify a DQ Rule of version 2 and the highest version available is 4, after you save the definition, its version becomes 5. Only the latest version will be in Active status.
  - **Check Type** - Select one of the following check types:
    - **Single Column Check** - define conditions based on individual checks on a single column. For more information, refer to Single Column Data Check Definitions.

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  - **Multi Column Check** - define conditions based on multiple columns of a single base table. These checks are not pre-defined and can be specified (user-defined) as required. For more information, refer to Multi Column Data Check Definitions.

- **Base Table** - The base table within the environment, associated with the rule.
- **Created By** - The login name of the user who created the rule.
- **Created Date** - The rule creation date.
- **Action** - Click **Action**, to view, approve, reject edit, or delete the rule.

To search for a particular rule, enter the first few letters of the rule name in the Search column.

You can also sort the rule summary based on the Status, Folder name, check type, record status, Rule name and Select table.

To sort the Summary based on the Status, click **Status** in the Search bar, and select the required status.

4.4.3.4 Creating DQ Rule

You can create a Data Quality Rule Definition by specifying the DQ Definition details along with the entity details and the type of data quality check to be performed on the selected base table. You can also define the required search conditions to query and correct the transformed data.

1. To create a DQ Rule, click **Add Rule** on the DQ Rules Summary.

   The Data Quality Rules page with DQ Group Details and DQ Rules Mapping tab is displayed.

2. Click **Start**, to enter the following basic details for the new DQ Rule.

   - **Name** - The unique identifier name for the rule.
     The name should start with alphabet and should not be more than 50 characters.

     Blank space ( ), **Underscore (_)** and **Hyphen (-)** are allowed as special characters.
   - **Description** - The description/details for the rule.
     The description should start with alphabet and should not be more than 250 characters.
   - **Folder** - Select the folder present in the current environment, to be associated with the rule.
   - **Check Type** - Select one of the following check types for the rule.
     - **Single Column** - Select Single column to perform data quality check only on one column. For more information, refer to Single Column Data Check Definitions.
     - **Multi-Column** - Select Multi-Column to perform data quality check on more than one column in a single table. For more information, refer to Multi Column Data Check Definitions.
   - **Access-type** - Select one of the following Access types.
     - **Read-only** - only the creator can edit the rule. Other users can only view the rule.
     - **Read-Write** - all users can view, modify any fields (including Access Type), and also delete the DQ Rule.
   - Check **Auto DQ Group Required** option, to create a new DQ group, for this Rule. The new group will be associated only with the created DQ rule. The group name will be set as <DQ_Rule_Name_group>, and this group will have only Read-only access.
   - Check **Auto Assignment**, to execute the rule, and also perform the assignment.

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> **Note**
>
> The Auto Assignment is applicable only to the Auto DQ Group.

- Click **Continue** to proceed with the Entity Selection page.

3. Enter/select the following entities:
   - **Table** - Select the basic table on which the rule is executed.
   - If the rule is a single-column rule, select the **Base Column**, to be included for the rule execution. Base column will not be present for Multi-Column rule.
     You can search table and columns based on their physical and logical names, using the toggle button.
   - Select the **Identifier Columns** required to execute the rule.
     The default primary key fields present in the selected entity table are automatically added as identifier columns. They cannot be deleted.
     - To select multiple columns, click **Edit**.
     - Select the required columns from the **Available Members** pane and move them to **Selected Members** pane.
   - Click **Edit**, to include the filter expression.
     The **Specify Expression** page is displayed. For more information refer to Creating Expressions.
     - Select the entities to be included in the filter expression and click **OK**.
4. Click **Continue**, to proceed with the **Data Check Definitions**.
5. Select the required Data Check Definitions, to validate the data.

   Enter/select the required information for each Data Check Definition. For more information about each Data check type, refer to Data Check Definitions.
6. Click **Submit**, to submit the new DQ Rule for approval.

   The DQ Rule is saved with the status **Pending for Approval**, in the Rules Summary and a confirmation message is displayed.

   While creating the DQ Rule, you can also click **Save As Draft**, to save the new incomplete DQ Rule at any point of time and resume the process at a later point. A confirmation message is displayed, after the draft is saved successfully.

   The new Rule added to the DQ Rules Summary, and is set to **Draft** Status in the DQ Rules Summary.

> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-approved.

4.4.3.5 Editing DQ Rules

You can update all the definition details except for the Definition Name, Check Type, Table, and the Base Column selected.

You can only edit the DQ rules that are set to **Draft, Approved** and **Rejected** status. You cannot edit the rules that are set to **Pending for Approval** status.

To edit the required Data Quality Rule definition details:

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1. Click **Action** adjacent to the DQ Rule to be modified.
2. Click **Edit**, to modify the DQ Rule.
3. Click **Start** to edit the **DQ Rule Details**.
4. Modify the description and click **Continue** to proceed with editing the Entity Selection details.

   You can also click **Save as Draft**, to save the changes and proceed with Submission later.
5. Modify the Filter expression and click **Continue** to proceed to **Data Check Definitions** page.
6. Add/remove the data checks required during rule execution and click **Submit**, to submit the modified rule for approval.

   The rule is updated and added to the DQ Rules Summary. A confirmation message is displayed.
   The Rule is set to **Pending for Approval** state.

> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-approved.

4.4.3.6 Approving/Rejecting a Data Quality Rule

An authorizer can approve a user-defined Data Quality Rule definition or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

> **Note**
>
> You can only approve those DQ Rules that are set to **Pending for Approval** status.
> If the user has **DQAUTOAUTH** Role assigned, the DQ rule will be auto-approved.

To view a Data Quality rule, and approve/ reject Data Quality rule:

1. Click **Action** adjacent to the DQ Rule to be approved/rejected.
2. Click **Preview**, to view the DQ Rule.

   All the details pertaining to the selected rule is displayed.
3. Click **Approve/Reject**, after reviewing the rule.
4. Enter valid reason for approval or rejection.
5. Click **Approve/Reject**.

   The DQ Rule is approved/rejected and a confirmation message is displayed.

- Bulk Approving/Rejecting Data Quality Rules
  An authorizer can approve multiple user-defined Data Quality Rule definitions or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

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4.4.3.6.1 Bulk Approving/Rejecting Data Quality Rules

An authorizer can approve multiple user-defined Data Quality Rule definitions or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

> **Note**
>
> You can only approve those DQ Rules that are set to **Pending for Approval** status. If the user has **DQAUTOAUTH** Role assigned, the DQ rule will be auto-approved.

> **Note**
>
> When you initiate bulk approval/rejection, all the selected rules are approved/rejected based on the user input. If you want to stop the approval/rejection of one specific rule, cancel the whole process and restart again.

To view several Data Quality rules, and approve/ reject them:

1. Filter Rule Summary, to view only the rules with **Pending For Approval** Status.

   All the rules that need be approved/rejected are displayed.

2. Select the rules for approval/rejection.

   You can select all the rules displayed in a page, by clicking the check box next to the **Name** header. To select all the rules in the Summary, with **Pending** Status, select **Click All Rules in Summary** link.

3. Click **View Details**, to view the Rule details of all the selected rules.

   All the rule details, and base table for the selected rules are displayed. Review the details and add appropriate comments and click **OK**.

   You can also **Proceed without Viewing** the details.

4. Click **Approve/Reject**.

   The selected DQ Rules are approved/rejected and a confirmation message is displayed.

4.4.3.7 Deleting a Data Quality Rule

You can remove the Data Quality Rule definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).

To delete a DQ Rule:

1. Click **Action** adjacent to the DQ Rule to be approved/rejected.
2. Click **Delete**, to delete the DQ Rule.

   The selected rule is set to **Pending for Approval** status and is deleted after approval.

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> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, the Rule will be auto-deleted.

4.4.3.8 Purging a Data Quality Rule

You can delete a Data Quality Rule definition permanently from the setup.

You can purge only those DQ Rules that are deleted after approval.

To delete a DQ Rule:

1. Click **Action** adjacent to the deleted DQ Rule.
2. Click **Purge**, to delete the DQ Rule from the setup.

   The selected rule is is deleted permanently after confirmation.

4.4.4 Data Quality Groups

Data Quality Groups facilitates you to logically group the defined DQ Definitions .

DQ Group Definitions can be executed through Scheduler Services. For more information, refer to Adding a DQ Check Task .

- DQ Groups Summary
  The Data Quality Groups Summary displays the list of user-defined Data Quality Groups with the other details such as Name, Folder, Creation Date, Created By, Last Modification Date, Last Modified By, Last Run Date, and Last Run Status. .
- Creating DQ Groups
  You can create a DQ Group definition by defining the DQ Definition details and mapping the required DQ Rules which are authorized and approved within the system.
- Editing DQ Groups
  You can modify all the details of a saved Data Quality Group Definition, except the Group name.
- Approving/Rejecting a Data Quality Group
  An authorizer can approve a user-defined Data Quality Group definition for further execution or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.
- Executing DQ Groups
  You can execute an approved Data quality group.
- Deleting a Data Quality Group
  You can remove the Data Quality Group definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).
- Purging a Data Quality Group
  You can delete a Data Quality Group definition permanently from the setup.

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4.4.4.1 DQ Groups Summary

The Data Quality Groups Summary displays the list of user-defined Data Quality Groups with the other details such as Name, Folder, Creation Date, Created By, Last Modification Date, Last Modified By, Last Run Date, and Last Run Status. .

You can create and execute DQ Group definitions and view, modify, copy, refresh, or delete DQ Group definitions within the Data Quality Groups Summary.

- Click **Data Quality Groups**, to access the Data Quality Groups Summary.

  The Data Quality Rules Summary with the following details is displayed.

  - **Name** - The Unique Identifier Name of the Data Quality Group.
  - **Status** - The Approval status of the specific group.
    - **Approval** - The group is approved and ready for execution.
    - **Pending for Approval** - The group requires approval and can be executed only after approval.
    - **Draft** - A defined group is set to **Draft** status until it is submitted for approval by the creator.
    - **Rejected** - The rejected rules are sent back to the user with the Approver comments.
  - **Version** - The current active version of the group.
    When a new definition is created, it will be saved as version 1 and once it is authorized, it will be in Active status. After you modify any DQ Group and save, it will be saved with version as highest available version +1. For example, if you modify a DQ Group of version 2 and the highest version available is 4, after you save the definition, its version becomes 5. Only the latest version will be in **Active** status.
  - **Folder** - The folder associated with the group.
  - **Created Date** - The group creation date.
  - **Created By** - The login name of the user who created the Group.
  - **Last Run Date** - The last date on which the DQ Group was executed.
  - **Last Run Status** - The last execution state if the specific DQ Group.
    - **Success** - The last execution of the selected DQ Group was completed successfully.
    - **Failed** - The last execution did not complete.
    - **NA** - The DQ Group was not executed.
  - **Action** - Click **Action**, to view, approve, reject, edit, execute, delete, or view the dependency of the group.

  To search for a particular group, enter the first few letters of the group name in the Search column.

  You can also sort the groups summary based on the Status, Folder name, record status and group name.

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4.4.4.2 Creating DQ Groups

You can create a DQ Group definition by defining the DQ Definition details and mapping the required DQ Rules which are authorized and approved within the system.

The DQ Group definition is flexible and purpose driven. Groups can be created for different subject areas such as Credit and Market or it can be application specific like Basel II, Economic capital.

1. To create a DQ Group, click **Add Group** in the DQ Group Summary.

   The Data Quality Group page with DQ group Details and DQ Rules Mapping tab is displayed.

2. Click **Start**, to enter the following basic details for the new DQ Group.

   - **Name** - The unique identifier name for the groups.
     The name should start with alphabet and should not be more than 50 characters.

     Blank space ( ), **Underscore (_)** and **Hyphen (-)** are allowed as special characters.
   - **Folder** - Select the folder present in the current environment, to be associated with the group.
   - **Description** - The description/details for the group.
     The description should start with alphabet and should not be more than 250 characters.
   - Check **Auto Assignment**, to execute the group, and also perform the assignment.
   - **Access-type** - Select one of the following access types.
     - **Read-only** - Only the creator can edit the group. Other users can only view the group.
     - **Read-Write** - All users can view, modify any fields (including Access Type), and also delete the DQ Group.

3. Click **Continue** to proceed with the Data Rules Mapping page.

   The list of available rules are displayed in the Data Rules Mapping page.

4. Select the Rules to be added to the new DQ Group.

5. Click **Submit**, to submit the new DQ Group for approval.

   The DQ Groups is saved with the status **Pending for Approval**,in the Group Summary and a confirmation message is displayed.

   While creating the DQ Group, you can also click **Save As Draft**, to save the new incomplete DQ Group at any point of time and resume the process at a later point. A confirmation message is displayed, after the draft is saved successfully.

   The new Group added to the DQ Groups Summary, and is set to **Draft** Status in the DQ Groups Summary.

> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediatly after creating it.

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4.4.4.3 Editing DQ Groups

You can modify all the details of a saved Data Quality Group Definition, except the Group name.

To edit the required Data Quality Group Definition details:

1. Click **Action** adjacent to the DQ Group to be modified.
2. Click **Edit**, to modify the DQ Group.
3. Click **Start** to edit the **DQ Group Details**.
4. (Optional). Modify the description and click **Continue** to proceed with adding/deleting the rules associated with the DQ Group.
5. Add/remove the DQ Rules associated with the DQ Groups and click **Submit**, to submit the modified group for approval.

   The group is updated and added to the DQ Groups Summary. A confirmation message is displayed.
   The Group is set to **Pending for Approval** state.

> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediatly after creating it.

4.4.4.4 Approving/Rejecting a Data Quality Group

An authorizer can approve a user-defined Data Quality Group definition for further execution or reject an inappropriate DQ Definition listed within the Data Quality Rule Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

> **Note**
>
> You can only approve those DQ Rules that are set to **Pending for Approval** status.
> If the user has **DQAUTOAUTH** Role assigned, they can save and approve the DQ Group, immediatly after creating it.

To view a Data Quality Group, and approve/ reject it:

1. Click **Action** adjacent to the DQ Groups to be approved/rejected.
2. Click **Preview**, to view the DQ Groups.

   All the details pertaining to the selected rule is displayed.
3. Click **Approve/Reject**, after reviewing the groups.
4. Enter valid reason for approval or rejection.
5. Click **Approve/Reject**.
6. The DQ Group is approved/rejected and a confirmation message is displayed.

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- Bulk Approving/Rejecting Data Quality Groups
  An authorizer can approve multiple user-defined Data Quality Groups or reject an inappropriate DQ Groups listed within the Data Quality Group Summary.

4.4.4.4.1 Bulk Approving/Rejecting Data Quality Groups

An authorizer can approve multiple user-defined Data Quality Groups or reject an inappropriate DQ Groups listed within the Data Quality Group Summary.

You should be mapped to DQ Authorizer function role to approve or reject a DQ Definition.

> **Note**
>
> You can only approve those DQ Groups that are set to **Pending for Approval** status. If the user has **DQAUTOAUTH** Role assigned, the DQ group will be auto-approved.

> **Note**
>
> When you initiate bulk approval/rejection, all the selected groups are approved/ rejected based on the user input. If you want to stop the approval/rejection of one specific group, cancel the whole process and restart again.

To view several Data Quality groups, and approve/ reject them:

1. Filter Group Summary, to view only the groups with **Pending For Approval** Status.

   All the groups that need be approved/rejected are displayed.
2. Select the groups for approval/rejection.

   You can select all the groups displayed in a page, by clicking the check box next to the **Name** header. To select all the groups in the Summary, with **Pending** Status, select **Click All Groups in Summary** link.
3. Click **View Details**, to view the Group details of all the selected Groups.

   All the group details, and base table for the selected groups are displayed. Review the details and add appropriate comments and click **OK**.

   You can also **Proceed without Viewing** the details.
4. Click **Approve/Reject**.

   The selected DQ groups are approved/rejected and a confirmation message is displayed.

4.4.4.5 Executing DQ Groups

You can execute an approved Data quality group.

To execute a data quality group:

1. Click **Action** adjacent to the DQ Group to be modified.
2. Click **Execute** to access the **Execute Group** page.
3. Enter/select the following details:
   - The **Threshold** percentage for the maximum number of errors permissible during the DQ check. By default, this is set to 100.

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- Set **Fail If Threshold Breaches** to **TRUE**, to abort the job and not include the failure records in the DQ table, when the DQ check errors are more than the set threshold value.
  If the **Fail If Threshold Breaches** is set to **FALSE**, the DQ group will be executed and the failure records will be inserted in the DQ Result tables.
- Set **Stop Insert on Threshold Breach** to **Y** , to the stop the execution when there is a thereshold breach. The execution will be stopped even if **Fail If Threshold Breaches** is set to **False**.
- Enter the **Additional Parameters** required for the Run DQ Rule filtering criteria for execution in the pattern: Key#Data type#Value; Key#Data type#Value; and so on.
- Set the **Rule Execution Connection** value. By default this is set to **Data**.
- Set the **Result Store Connection** value. By default, this is set to **Data**.
- Select **As of Date** to execute to DQ group.

4. After providing the required details, click **Run**, to begin the execution.

4.4.4.6 Deleting a Data Quality Group

You can remove the Data Quality Group definition(s) that are not grouped in the Data Quality Framework. A grouped and non-executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).

To delete a DQ Group:

1. Click **Action** adjacent to the DQ Group.
2. Click **Delete**, to delete the DQ Group.

   The selected group is deleted after confirmation.

> **Note**
>
> If the user has **DQAUTOAUTH** Role assigned, the Group will be auto-deleted.

4.4.4.7 Purging a Data Quality Group

You can delete a Data Quality Group definition permanently from the setup.

To delete a DQ Group:

1. Click **Action** adjacent to the deleted DQ Group.
2. Click **Purge**, to delete the DQ Group from the setup.

   The selected Group is is deleted permanently after confirmation.

4.4.5 Adding a DQ Check Task

You can add a new DQ check Task in the Scheduler Services and add the task to a Batch Definition, for execution.

For more information about adding a task to the Batch and about Scheduler Services, refer to Scheduler Services documentation.

To add new task using the Define Tasks page in Scheduler Services, perform the following steps:

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1. Click **Define Tasks** from the Header panel.
2. Select the **Batch**, to add new task.
3. Click **Add**, to add a new DQ task in the **Create Task** page.
   - Complete all the generic details in the Create Task Page. For more information refer to Adding a Task.
   - Select the **Task Type** as DQ Task.
   - Select the **Group** to perform the DQ check.
   - Enter the **Threshold** percentage for the maximum number of errors permissible during the DQ check. By default this value is set to 100.
   - Set **Fail If Threshold Breaches** to **TRUE**, to abort the job and not include the failure records in the DQ table, when the DQ check errors are more than the set threshold value.

     If the **Fail If Threshold Breaches** is set to **FALSE**, the job will proceed further and the failure records will be inserted in the DQ Result tables.
   - Enter the **Additional Parameters** required for the Run DQ Rule filtering criteria for execution in the pattern: Key#Data type#Value; Key#Data type#Value; and so on.
4. Click **Save** to add the new DQ task to the selected Batch.

4.4.6 Execution Summary

The Execution Summary provides the consolidated list of executed DQ batches, for the last 30 days .

You can also view the consolidated details related to the total number of records analysed, total number of passed records and the pass percentage and total number of error records and their percentage.The number of error records categorized based on the Data checks is also displayed as a pie chart.

To view the Execution Summary Details:

- Click **Execution Summary**, to access the consolidated Execution Summary.

  The Execution Summary page with the following details is displayed.
  - **Batch ID** - The Unique Identifier Name of the particular Batch in which the DQ group is added for Data Quality Check.
  - **Process Instance ID** - The unique identifier of the execution process.
  - **DQ Group** - The DQ group associated with the Batch for Data Quality check.
  - **DQ Group Desc** - The DQ group description.
  - **FICMIS Date** - FICMIS Date refers to the date with which the data for the execution would be filtered. In case the specified MIS date is not present in the target table, execution completes with the message **No Records found**.
  - **Execution Date** - The last execution date of the Batch.
  - **Scanned Records** - The total number of records scanned for Data Quality check.
  - **Erroneous Records** - The total number of records that failed the Data Quality check.
  - **Execution Status** - The DQ Batch execution status.
  - **Assignment Status** - The current Assignment status of the DQ Batch.
  - **Action** - Click **Action**, to view the Run Details of the DQ Batch.

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To search for a particular Batch, enter the first few letters of the Batch name in the Search column.

You can also sort the Execution summary based on the Execution Date, FICMIS Date, Execution status and Group Name, Assignment Status, Batch Id and Process Instance ID.

- Viewing Run Details
  Execution Details page provides the information related to the Data Quality Rule and the Data Quality Check executed during a Batch Execution.

4.4.6.1 Viewing Run Details

Execution Details page provides the information related to the Data Quality Rule and the Data Quality Check executed during a Batch Execution.

You can also view the consolidated details related to the total number of records analysed, total number of passed records and the pass percentage and total number of erro records and their percentage.
The number of error records categorized based on the Data checks is also displayed as a pie chart.

1. Click **Action** adjacent to the specific Batch.
2. Click **View Run Details**, to access the Run details of the particular Batch execution.

   The Run details of the selected Batch is displayed with the following information.

   - **Rule** - The Rule name of the executed DQ Rule.
   - **Entity** - The Table entity associated with the Rule.
   - **Column** - The column associated for Data Quality check
   - **Check Type** - The type of check performed on the Data.
   - **Consolidated Records Scanned** - The total number of records scanned.
   - **Error Records** - The total number of erroneous records.
   - **Assignment Type** - The assignment type set during the DQ rule creation.
3. Generate and download the report, and perform assignment action based on the report.

   > **Note**
   >
   > To perform assignment, you must have the **DQ_EXE_ASSIGN** role assigned.

   After the assignment process is completed, the Assignment status of the particular DQ Batch is set to **Success**.

4.4.7 Interrupting DQ Group Execution in a Batch

You can interrupt an ongoing execution of a DQ group in a batch using the **Interrupt** option on the **Scheduler Services Monitor** screen.

Perform the following steps to interrupt execution of a DQ group:

1. Log in to the Service Console and from the left navigation pane in the Service console, click **Operations and Processes** > **Scheduler**.
2. Click **Monitor Batch** from the Header panel.

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3. Select the **Batch/Batch Group** and the **Batch/Batch Group Name** that contains the DQ group you need to interrupt.
4. Select the **Batch Run ID/Batch Group Run ID**.
5. Verify that the **Status** is **Ongoing** as you can interrupt execution of ongoing groups only.
6. Click **Actions** and select **Interrupt**.

The table below shows the status of the interrupt.

Table 4-25 Status on the Scheduler Services Monitor screen

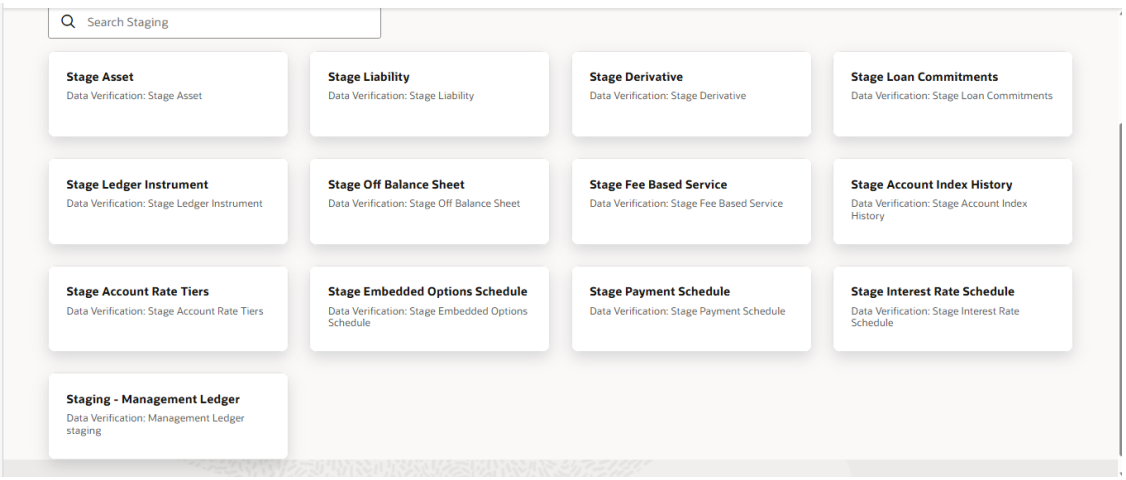
Group Execution Scenario	Initial status on the Scheduler Services Monitor screen	Message displayed on the Scheduler Services Monitor screen	Final status on the Scheduler Services Monitor screen
All requests are Pending	Interrupted	Interrupted	Interrupted
Some requests are Pending and some in Success/Failed	Interrupted	Interrupted	Interrupted
Some requests are in Pending and some in Success and Some are Ongoing	Ongoing	Partially Interrupted	Interrupted
Some requests are in Success and some are Ongoing	Ongoing	Interruption failed	Success/Failed
All requests are Ongoing	Ongoing	Interruption failed	Success/Failed

4.5 Data Verification

The Data Verification UI helps you to verify the data that is loaded from the source systems to the Cloud Service's stage and processing tables, make minor corrections/adjustment to the data, and add new data directly into the tables. This UI allows you to add one record at a time and is not recommended for high volume additions as entering data is a lengthy process.

To open the Data Verification screen, from the LHS menu, select **Data Management Tool**, and then select **Data Verification**.

Figure 4-22 Data Verification Dashboard

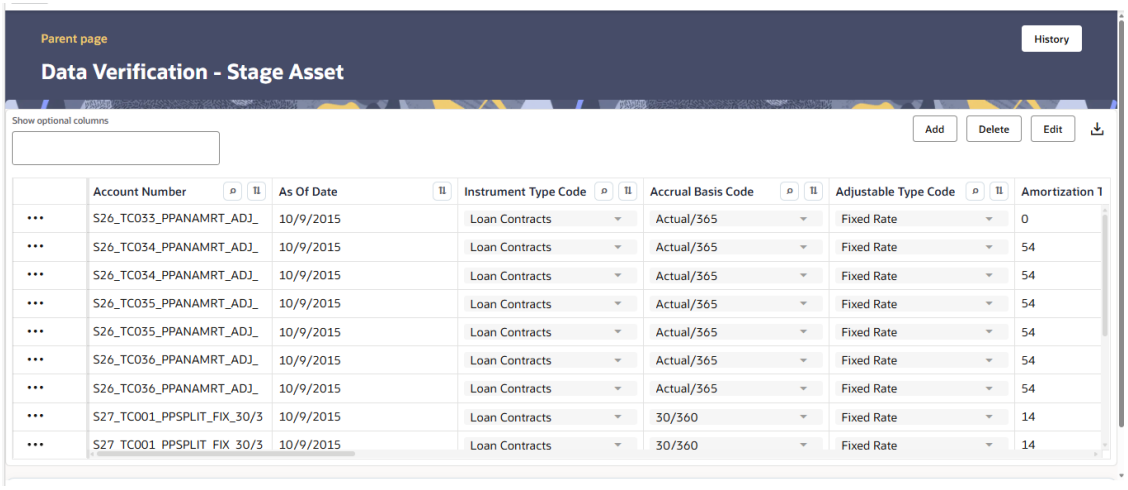


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This screen displays two tabs namely Staging and Processing. The Staging tab displays the tables that are in the staging level where you can select a table, see the data, carry out corrections, or add new data. The Processing tab displays the tables that are at the processing level and you can do all the actions similar to Staging tables.

When you select a table, a new window is displayed with a grid where you can see the selected columns.

Figure 4-23 Data Verification – Stage Asset (sample Staging table)

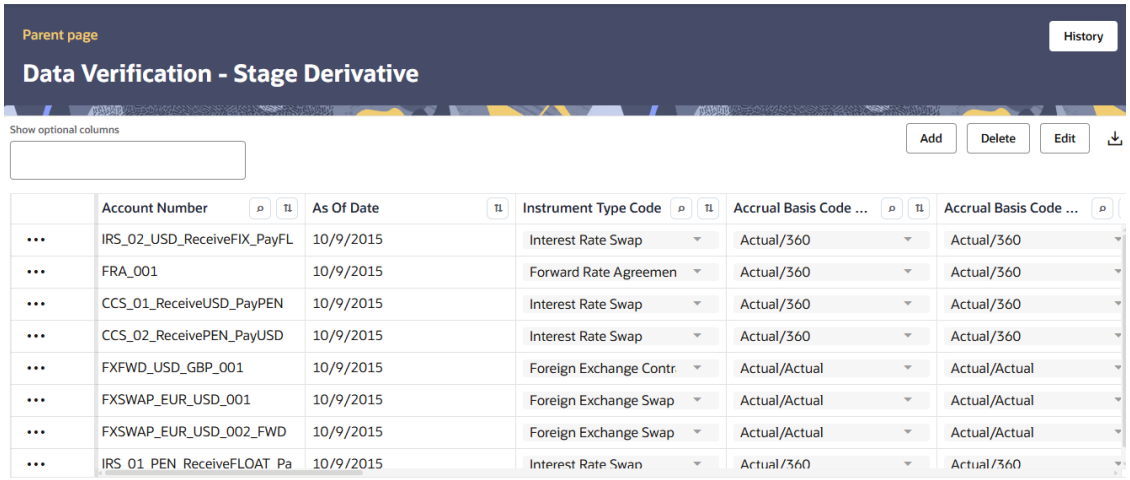


Navigating through Data Verification

Once you select a table and modify or verify your details, you can navigate back to the Dashboard or other tables using the application's standard navigation options, such as the navigation menu or breadcrumb links available in the user interface.

Use the left-hand navigation panel or the application menu to switch between the Dashboard and available tables.

Figure 4-24 Navigation through Data Verification



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Users and Roles

The following roles and functions are required to use the Data Verification UI, edits the data, and add data to the Stage and Processing tables.

Table 4-26 Roles and Role Names

Role	Role Name
DVACCROLE	Data Verification Access Role
STGTABACCROLE	Data Verification Staging Tab Access Role
STGTABEDITROLE	Data Verification Staging Tab Tables Data Edit, Delete Role
STGTABAUTHROLE	Data Verification Staging Tab Tables Data Authorizer Role
PROCTABACCROLE	Data Verification Processing Tab Access Role
PROCTABEDITROLE	Data Verification Processing Tab Tables Data Edit, Delete Role
PROCTABAUTHROLE	Data Verification Processing Tab Tables Data Authorizer Role

The access to the users can be restricted up to table level because all the users need not have access to all the tables.

Add a New Record

> **Note**
>
> Before adding a new row to a Stage table (for example, Stage Asset), ensure that data has already been loaded into the table through the loader. The table must not be empty, as the loader creates the required partitions and sub-partitions during the initial load. The **Input File Name** field will only be available after this initial load. Adding rows to an empty Stage table is not supported; the ability to create new sub-partitions is planned for a future release.

To add a new record to a selected stage/processing table, click **Add**. Enter/populate the mandatory and the relevant columns and then click Save. When you click **Add**, you must enter the mandatory key columns first, and then click ellipsis (…) icon. After this your can click the ellipsis (…) icon to open the Edit Table window, fill the relevant details and then save the details.

Delete a Row

To delete a row, select the row and click the **Delete** icon to collapse the menu where you can select **Delete Row**.

Duplicate a Row

You can select a row and click **Duplicate Row** from the hamburger menu. This creates duplicate row with the same values in the Data Verification - <Table> screen.

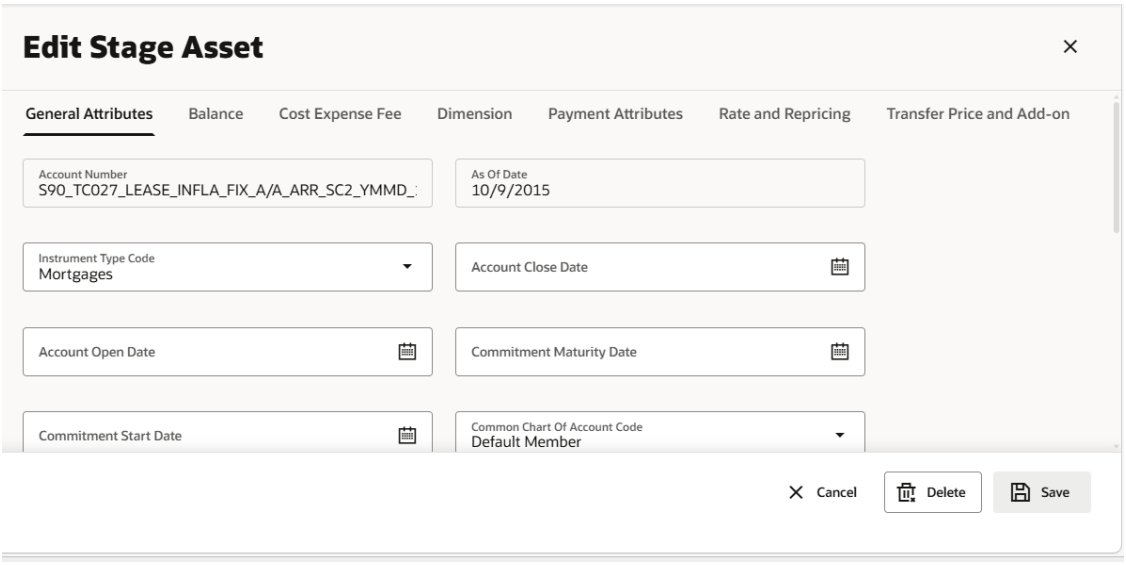
Edit a Record

To edit a record, select a row from the Data Verification window. There are two ways in which you can edit the columns from the table.

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- Select a row from the Data Verification grid and click the **Edit** button. This enables the columns that are exposed. You can double-click the entry to edit. Editing the key columns in the table is restricted.
- Select a row from the Data Verification grid and click the ellipsis (…) icon, and then click **Edit**. This opens the Edit Table window. This window displays all the columns from the table. The columns are categorized based on their nature and displayed in different tabs. You can select the relevant columns and edit. After you update the relevant details, click **Save**.

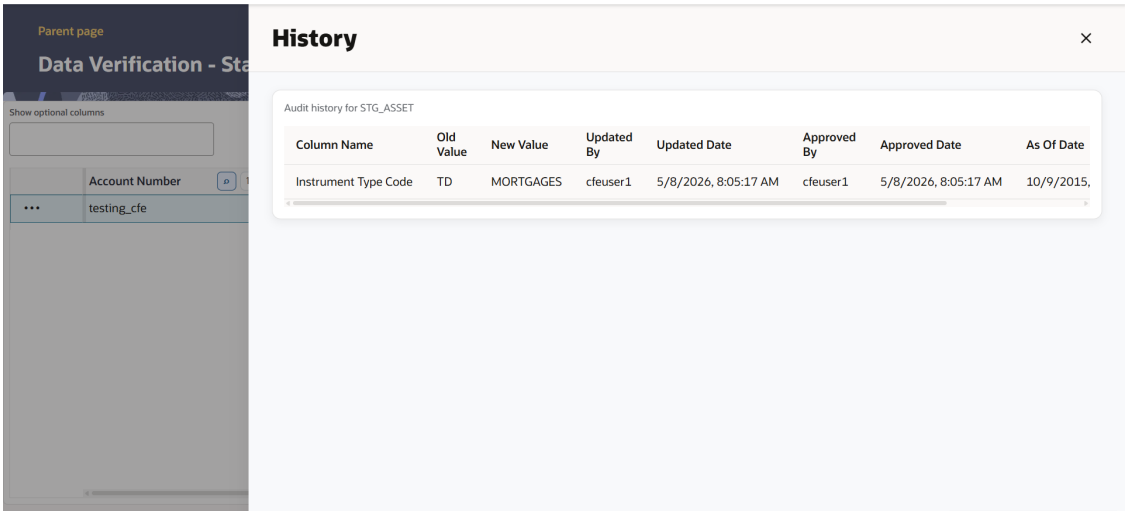
Figure 4-25 Sample Edit Table



View History

This option displays the changes carried out on a selected record. To see the history on a record, select the record, click the ellipsis (…) icon, and then select View History. This displays the history of updates on the selected record with details such as Column Name, New Value, Old Value, Updated Date, and Updated By.

Figure 4-26 History at Record Level

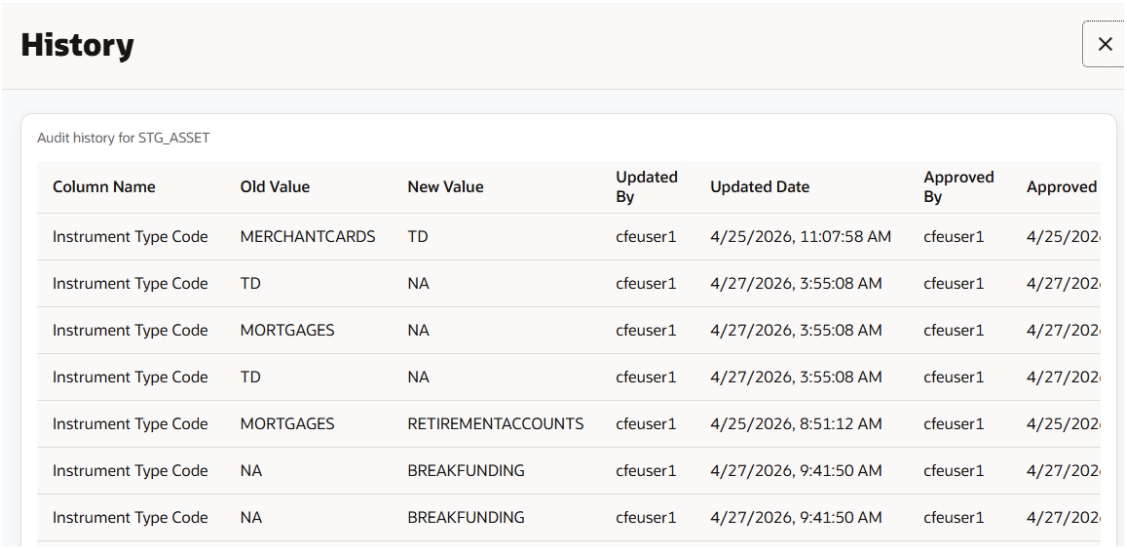


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To navigate back to the Dashboard or the selected table's Data Verification screen, click the Parent Page link available at the top-left corner of the screen. You can also type the table name in the search option for quick access.

To see the history of all the records on a particular table, select the record and click the History button on the top right-hand corner of the screen. This displays all the updates done on the all the records in the table. A sample screen of the history on the table is as follows:

Figure 4-27 History at Table Level



4.6 Lookup Tables

Lookup Tables are user-defined database tables created to hold user data for matching instrument-level measures or attributes and returning a corresponding value. The user data is matched conditionally with columns from a Profitability Management Cloud Service instrument table, and a user-specified return value is stored in the return columns of the Lookup table.

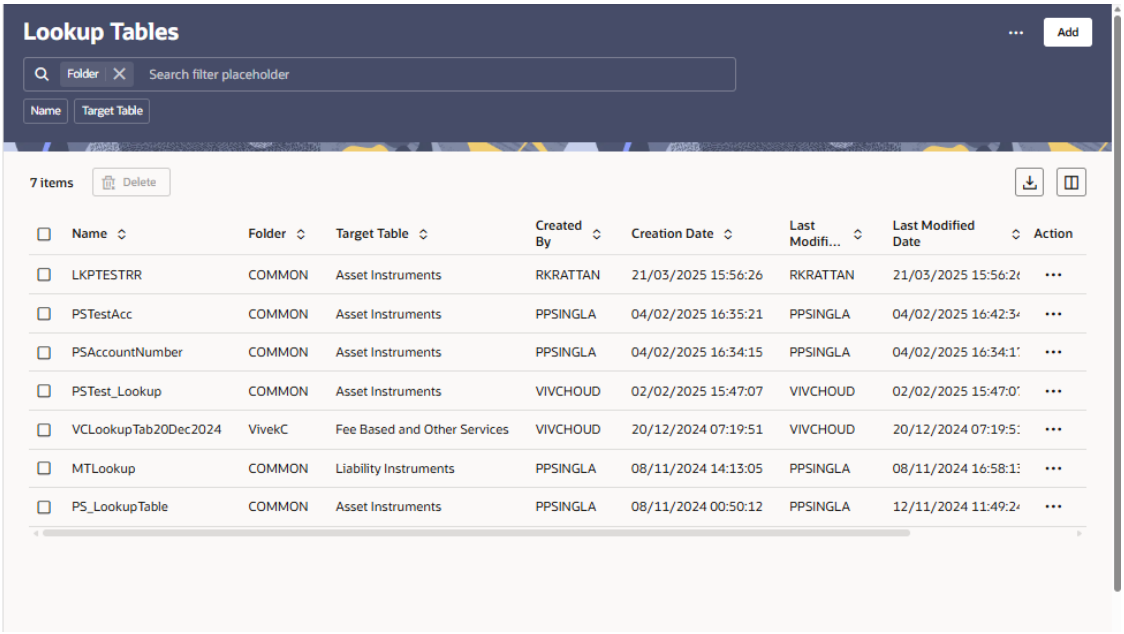
Summary and Detail Screens

To open the Summary page, select **Data Management Tools**, and then select **Lookup Tables**.

A summary screen is displayed showing a set of Lookup Table rules. Using search criteria, you can control the set of rules displayed. When you Add, Edit, or View a rule, a detail screen is displayed.

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Figure 4-28 Lookup Tables — Summary page



- Navigation in Summary Screen
  When you navigate to the Lookup Tables summary screen, the rules stored within your current Default Folder are presented in a summary table. The Lookup Tables summary screen has two panes: Search and Lookup Tables summary table.
- Navigation in the Detail Screen
- Adding a Lookup Table
  To add a Lookup Table:
- Executing a Lookup Table using Scheduler Service
- Exporting and Importing an Excel Sheet
  While editing the Lookup Table definition, the process allows to export and import the Lookup Table data using excel sheets.
- Importing Data using Scheduler Service
  To import the Lookup Table Data using Scheduler Service:
- Deleting Lookup Table Data using Scheduler Service
  To import the Lookup Table Data using Scheduler Service:

4.6.1 Navigation in Summary Screen

When you navigate to the Lookup Tables summary screen, the rules stored within your current Default Folder are presented in a summary table. The Lookup Tables summary screen has two panes: Search and Lookup Tables summary table.

The title bar of the summary page provides the following actions:

- **Add:** Click Add to create a new Lookup Table rule. The Add button is disabled if any rows in the table are selected.
- **Actions:** Click the ellipsis icon at the top right of the title bar to access the following options:

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- **Refresh:** Refreshes the summary table to display the latest data.
- **Reset:** Resets the search filters applied.
- **Help:** Opens the Help page.

The grid bar at the top of the summary table provides the following buttons:

- **Delete:** Select one or more rules and click Delete to remove them simultaneously.
- **Export:** Downloads the summary table data in .xls format.
- **Columns:** Opens a column selector to choose which columns to display on the summary screen.

Search

To search Lookup Tables:

1. Click the **Search** icon on the Search pane to expand the criteria window.
2. Enter the Lookup Table Name or Description and click Search to display matching Lookup Tables.
3. Click **Reset** to remove the applied filter criteria and refresh the window.
   The search results are displayed in a table containing all Lookup Tables that meet the search criteria.

Lookup Table Summary Table

This section presents a table containing all Lookup Tables that meet your search criteria. The summary table displays the following columns:

- **Name:** Displays the Lookup Table's short name. Hovering over the name displays the object code and object ID.
- **Folder:** Displays the folder in which the Lookup Table was created.
- **Target Table:** Displays the target instrument table associated with the Lookup Table.
- **Created By:** Displays the name of the user who created the rule.
- **Creation Date:** Displays the date and time at which the rule was created.
- **Last Modified By:** Displays the name of the user who last modified the rule.
- **Last Modified Date:** Displays the date and time of the latest modification.
- **Access Type:** Displays whether the rule is Read/Write or Read Only. Only the creator of a rule may change its Access Type.
- **Status:** Displays the current status of the Lookup Table. Possible values are: Creation in Progress, Table Created, Failed, and Deletion in Progress.
- **Action:** Displays the list of actions available for the Lookup Table rule.

The Action column offers the following actions based on the status of the Lookup Table:

- If status is Creation in Progress, only **View** is available.
- If status is Table Created, the available actions are **View**, **Edit**, **Run**, **Delete**, **Save As**, and **Check Dependencies**.
- If status is Failed, the available actions are **View** and **Delete**.
- If status is Deletion in Progress, only **View** is available.

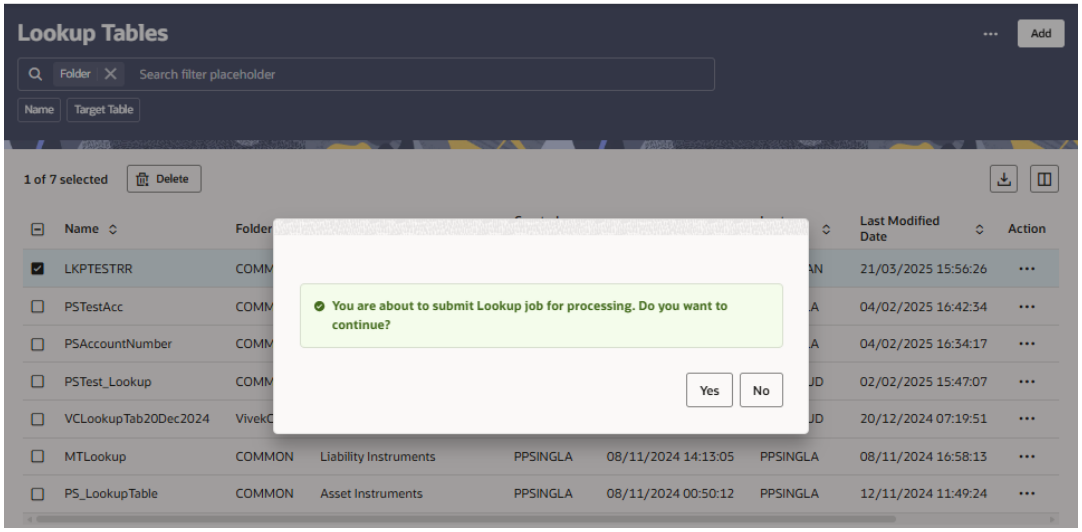
The Creation in Progress status transitions to either Table Created or Failed, depending on whether the physical lookup table creation in the database succeeds or fails.

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The following actions are available for a Lookup Table rule:

- **View:** Opens the Lookup Table in view mode. Available for all status values.
- **Edit:** Opens the Lookup Table in edit mode. Available for Table Created status only.
- **Run:** Submits the Lookup Table for processing. When you click **Run**, a confirmation dialog displays the message: **You are about to submit Lookup job for processing. Do you want to continue?** Click **Yes** to proceed or **No** to cancel.

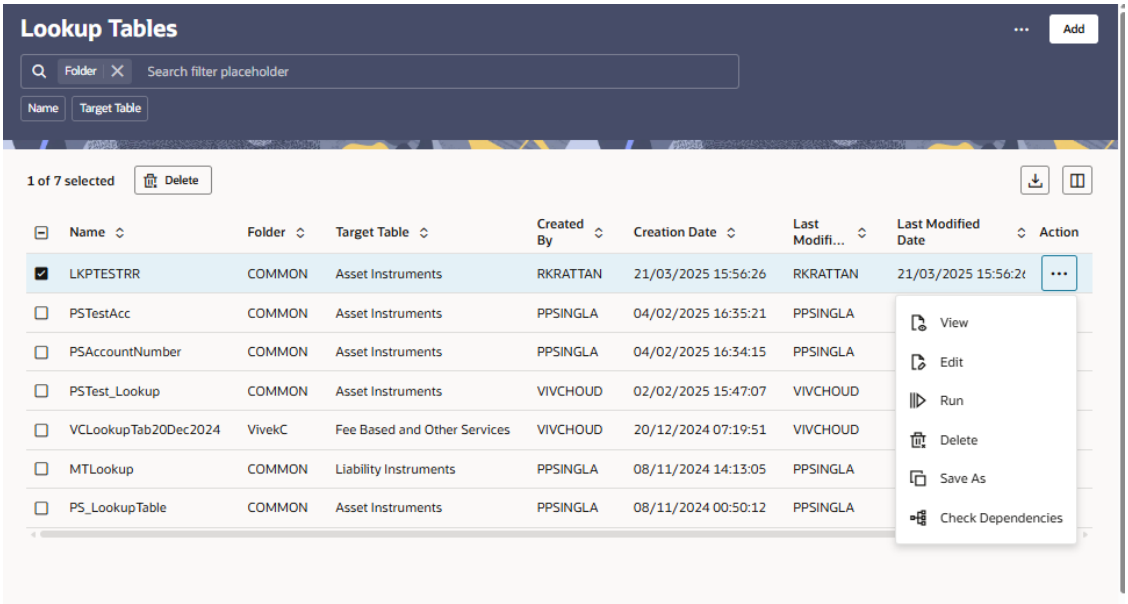
Figure 4-29 Lookup Tables — Run confirmation dialog



- **Save As:** Creates a copy of the Lookup Table rule. The Save As dialog allows you to enter the Name, Description, Folder, and Access Type for the copy.
- **Delete:** Deletes the selected Lookup Table rule. Available for Table Created and Failed status. For tables in Failed state, Delete removes only the row from the summary grid. Once Delete is initiated, the status changes to Deletion in Progress. When deletion completes successfully, the row is removed from the summary grid. If deletion fails, the table reappears in the summary with a Failed status.
- **Check Dependencies:** Checks for dependencies of the selected Lookup Table with other objects in the application. Available for Table Created status only.

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Figure 4-30 Lookup Tables — Actions



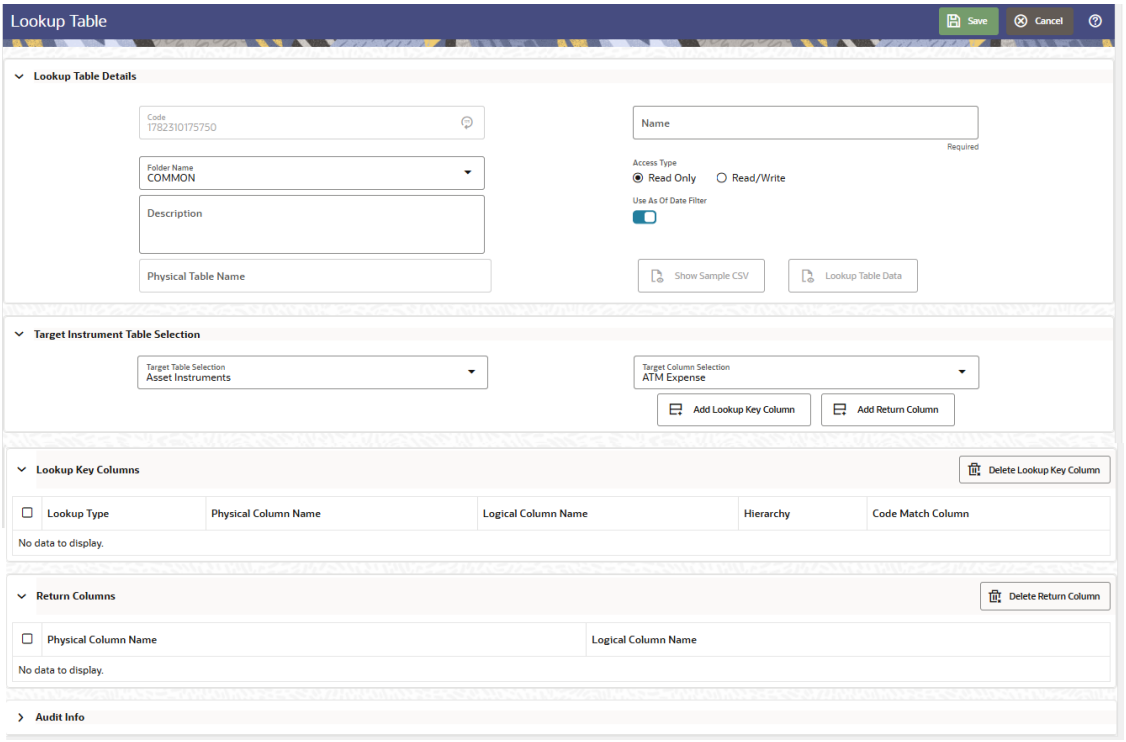
You may select or deselect all Lookup Table rules in the summary table by clicking the check box in the upper-left corner of the summary table, directly to the left of the Name column header.

4.6.2 Navigation in the Detail Screen

When you Add, Edit, or View a Lookup Table rule, the Lookup Table detail screen is displayed. The detail screen is organized into the following panes: Lookup Table Details, Target Instrument Table Selection, and Lookup Key Columns.

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Figure 4-31 Lookup Table — Detail screen



- Lookup Table Details
  The **Lookup Table Details** pane captures the identifying information and configuration settings for the Lookup Table rule.
- Target Instrument Table Selection
  The **Target Instrument Table Selection** pane defines the instrument table and target column that the Lookup Table operates against.
- Lookup Key Columns
  The **Lookup Key Columns** grid displays the columns defined for the Lookup Table. Click **Delete Lookup Key Column** at the top right of the pane to remove a selected column.
- Lookup Table Data Screen
  You can input data into the Lookup Table through the Lookup Table Data screen, accessible from the Lookup Table detail screen. Click Lookup Table Data to open the screen. This button is enabled only after the Lookup Table reaches the Table Created state.
- Audit Info Pane

4.6.2.1 Lookup Table Details

The **Lookup Table Details** pane captures the identifying information and configuration settings for the Lookup Table rule.

Specify the following fields:

- **Code:** The code is auto-generated. You can also manually enter a numeric code. Only numerical values are allowed; special characters are not permitted.
- **Name:** Enter a short name for the Lookup Table rule. This field is required before you can save the rule.

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- **Folder Name:** Select the folder in which to store the Lookup Table rule. This field is required.
- **Description:** Enter an optional description for the Lookup Table rule.
- **Physical Table Name:** Displays the name of the physical database table associated with the Lookup Table rule.
- **Access Type:** Select **Read Only** or **Read/Write** to control access to the rule. Only the creator of a rule may change its Access Type.
- **Use As Of Date Filter:** Enable this toggle to apply an As of Date filter when the Lookup Table is used in rule execution. This toggle is enabled by default

The following options are also available in this pane:

- **Show Sample CSV:** Displays a sample CSV template showing the expected format for importing data into the Lookup Table. This template can be used to prepare data to load into the Lookup Table from Scheduler.
- **Lookup Table Data:** Opens the Lookup Table Data screen, where you can view, add, or delete data in the lookup table. This button is enabled only after the Lookup Table reaches the Table Created state.

4.6.2.2 Target Instrument Table Selection

The **Target Instrument Table Selection** pane defines the instrument table and target column that the Lookup Table operates against.

- **Target Table Selection:** Select the instrument table from the drop down.
- **Target Column Selection:** Select the target column from the selected instrument table.

The following options are available in this pane:

- **Add Lookup Key Column:** Adds a lookup key column to the Lookup Key Columns grid based on the selected table and column.
- **Add Return Column:** Adds a return column to the Lookup Key Columns grid.

4.6.2.3 Lookup Key Columns

The **Lookup Key Columns** grid displays the columns defined for the Lookup Table. Click **Delete Lookup Key Column** at the top right of the pane to remove a selected column.

The grid contains the following columns:

- **Lookup Type:** The type of lookup for the column. Three column types are supported:
  - **Range Lookup:** For non-dimension instrument columns. Stores a range of values between a minimum and a maximum. The logical condition is: Range Lookup Minimum value ≤ matching instrument data ≤ Range Lookup Maximum value. Lookup data must not have overlapping ranges, as this leads to ambiguous results.
  - **Exact Match:** For all instrument columns, both dimension and non-dimension. Performs a literal database join and supports numeric values, dates, and strings.
  - **Hierarchy Match:** For instrument dimension columns. Allows matching on dimension member values from a source instrument table with any leaf member that belongs to a hierarchical rollup point. Supports only Key Processing dimensions.
- **Physical Column Name:** Displays the physical database column name.
- **Logical Column Name:** Displays the logical (user-facing) name of the column. This field is editable.

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- **Hierarchy:** Applicable for Hierarchy Match column types. Displays the hierarchy associated with the dimension column.
- **Code Match Column:** Indicates whether the column is designated as a code match column.

You can drag and reorder columns in the grid. The physical database table is created with the columns in the order shown in the grid. To reorder, hold and release the left mouse button on the Logical Column Name column.

Once a column has been added to the grid, it becomes unselectable in the Target Column Selection dropdown to prevent duplicate entries.

4.6.2.4 Lookup Table Data Screen

You can input data into the Lookup Table through the Lookup Table Data screen, accessible from the Lookup Table detail screen. Click Lookup Table Data to open the screen. This button is enabled only after the Lookup Table reaches the Table Created state.

The **Lookup Table Data** screen displays the lookup table columns and the data contained in the table. The following operations are available:

- **Add Row:** Enter the number of rows to add and click Add Row to insert new rows into the table.
- **Delete Row:** Removes one or more selected rows from the table.
- **Remove Blank Rows:** Removes all blank rows in the table at once.
- **Export:** Exports the lookup table data in .xls format. The file can be used to prepare / modify data and imported back into the Lookup Table from this UI.
- **Import:** Imports data from a .xls file into the lookup table.
- **Save:** Saves the row values to the database and closes the screen.
- **Apply:** Saves the row values to the database without closing the screen, allowing you to continue working.

4.6.2.5 Audit Info Pane

The Audit Info pane is a standard footer pane available for every Profitability Management Cloud Service rule type. It displays the following tabs:

- **Audit:** Shows audit data for the object, including Created By, Created Date, Modified By, Modified Date, Authorized By, and Authorized Date.
- **Comments:** Shows existing comments for the object. Only the latest comment is editable; deletion of existing comments is not permitted. Users can add new comments.
- **Tags:** Shows the tags associated with the object. Users can add new tags or remove existing ones.

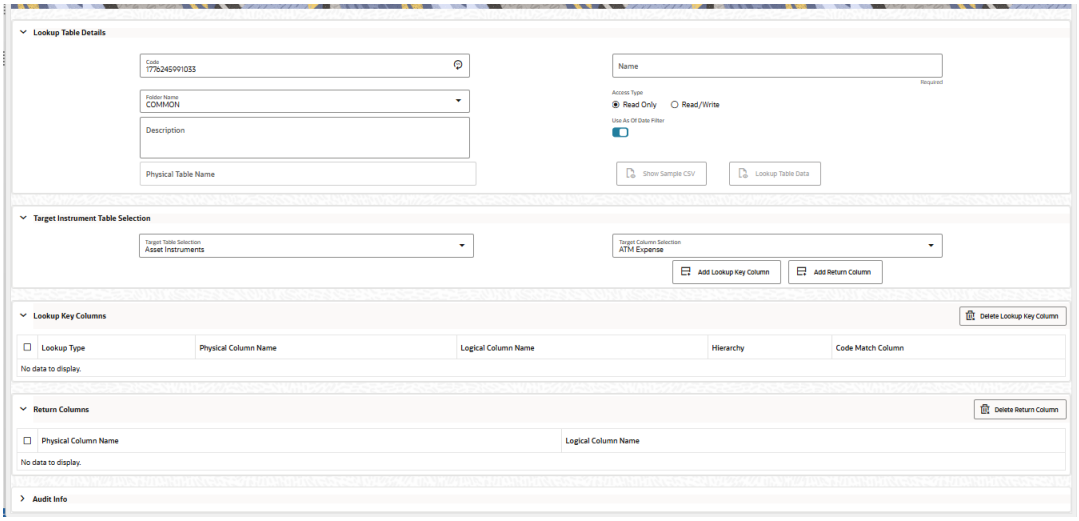
4.6.3 Adding a Lookup Table

To add a Lookup Table:

1. Click **Add** on the title bar.

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Figure 4-32 Adding a Lookup Table



2. Enter the following details under Lookup Table Details:
   - Code

     > **Note**
     > – The code can be entered manually by the user or generated automatically.
     > – Only numerical values are allowed; special characters are not permitted.

   - Name
   - Folder Name
   - Description
   - Access Type: Read Only or Read/Write
   - Use As Of Date Filter toggle switch: As applicable.

     > **Note**
     > Click **Show Sample CSV** to download the CSV template required by the Scheduler Service Lookup Table Data Loader. Use this template to prepare your lookup table data before importing it.

3. Enter the following details under Target Instrument Table Selection section:
   - Target Table Selection: Select the relevant table that you want to change/update the data.
   - Target Column Selection: Seelct the relevant column that you want to set the condition on the selected Target Table.
   - Add Lookup Key Column: Select the following options as applicable:
     – Exact Match
       * Range Lookup
     – Code Match

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  - Code Pattern Match
  - Hierarchy – ID Match: In this case, you must select the Hierarchy of the selected Dimension. Staggered hierarchies with multi-level nodes are also supported. In lookup data, you can use nodes at multiple levels on the selected hierarchy, system is able to figure out leaf nodes on which lookup table need to be executed. Provide the hierarchy ID.
  - Hierarchy – Code Match: In this case, you must select the hierarchy of the chosen dimension. Staggered hierarchies with multi-level nodes are also supported. In the lookup data, you can use nodes at multiple levels of the selected hierarchy, and the system is able to determine the leaf nodes on which the lookup table needs to be executed. Provide the hierarchy code.
- Add Return Column.

4. Enter the following details under Lookup Key Columns section:
   - Lookup Type:
     - Exact Match
     - Range Lookup

     The Audit Info part of the screen displays the following details:
     - Created By
     - Created Date
     - Modified By
     - Modified Date
     - Authorized By
     - Authorized Date
5. Click **Save**. The newly added Lookup Table definition is added to the summary screen and displayed.
   After the definition is saved, you can select the definition from the summary screen and clickView from Action menu.

   You can see the Show Sample CSV and Lookup Table Data buttons are enabled.

   When you click the Show Sample CSV button, the system downloads a CSV file. You can feed the details in this sheet.

   When you click the Lookup Table Data button, the system displays the Lookup Table Data in edit mode.

   Two physical tables are created in the database: one with the STG_ prefix and one without the prefix.

From this screen, you can manually Add or Delete a row, export or import a CSV file. Click Import, navigate to the location where you have your XLS file, select and import.

4.6.4 Executing a Lookup Table using Scheduler Service

To execute a Lookup Table using Scheduler Service:

1. Navigate to Scheduler Service, select **Define Batch**
2. Click **Create** from Actions.
3. Create a batch and save it.

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4. Navigate to Scheduler Service, select **Define Task**.
5. Create a task.
6. Select the Component as **Lookup Table** and click **Save**.
7. In the Task Parameter section, enter the following values:

Table 4-27 Lookup Table Parameters

Parameter	Description
Folder	Select the folder used to filter and locate the Lookup Table rule.
Lookup Table Rule	Select the Lookup Table rule to execute or process.

8. Save the task and add it to the batch.
9. Execute the batch with the required As of Date.
10. Monitor the task. For more information, see For more details, see Monitor Batch..
11. Navigate to the Lookup Table summary screen and review the execution status and log details for the selected Lookup Table rule.

4.6.5 Exporting and Importing an Excel Sheet

While editing the Lookup Table definition, the process allows to export and import the Lookup Table data using excel sheets.

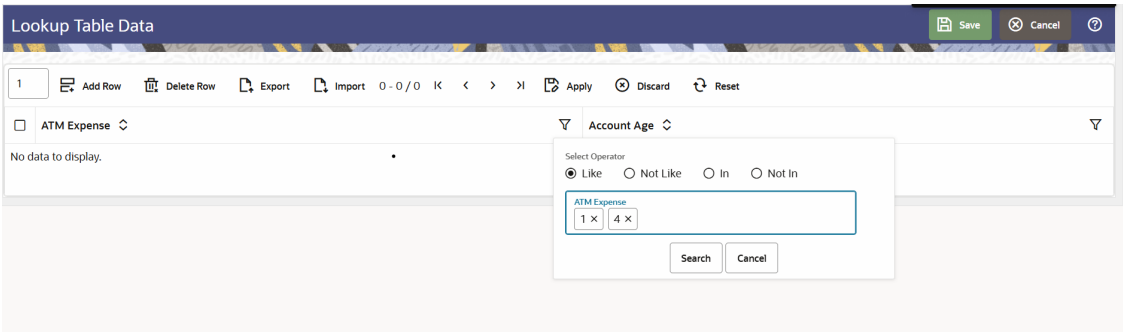
To export, click **Export**. This downloads an excel sheet with the lookup data. You can fill the data and then save the sheet. From the UI, you click **Import** and select the sheet from your local machine. This directly feeds the column details into the table and displays. While importing the data, you have an option to overwrite the existing data. If you select the checkbox and import, the system overwrites the existing data and writes the new data.

> **Note**
>
> To load data through the UI, export the template directly by clicking **Export/Import** option in the Lookup Table Data entry UI.

Searching the Column Values

To search the column value, click the funnel icon next to the column.

Figure 4-33 Lookup Table Data



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Select any of the options from Like, Not Like, In, or Non In and enter the values in the text box below. This field accepts mutiple inputs. Click **Search** to fetch the details.

4.6.6 Importing Data using Scheduler Service

To import the Lookup Table Data using Scheduler Service:

1. Navigate to Scheduler Service, select **Define Batch**.
2. Click **Create** from Actions.
3. Create a batch and save it.
4. Navigate to Scheduler Service, select **Define Task**.
5. Create a Task.
6. Select the Component as **Lookup Table Data Loader**.
7. In the Task Parameter section, select the following values:

Table 4-28 Lookup Table Parameters

Parameter	Description
Folder	Select the folder used to filter and locate the Lookup Table rule.
Lookup Table Rule	Select the Lookup Table rule to execute or process.
File Name	Input name of file, containing lookup data, without prefix and extension. Example 'DATA1 **Note** Actual name of file that must be uploaded to object store will be INPUT_YYYYMMDD_PBSM_LOOKUP_<file_name>.csv, example INPUT_20150315_PBSM_LOOKUP_DATA1.csv. Here YYYYMMDD is the As of Date for which data is being loaded or Batch MIS Date."

8. Select the Insertion Mode from the options **Delete and Insert** or **Append**. For more details, see Define a Task.
9. Execute the task. Select the **As of Date** as the date that is used in the CSV file name.
10. Monitor the task. For more details, see Monitor Batch.
11. Navigate to the Lookup Table summary screen and verify the imported Lookup Table definition.

4.6.7 Deleting Lookup Table Data using Scheduler Service

To import the Lookup Table Data using Scheduler Service:

1. Navigate to Scheduler Service, select **Define Batch**.
2. Click **Create** from Actions.

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3. Create a batch and save it.
4. Navigate to Scheduler Service, select **Define Task**.
5. Create a Task.
6. Select the Component as **Delete Lookup Table Data**.
7. In the Task Parameter section, select the following values:

Table 4-29 Lookup Table Parameters

Parameter	Description
Folder	Select the folder used to filter and locate the Lookup Table rule.
Lookup Table Rule	Select the Lookup Table rule to execute or process.

8. Select the definition.
9. Select the **Folder** and **Lookup Rule Name**.
10. Execute the task with the **As of Date**.
11. Monitor the task.
12. Navigate to the Lookup Table summary screen and verify the Lookup Table definition is deleted.

4.7 Data Housekeeping

The Data Housekeeping UI helps you to perform the followings tasks based on user defined criteria:

- Delete data from selected tables
- Drop partitions and truncate subpartitions from selected tables
- Archive the data from selected tables

You can use this as data retention in PBSM cloud services.

To open the Data Housekeeping screen, from the LHS menu, select **Data Management Tool**, and then select **Data Housekeeping**.

Users and Roles

The following roles and functions are required to use the Data Housekeeping UI.

Table 4-30 Roles and Role Names

Role Code	Role Name	Function Code	Function Name
RLDHKANALYST	Data Housekeeping Analyst Role	DHKADD	Create Data Housekeeping Policy
		DHKRUN	Run Data Housekeeping Policy
		DHKDEL	Delete Data Housekeeping Policy
		DHKEDIT	Edit Data Housekeeping Policy

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Table 4-30 (Cont.) Roles and Role Names

		DHKVIEW	View Data Housekeeping Policy
		DHKLOG	View Data Housekeeping Policy execution log
RLDHKAUTH	Data Housekeeping Authorizer Role	DHKAUTH	Authorize Data Housekeeping Policy
		DHKADD	Create Data Housekeeping Policy
		DHKRUN	Run Data Housekeeping Policy
		DHK	Delete Data Housekeeping Policy
		DHKEDIT	Edit Data Housekeeping Policy
		DHKVIEW	View Data Housekeeping Policy
		DHKLOG	View Data Housekeeping Policy execution log
RLDHKAUDIT	Data Housekeeping Auditor Role	DHKVIEW	View Data Housekeeping Policy
		DHKLOG	View Data Housekeeping Policy execution log

Data Housekeeping Summary

Search Policy

Prerequisites: Predefined Policy

To search for a Policy:

1. You can search a policy is through the **Search** drop-down option. Select **Policy Name**, **Policy Type**, **Seeded Policy Flag**, **Last Execution Status**, and **Created By** from **Search** drop-down.
2. Enter the **Policy Name**, **Policy Type**, **Seeded Policy Flag**, **Last Execution Status**, and **Created By** in Search Criteria and click **Go**.

Rows that contain the string you are searching for are fetched and displayed in the Data Housekeeping Summary.

The Data Housekeeping Summary displays the following information:

New Policy: Click the New Policy icon on the page header to build a new policy.

- **Policy Name**: The policy name.
- **Schedule**: Shows the time when the policy is scheduled.
- **Last Run Date:** The Date and Time when the policy was last modified.
- **Created Date:** the date when policy was created.
- **Type**: The Type (Archive, Drop Partition, Delete) of the policy.

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- **Last Execution Status:** The status of policy after execution.
- **Policy Status**: Shows the current state of the policy (for example, SAVED, FAILED).

> **Note**
>
> The Policy Status and Last Execution Status columns are now positioned adjacent to each other in the summary grid for improved clarity and readability.

- **Actions:** Click this icon to view a list of actions that you can perform on the Policy.
  - **View:** View existing policy.
  - **Edit:** Edit existing policy. To edit a rule, you must have Read/Write privilege.
  - **Authorize:** Select Authorize to approve the policy for execution.
  - **Withdraw Jobs:** Select Withdraw Jobs to cancel the Job execution.
  - **View Log:** Select View Log to view the audit information of the policy. This information includes pending and running jobs.
  - **Delete:** You can delete policies that you no longer require. Note that only policy owners and those with Read/Write privileges can delete Policies. A policy that has a dependency cannot be deleted. A policy cannot be retrieved after deletion.
  - **Job Execution Details:** Shows the execution details of selected policy.
- Create Data Housekeeping Policy
- Authorize a Policy
- Withdraw a Policy

4.7.1 Create Data Housekeeping Policy

To create a new Data Housekeeping policy, follow these steps:

1. Navigate to the **Data Housekeeping Summary** Page.
2. Click the **New Policy** icon. The **Create Data Housekeeping** Page is displayed.
3. Click **Start** to create a new policy.
4. Enter the required details and Submit.

   Below are the supported Policy Types:

   - Create Drop-Partition Policy
   - Create Archive Policy
   - Create Delete Policy
   - Create Nullify Policy

> **Note**
>
> You can select only one Policy Type at a time (Drop Partition, Archive, Delete, or Nullify). The UI prevents selecting multiple policy types simultaneously.

- Create Drop Partition Policy
- Create Archive Policy

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- Create Delete Policy
- Create Nullify Policy

4.7.1.1 Create Drop Partition Policy

This section provides the details on dropping the partition data from selected tables based on user defined criteria.

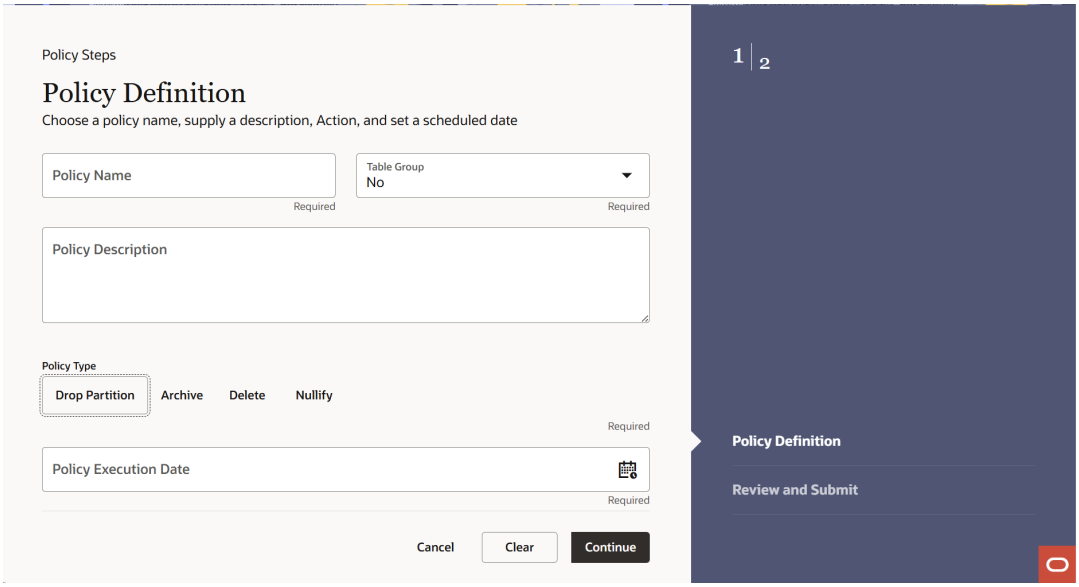
To create Drop Partition Policy, follow these steps:

1. Navigate to **New Policy** page.
2. Follow the steps mentioned in below sections:
   a. **Step 1:** Policy Definition
   b. **Step 2:** Selection
   c. **Step 2:** Preview and Submit

Step 1: Policy Definition section

1. From **Policy Details** tab, click **Start**. The **Policy Definition** page is displayed.

Figure 4-34 Policy Definition section



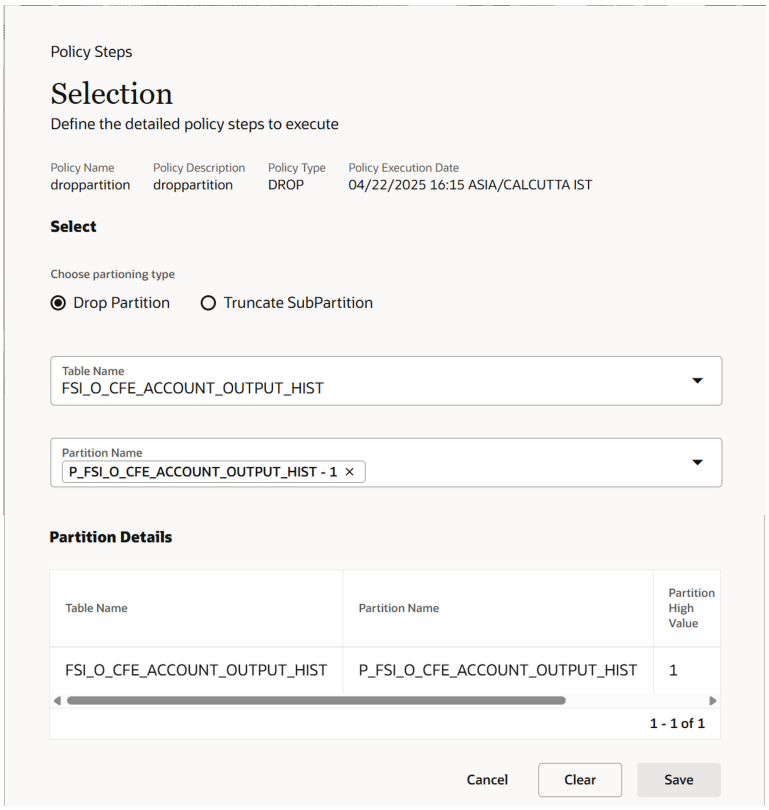
2. Enter the following details:
   - **Name:** Name of Policy
   - **Description:** Description of Policy
   - **Table Group:** If this option is selected as **No**, then you can select **Policy Type** as **Drop Partition**.
   - **Type:** Type of Policy as Drop Partition
   - **Policy Execution Date:** Select the execution date and time of policy using calendar
3. Click **Continue**.

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Step 2: Selection section

1. Navigate to the **Selection** section. The **Selection** window is displayed to define the partitions.
2. Select the **Partition type** as **Drop Partition** or **Truncate Subpartition**.
   a. If **Partition type** is selected as **Drop Partition**, then following window is displayed:

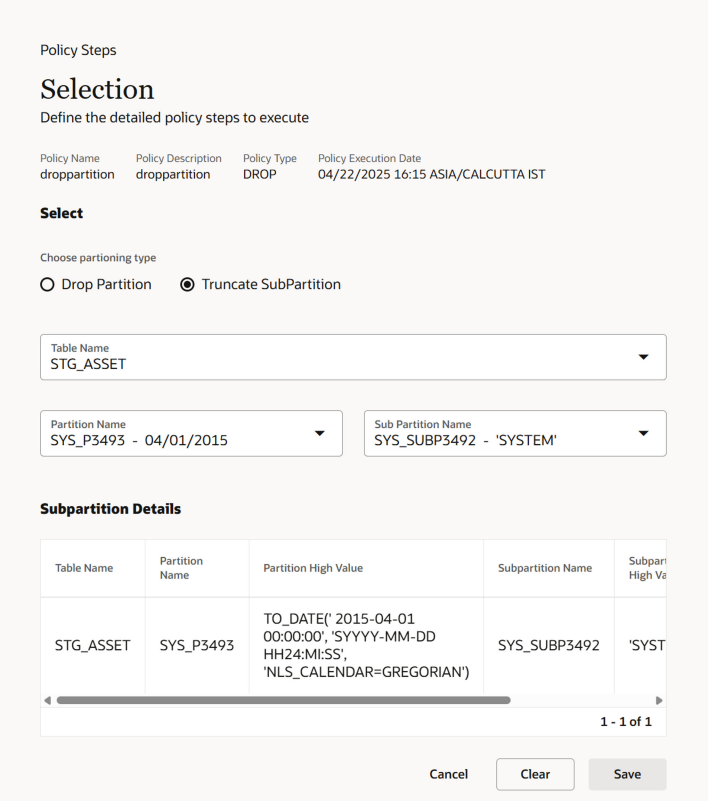
Figure 4-35 Partition type as Drop Partition



   b. Select the table(s) for which you want to do the partitions. The list of available partitions is displayed that contain data.
   c. Select the **Partition Name**. Partition Name shows the partition of the selected table from the database.
   The Partition details will be displayed in **Partition Details** section. This shows the Table Name, Partition Name, column name, and the actual partition value selected for dropping (rather than the partition's high value), so you can confirm exactly what will be dropped. This doesn't show empty partitions.
   d. Click **Continue**.
   a. If **Partition type** is selected as **Truncate Subpartition**, then following window is displayed:

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Figure 4-36 Partition type as Truncate Subpartition



b. Select the table(s) for which you want to do the sub partitions. The list of available sub partitions is displayed that contain data.

c. Select the **Sub Partition** Name. Sub Partition Name shows the columns and metadata on which sub-partition has been created.
The Sub Partition details will be displayed in **Subpartition Details** section. This shows the Table Name, Partition Name, column name, and the actual partition value selected for dropping (rather than the partition's high value), so you can confirm exactly what will be dropped. This doesn't show empty partitions.

d. Click **Continue**.

> **Note**
>
> If only sub-partition is selected to remove then only data from it will deleted. Sub-partition is not dropped to enable customer re-load data in it, if needed. Sub-partitions in PBSM data model is created with a pre-defined list.

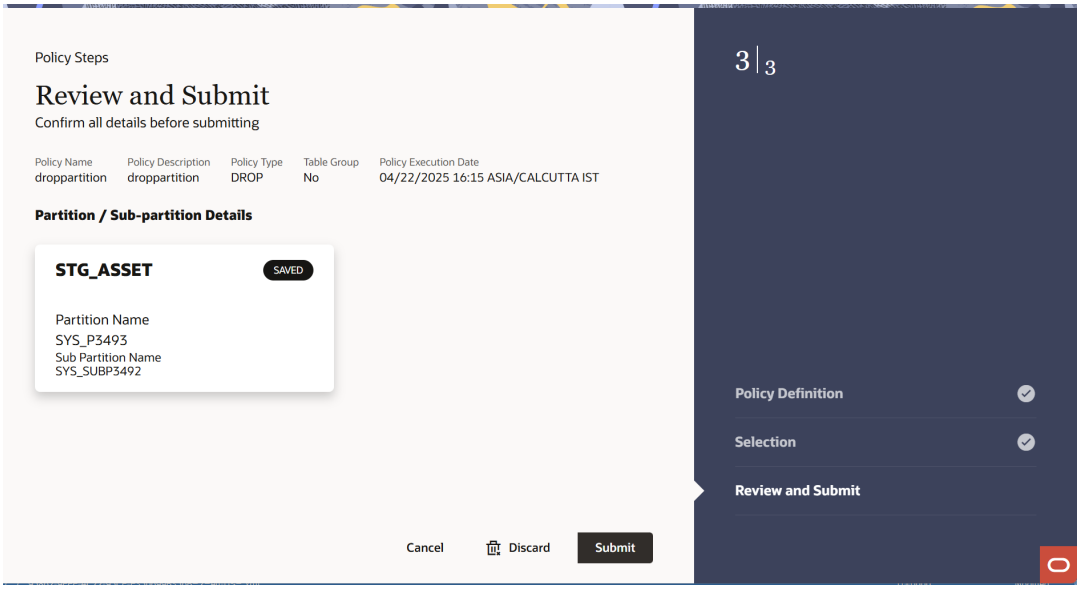
3. Click **Save**.
4. Click **Continue**.

Step 3: Preview and Submit section

1. Navigate to **Preview and Submit** section. Review the policy details.

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Figure 4-37 Preview and Submit section



2. Click **Submit** to create the policy. The created policy will be displayed on **Data Housekeeping Summary** page.

4.7.1.2 Create Archive Policy

This section provides the details on archiving the data from selected tables based on user defined criteria.

To create Archive Policy, follow these steps:

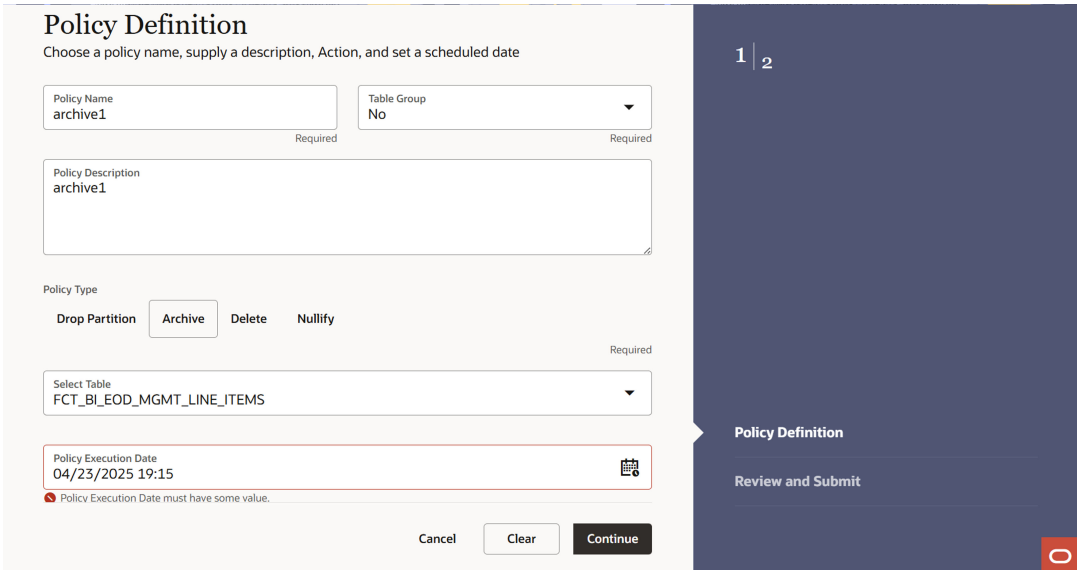
1. Navigate to **New Policy** page.
2. Follow the steps mentioned in below sections:
   a. **Step 1:** Policy Definition
   b. **Step 2:** Condition
   c. **Step 3:** Preview and Submit

Step 1: Policy Definition section

1. From **Policy Details** tab, click **Start**. The **Policy Definition** page is displayed.

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Figure 4-38 Policy Definition section



2. Enter the following details:
   - **Name:** Name of Policy
   - **Description:** Description of Policy
   - **Table Group:** If this option is selected as **No**, then you can select **Policy Type** as **Drop Partition**.
   - **Type:** Type of Policy as Archive
   - **Policy Execution Date:** Select the execution date and time of policy using calendar

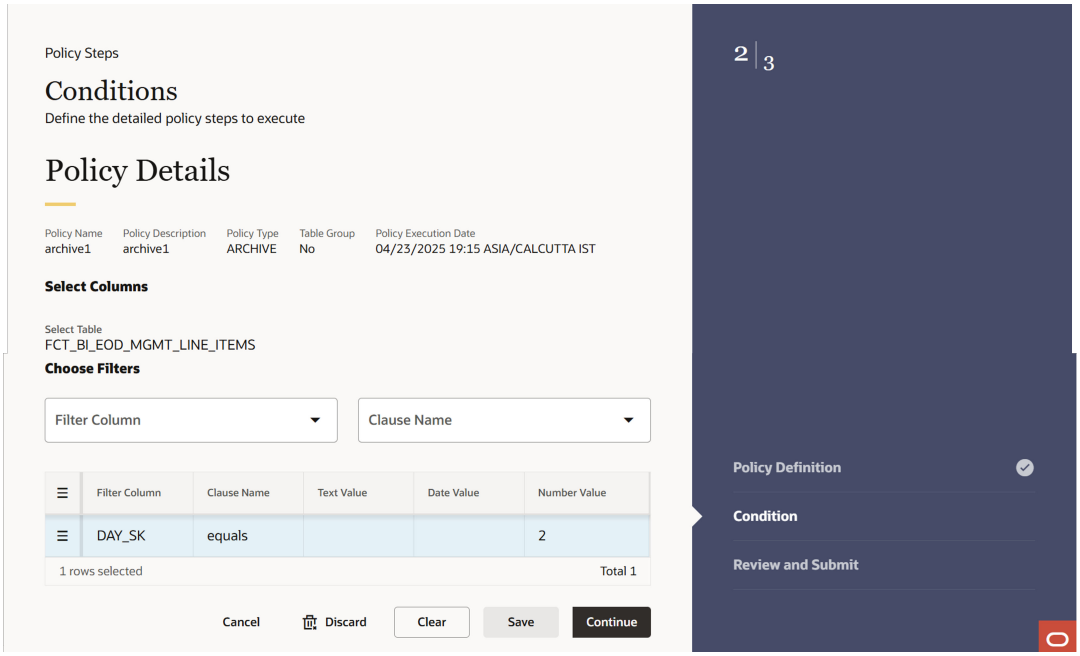
Step 3: Conditions

This section allows you to define the conditions(s) to archive the table.

1. Navigate to the **Conditions** section.

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Figure 4-39 Conditions section



2. Select the column(s) using **Filter Column**.
3. Select operator from **Clause Name** drop-down. The list of operators displays based on the selected Column Name.

> **Note**
>
> You must select at least one condition to avoid the full table archive. Use AND if you want to use multiple columns. You can select columns from pre-defined list. Don't use wild card characters. Supported operators are: >, <, <=, and =>.

4. Enter condition value for selected column.
   For example, If you have selected **Column** as **Account Number**, then select **Equals** operator from **Clause Name** drop-down, and enter alphanumeric value in **Value** field.

   Click **Row Actions** icon to view single row, add a new row, create duplicate row, delete row, refresh row, or revert changes.

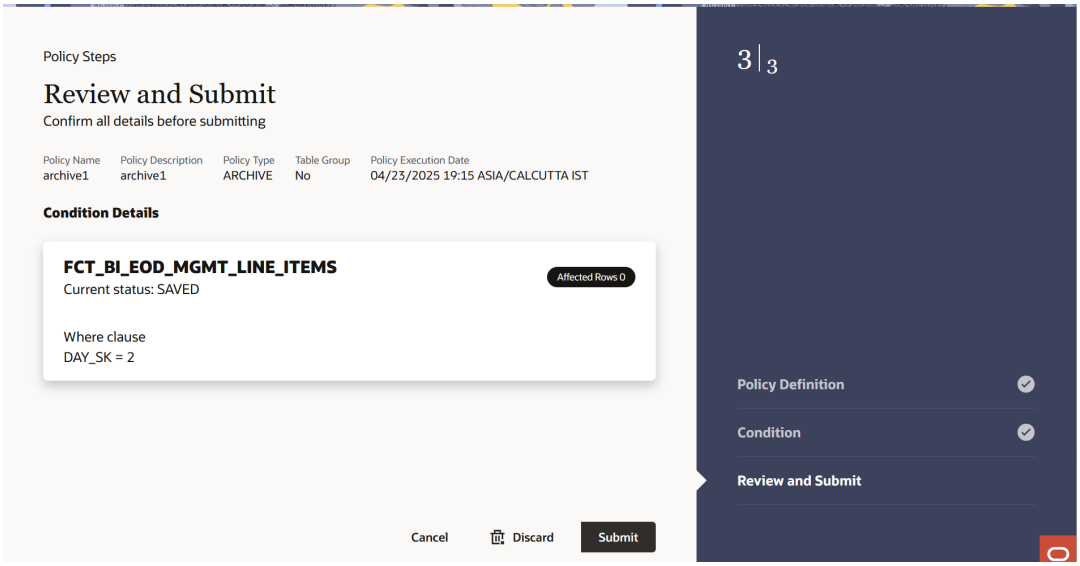
   To add more conditions, define the condition and click **Save**.
5. Click **Continue**.

Step 3: Preview and Submit section

1. Navigate to **Preview and Submit** section. Review the policy details.

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Figure 4-40 Preview and Submit section



2. Click **Submit** to create the policy. The created policy will be displayed on **Data Housekeeping Summary** page.

> **Note**
>
> Data that is archived remains in the same table but is invisible to user. Thus, they cannot be inserted back as it will violate unique constraint of concerned table.

4.7.1.3 Create Delete Policy

This section provides the details on deleting the data from selected tables based on user defined criteria.

To create Delete Policy, follow these steps:

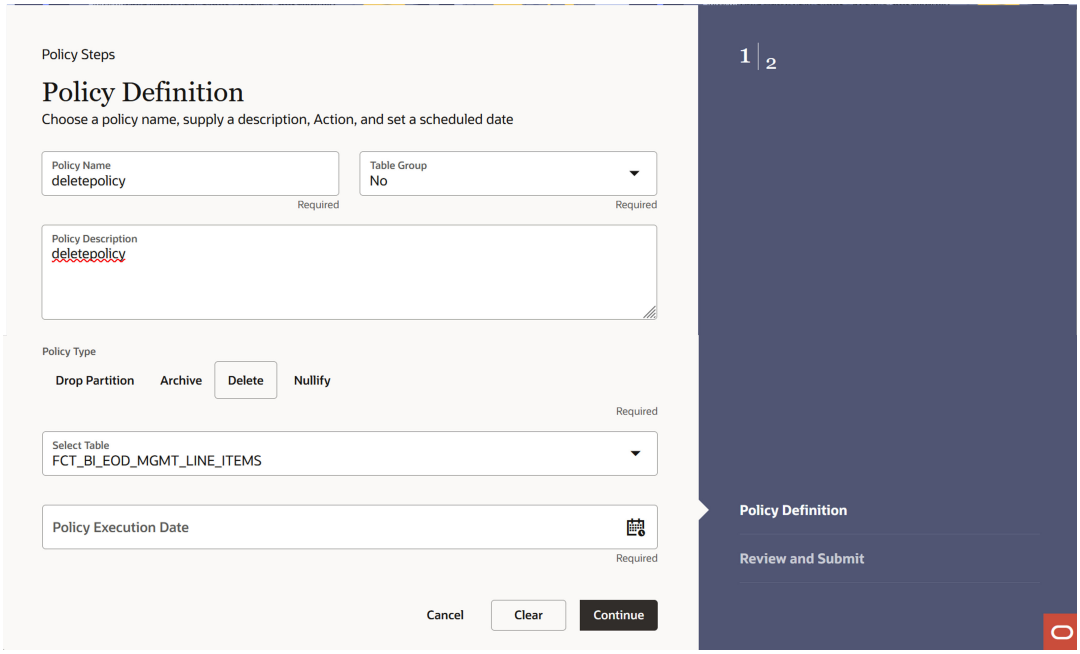
1. Navigate to **New Policy** page.
2. Follow the steps mentioned in below sections:
   a. **Step 1:** Policy Definition
   b. **Step 2:** Condition
   c. **Step 3:** Preview and Submit

Step 1: Policy Definition section

1. From **Policy Details** tab, click **Start**. The **Policy Definition** page is displayed.

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Figure 4-41 Policy Definition section



2. Enter the following details:
   - **Name:** Name of Policy
   - **Description:** Description of Policy
   - **Table Group:** If this option is selected as **No**, then you can select **Policy Type** as **Drop Partition**.
   - **Type:** Type of Policy as **Delete**
   - **Policy Execution Date:** Select the execution date and time of policy using calendar

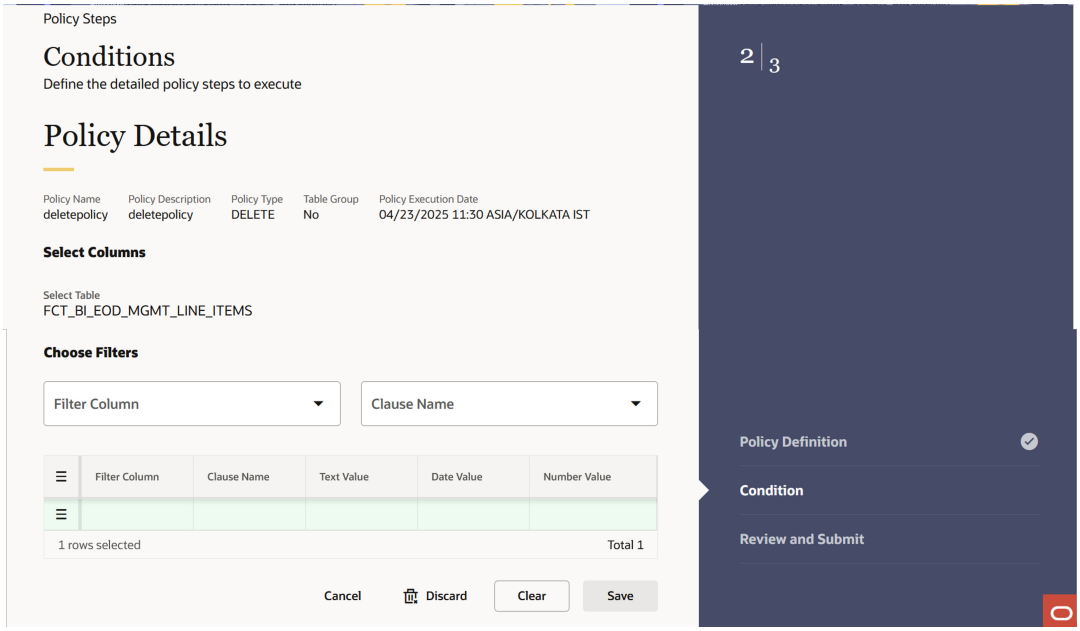
Step 2: Conditions

This section allows you to define the conditions(s) to Delete the table.

1. Navigate to the **Conditions** section.

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Figure 4-42 Conditions section



2. Select the column(s) using **Filter Column**.
3. Select operator from **Clause Name** drop-down. The list of operators displays based on the selected Column Name.

> **Note**
>
> You must select at least one condition to avoid the full table Delete. Use AND if you want to use multiple columns. You can select columns from pre-defined list. Don't use wlid card characters. Supported operators are: >, <, <=, and =>.

4. Enter condition value for selected column.
   For example, If you have selected **Column** as **Account Number**, then select **Equals** operator from **Clause Name** drop-down, and enter alphanumeric value in **Value** field.

   Click **Row Actions** icon to view single row, add a new row, create duplicate row, delete row, refresh row, or revert changes.

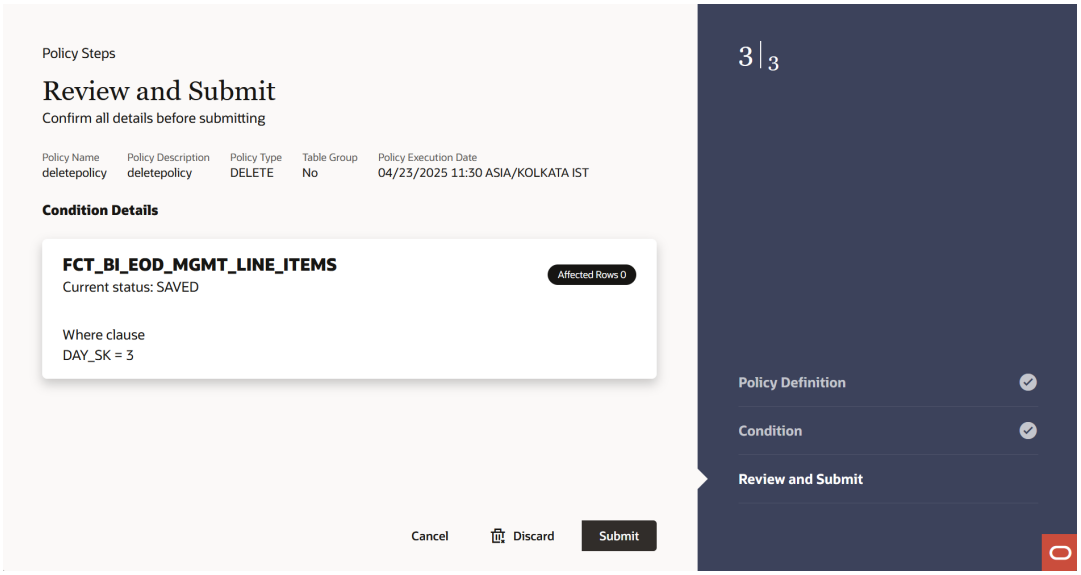
   To add more conditions, define the condition and click **Save**.
5. Click **Continue**.

Step 3: Preview and Submit section

1. Navigate to **Preview and Submit** section. Review the policy details.

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Figure 4-43 Preview and Submit section



2. For a Delete policy, the **Preview and Submit** screen displays the number of rows that will be affected (deleted) based on the conditions defined in Step 2, so you can verify the impact before submitting.
3. Click **Submit** to create the policy. The created policy will be displayed on **Data Housekeeping Summary** page.

4.7.1.4 Create Nullify Policy

This section provides the details on nullifying the column from selected tables based on user defined criteria.

To create Nullify Policy, follow these steps:

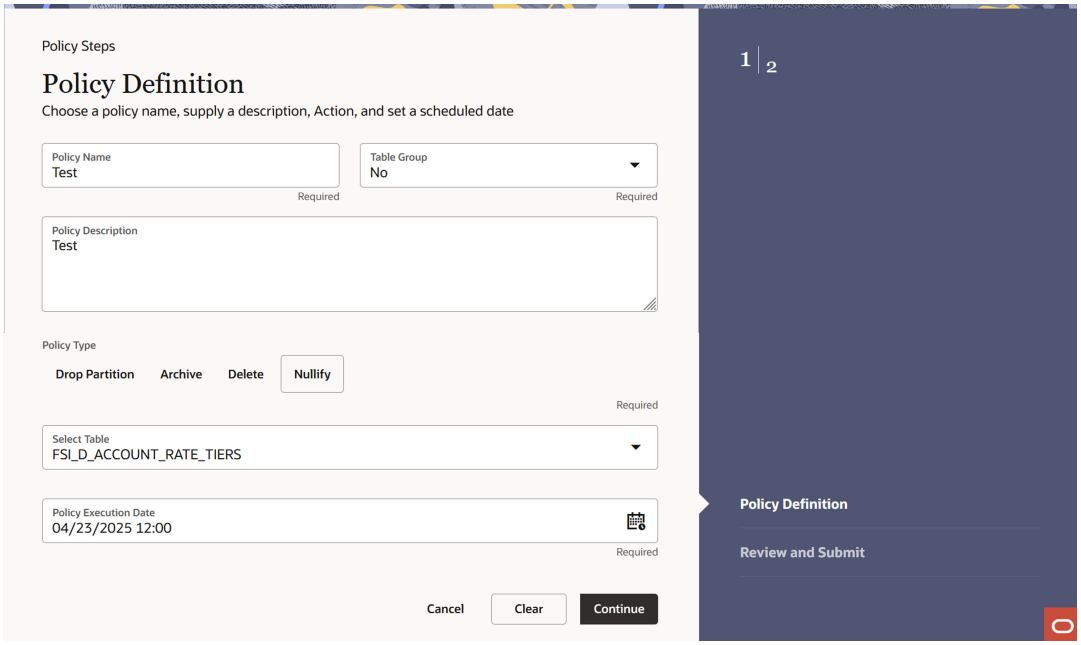
1. Navigate to **New Policy** page.
2. Follow the steps mentioned in below sections:
   a. **Step 1:** Policy Definition
   b. **Step 2:** Choose Columns
   c. **Step 3:** Condition
   d. **Step 4:** Preview and Submit

Step 1: Policy Definition section

1. From **Policy Details** tab, click **Start**. The **Policy Definition** page is displayed.

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Figure 4-44 Policy Definition section



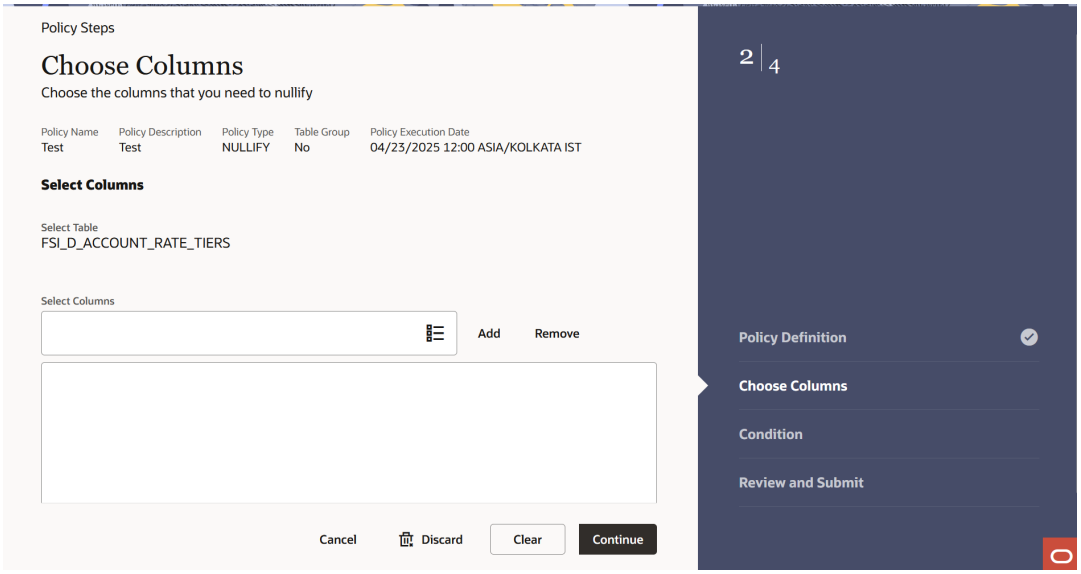
2. Enter the following details:
   - **Name:** Name of Policy
   - **Description:** Description of Policy
   - **Table Group:** If this option is selected as **No**, then you can select **Policy Type** as **Drop Partition**.
   - **Type:** Type of Policy as Nullify
   - **Policy Execution Date:** Select the execution date and time of policy using calendar

Step 2: Choose Columns section

1. Navigate to the **Choose Columns** section.

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Figure 4-45 Choose Columns



2. To select the columns which you want to nullify, click

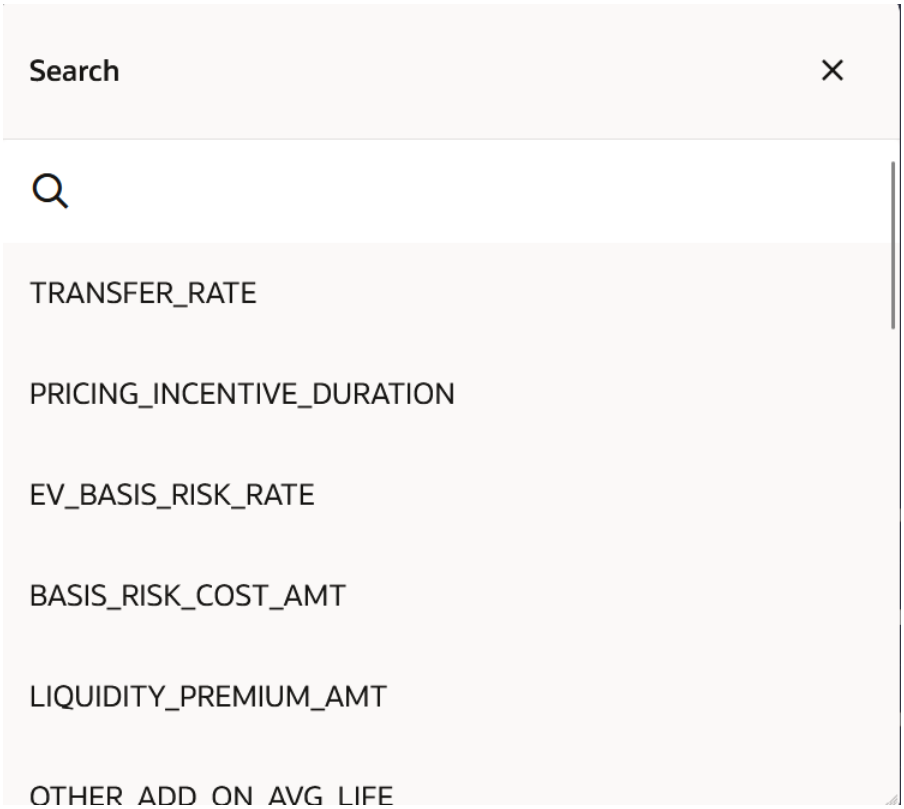
Figure 4-46 Search Columns



in Select Columns field. The Search window is displayed.

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Figure 4-47 Search Columns



3. Select columns and click **Add**.
4. Click **Continue**.

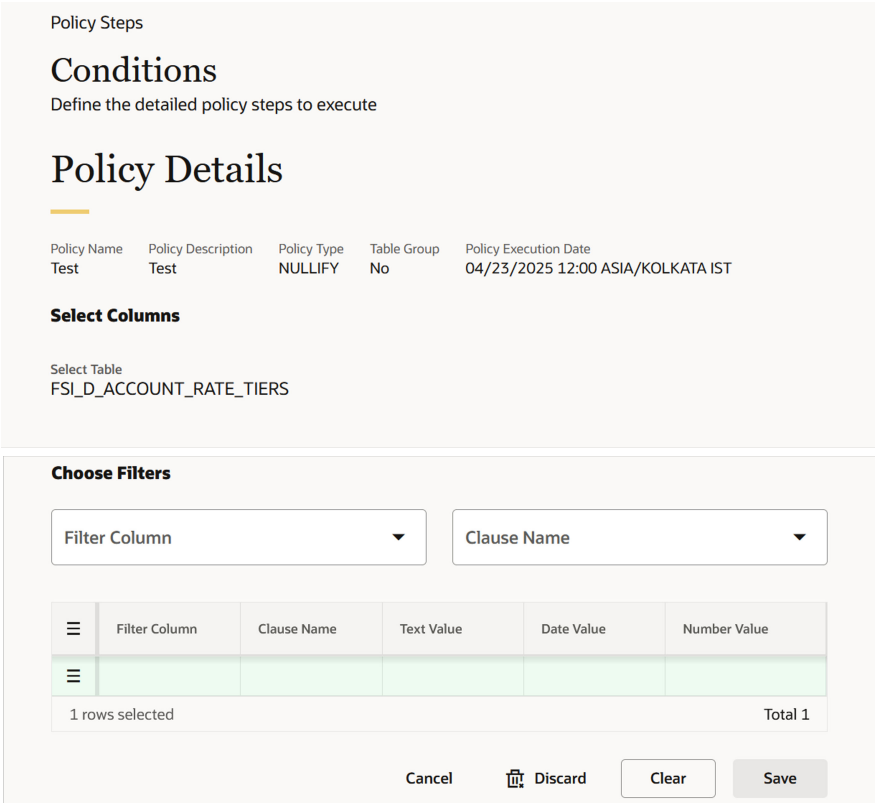
Step 3: Conditions

This section allows you to define the conditions(s) to archive the table.

1. Navigate to the **Conditions** section.

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Figure 4-48 Conditions section



2. Select the column(s) using **Filter Column**.
3. Select operator from **Clause Name** drop-down. The list of operators displays based on the selected Column Name.

> **Note**
>
> You must select at least one condition to avoid the full table archive. Use AND if you want to use multiple columns. You can select columns from pre-defined list. Don't use wild card characters. Supported operators are: >, <, <=, and =>.

4. Enter condition value for selected column.
   For example, If you have selected **Column** as **Account Number**, then select **Equals** operator from **Clause Name** drop-down, and enter alphanumeric value in **Value** field.

   Click **Row Actions** icon to view single row, add a new row, create duplicate row, delete row, refresh row, or revert changes.

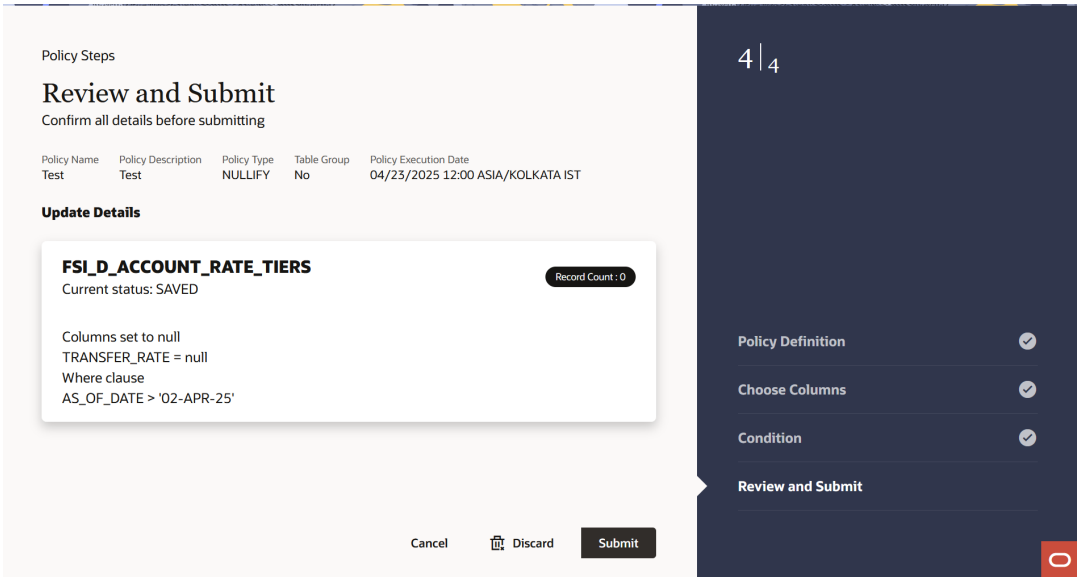
   To add more conditions, define the condition and click **Save**.
5. Click **Continue**.

Step 4: Preview and Submit section

1. Navigate to **Preview and Submit** section. Review the policy details.

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Figure 4-49 Preview and Submit section



2. Click **Submit** to create the policy. The created policy will be displayed on **Data Housekeeping Summary** page.

> **Note**
>
> Data that is archived remains in the same table but is invisible to user. Thus, they cannot be inserted back as it will violate unique constraint of concerned table.

4.7.2 Authorize a Policy

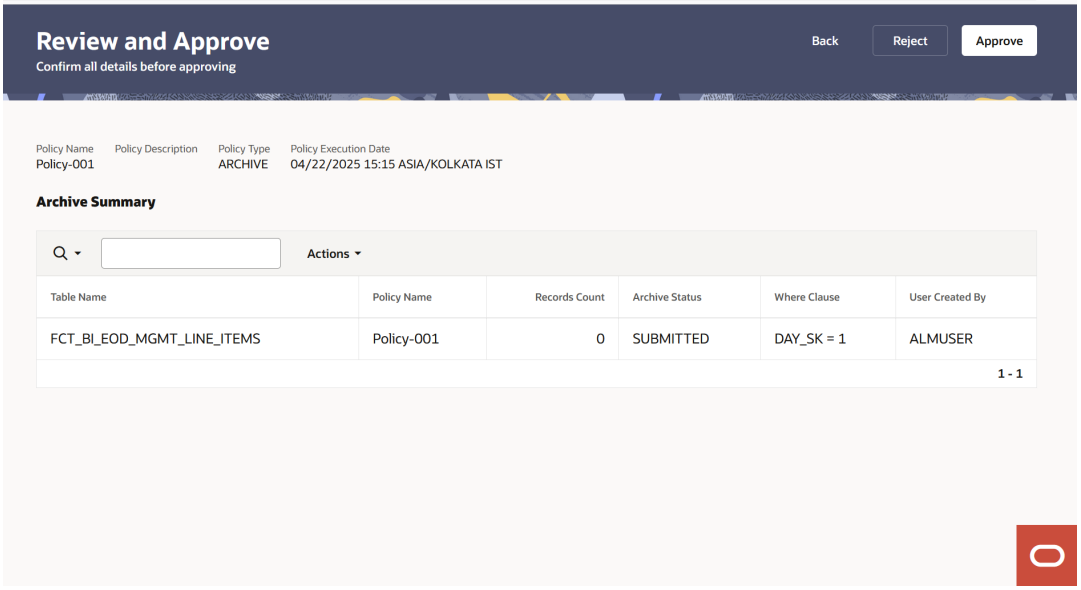
To authorize a policy, follow these steps:

Predefined Data Housekeeping Policy

1. Navigate to the **Data Housekeeping Summary** page
2. Search for a policy that you want to authorize. For further information, see the Data Housekeeping Summary section
3. Click on the **Action** icon against the policy name and select **Authorize**.

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Figure 4-50 Authorize Policy



4. Click **Approve**.
5. Enter Policy comments and click **OK**.

Figure 4-51 Policy Comments



Data Housekeeping policy gets executed on scheduled date and time after authorization. It runs automatically at the defined date and time which was set during the policy creation.

4.7.3 Withdraw a Policy

> **Note**
>
> Policies can be withdrawn if there is more than 15 minutes left in the scheduled time.

To withdraw a policy, follow these steps:

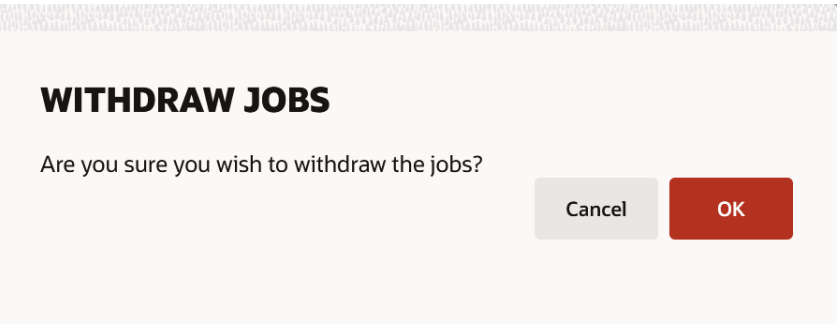
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Predefined and approved Data Housekeeping Policy

1. Navigate to the **Data Housekeeping Summary** page
2. Search for a policy that you want to authorize. For further information, see the Data Housekeeping Summary section
3. Click on the **Action** icon against the policy name and select **Withdraw Jobs**.

   A confirmation box is displayed. Click OK.

Figure 4-52 Withdraw Jobs



4.8 Balance Reconciliation

The Profitability and Balance Sheet Management Cloud Service's Balance Reconciliation module helps you to Reconcile the selected processing/instrument/account balances against the Management Ledger. If any differences are found, you will have the flexibility to choose significant differences and create plug entries for those in the Ledger_Instruments table.

> **Note**
>
> All General Ledger Accounts must mandatorily have a Reconciliation product mapped to them.

You can define the dummy attributes for the Product-Currency combinations, whichever General Ledger Account is used for Reconciliation. Default dummy attributes are auto populated based on the linked product ID and currency selected in Reconciliation dimensions.

Reconciliation is a three-step process.

- Reconciliation Definition and Default Attributes setup
- Reconciliation Report verification
- Plug entry creation and writing the Reconciliation differences back to Ledger Instruments table

To access the Balance Reconciliation module, from the LHS Menu, navigate to **Data Management Tools**, and select **Balance Reconciliation**.

The Balance Reconciliation landing screen displays the following two cards:

- Reconciliation Definition
- Default Attributes

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> **Note**
>
> 1. Ledger Balances with Balance Type CD as only 0, will be considered for reconciliation.
> 2. Balance Sheet category will be derived based on Common COA linked as attribute with selected GL account, which subsequently has Account Type defined as attribute of the concerned Common COA.
> 3. Reconciliation Product must be defined as attribute of GL accounts which participate in reconciliation, so system can pick account attributes for the plug entry creation.

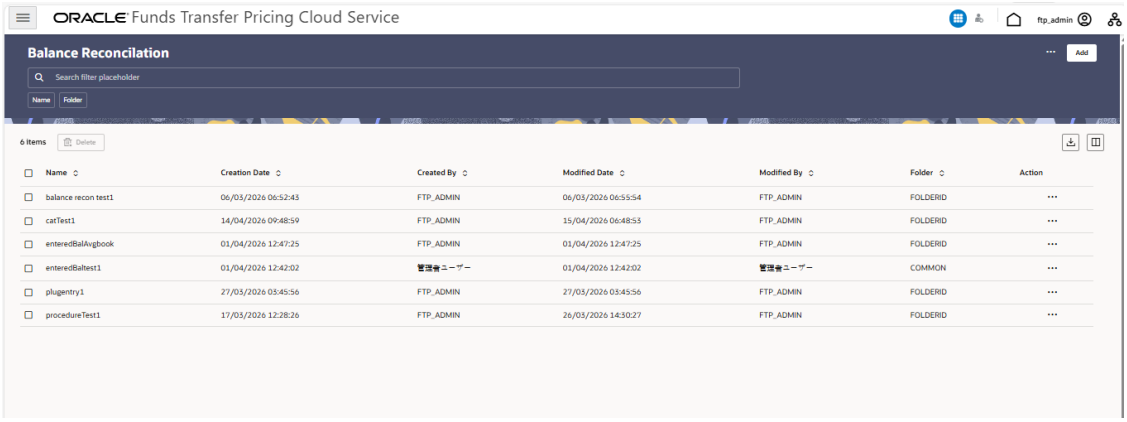
- Reconciliation Definition
  The Reconciliation Definition summary screen allows you to search for any definitions from the displayed list.
- Default Attributes
  The following is the Default Attribute Summary screen, where you can find all the default attributes defined for various Product-Currency combinations.
- Reconciliation using Batch Process
  You can perform Reconciliation using the Scheduler Services. The steps below use the GL RECON component, which does not require a Service URL selection.

4.8.1 Reconciliation Definition

The Reconciliation Definition summary screen allows you to search for any definitions from the displayed list.

The Balance Reconciliation Summary Screen is as follows:

Figure 4-53 Balance Reconciliation Summary Screen



This screen displays the following definition attributes for easy identification:

- Name
- Creation Date
- Created By

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- Modified Date
- Modified By
- Folder
- Action menu (ellipsis icon) for additional operations such as View/Edit, Delete, and other options
- Adding a New Reconciliation Definition
  The Create Reconciliation screen allows you to define a new Reconciliation Definition.
- Reconciliation Balance
- Actions Performed on Reconciliation Definition
  To delete one or multiple Reconciliation Definitions, you can select the checkboxes against each one of them and press the **Delete** button.

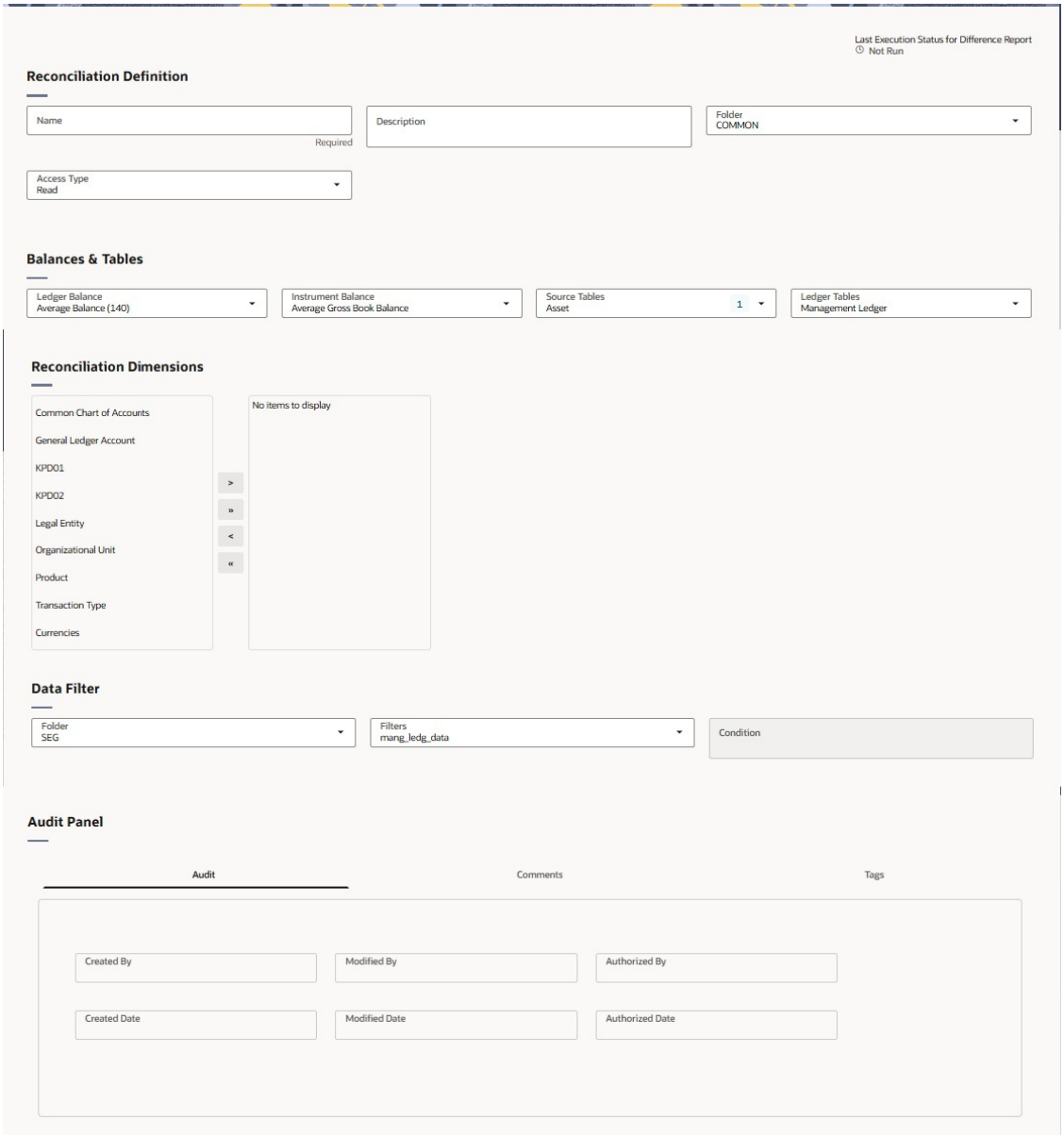
4.8.1.1 Adding a New Reconciliation Definition

The Create Reconciliation screen allows you to define a new Reconciliation Definition.

To add a new Reconciliation Definition, click the **Add** button on the summary screen.

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Figure 4-54 Create Reconciliation Definition Screen



Reconciliation Definition setup allows you to select the Ledger Balance financial element, Instrument Balance measure, source table, ledger table, and reconciliation dimensions used for the reconciliation.

In the **Balances & Tables** section, select the required values in the following fields:

- Ledger Balance: Select the Management Ledger financial element to be reconciled. The list includes Average Balance (140), Ending Balance (100), and other configured leaf-level financial elements, such as accrued-interest and accumulated-balance elements.
- Instrument Balance: Select the instrument balance measure to compare with the selected ledger balance. Available options are Average Gross Book Balance, Current Par Balance, Current Gross Book Balance, Original Gross Book Balance, Original Par Balance, and activated placeholder balance columns.
- Source Tables: Select the instrument source table, such as Asset.

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- Ledger Tables: Select the ledger table used for reconciliation along with the seeded management ledger; activated placeholder management ledgers are also available for selection.

For the selected source table, choose the reconciliation key dimensions. For example, you can reconcile by General Ledger Account ID and Currency, or at a more granular level by including Organization Unit and Legal Entity.

While selecting reconciliation key dimensions, you have the option to choose from activated placeholder dimensions as well along with seeded key dimensions.

Similarly, there is a seeded Management Ledger table, which is used by default for balance reconciliation against the selected portfolio of accounts. In the current user interface, only Management Ledger is available for selection in the Ledger Tables field.

Users can select the required additional ledger table during Balance Reconciliation setup and use it as part of the reconciliation process.

> **Note**
>
> The **Ledger Tables** field displays **Management Ledger** via DME as the available ledger option.

Use the Data Filter section to restrict the portfolio records included in the Balance Reconciliation definition.

- In the **Folder** field, select the folder that contains the required saved filter. For example, select Common.
- In the **Filters** field, select the required portfolio filter. For example, select Data Filter 01.
- The **Condition** field displays the condition defined for the selected filter.

4.8.1.2 Reconciliation Balance

Balance Reconciliation compares the balance selected in Ledger Balance with the balance selected in Instrument Balance.

In Ledger Balance, select the applicable Management Ledger financial element. For example, select Ending Balance (100) to reconcile ending balances or Average Balance (140) to reconcile average balances. Additional configured financial elements can also be selected where applicable.

In Instrument Balance, select the balance measure that corresponds to the reconciliation requirement:

- Average Gross Book Balance
- Current Par Balance
- Current Gross Book Balance
- Original Gross Book Balance
- Original Par Balance

Reconciliation is performed for the selected combination of ledger balance, instrument balance, source table, ledger table, data filter, and reconciliation dimensions.

The system uses the entered balance when Currency is included as a reconciliation dimension. When Currency is not selected, the system uses the functional balance.

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At run time, select **Include GL Only Balances** if balances that are available only at the ledger level also need to be reconciled. When selected, the system includes GL-only balances while reconciling ledger balances against instrument balances.

At run time, select the As-of-Date for which Balance Reconciliation must be performed.

4.8.1.3 Actions Performed on Reconciliation Definition

To delete one or multiple Reconciliation Definitions, you can select the checkboxes against each one of them and press the **Delete** button.

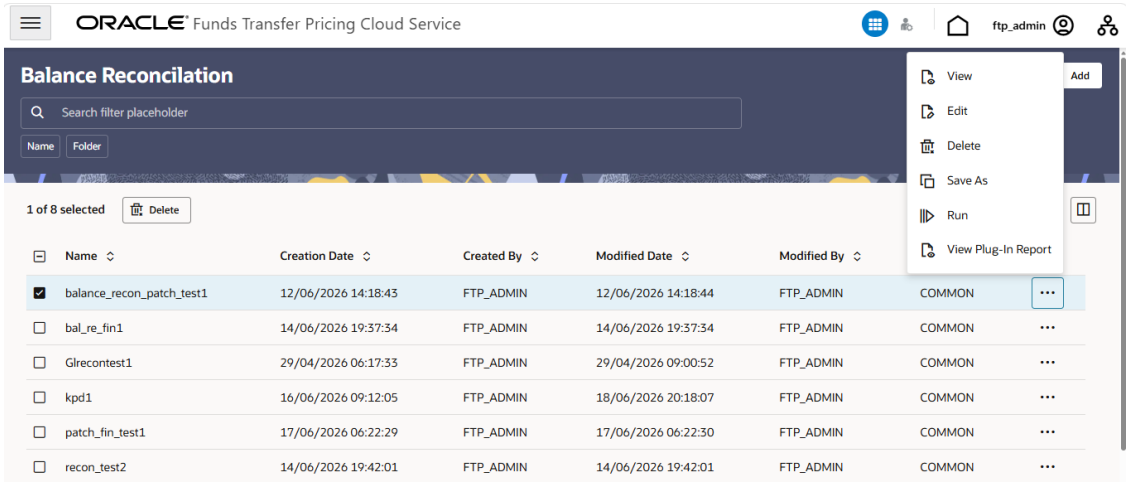
A confirmation message will let you confirm and delete selected definitions.

You can also perform search based on following fields:

- Name
- Reconciliation Dimensions
- Source tables against which reconciliation is performed
- Folder where the reconciliation definition is stored

The following screen display the **Actions** menu from which the different actions that you can perform on existing Reconciliation Definitions.

Figure 4-55 Actions Icon and Different Actions



The following are the actions:

- **View**: Click this action button and view the definition in read only format.
- **Edit**: Click this action button and edit the definition.
- **Delete**: Click this action to delete the selected definition.
- **Save As**: Click this action to create a new definition by copying the selected definition.
- **Run**: Click this action to execute the reconciliation based on the selected parameters. As-of-Date is a run time parameter, you can choose for which date reconciliation needs to be performed.
- **View Plug-In-Report**: Click this action to view the generated Reconciliation Report for the selected run.

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- **Execution Details**: Click this action to view all the runs for a selected definition, along with the user information of who triggered the execution.
  The **View Plug-In-Report** option displays the generated Plug-In-Report for the selected reconciliation run.

  When you open a reconciliation definition in edit mode, the More menu displays the following additional options:

  – **Run:** Click this option to run the reconciliation definition.

  – **View Logs:** Click this option to view the execution logs for the reconciliation difference report.

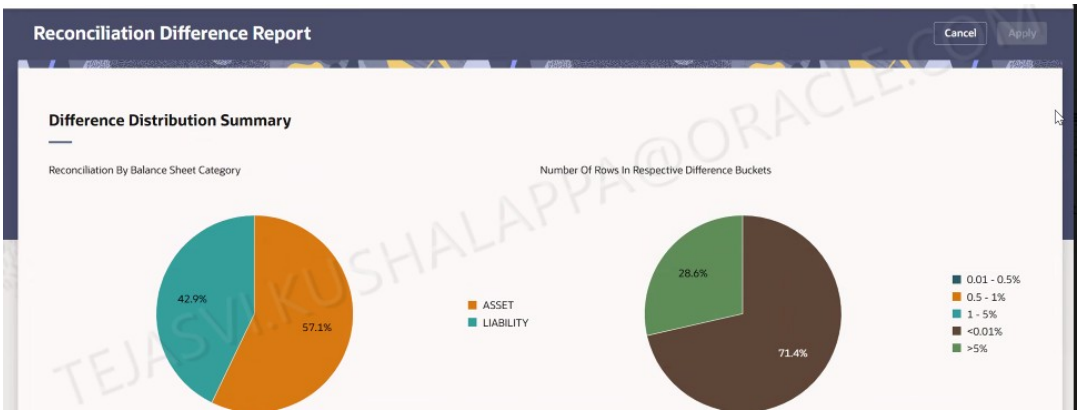
  – **View Difference Report:** Click this option to view the reconciliation difference report generated for the selected run.

  The reconciliation definition screen displays the **Last Execution Status for Difference Report**. This status indicates the latest execution result for the difference report, including whether the execution completed successfully and the date and time of completion.

  After clicking Process, the **Reconciliation Difference Report** is generated. You can also access the generated report using the **View Difference Report** option available from the **More** menu on the reconciliation definition screen.

> **Note**
>
> In the **View Difference Report** screen, placeholder dimension columns are visible along with the selected reconciliation dimensions. These columns are displayed in the report output to support reconciliation analysis across activated placeholder dimensions.

Figure 4-56 Reconciliation Difference Report



The detailed report is displayed as follows, where you can filter out insignificant difference using ‘Threshold Percentage’, also threshold can be applied at each row level or for whole Balance Sheet category level. If threshold is applied at Balance Sheet category level, all the rows that belong to the Balance Sheet category which is less than given percentage will be hidden from the Reconciliation Difference Report. A download button allows you to download the Reconciliation Report.

You can select **Filter at Category Level** toggle switch to apply threshold at ‘consolidated difference reports’, which is at balance sheet category level OR can directly apply the

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threshold to each difference row, which is available at the unique combination of selected key dimensions.

You can select the **ID / Code** toggle switch to see the CD data. By default, the toggle switch displays the ID data.

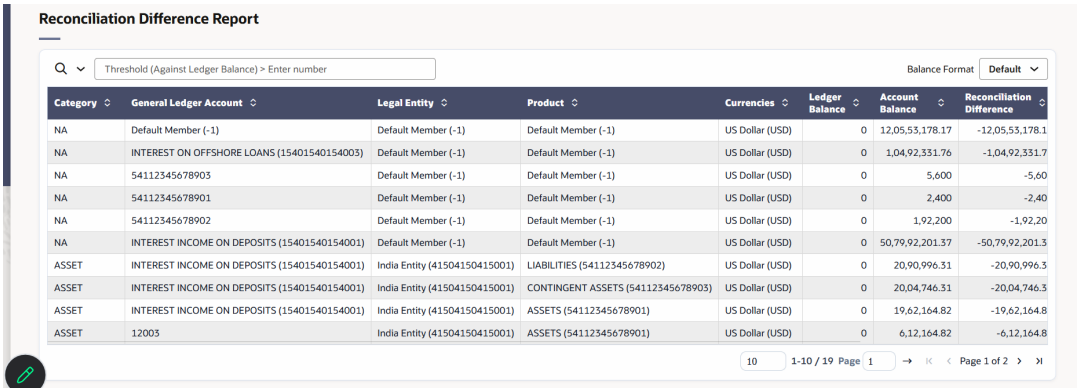
The reconciliation difference grid supports sorting and pagination.

- Sorting: Click a column header to sort the report by that column. Sorting is available for columns such as Category, Common Chart of Accounts, General Ledger Account, Ledger Balance, Account Balance, Reconciliation Difference, and percentage-difference values. The sort indicator in the column header shows the active sort direction.
- Pagination: Use the pagination controls at the bottom of the grid to view report records page by page. Select the required page size, enter or select a page number, or use the First, Previous, Next, and Last page controls to navigate through the report. The grid also displays the range of rows currently shown and the total number of rows.

You can also change the unit of balance to thousands or millions.

You can see difference in both percentage and absolute format.

Figure 4-57 Differences in Percentage and Absolute Formats



The **Apply** button is disabled. When the button is disabled, plug entries cannot be created from the Difference Report. Use Cancel to close the report without creating plug entries.

> **Note**
>
> Plug entries can only be created through batch processing. Use the Difference Report UI only to review and verify unaccounted balances; plug entries cannot be created from this UI.

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Figure 4-58 Differences in Percentage and Absolute Formats

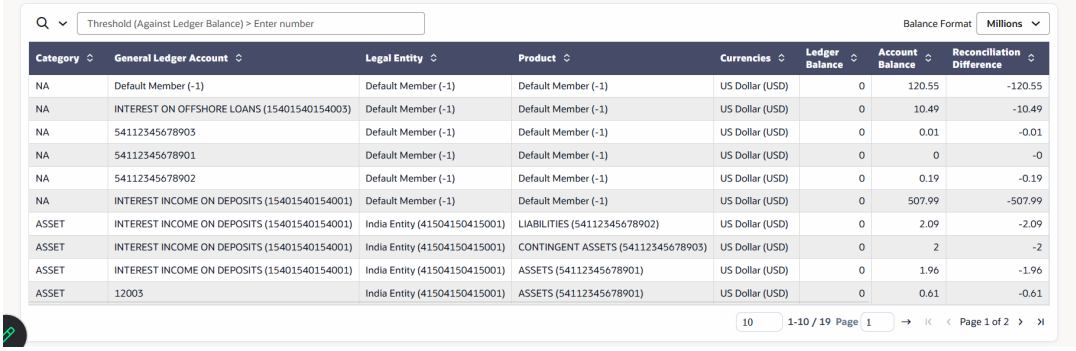
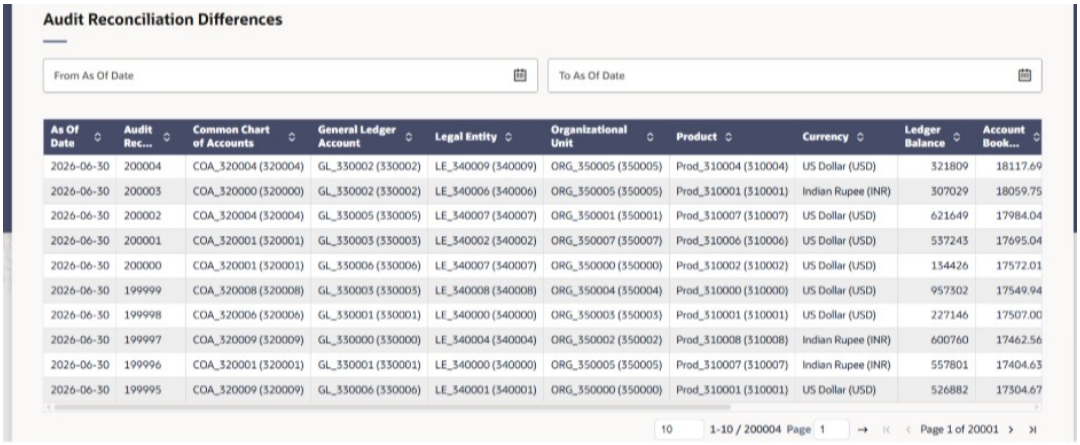


Figure 4-59 Plug Entires



Viewing the Plug-in Report

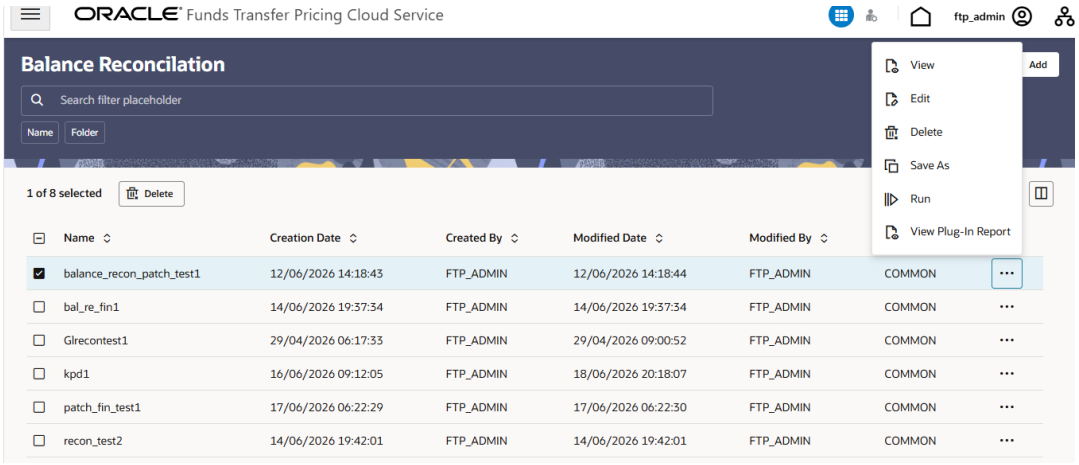
After the Balance Reconciliation run is completed, users can view the generated report from the action menu.

To view the report:

1. Navigate to the Balance Reconciliation Summary screen.
2. Select the completed Balance Reconciliation definition or run for which you want to view the report.
3. Click the **Action** menu icon for the selected row.
4. Select **View Plug-In Report**.

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Figure 4-60 View Plug-In Report



The **GL Recon Audit** page is displayed.

5. Enter or select the required **From As Of Date** and **To As Of Date**.
6. Click **Apply**.
   The report displays the audit reconciliation differences for the selected period, including details such as As Of Date, Common Chart of Accounts, General Ledger Account, Ledger Balance, Account Book Balance, Account Par Balance, Reconciliation Difference, and percentage difference values.

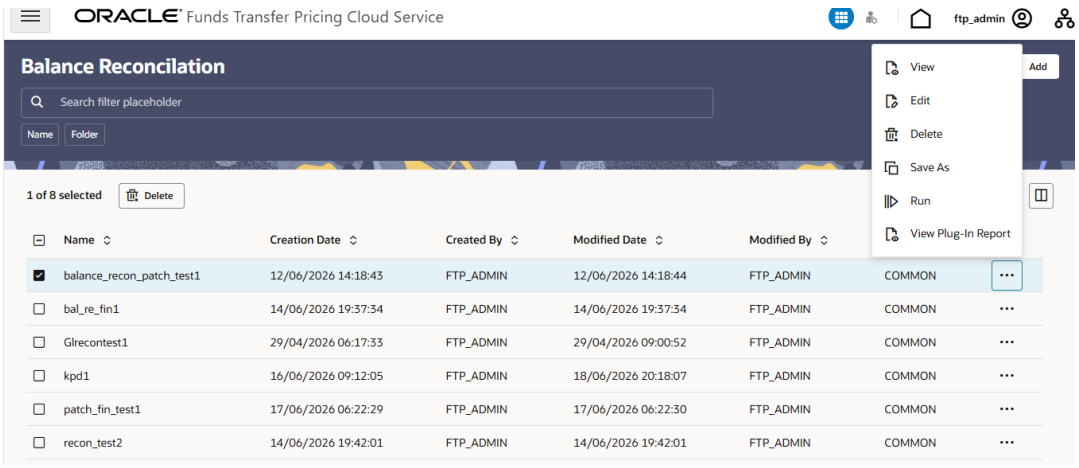
Running a Balance Reconciliation Definition

Use the Run option to execute a Balance Reconciliation definition.

To run a Balance Reconciliation definition:

1. Navigate to the Balance Reconciliation Summary screen.
2. Select the completed Balance Reconciliation definition or run for which you want to view the report.
3. Click the **Action** menu icon for the selected row.
4. Select **Run**.

Figure 4-61 Run Option



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A confirmation message is displayed: **You are about to submit FTP job for processing. Do you want to continue?**

5. Click **Yes** to continue.
6. In the Execute panel, select the **Effective Date**.
7. Click **Run**.
   The Balance Reconciliation process is submitted for execution. After submission, the reconciliation definition page displays the Last Execution Status for Difference Report. The status changes to In Progress while the process is running.
8. After the run is completed, the **Run Completed** popup is displayed with the message: **GL reconciliation completed successfully. Do you want to view the Difference Report?**
9. Click **View Difference Report** to open the generated reconciliation difference report.
10. To remain on the current page without opening the report, click **Stay**.

Viewing or Editing a Balance Reconciliation Definition

From the Balance Reconciliation summary screen, users can open an existing reconciliation definition in view or edit mode.

To view or edit a Balance Reconciliation definition:

1. Navigate to the Balance Reconciliation summary screen.
2. Locate the required reconciliation definition.
3. Click the **Action** menu icon for the selected row.
4. Select **View** to open the definition in read-only mode, or select **Edit** to modify the definition.
   The definition screen displays the reconciliation setup details, including the definition name, description, folder, access type, balances, tables, and selected reconciliation configuration.

Actions Available from the Definition Screen

From the definition screen, users can open the More Options menu and perform the following actions:

- **Run:** Executes the Balance Reconciliation definition.
- **View Logs:** Opens the Logviewer Service page for the latest execution.
- **View Difference Report:** Opens the generated reconciliation difference report.
- **Cancel:** Closes the menu without performing an action.

Viewing Logs from the Execution Status

Users can also open the log details directly from the execution status.

To view logs from the status indicator:

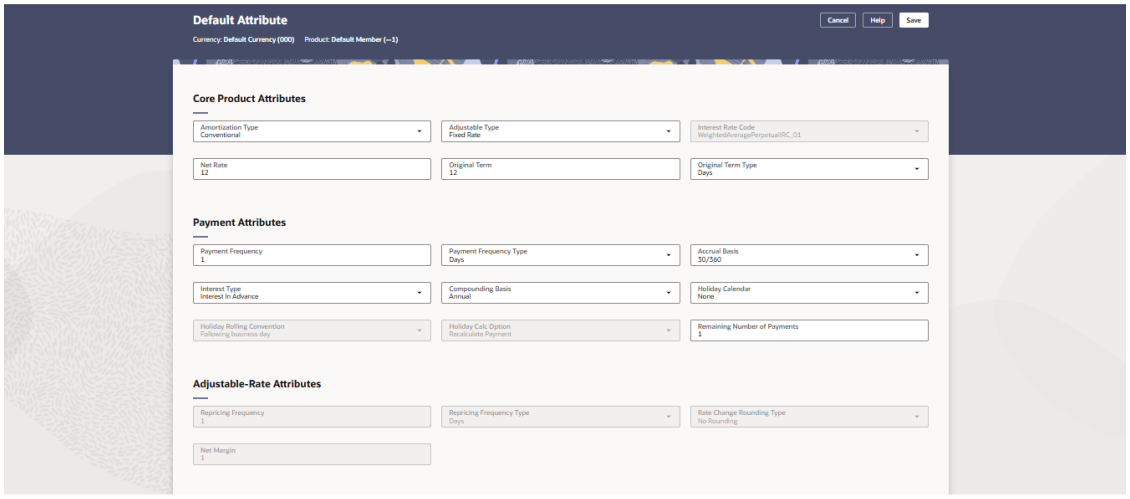
1. Open the Balance Reconciliation definition in view or edit mode.
2. Do either of the following:
   - Go to Last Execution Status for Difference Report and click the green tick icon next to Completed Successfully.
   - Click **View Logs**.
     The **Logviewer Service** page is displayed. This page shows the batch run ID, process ID, log statistics, severity counts, timestamps, and execution messages for the selected Balance Reconciliation run.

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4.8.2 Default Attributes

The following is the Default Attribute Summary screen, where you can find all the default attributes defined for various Product-Currency combinations.

Figure 4-62 The Default Attributes Summary screen



This screen includes the following sections:

- Core Product Attributes:
  - Amortization Type
  - Adjustable Type

> **Note**
>
> In the **Adjustable Type** drop-down, if you select an option other than Fixed Rate, the following fields are enabled:
>
> * Interest Rate Code
> * Adjustable-Rate Attributes:
>   * Repricing Frequency
>   * Repricing Frequency Type
>   * Rate Change Rounding Type
>   * Net Margin

  - Interest Rate Code
  - Net Rate
  - Original Term
  - Original Term Type

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- Payment Attributes:
  - Payment Frequency
  - Payment Frequency Type
  - Accrual Basis
  - Interest Type
  - Compounding Basis
  - Holiday Calendar
  - Holiday Rolling Convention
  - Holiday Calc Option
  - Remaining Number of Payments

> **Note**
>
> In the **Holiday Calendar** drop-down, if you select an option other than **None**, the following fields are enabled:
>
> - Holiday Rolling Convention
> - Holiday Calc Option

- Adjustable-Rate Attributes:
  - Repricing Frequency
  - Repricing Frequency Type
  - Rate Change Rounding Type
  - Net Margin

Click **Save** to save changes or **Cancel** to discard updates.

4.8.3 Reconciliation using Batch Process

You can perform Reconciliation using the Scheduler Services. The steps below use the GL RECON component, which does not require a Service URL selection.

To run the Reconciliation using Batch Process, follow these steps:

1. With the Define Batch feature, it is possible to create new batches and review existing ones. Navigate to the Scheduler Service and click **Define Batch**.
2. Click **+** to create a new batch.
3. In the **Create Batch** screen, enter the following values:
   a. Code (spaces are not allowed in the code section).
   b. Batch Name
   c. Click **Save**.

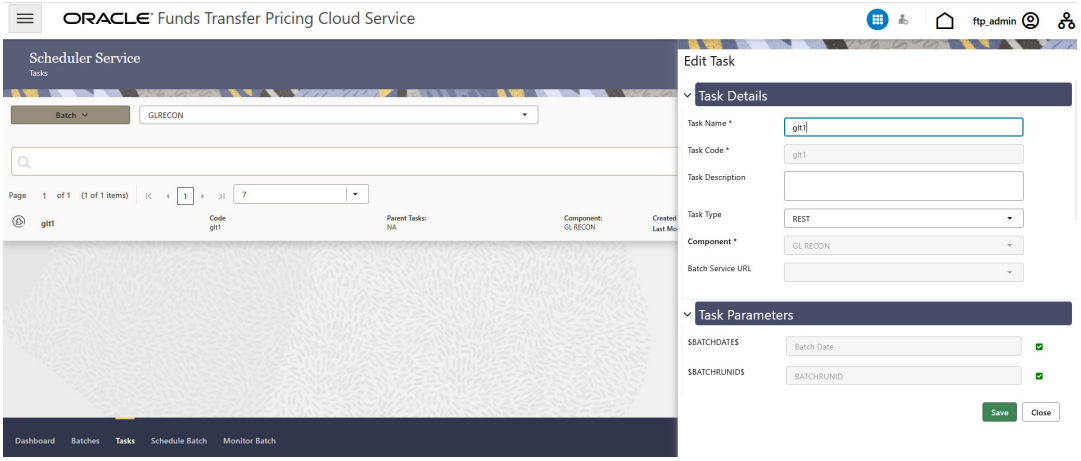
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> **Note**
>
> The **Service Url Name** field in the **Create Batch** screen does not require a selection when using the GL RECON component. Leave it blank.

4. In the **Define Task** screen, you can define the tasks related to a specific batch.
   a. Navigate to **Define Task**.
   b. Select the name of the batch that has been created for this task.
5. Click **+** to create a new task.
6. In the **Create Task** screen, enter the following values:
   a. Task Code (Spaces are not allowed in the code section). b.
   b. Task Name.
   c. Select the task type as **REST**.
   d. Select the Component as **GL RECON**.
   e. Click **Save**.

> **Note**
>
> When the **GL RECON** component is selected, the **Batch Service URL** field is not displayed and does not require configuration.

Figure 4-63 Define Task



7. In the **Task Parameter** section, enter the following values:
   a. **Process Name** — Select the Reconciliation Definition for which the batch should be executed. Ensure you select the correct definition to avoid errors in the batch process.
   b. **Threshold** — Enter a numeric threshold value.

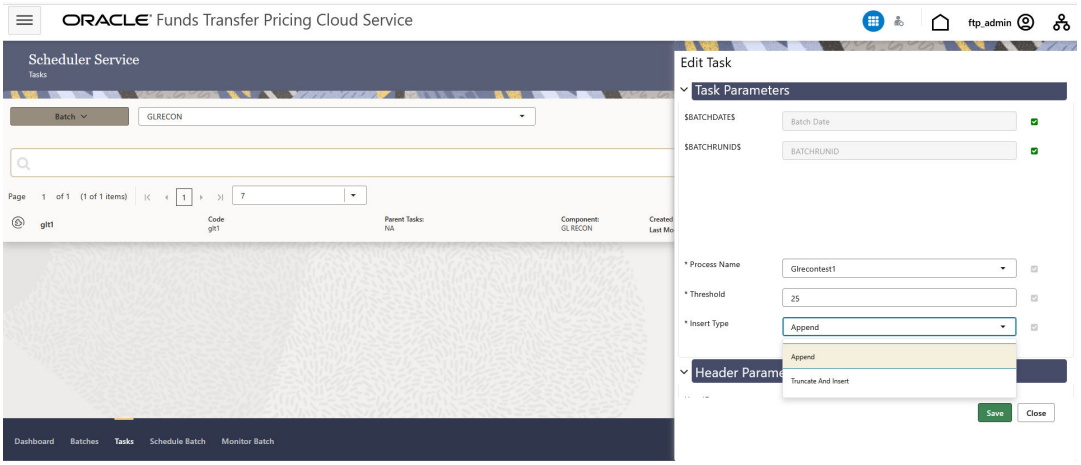
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> **Note**
>
> The value must be greater than or equal to zero (0). Negative values are not supported. A null (blank) value is also accepted, in which case all data will be inserted into the Ledger Instrument and Reconciliation Difference Audit tables.

c. **Insert Type** — Select one of the following options from the dropdown:

- **Insert only** — Appends reconciliation data on top of any existing data for the concerned AS_OF_DATE/MIS_DATE. Use this option when different Reconciliation Definitions are being executed for different instrument tables.
- **Truncate And Insert** — Truncates all existing data for the concerned AS_OF_DATE/MIS_DATE and inserts fresh reconciliation data. Use this option when intermediate day runs have taken place and a final global run is required.

Figure 4-64 Task Parameter



8. Schedule the batch using the **Schedule Batch** screen.
   a. Navigate to **Schedule Batch**.
   b. Select the **Name** of the batch created in Step 1.
   c. Use the **Edit Parameters** option to review the batch parameters and make any necessary adjustments before execution.
   d. Verify the following before executing:
      - **MIS Date** — The MIS Date is used as the As-of-Date in the Reconciliation UI. Select the appropriate MIS Date.
      - Confirm that the **Process Name** and **Threshold** values entered in Step 7 are correct for the target environment.
   e. Click **Execute** to run the batch, or click Save to save the batch definition without running it.
      - Clicking **Save** saves the batch definition without executing the batch.
      - Clicking **Execute** submits the batch for execution. An Execute Status dialog is displayed confirming the batch has been submitted.
9. Monitor the Batch:

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a. Navigate to **Monitor Batch**.

b. Select the batch name and MIS Date, then check the Batch Status.

c. After the batch completes successfully, navigate to the Balance Reconciliation module to verify the results in the GL Recon Audit report.

Sometimes a batch may fail. The reason for batch failure could be one of the following:

- Selecting an incorrect or invalid **Process Name** (Reconciliation Definition).
- Entering an invalid Threshold value. Only null or a value ≥ 0 are supported. Negative values are not permitted.
- Not selecting an **Insert Type** — this field is mandatory.

> **Note**
>
> The following role mappings to the SKU User group must be present to enable GL RECON listing and execution:
>
> - RCMDREAD
> - RCMDADVND

For detailed instructions for defining, executing, and monitoring a Batch, see the Scheduler Service documentation.

4.9 Datasets

The Dataset UI enables an Admin to specify the selection of tables and columns.

Datasets Summary

This page is the gateway to all Dataet Rules and related functionality. You can navigate to other pages relating to Dataset Rules from this point.

Search Dataset

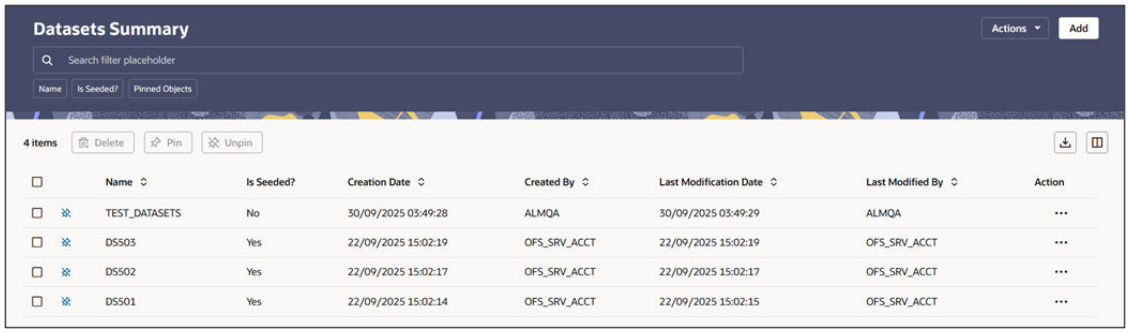
Prerequisites: Predefined Dataset

To search for a Dataset:

- Enter the **Dataset Name, Is Seeded,** or **Pinned Objects** in Search Criteria and click **Search icon**.
- Rows that contain the string you are searching for are fetched and displayed in the Datasets Summary.

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Figure 4-65 Datasets Summary



The Datasets Summary displays the following information:

Add: Click the Add button on the page header to build a new dataset rule.

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Datasets summary table displays the following columns:

- **Name**: The dataset name.
- **Is Seeded**?: Shows Yes if the Dataset is seeded.
- **Created Date:** The Date and Time when the dataset was created.
- **Created By:** Displays the Name of the user who created the dataset.
- **Last Modified By:** Displays the Name of the user who last modified the dataset.
- **Last Modification Date:** The Date and Time when the dataset was last modified.
- **Actions:** Click this icon to view a list of actions that you can perform on the dataset.
  - **View:** View existing dataset Rule.
  - **Edit:** Edit existing dataset Rule. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a dataset rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete datasets that you no longer require. Note that only dataset Rule owners and those with Read/Write privileges can delete rules. A dataset Rule that has a dependency cannot be deleted. A dataset Rule cannot be retrieved after deletion.
  - **Dependency Check Information:** You can check dependencies for rules to know where a particular dataset Rule has been used. This also prevents accidental deletion

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of rules having dependencies. Click on the **Action** icon against the dataset Rule Name and select Dependency Check to generate a report on all Rules that utilize your selected dataset Rule.

- List of Seeded Datasets
- Creating a Dataset

4.9.1 List of Seeded Datasets

Below is the list of seeded datasets:

Management Ledger Extract Dataset

TP Rate Extract Liability Instrument Dataset

TP Rate Extract Asset Instrument Dataset

FTP Output Extract Liability Instruments Dataset

FTP Output Extract Asset Instrument Dataset

Off Balance Sheet Instruments Dataset

Loan Commitments Instruments Dataset

Liability Instruments Dataset

Ledger Instruments Dataset

Fee Based Instruments Dataset

Derivative Instruments Dataset

Asset Instruments Dataset

4.9.2 Creating a Dataset

To create a dataset, follow these steps:

1. Navigate to **Datasets Summary** page.
2. Click the **Add** button. The **Dataset** window is displayed.
3. Enter the following dataset details in the **Basic Information** section:
   - **Name:** Enter unique dataset name.
   - **Description:** Enter brief description for data set.
4. Enter the following table information in the **Table Selection** section:

   To add Table(s), follow these steps:

   a. Click **Add** button in Tables Selection section. The **Add Tables** window is displayed.

   b. Select the table(s). You can select multiple tables at a time. Click **View Selected** button to view the list of selected tables. Click **Ok**.

   c. Edit the Table Alias as required.

   d. You can add a table multiple times, but Table Alias should be unique, as mentioned in below:

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> **Note**
>
> The maximum limit of Alias is 128 characters and alias must start with a letter or underscore, and contain only letters, digits, or underscores. If the table alias is same, then an error message is displayed after clicking **Save** button.

5. Enter the following Column details of selected tables in the **Columns Selection** section:

   To add Column(s), follow these steps:

   a. Click **Add** button in **Columns Selection** section. The **Add Columns** window is displayed. Here, the list of columns is displayed based on the selected tables.

   b. Select the Table. The list of columns is displayed based on selected tables from **Tables Selection** section.

   c. You can use Search feature to search the columns

   d. Select the Column(s). The Display Name can be logical name of the column.

   e. Click **View Selected** button to view the list of selected columns. Click **Ok**.

> **Note**
>
> If you change the table alias in Tables Selection section, then it gets updated in Columns Selection section automatically.

6. Update the **Other Details** section for required joins/conditions.

> **Note**
>
> If more than one table is selected, then it is mandatory to update the conditions in Other Details section, else an error message is displayed while saving the dataset.

   You can click **Hint** icon to view the hints before defining a condition. Below is a sample of Hint:

   Use filters as required.

   You can click **Hint** icon to view the hints before defining a filter. Below is a sample of Hint:

7. Click **Save**.

4.10 Rules Framework

The Rules Framework provides a user-friendly interface for creating, managing, and executing business rules without requiring direct SQL knowledge. It enables you to define rule logic using datasets, conditions, hierarchies, and expressions, and preview the impact before execution.

The Rules Framework consists of the following components:

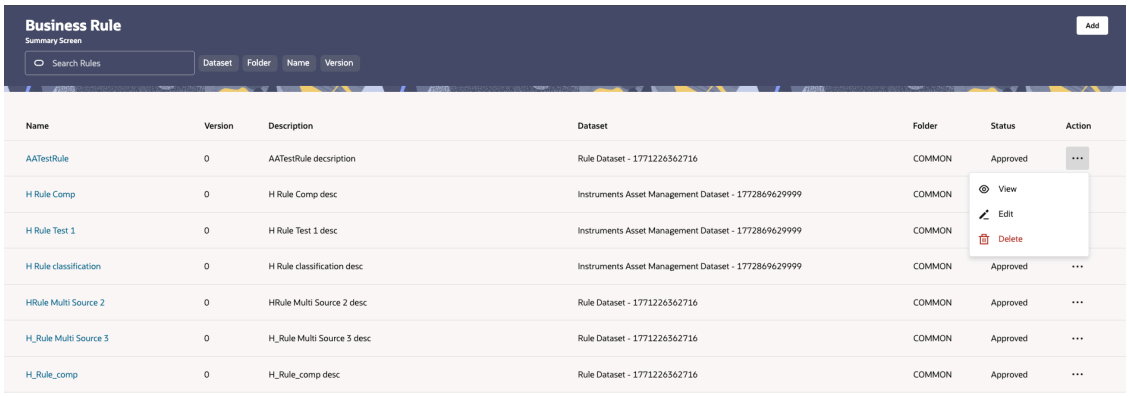
- **Business Rule Summary** — the central screen for viewing, searching, and managing all Business Rules.
- **Basic Details** — defines the name, description, folder, and dataset for the rule.

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- **Source Setup** — defines the input sources and conditions (IF clauses) that drive the rule logic.
- **Outcome Setup** — defines the target columns and how they are updated when conditions are met.
- **Combination Configuration** — maps specific source conditions to outcomes through IF-THEN combinations.
- **Impact Preview** — previews the effect of the rule on sample data before submission.
- **Review and Submit** — provides a final consolidated summary and the generated merge query before the rule is saved.

The **Business Rule Summary** screen is the gateway to all Business Rules and related functionality. You can navigate to all rule management actions from this screen.

Figure 4-66 Business Rule Summary



To access the **Business Rule Summary** screen, navigate to **Data Management Tools** > **Rule** from the left navigation menu.

The Summary screen displays all existing rules in a tabular format with the following columns:

- **Name** — the name of the Business Rule.
- **Version** — the version number of the rule.
- **Description** — a brief description of the rule.
- **Dataset** — the dataset associated with the rule.
- **Folder** — the folder in which the rule is saved.
- **Status** — the current status of the rule.
- **Action** — the available actions for the rule (View, Edit, Delete).

You can search for existing rules using the **Search Rules** bar. Filter the results by **Dataset**, **Folder**, **Name**, or **Version** using the filter tabs below the search bar.

- Adding New Rules
- Viewing a Business Rule
- Editing a Business Rule
- Deleting a Business Rule

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- Rules Framework using Batch Process
  You can perform Business Rules using the Scheduler Services. The steps below use the `BUSINESS_RULE` component, which does not require a Service URL selection.

4.10.1 Adding New Rules

Creating a Business Rule follows a guided six-step workflow. The progress panel on the right side of the screen shows all steps and your current position.

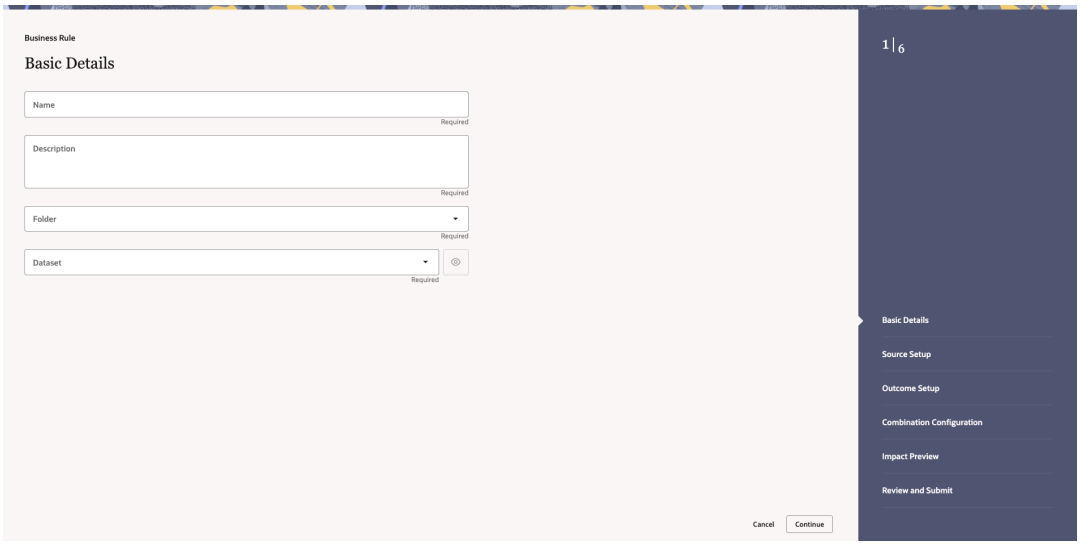
To create a new rule:

1. Navigate to the **Business Rule Summary** page.
2. Click **Add**.

   The **Business Rule — Basic Details** page opens
3. In the **Business Rule — Basic Details** page, do the following"
   a. In the **Name** field, enter a unique name for the Business Rule.
   b. In the **Description** field, enter a brief description of the purpose of the rule.
   c. In the **Folder** field, select the folder in which to save the rule. Folders are used for logical grouping of rules.
   d. In the **Dataset** field, select the dataset to which the rule applies.

      The dataset defines the source fact and dimension tables available for rule configuration. Click the eye icon next to the Dataset field to preview the selected dataset.
   e. Click **Continue** to proceed.

Figure 4-67 Business Rule — Basic Details



4. In the **Business Rule — Source Setup** screen that opens, do the following:
   a. Click **Add Source**.

      The Add Source wizard opens and prompts you to select the source type. The supported source types are:
      - Dimension (Hierarchy-Based)

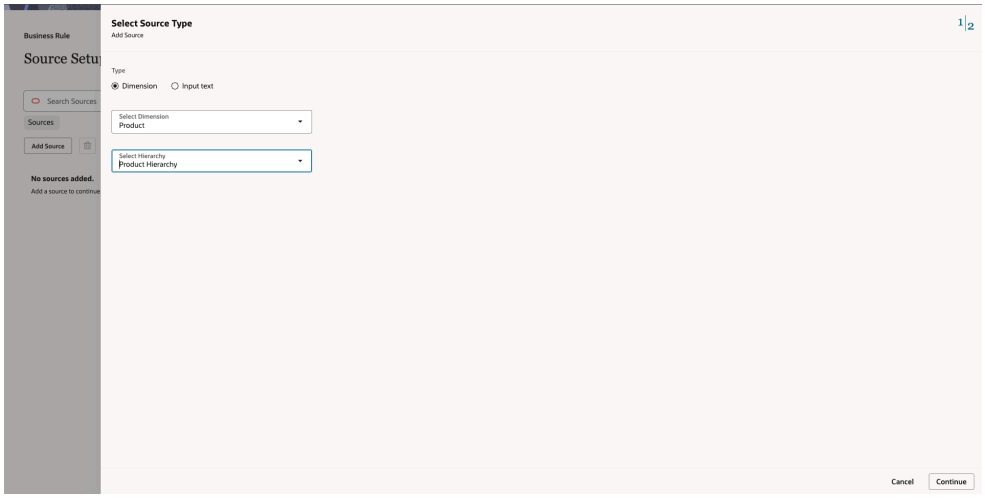
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- Non-Key Dimension (Direct Member Selection)
- Input Text (Attribute-Based Condition)

b. Select the Source Type:

- If you select **Dimension**, to configure a Key Dimension source:
  i. Select Key Dimension as the source type.
  ii. Select the desired Key Dimension (for example, Product or Organization).
  iii. Select the Hierarchy associated with the dimension.
  iv. Select one or more Hierarchy Members from the hierarchy.
  v. Click **Add Source** to confirm.

Figure 4-68 Dimension Source



- To configure a Non-Key Dimension source:
  i. Select Non-Key Dimension as the source type.
  ii. Select the desired Non-Key Dimension.
  iii. Select one or more Dimension Members.
  iv. Click **Add Source** to confirm.

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Figure 4-69 Non-Key Dimension



- If you select **Input text**, do the following:
  - i. Select the Table from the **Select Table** dropdown.
  - ii. Select the Column from the **Select Column** dropdown.
  - iii. Click **Continue**. The **Add Custom Input Values** screen is displayed.
  - iv. In the **Enter value** field, type the value and click **Add** to add it to the Created Custom Values list.
  - v. Click **Add Source** to confirm.
    After all sources have been added, the **Source Setup** screen displays the configured sources as filter tabs at the top of the screen.

Figure 4-70 Input text



c. Click **Continue**.

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Figure 4-71 Business Rule — Source Setup

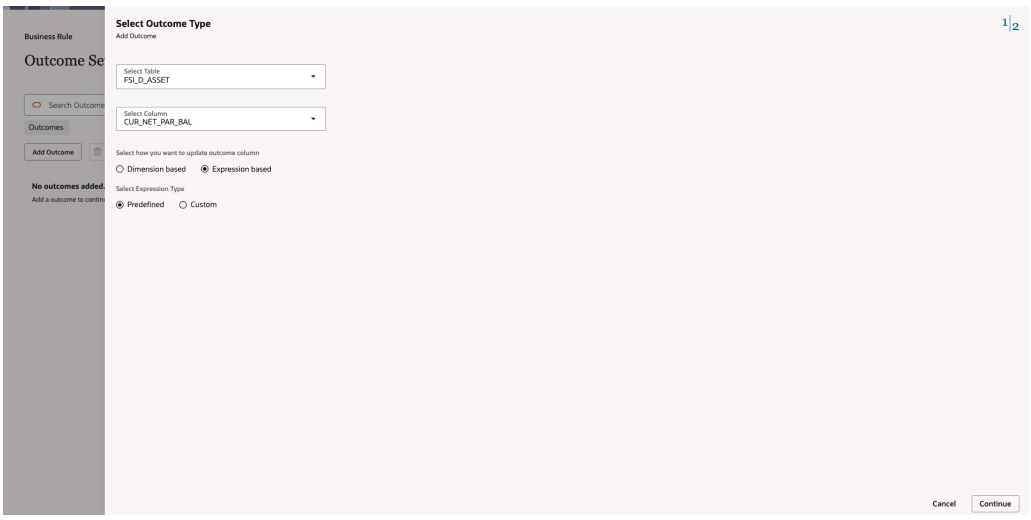


5. In the **Business Rule — Outcome Setup** screen that opens, do the following:

   a. Click **Add Outcome**.

      The **Add Outcome** page opens.

Figure 4-72 Select Outcome Type screen



   b. Select the Target Table from the **Select Table** dropdown.

   c. 2. Select one or more Target Columns from the **Select Column** dropdown.

> **Note**
>
> Multiple target columns are supported. All selected columns must belong to the same target table.

   d. Select the Outcome Column:

      - If you select **Dimension based**, do the following:

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i. 2. Select the required Dimension from the **Select Dimension** dropdown.

ii. Select one or more **Dimension Members**.

iii. Click **Add Outcome** to confirm.

- If you select **Expression based**, do the following:

  i. Select the expression type.

     – **Predefined**

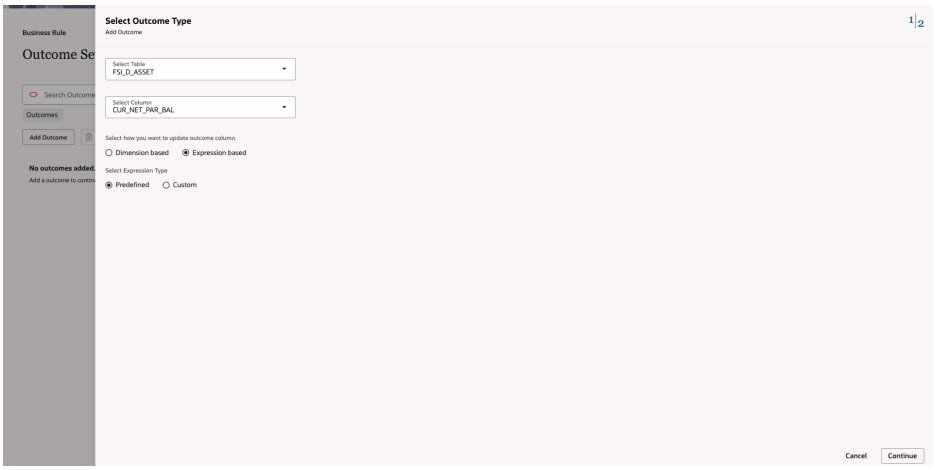
     – **Custom**

  ii. Click **Continue**.

  iii. If you select **Predefined**, then select one or more expressions from the available list and click **Add Outcome** to confirm

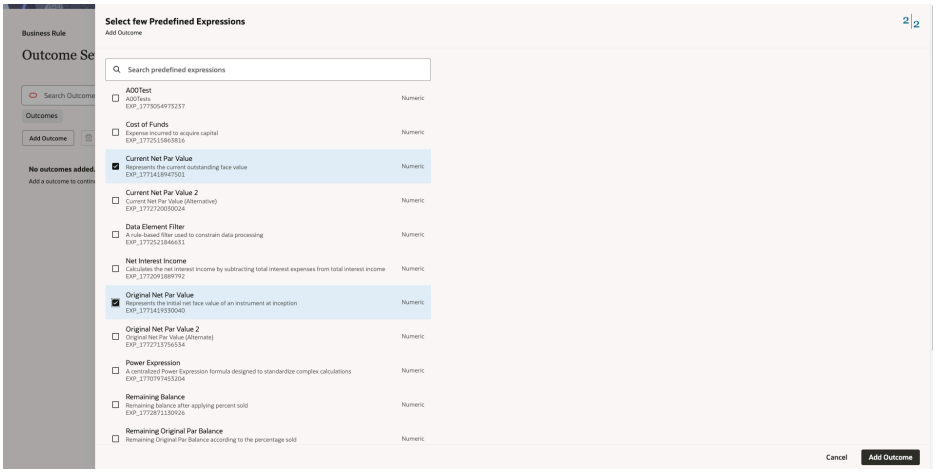
> **Note**
>
> If no predefined expressions have been configured in the system, the message "No expressions available." is displayed.

Figure 4-73 Predefined Expression screen



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Figure 4-74 Predefined Expression List

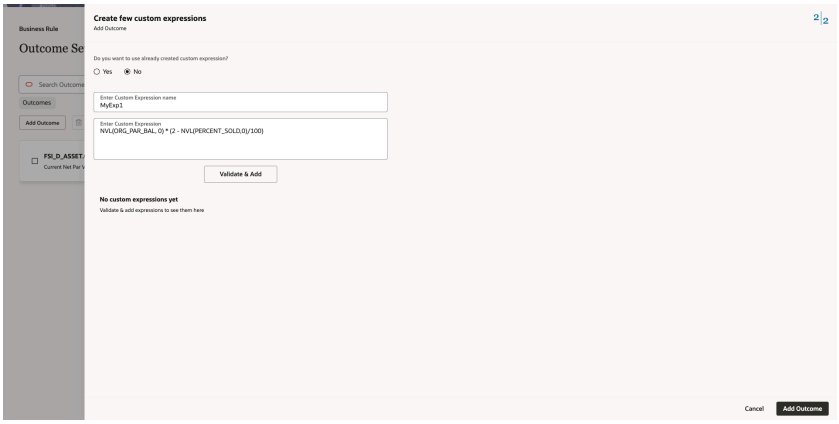


iv. If you select **Custom**, then do the following:

i. In the **Do you want to use already created custom expression?** field, select either of the following option:

- **Yes** — to reuse an expression already created in this session (shown in the Created expressions list on the right).
- **No** — to create a new expression.

Figure 4-75 Custom Screen



ii. If you select **No**, enter a **Custom Expression Name** in the **Name** field.

iii. Enter the SQL expression in the **Enter Custom Expression** field.

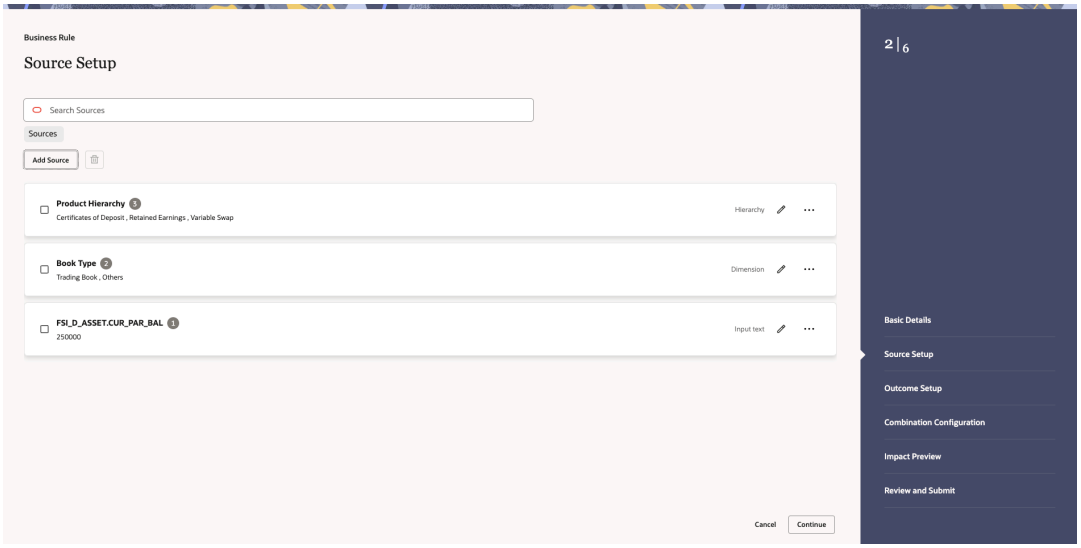
iv. Click **Validate & Add** to validate the expression syntax and add it to the **Created expressions** list.

v. Click **Add Outcome** to confirm.

e. Click **Continue**.

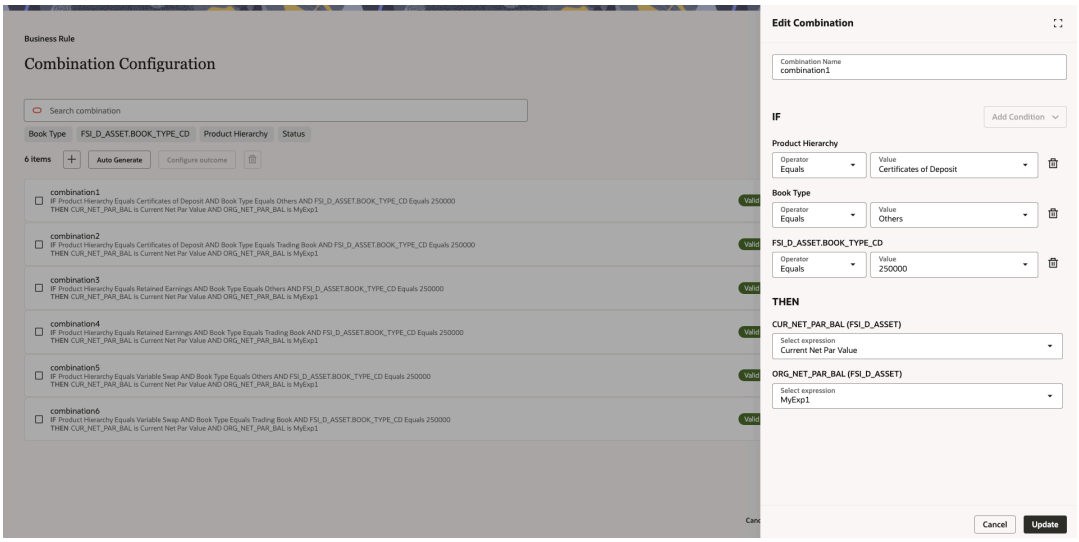
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Figure 4-76 Source Setup Summary



6. In the **Business Rule — Combination Configuration** page that opens, do the following:

Figure 4-77 Business Rule — Combination Configuration



The system provides two methods for creating combinations:

- Auto Generate
- Manual Addition

a. Do either of the following:

   - Click **Auto Generate** to allow the system to automatically create all possible combinations based on the configured source conditions.

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> **Note**
>
> Auto Generate saves time, ensures complete coverage of all condition permutations, and reduces manual errors.

- Click **+** to manually add a combination. The **Add Combination** panel opens on the right side of the screen. Do the following:
  i. Enter a **Combination Name**.
  ii. Under the **IF** section, the source column is displayed. Configure the condition:
    – Select the Operator (for example, Equals).
    – Select or enter the Value to match.
    – Click **Add Condition** to include additional conditions in the same combination.
  iii. Under the **THEN** section, select the expression to apply from the Select expression dropdown for the outcome column.
  iv. Click **Create** to save the combination

b. Click **Continue**.

Each combination in the list displays a status indicator:

- Missing Outcome — no target outcome has been configured for this combination. The rule is incomplete and cannot be submitted.
- Valid — the outcome is properly configured and the combination is ready for execution.

You can assign outcomes to combinations in two ways:

- Individual Configuration — click the Edit icon on a specific combination to configure its outcome individually.
- Bulk Configuration — select multiple combinations using the checkboxes, then click Configure Outcome to assign the same target configuration to all selected combinations simultaneously.

You can search combinations using the Search combination bar, and filter the displayed combinations by source attributes such as Book Type, Product Hierarchy, or Status using the filter tabs.

7. In the **Business Rule — Impact Preview** page that opens allows you to test the Business Rule against a sample of the dataset before submission, validating that the configured combinations and outcomes produce the expected results.

> **Note**
>
> The preview is based on sample rows only. Results may vary for the full dataset.

The **Business Rule — Impact Preview** screen displays the following:

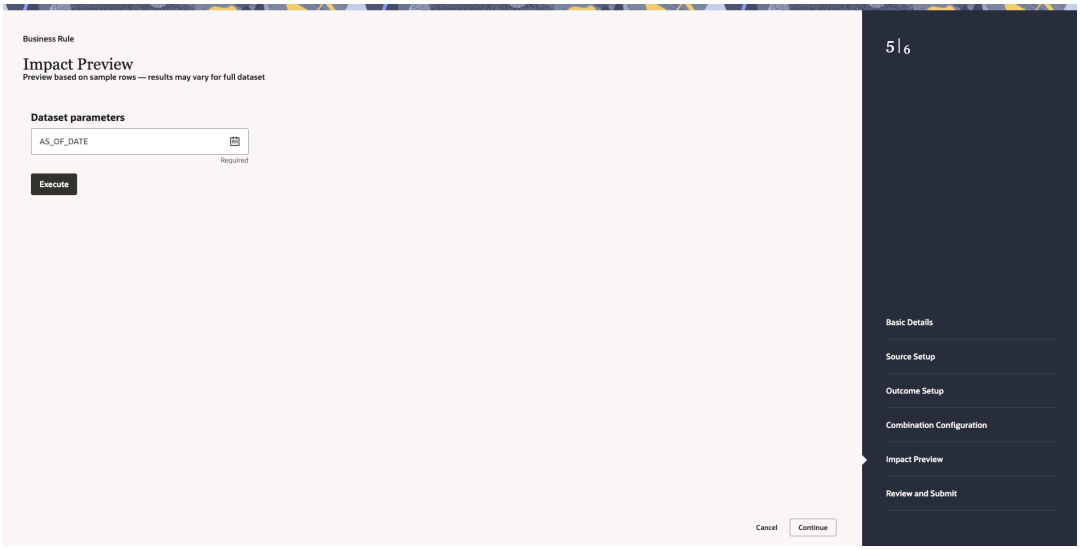
- **Dataset parameters** — if the selected dataset requires runtime parameters, they are listed here for input prior to execution. If none are required, the message "No parameters required for dataset." is displayed.
- **Execute button** — click to run the preview against the sample data and display the projected output.

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If the preview cannot be loaded, the message "**Unable to load impact preview. Please try again or verify your combinations**." is displayed. In this case, return to the Combination Configuration step to verify that all conditions and expressions are correctly defined before retrying.

Click **Continue**.

Figure 4-78 Business Rule — Impact Preview



8. The **Business Rule — Review and Submit** page that opens provides a consolidated view of the complete rule configuration across all previous steps.

   Do the following:

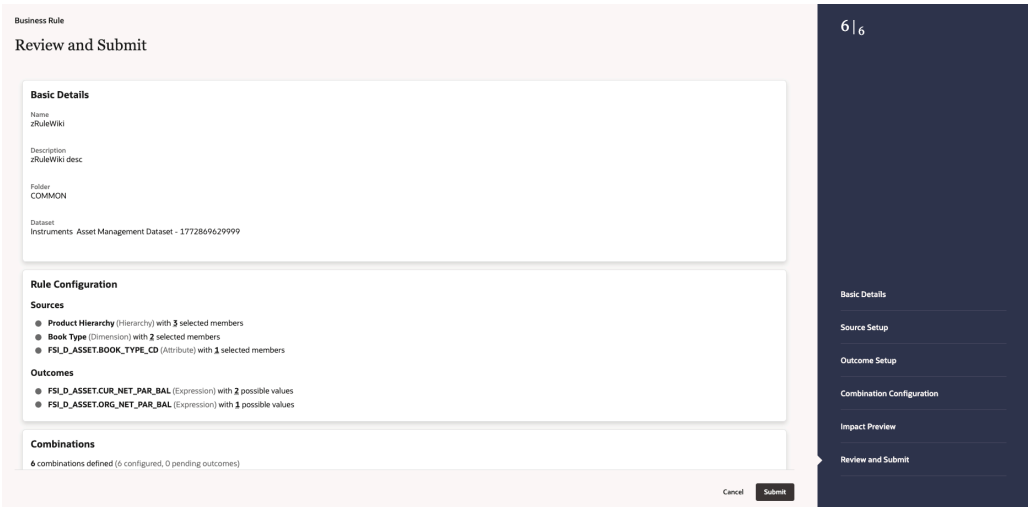
   a. Review all details carefully before saving the Business Rule.
   The screen displays a summary of:

      - **Basic Details** — Name, Description, Folder, and Dataset.
      - **Source Setup** — all configured source conditions.
      - **Outcome Setup** — all configured outcome columns and their derivation logic.
      - **Combination Configuration** — all defined IF-THEN combinations.
      - **Generated Merge Query** — scroll down to view the SQL merge query that the system has generated based on the rule configuration. This allows you to verify the underlying logic before execution.

   b. Once you have reviewed all details, click **Submit** to save and activate the Business Rule.
   After submission, the Business Rule is saved and appears in the **Business Rule Summary** screen.

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Figure 4-79 Business Rule — Review and Submit



> **Note**
>
> Once a Business Rule has been submitted, it can be viewed, edited, or deleted from the **Business Rule Summary** screen using the **Action** menu against the respective rule entry. Only users with Read/Write privileges can edit or delete a Business Rule. A rule that has active dependencies cannot be deleted.

4.10.2 Viewing a Business Rule

To view a Business Rule:

1. Navigate to the **Business Rule Summary** screen. At least one step is required. If you have only one step, then it appears unnumbered in the output.
2. Locate the required rule in the list.
3. Click the **Action** icon corresponding to the rule.
4. Click **View**.

   The selected Business Rule opens in read-only mode, allowing you to review all configured details such as Basic Details, Source Setup, Outcomes, and Combinations.

4.10.3 Editing a Business Rule

To edit a Business Rule:

1. Navigate to the **Business Rule Summary** screen.
2. Locate the required rule in the list.
3. Click the **Action** icon corresponding to the rule.
4. Click **Edit**.

   The rule opens in edit mode, allowing you to modify the configuration across all steps (Basic Details, Source Setup, Outcome Setup, and so on).

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5. Make the required changes.
6. Click **Submit** to save the updated rule.

> **Note**
>
> - After editing, the rule may require re-validation or re-submission.
> - Only users with Read/Write privileges can edit a rule.
> - The outcome type cannot be changed to a different type once configured.

4.10.4 Deleting a Business Rule

To delete a Business Rule:

1. Navigate to the **Business Rule Summary** screen.
2. Locate the required rule in the list.
3. Click the **Action** icon corresponding to the rule.
4. Click **Delete**.
5. Confirm the deletion when prompted.

> **Note**
>
> - Only users with Read/Write privileges can delete a rule.
> - A rule cannot be deleted if it has active dependencies.

4.10.5 Rules Framework using Batch Process

You can perform Business Rules using the Scheduler Services. The steps below use the `BUSINESS_RULE` component, which does not require a Service URL selection.

To run the Business Rules using Batch Process, follow these steps:

1. With the Define Batch feature, it is possible to create new batches and review existing ones. Navigate to the Scheduler Service and click **Define Batch**.
2. Click **+** to create a new batch.
3. In the **Create Batch** screen, enter the following values:
   a. **Code** - Enter a unique code. Spaces are not allowed.
   b. **Batch Name** - Enter a name for the batch.
   c. Click **Save**.

> **Note**
>
> The **Service Url Name** field in the **Create Batch** screen does not require a selection when using the GL RECON component. Leave it blank.

4. In the **Define Task** screen, you can define the tasks related to a specific batch.

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a. Navigate to **Define Task**.

b. Select the name of the batch that has been created for this task.

5. Click **+** to create a new task.

6. In the **Create Task** screen, enter the following values:

a. Task Code (Spaces are not allowed in the code section). b.

b. Task Name.

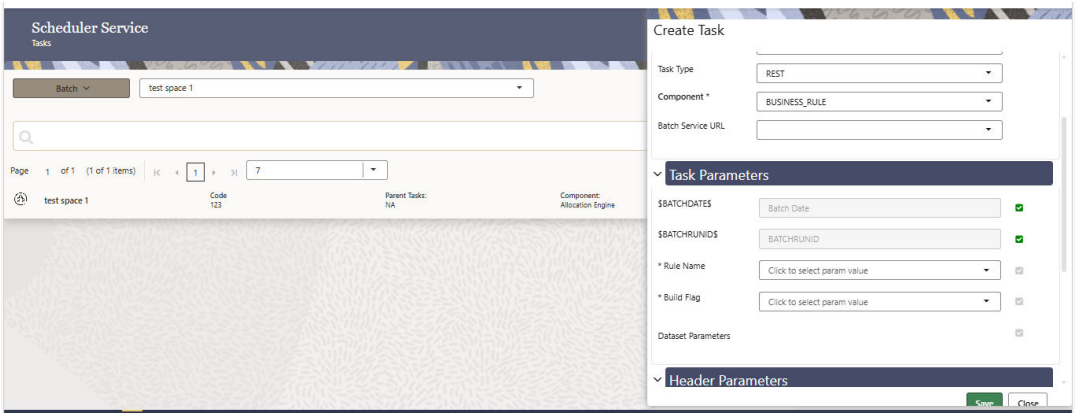
c. Select the task type as **REST**.

d. Select the Component as **BUSINESS_RULE.**.

e. Click **Save**.

> **Note**
>
> When the **BUSINESS_RULE.** component is selected, the **Batch Service URL** field is not displayed and does not require configuration.

Figure 4-80 Define Task



7. In the **Task Parameter** section, enter the following values:

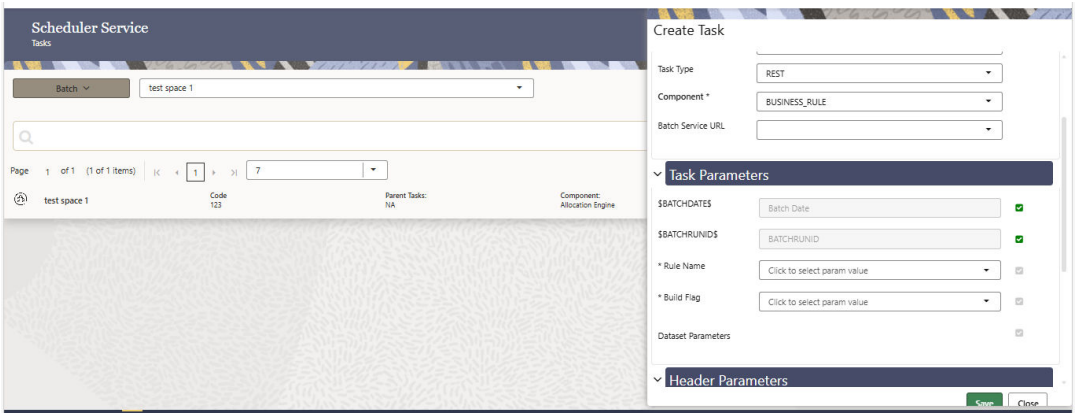
a. **Rule Name** — Select the Business Rule that must be executed.

b. **Build Flag** — Select whether the Business Rule must be built or compiled before execution.

c. **Dataset Parameters** — Enter or review the dataset-specific parameters required to execute the selected Business Rule.

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Figure 4-81 Define Task



8. Schedule the batch using the **Schedule Batch** screen.
   a. Navigate to **Schedule Batch**.
   b. Select the **Name** of the batch created in Step 1.
   c. Use the **Edit Parameters** option to review the batch parameters and make any necessary adjustments before execution.
   d. Verify the following before executing:
      - The correct Rule Name is selected.
      - The **Build Flag** value is correct.
      - All required **Dataset Parameters** are entered correctly for the selected Business Rule.
   e. Click **Execute** to run the batch, or click Save to save the batch definition without running it.
      - Clicking **Save** saves the batch definition without executing the batch.
      - Clicking **Execute** submits the batch for execution. An Execute Status dialog is displayed confirming the batch has been submitted.
9. Monitor the Batch:
   a. Navigate to **Monitor Batch**.
   b. Select the batch name and MIS Date, then check the Batch Status.
   c. After the batch completes successfully, verify the Business Rule execution results in the applicable module or output location.

4.11 Data Extraction

The Data Extraction feature allows you to extract the data which can used as input for another downstream service for processing. You can download the processed/unprocessed data from processing area and make it accessible to downstream service.

This is a two-step process.

Dataset: Allows Admin to define the set of tables/columns for data extract.

Extract Data: Allows Analyst to extract the data from defined datasets.

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Table 4-31 User Roles

Module Name	Role Code
Dataset	RLCADSADMIN
	RLCADSANALYST
	RLCADSAUDIT
Export Data	RLCADEADMIN
	RLCADEANALYST
	RLCADEAUDIT

- Export Data
  The export Data allows analyst to extract data in text format. The text format export options are CSV, JSON, Parquet, or XML.

4.11.1 Export Data

The export Data allows analyst to extract data in text format. The text format export options are CSV, JSON, Parquet, or XML.

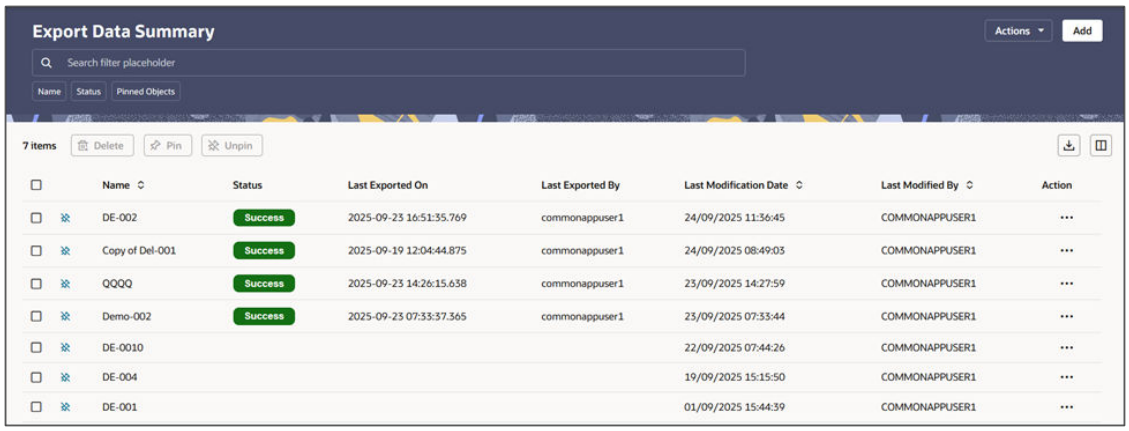
This page is the gateway to all Export Data Rules and related functionality. You can navigate to other pages relating to Export Data Rules from this point.

Search Export Data Rule

Prerequisites: Predefined Export Data Rule

To search for an Export Data Rule, You can search a rule is through the **Search** field. Enter the **Export Data Name, Status,** or **Pinned Objects** [IN1] in Search Criteria and click **Search icon**.

Figure 4-82 Export Data summary



Rows that contain the string you are searching for are fetched and displayed in the Export Data Summary page

The Export Data Summary displays the following information:

Add: Click the **Add** button on the page header to build a new Export Data rule.

Actions: Enables you to perform following tasks.

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- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Export Data summary table displays the following columns:

- **Name**: The export data rule name.
- **Status**: Shows the execution status of Export Data rule as Success, Failed, or In Progress
- **Last Exported On:** The Date and Time when the Data was last exported.
- **Last Exported By:** Displays the Name of the user who last exported the data.
- **Last Modified By:** Displays the Name of the user who last modified the Export Data rule.
- **Last Modification Date:** The Date and Time when the Export Data rule was last modified.
- **Actions:** Click this icon to view a list of actions that you can perform on the Export Data rule.
  - **View:** View existing Export Data rule.
  - **Edit:** Edit existing Export Data Rule. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse an Export Data rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete rules that you no longer require. Note that only Export Data rule owners and those with Read/Write privileges can delete rules. An Export Data rule that has a dependency cannot be deleted. An Export Data rule cannot be retrieved after deletion.
  - **Dependency Check Information:** You can check dependencies for rules to know where a particular Export Data rule has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Export Data rule Name and select Dependency Check to generate a report on all Rules that utilize your selected Export Data rule.
  - **Export Data:** Select Export Data to export an existing Export Data rule.
  - **View Export Details:** Select View Export Details to view export details of the rule.
- Creating the Export Data Rule
- Exporting the Data
- Viewing Export Details
- Data Export Downloader Utility

4.11.1.1 Creating the Export Data Rule

To create a export data rule, follow these steps:

1. Navigate to **Export Data Summary** page.

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2. Click the **Add** button.
3. Enter the following Export Data details in the Basic Information section:

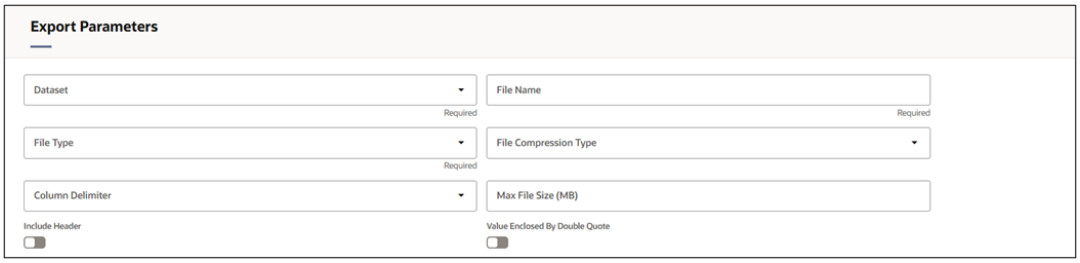
Figure 4-83 Basic Information section



- **Name:** Enter unique export data rule name. This is a mandatory field.
- **Description:** Enter brief description of rule.

4. Enter the parameter details in the **Export Parameters** section:

Figure 4-84 Export Parameters section



- **Dataset:** Select the Dataset which was defined in Datasets UI.
- **File Type:** Select the type of file. It can be CSV, JSON, Parquet, and XML
- **File Compression Type:** Define the compression type for the selected file. The supported File Compression Type is Gzip.
- **File Name:** Enter the logical name for table.
- **Column Delimiters:** This field is applicable if the selected file type is CSV. The supported Column Delimiters are Comma (,) and Pipe(|). You can use this to separate data within a row.
- **Max File Size:** Define the maximum file size. The minimum file size limit is 10 MB and maximum limit is 1GB.
- **Include Header:** This field is applicable if the selected file type is CSV. If this toggle is turned **ON**, then the exported CSV file will include headers for the exported table columns.
- **Value Enclosed By Double Quote:** This field is applicable if the selected file type is CSV. If this toggle is turned **ON**, then the fields will be double quoted in exported CSV file.

5. Enter the table and column details in the **Tables and Columns** section:

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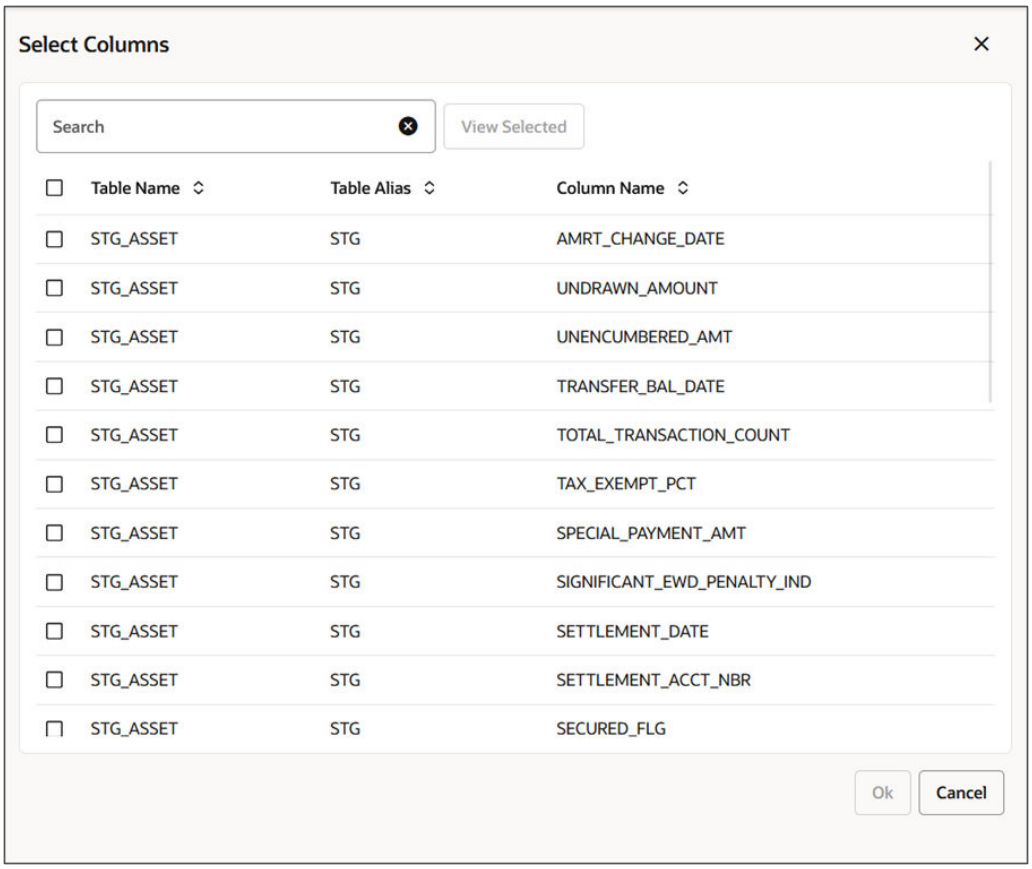
Figure 4-85 Tables and Columns section



To add **Table(s)** and **Column(s)**, follow these steps:

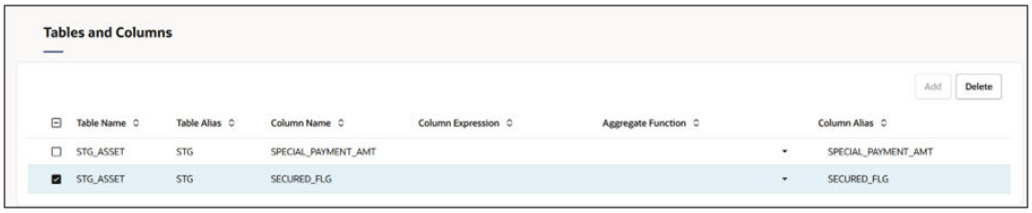
a. Click **Add** button in Tables and Columns section. The **Select Columns** window is displayed.

Figure 4-86 Select Columns window



b. Select the tables and columns. Click **OK**.

Figure 4-87 Tables and Columns section



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c. You can edit the **Column Alias** name if required. The **Column Alias** name should be unique.

   You can reorder the columns via drag-and-drop feature. It supports reordering of single or multiple columns at a time. Exported files will also reflect the new column order.

   By default, this section displays physical Table names and Column names. If you want to see logical names, click **Grid Columns** and select **Table Display Name** and **Column Display Name** from Grid Column list. This allows you to toggle the view between physical column names and logical (display) column names. When you click the Add button to add the columns, the selected view will be displayed (as defined by using **Grid Columns** feature).

   The Search functionality works with both naming conventions (Logical Names and Physical Names).

d. Add the **Column Expression**.

   You can also include dynamic parameters in column expression if needed.

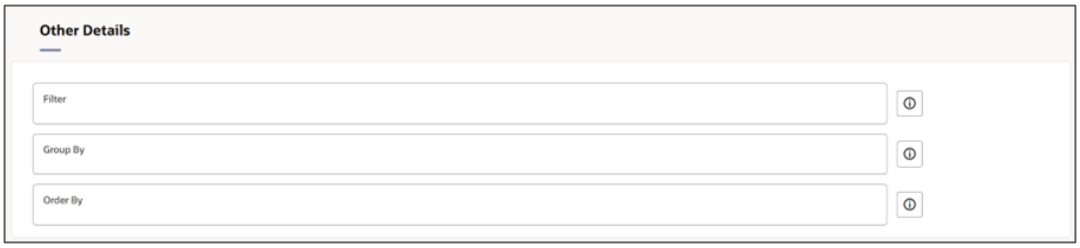
   These dynamic parameters will be replaced with actual values during the execution through the Scheduler Service UI or Export Data UI.

   For more details, see the Exporting the Data section.

e. Define the **Aggregate Function**.

6. Update the **Other Details** section for Filters, Groups, and/or Orders.

Figure 4-88 Other Details section



- Use **filters** as required.
  You can also include dynamic parameters for Filter queries if needed.

  For example:

  ```
  FSI_D_ASSET.ACCOUNT_NUMBER = '##ACC_VAL1##'
  ```

  If multiple parameters are required, then separate them using commas (,). For example:

  ```
  FSI_D_ASSET.ACCOUNT_NUMBER IN
  ('##ACC_VAL1##','##ACC_VAL2##','##ACC_VAL3##')
  ```

  These dynamic parameters will be replaced with actual values during the execution through the Scheduler Service UI or Export Data UI.

  For more details, see the Exporting the Data section.

  You can click **Hint** icon to view the hints before defining a filter. Below is a sample of Hint:

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Figure 4-89 Sample of Hint



- Use **Group By** to group the data.
  You can also include dynamic parameters for Group By queries if needed.

  For example:

  ```
  FSI_D_ASSET.ACCOUNT_NUMBER = '##ACC_VAL1##'
  ```

  If multiple parameters are required, then separate them using commas (,). For example:

  ```
  FSI_D_ASSET.ACCOUNT_NUMBER IN
  ('##ACC_VAL1##','##ACC_VAL2##','##ACC_VAL3##')
  ```

  These dynamic parameters will be replaced with actual values during the execution through the Scheduler Service UI or Export Data UI.

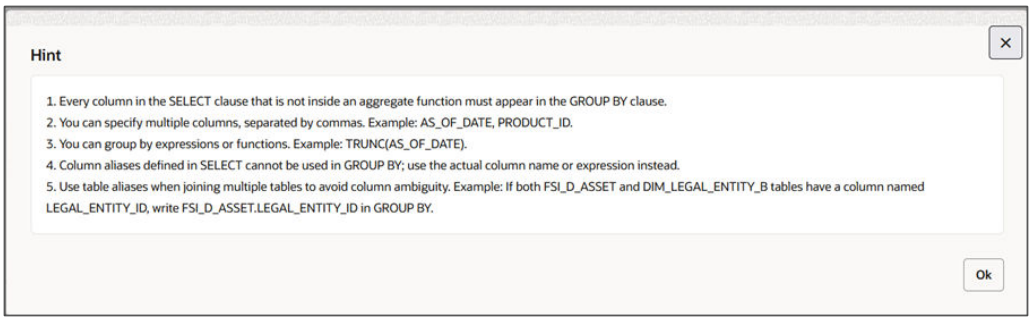
  For more details, see the Exporting the Data section.

  The Group By Suggestion icon allows you to automatically create the sample clauses using the above selected columns. You can copy this query if required. This helps in auto-generation of GROUP BY clauses when using aggregate functions.

  > **Note**
  >
  > This is just a suggested query, generated by system. User must validate this.

  You can click **Hint** icon to view the hints before defining a filter. Below is a sample of Hint:

Figure 4-90 sample of Hint



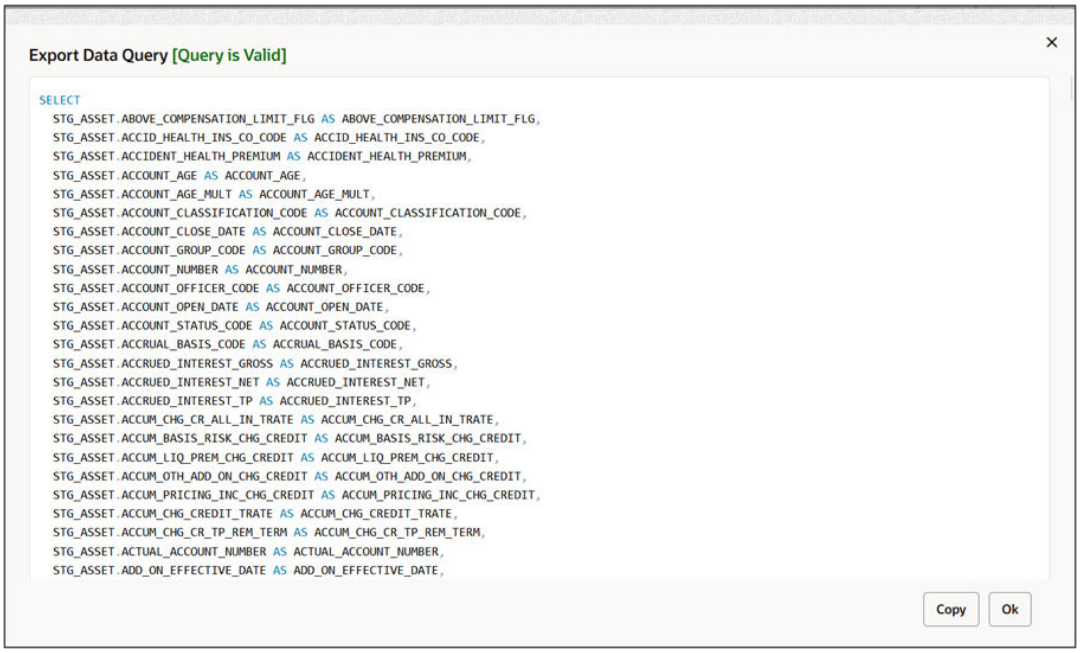
- Use **Order By** to arrange the data.
  You can define default values for each parameter (placeholder). These default values are optional, but recommended for ease of use. If you have provided Dynamic and

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Static values for placeholder, then the provided dynamic value is used at execution (Dynamic parameter takes precedence). If not, then pre-set default values are used.

7. Click **Save**. You can click **Preview Query** button to view the defined rule in query format.

Figure 4-91 Preview Query



You can copy the query using the **Copy** button. Click **Ok** to continue.

4.11.1.2 Exporting the Data

You can export the data using the following methods:

- Export Data Summary UI
- Scheduler Service
- Using Export Data Summary UI
- Using Scheduler Service

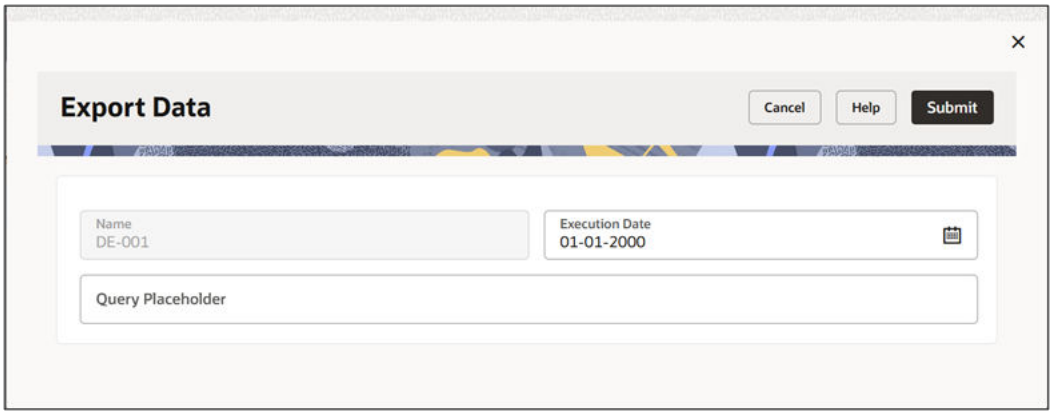
4.11.1.2.1 Using Export Data Summary UI

To Export the data, follow these steps:

1. Navigate to **Export Data Summary** page.
2. Click on the **Action** icon against the Export Data Rule Name and select Export Data to export data. The **Export Data** window is displayed.

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Figure 4-92 Export Data window



3. Select the **Execution Date** . If static values are specified for placeholder parameters in the Query Placeholder section, the corresponding placeholder details are automatically displayed. You can change these values if required. For more information, refer to the Query Placeholder section. Enter the Name/Value parameters in Query Parameter field, if required. These represent the actual values for dynamic parameters. For more information, see the Other Details section.

   For example: ACC_VAL1=1, ACC_VAL2=2.

   If multiple parameters are used, then separate them with commas (,).
4. Click **Submit**. The Status of execution can be Success, Failed or In Progress.

4.11.1.2.2 Using Scheduler Service

To export the data using Scheduler Service, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Define a new batch.
3. Enter the Batch Name and Description, and then Save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from Batch drop-down list on **Define Task** window.
6. Click the **Add** button.
7. Define the Task Code, Task Name, and Description.
8. Select Components as “**Data Extraction**”.Input the following mandatory parameters:
   - **Export Data Name:** Select the Export Data rule from drop-down list.
   - **Query Placeholder:** Enter the Name/Value parameters in this field. These represent the actual values for dynamic parameters. For more information, see the Other Details section.
     For example: ACC_VAL1=1, ACC_VAL2=2.

     If multiple parameters are used, then separate them with commas (,).

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> **Note**
>
> If static values are specified for placeholder parameters in the **Query Placeholder** section, the corresponding placeholder details are automatically displayed. You can change these values if required. For more information, refer to the **Query Placeholder** section.

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

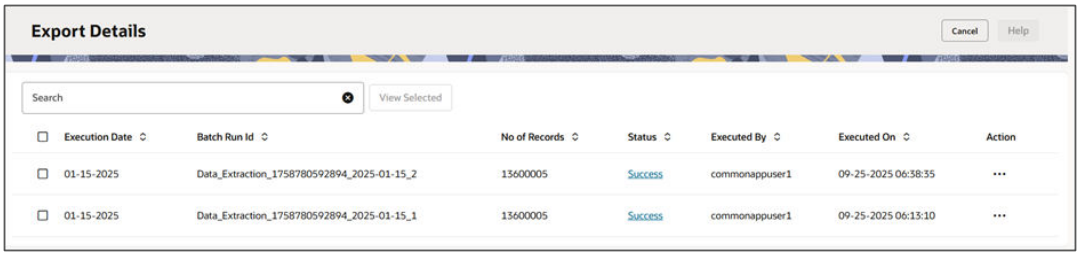
   For more information, see the Scheduler Service.

4.11.1.3 Viewing Export Details

To view the data export details, follow these steps:

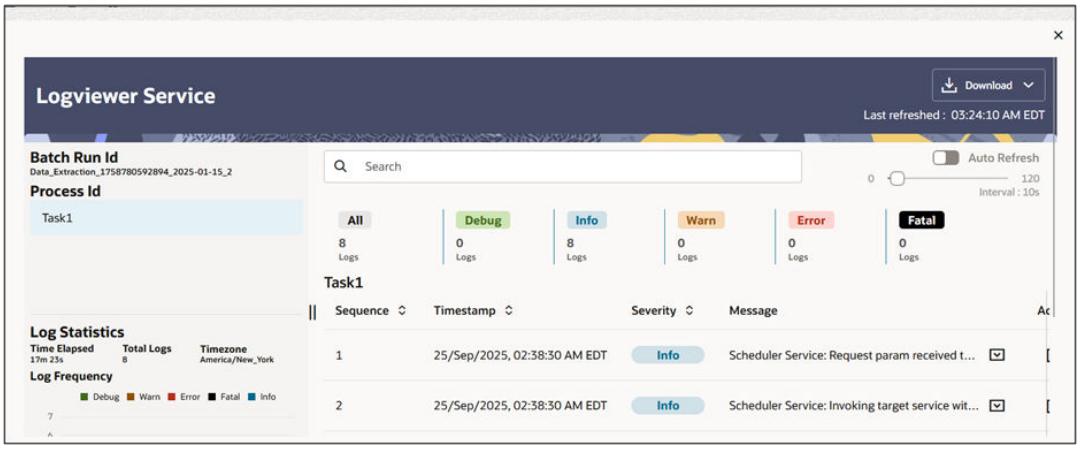
1. Navigate to **Export Data Summary** page.
2. Click on the **Action** icon against the Export Data Rule Name and select **View Export Details**. The **Export Details** window is displayed.

Figure 4-93 Export Details window



3. Click any **Status** to view the log details. The **Log Viewer Service** window shows the complete details of data export along with Batch Run ID Information.

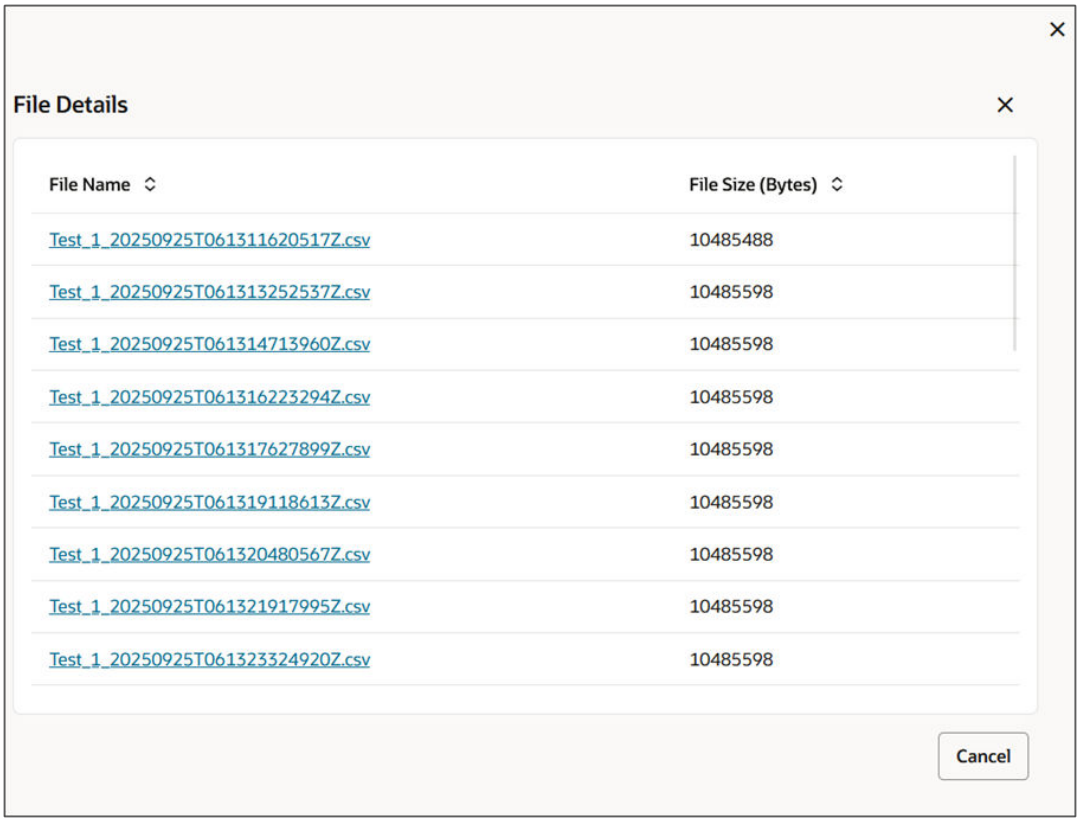
Figure 4-94 Log Viewer Service Window



4. Following two options are available for download:
   - **Download Manifest:** Manifest file contains the export details in JSON format.
   - **Download Files:** Allows you to download the exported files.

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Figure 4-95 Download Options



4.11.1.4 Data Export Downloader Utility

Public API to retrieve the manifest file. This feature allows the automation of file download process. The API returns a manifest file in JSON format. Manifest includes file details and URLs for downloading. This reduces the manual download steps.

This utility uses configuration from a `.env` file and securely fetches export files from Oracle Object Storage using token-based authentication. For more information, refer to Data Export Download document on My Oracle Support.

1. **Retrieve the manifest file**Invoke the REST service below to obtain the manifest file details:
   `/dataextractor/getDataExportManifestFile?code=<export_definition_code>&batchRunId=<batch_run_id>`
2. Enter Export Definition Code and Batch Run ID.

> **Note**
>
> You can retrieve the data using export definition code and batch run ID. The Code value shown as a tooltip in Data Export UI (move-over Name field on Data Export Summary UI). Batch run ID visible in the Export Details UI. Also, these details are available in LogViewer Service UI.

It will download the JSON . Below is an example:

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Example request:

```
/dataextractor/getDataExportManifestFile?
code=987654321&batchRunId=DATA_EXTRACTION_RUN1
```

Sample response:

{

"payload": {

"executedBy": "caqa_user",

"batchRunId": "Data_Extraction_111111_2022-04-26_2",

"fileDetails": [

{

"fileName": xyz.gz,

"fileSize": "247"

}

],

"dateFormat": "MM-dd-yyyy HH:mm:ss UTC",

"executedOn": "11-18-2025 06:31:14",

"rowsLoaded": "4916",

"exportFilePrefix": "Data_Extraction_111111_2022-04-26_2/Task1",

"parUrlExpiryTime": "12-13-2025 13:28:05",

"statusName": "Success",

"asOfDate": "04-26-2022",

"endTimestamp": "11-18-2025 06:31:16",

"taskId": "Task1",

"startTimestamp": "11-18-2025 06:31:14",

"statusCode": "SUCCESS"

},

"status": "Success"

}

3. Parse the response
   Parse the JSON response to extract the “fileName” attribute, which contains the PAR (Pre-Authenticated Request) URLs for the exported files.
4. Download the files
   Use the PAR URLs obtained from the manifest response to download the exported files directly.

4.12 Data Redaction

PBSMCS is enhanced to enable masking of sensitive data and Personal Identification Information (PII) to adhere to Regulations and Privacy Policies.

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Oracle Data Redaction provides selective, on-the-fly redaction of sensitive data in database query results prior to display by applications so that unauthorized users cannot view the sensitive data.

The stored data remains unaltered, while displayed data is transformed to a pattern that does not contain any identifiable information.

> **Note**
>
> Redaction is supported only on Oracle database.

- Redaction Functions
  Use functions to define the type of redaction to be applied.
- Redaction Policies
  You can use policies to map redaction functions to classification codes.
- Redaction Approval
  You can approve or reject the redaction policies, using the Redaction Policies Authorization screen.

4.12.1 Redaction Functions

Use functions to define the type of redaction to be applied.

To define a redaction function:

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Functions**. The **Redaction Functions Summary** screen appears.
2. Click **Add** and provide the following details:
3. **Redact Function Name**: Specify a name for the function. Example: Email_ID.
4. **Description**: Provide a description for the function. Example: Function to redact email IDs.
5. **Redact Type**: Select the redaction type to be applied.
   - **Full**: You can redact all of the contents of the column data. The redacted value returned to the querying application user depends on the data type of the column. For example, columns of the NUMBER data type are redacted with a zero (0), and character data types are redacted with a single space.
   - **Partial Trailing**: You can hide or obscure a part of the data at the end of a column value. For example, you can redact a Social Security number with asterisks (*), except for the initial 4 digits.

     > **Note**
     >
     > Only VARCHAR and VARCHAR2 are supported.

   - **Partial Leading**: You can hide or obscure a part of the data at the beginning of a column value. For example, you can redact a Social Security number with asterisks (*), except for the last 4 digits.

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> **Note**
>
> Only VARCHAR and VARCHAR2 are supported.

- **No of characters**: (Available only if partial redaction is applied). Specify the number of characters to be redacted.

> **Note**
>
> You can't apply partial redaction to date type columns. Only full redaction is applicable to date type columns.

6. Click **Apply**.

4.12.2 Redaction Policies

You can use policies to map redaction functions to classification codes.

A classification code is a logical abstraction for a table column. Example: Social Security Number. These codes are pre-seeded.

By mapping classification codes to redaction functions, you can redact the underlying table column.

- View redaction policies
  You can view the defined redaction policies using the Redaction Policies Summary screen.
- Create redaction policies
  Perform the following steps to create a redaction policy:
- Modify a redaction policy
  Perform the following steps to modify a redaction policy.
- Drop a redaction policy
  Perform the following steps to drop a redaction policy.
- Refresh a redaction policy
  Use the Refresh feature to extend redaction to newly added columns within an existing policy, preserving previous redactions.

4.12.2.1 View redaction policies

You can view the defined redaction policies using the Redaction Policies Summary screen.

To view the redaction policies:

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Policies**.

   The **Redaction Policies Summary** screen appears.
2. Enter the text of the second step here.

   See the table below for fields and their description.

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Table 4-32 Redaction Policies Summary

Field	Description
Classification Name	Pre-seeded classification code name.
Redact Functions	Redact function name
Version	The latest version of the classification.
Request Type	Types of request: • Refresh: Map redaction as per latest addition of table columns. • Unmap: Remove redaction. • Map: Apply redaction
Status	Policy status
Policy Applied On	Date on which the policy was applied.
Created By	The user who created the policy.
Created Date	Date of creation of the policy.
Actions	You can perform the following actions: a. Edit b. Drop c. Refresh d. View

3. Click the **Actions** menu corresponding to the policy you want to view and select **View**.

The Redaction Policies Preview screen appears containing details of the policy.

4.12.2.2 Create redaction policies

Perform the following steps to create a redaction policy:

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Policies**.

   The **Redaction Policies Summary** screen appears.
2. Click **Add**.
3. Select the classification from the **Classification Name** drop-down list.

> **Note**
>
> Data redaction can be configured for extended or custom columns only if the columns are created using the Data Model Extension (DME) module. After extension, such columns are available for selection in the Redaction Policies screen.
>
> However, the Classification field supports only the predefined values provided by the application. Customization or extension of classification values for additional sensitive data types is not currently supported.

4. Select the function to be mapped to the classification name, from the **Redact Function Name** drop-down list.
5. Click **Map**.

   The affected table and columns are displayed as a result of this mapping.

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6. Click **Submit for Approval** or click **Reject** to cancel the mapping.

4.12.2.3 Modify a redaction policy

Perform the following steps to modify a redaction policy.

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Policies**.

   The **Redaction Policies Summary** screen appears.
2. Click the **Actions** menu corresponding to the policy you want to modify and select **Edit**.
3. Select the required function from the **Redact Function Name** drop-down list.
4. Click **Update Map**.

   The screen displays the affected table and columns as a result of this modification.
5. Verify the details and click **Submit for Approval**.

4.12.2.4 Drop a redaction policy

Perform the following steps to drop a redaction policy.

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Policies**.

   The **Redaction Policies Summary** screen appears.
2. Click the **Actions** menu corresponding to the policy you want to drop and select **Drop**.

   The screen displays the affected table and columns as a result of this drop action.
3. Verify the details and click **Submit for Approval**.

4.12.2.5 Refresh a redaction policy

Use the Refresh feature to extend redaction to newly added columns within an existing policy, preserving previous redactions.

To refresh a redaction policy:

1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Policies**.

   The **Redaction Policies Summary** screen appears.
2. Click the **Actions** menu corresponding to the policy you want to refresh and select **Refresh**.

   The **Refresh Dialog** appears.
3. Click **Run Refresh**.

4.12.3 Redaction Approval

You can approve or reject the redaction policies, using the Redaction Policies Authorization screen.

You must have the REDACT_AUTH role to approve/reject the policies.

Perform the following steps:

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1. Click **Data Management Tools** > **Redaction Framework** and select **Redaction Approval**. The **Redaction Policies Authorization Summary** screen appears listing the policies awaiting approval/rejection.
2. Click the **Actions** menu corresponding to the policy you want to approve/reject. The screen displays the affected tables and columns as a result of approving/rejecting this policy.
3. Verify the details and click **Approve & Execute** to approve the policy. Or, click **Reject** to cancel the policy.
4. Depending on the selection, provide the Approver Comments/Rejected Comments and click the **Approve & Execute**/**Reject** button once again to complete the action.

4.13 Data Mapping

The Data Mapping screen enables users to search and review mappings between source and target entities. To search for reports, click the **Search** field to open the search criteria pop-up. Enter search terms such as Code, Name, Description, Source Physical Entity, or Target Physical Entity. Then click **Search**.

The **Export** button enables you to download the summary page details in .CSV format.

4.14 Data Stratification

Data Aggregation and Stratification enables you to summarize large volumes of financial instruments to a manageable scale for processing and reporting purposes. The stratification engine is used to intelligently group financial instrument records for processing. Grouping them in this way vastly reduces the processing time while retaining the necessary accuracy by still providing an instrument-level result. Using this feature is a multi-step process, which includes:

Financial Services users who load account level data into the Instrument/Account tables do not always have a need to process this data at the account level (for example, ALMCS). Many types of instruments carry the same financial characteristics or can be grouped along common lines without compromising processing accuracy. After grouping common data into stratified pools, processes run against this data requires significantly less processing time (that is, reduced from millions of individual records to several thousand, hundreds or even tens). Functional end users require functionality to define how grouping should occur and to execute this grouping (also known as stratification) at their discretion. They also require the ability to run stratification/aggregation multiple times against the same instrument level data set and retain all of the aggregated results as unique data sets.

- 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

User and Roles

Role Code	Role Name	Function Code	Function Name
RLSTRATTIERADMIN	Stratification Tier Admin Role	STRATTIERADD	Add Stratification Tier

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Role Code	Role Name	Function Code	Function Name
		STRATTIERDEL	Delete Stratification Tier
		STRATTIEREDIT	Edit Stratification Tier
		STRATTIERCOPY	Copy Stratification Tier Data
		STRATTIERVIEW	View Stratification Tier
		STRATTIERTRACE	Trace Stratification Tier Data
RLSTRATTIERANALYST	Stratification Tier Analyst Role	STRATTIERADD	Add Stratification Tier
		STRATTIERDEL	Delete Stratification Tier
		STRATTIEREDIT	Edit Stratification Tier
		STRATTIERCOPY	Copy Stratification Tier Data
		STRATTIERVIEW	View Stratification Tier
		STRATTIERTRACE	Trace Stratification Tier Data
RLSTRATTIERAUDIT	Stratification Tier Auditor Role	STRATTIERVIEW	View Stratification Tier
RLSTRATRULEADMIN	Stratification Rule Admin Role	STRATRULEADD	Add Stratification Rule
		STRATRULERUN	Run Stratification Rule Data
		STRATRULEDEL	Delete Stratification Rule
		STRATRULEEDIT	Edit Stratification Rule
		STRATRULECOPY	Copy Stratification Rule Data
		STRATRULEVIEW	View Stratification Rule
		STRATRULETRACE	Trace Stratification Rule Data
RLSTRATRULEANALYST	Stratification Rule Analyst Role	STRATRULEADD	Add Stratification Rule
		STRATRULERUN	Run Stratification Rule Data
		STRATRULEDEL	Delete Stratification Rule
		STRATRULEEDIT	Edit Stratification Rule
		STRATRULECOPY	Copy Stratification Rule Data
		STRATRULEVIEW	View Stratification Rule
		STRATRULETRACE	Trace Stratification Rule Data
RLSTRATRULEAUDIT	Stratification Rule Auditor Role	STRATRULEVIEW	View Stratification Rule

Partial Aggregation

An extra filter option is given in the Stratification Definition, which limits the stratification, only for the accounts in the Source Table falling under the filter criteria. If the Filter is not being used, (case for all existing definitions), then the existing behavior remain as is.

For accounts in the Source Table, which does not satisfy the filter condition will not be aggregated and will be moved to the destination table as is. But whether column mappings

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which are defined in aggregation tab and under defaults will be applicable or not for non-aggregated records, will be dependent on the **Apply Column mapping for Non-Aggregated Accounts** check-box settings. If this check-box is selected, then the aggregated records column mappings will be applicable to the non-aggregated records. Else, the non-aggregated records will be moved to the destination aggregated table without using the column mappings.

Stratification Action Operations

To create the pools of instruments, identify the operation for each of the attributes. Following choices are avialable in terms of how to populate each attribute in the instrument pool from the instrument data:

- **Discrete**: Directs the 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 reporting purposes. Selecting 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 user on amount, date, or rate fields. These types of fields tend to have many discrete values. Typical value for a discrete group by is an ID field or a yes/no flag, amortization type, adjustable type, accrual basis.
- **Default**: Used for attributes that user wants to set to a hard-coded value.
  If you are defining a stratification rule that you know is used only by one class or type of product, and you want all pools that are generated from that rule to have the same value for a specific attribute, select this option to force the attribute to have that predefined value. The Default option should be used with caution and only when you are sure that the value is valid for all pools that are created by the stratification rule. When you are unsure, a better choice is to either drop the attribute entirely, or populate the field with discrete values.
- **Tiers**: If you want to group the possible range of values into consistent ranges, the simplest grouping operation to use tiers.
  Identify the lower and upper value of tiers, and Stratification engine that groups the instruments into that range. 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.

Aggregation Action Operations

The following are the default aggregation action operations:

Amount Action
The following options are possible when aggregating records for BALANCE type columns:

1. Average: Calculates the average value of an attribute for all instruments in the pool.
2. Max: Maximum value of a given attribute for all the instruments that are part of the pool.
3. Min: Minimum value of a given attribute for all the instruments that are part of the pool.
4. Sum: Total sum value for a numeric attribute.
5. Default: Applies a specified default value.

Rate/Percent Action
The following options are possible when aggregating records for RATE type columns:

1. Average: Calculates the average value of an attribute for all instruments in the pool.

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2. Max: Maximum value of a given attribute for all the instruments that are part of the pool.
3. Min: Minimum value of a given attribute for all the instruments that are part of the pool.
4. Sum: Total sum value for a numeric attribute.
5. Weighted Average: Calculates the average weighted value for an attribute by another balance. Examples of attributes for which you may want to calculate the weighted average are interest rate fields: interest rate, cap rate, floor rate, and interest rate margin for floating rates. Other possibilities include loan-to-value, and so forth
6. Default: Applies a specified default value.

Date Action
The following options are possible when aggregating records for DATE type columns:

1. Max: Maximum value of a given attribute for all the instruments that are part of the pool.
2. Min: Minimum value of a given attribute for all the instruments that are part of the pool.
3. Median: Median Date value for all date values in the pool.
4. Default: Applies a specified default value.

Integer Action
The following options are possible when aggregating records for INTEGER type columns (example: payment frequency, reprice frequency, original term etc.):

1. Average: Calculates the average value of an attribute for all instruments in the pool.
2. Max: Maximum value of a given attribute for all the instruments that are part of the pool.
3. Min: Minimum value of a given attribute for all the instruments that are part of the pool.
4. Weighted Average: Calculates the average weighted value for an attribute by another balance.
5. Default: Applies a specified default value.

Text / Alphanumeric Action
The following options are possible when aggregating records for STRING, CODE type columns:

1. Max: Maximum value of a given attribute for all the instruments that are part of the pool.
2. Min: Minimum value of a given attribute for all the instruments that are part of the pool.
3. Default: Applies a specified default value.

Stratification Tips

Consider this criteria 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 ALM engine uses only the current balance amount fields for its calculations. As far as the ALM 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

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same or similar cash flows. In other words, all instruments that are grouped into a pool should share common and pertinent financial characteristics.

> **Note**
>
> Unique Constraint on all Aggregated tables is the same as other instrument tables with ID Number and Identity Code. In order to preserve uniqueness, DEFAULT value should not be used for ID_NUMBER and IDENTITY_CODE mappings. MIN/MAX should be used for these fields accordingly

Also See:

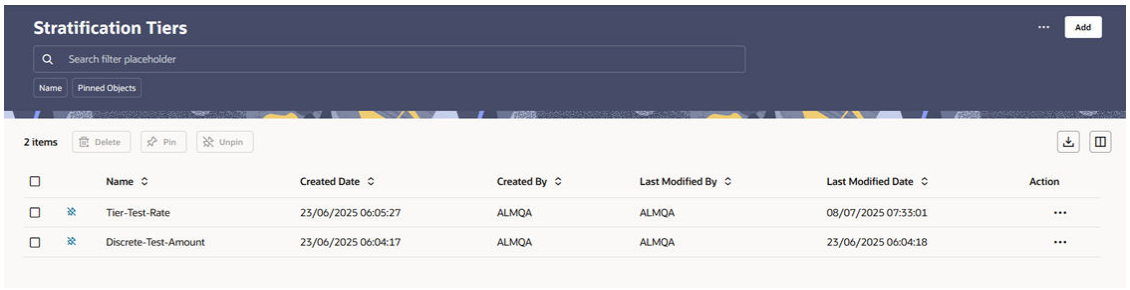
- Data Stratification Rule
- Data Stratification Tiers
- Data Stratification Tier
- Data Stratification Rules

4.14.1 Data Stratification Tier

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 purposes. 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 set up 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

Data Stratification Tiers Summary

Figure 4-96 Data Stratification Tier



Search Stratification Tier

Prerequisites: Predefined Stratification Tier

To search for a Stratification Tier:

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1. You can search a Stratification Tier is through the **Search** drop-down option. Select **Stratification Tier Name**, **Stratification Tier Type**, **Seeded Stratification Tier Flag**, **Last Execution Status**, and **Created By** from **Search** drop-down.
2. Enter the **Stratification Tier Name**, **Stratification Tier Type**, **Seeded Stratification Tier Flag**, **Last Execution Status**, and **Created By** in Search Criteria and click **Go**.

Rows that contain the string you are searching for are fetched and displayed in the Data Stratification Tiers Summary.

The Data Stratification Tiers Summary displays the following information:

Add: Click the **Add**button on the page header to build a new Stratification Tier.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Data Stratification Tier summary table displays the following columns:

- **Name**: The Stratification Tier name.
- **Created Date:** The Date and Time when the Stratification Tier was created.
- **Created By:** Displays the Name of the user who created the Stratification Tier.
- **Last Modified By:** Displays the Name of the user who last modified the Stratification Tier.
- **Last Modification Date:** The Date and Time when the Stratification Tier was last modified.
- **Actions:** Click this icon to view a list of actions that you can perform on the Stratification Tier.
  - **View:** View existing Stratification Tier.
  - **Edit:** Edit existing Stratification Tier. To edit a rule, you must have Read/Write privilege.
  - **Delete:** You can delete rules that you no longer require. Note that only Stratification Tier owners and those with Read/Write privileges can delete rules. A Stratification Tier that has a dependency cannot be deleted. A Stratification Tier cannot be retrieved after deletion.
  - **Dependency Check:** You can check dependencies for rules to know where a particular Stratification Tier has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Stratification Tier Name and select Dependency Check to generate a report on all Rules that utilize your selected Stratification Tier.
- Create Data Stratification Tier

4.14.1.1 Create Data Stratification Tier

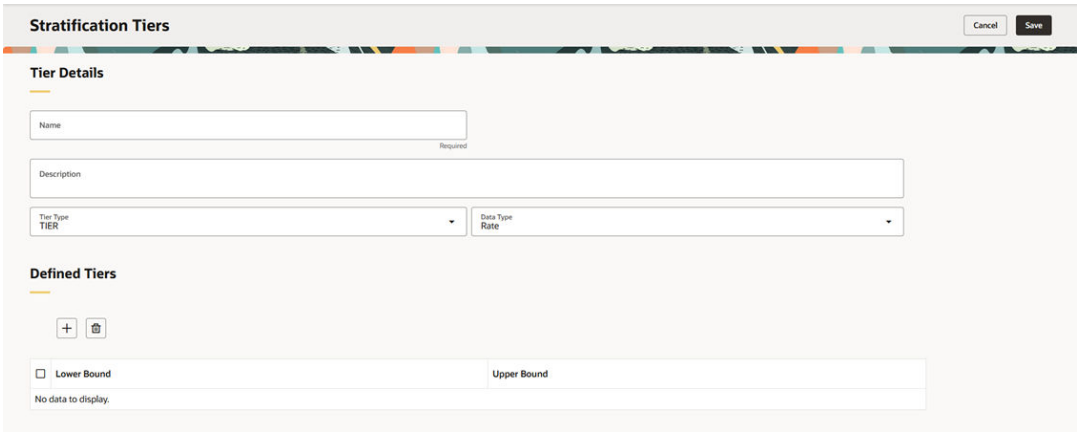
This section provides the details on creating the data Stratification.

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To create data Stratification rule, follow these steps:

1. Navigate to **Stratification Tiers** page.

Figure 4-97 Data Stratification Tier



2. Provide a unique **Name** and **Description** for the Stratification Tier.
3. Select the **Tier Type** as **Tier** or **Discrete**.
   - **Tier:** This can be defined as a range of lower and upper values.
     Example (for amount):

Tier#	Lower Bound Value	Upper Bound Value
1	1	5,000
2	5,001	25,000
3	25,001	100,000

> **Note**
>
> Tier will have a lower and upper value. Following validations are applied on UI:
>
> a. Set the lower- and upper-bound amounts for the tiers.
> b. The lower-bound value must be less than or equal to the upper-bound value.
> c. The lower-bound value must be greater than the upper-bound value of previous range.
> d. Values must not overlap

   - **Discrete**: This is defined a discrete list of values and generally used for text or code fields example, yes/no flag.

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> **Note**
>
> The **Discrete** 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. Select Discrete option for an attribute ensures that only instruments with matching values are grouped in a pool. The Discrete option may be the correct choice for important code fields. Be careful when using the discrete action on the amount, date, or rate fields. These types of fields tend to have many discrete values.

4. Select the column **Data Type** (Amount, Rate, Date, or Integer) 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.
5. Define each tier with lower and upper bounds and add as a defined range. Click **Add** to add the tier. Additionally, use Delete to delete the individual tier definitions if required.
6. After all Tier ranges are defined, select **Save** to save the assumptions and exit the Tier screen.

The tier definitions created in this step are mapped to the individual columns in the Stratification Definition rule on the Stratification tab.

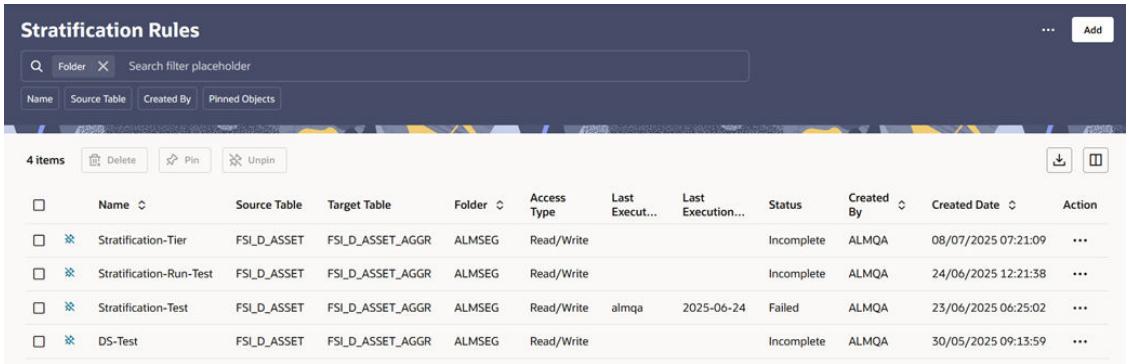
4.14.2 Data Stratification Rules

Stratification Rules are defined to specify aggregations that are different from the default. Stratification rules are the primary interface for defining how pools of instruments are assembled.

The engine that does the aggregation and stratification processing is the Data Stratification Rule. This feature 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.

Data Stratification Rules Summary

Figure 4-98 Stratification Rules



Search Stratification Rule

Prerequisites: Predefined Stratification Rule

To search for a Stratification Rule:

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1. You can search a Stratification Rule is through the **Search** drop-down option. Select **Stratification Rule Name**, **Stratification Rule Type**, **Seeded Stratification Rule Flag**, **Last Execution Status**, and **Created By** from **Search** drop-down.
2. Enter the **Stratification Rule Name**, **Stratification Rule Type**, **Seeded Stratification Rule Flag**, **Last Execution Status**, and **Created By** in Search Criteria and click **Go**.

Rows that contain the string you are searching for are fetched and displayed in the Data Stratification Rules Summary.

The Data Stratification Rules Summary displays the following information:

Add: Click the **Add**button on the page header to build a new Stratification Tier.

More Actions icon: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Data Stratification Rule summary table displays the following columns:

- **Name**: The Stratification Rule name.
- **Source Table:** Displays the source table name.
- **Target Table:**Displays the target table name.
- **Folder:** Displays the Folder name where the Stratification Rule is saved.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Last Executed By:** Displays the Name of the user who last runs the Stratification Rule.
- **Last Execution Date:** The Date and Time when the Stratification Rule was last modified.
- **Execution Status:** The status of Stratification Rule after execution.
- **Actions:** Click this icon to view a list of actions that you can perform on the Stratification Rule.
  - **View:** View existing Stratification Rule.
  - **Edit:** Edit existing Stratification Rule. To edit a rule, you must have Read/Write privilege.
  - **Delete:** You can delete rules that you no longer require. Note that only Stratification Rule owners and those with Read/Write privileges can delete rules. A Stratification Rule that has a dependency cannot be deleted. A Stratification Rule cannot be retrieved after deletion.
  - **Dependency Check:** You can check dependencies for rules to know where a particular Stratification Rule has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Stratification Rule Name and select Dependency Check to generate a report on all Rules that utilize your selected Stratification Rule.

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- **Execute:** Select Execute to execute an existing Stratification Rule. After clicking Execute, the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run.

- Create Data Stratification Rule
- Executing a Stratification Rule

4.14.2.1 Create Data Stratification Rule

This section provides the details on creating the data Stratification.

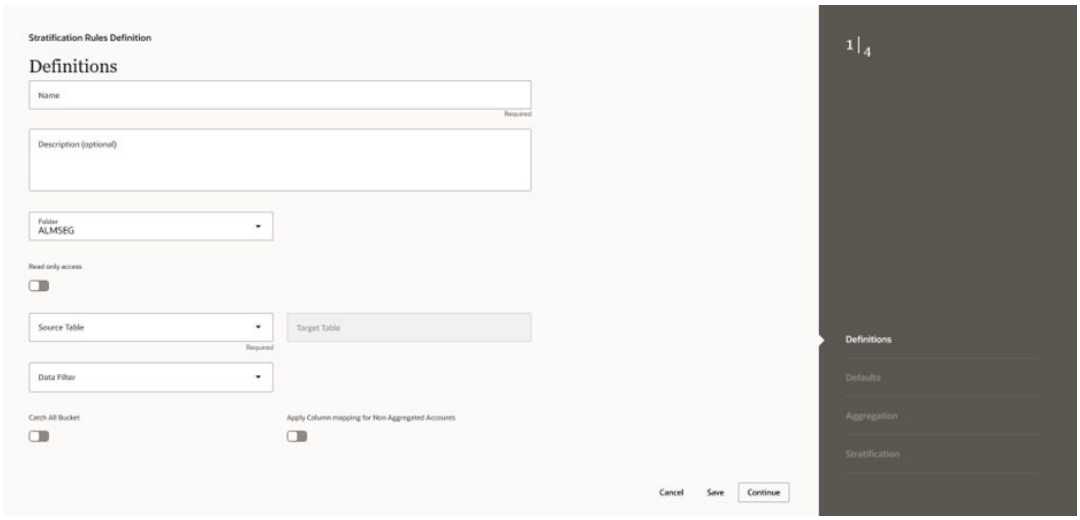
To create data Stratification rule, follow these steps:

1. Navigate to **Data Stratification Definition** page.
2. Follow the steps mentioned in below sections:
   a. **Step 1:** Definitions
   b. **Step 2:** Defaults
   c. **Step 3:** Aggregation
   d. **Step 4:** Stratification

Step 1: Definitions section

1. From **Definitions** tab, click **Start**. The **Definitions** page is displayed.

Figure 4-99 Definitions section



2. Enter the following details:
   - **Name:** Name of Data Stratification rule
   - **Description:** Description of Data Stratification rule
   - **Folder:** Folder where Data Stratification rule needs to be saved
   - **Source Table:** Select a Source Instrument Table (Asset and Liability). The list of values will include all seeded and properly registered instrument tables that contain account-level data records.
   - **Target Table:** Auto populated based on source table: Asset Aggregate, Liability Aggregate. You cannot modify this field.

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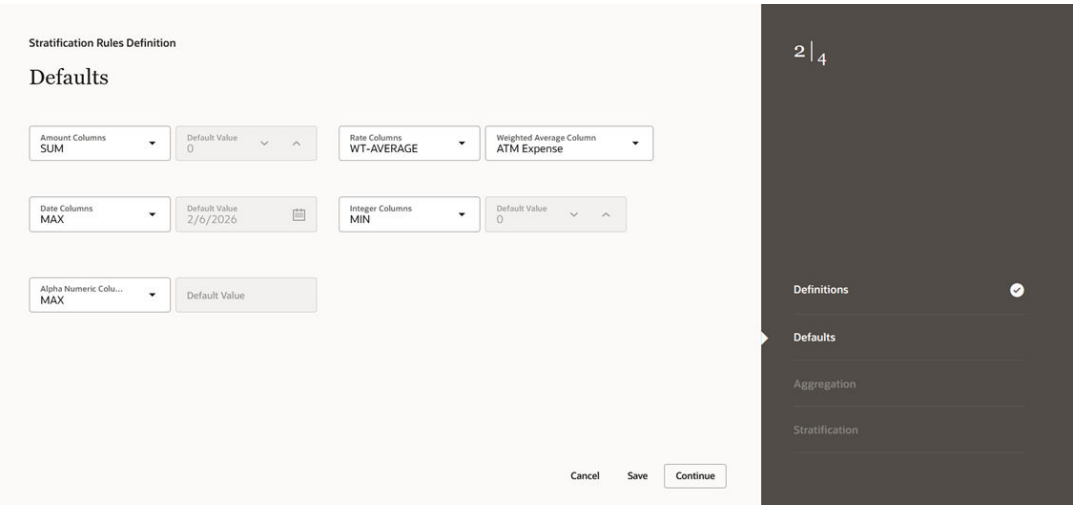
- **Data Filter:** Select Data filter. Displays data filters defined on Source Table
- **Catch All Buckets:** Specify whether or not to include a catch-all bucket in the process. If this is selected, then all records from the source table must be accounted for in the target table.
- **Apply Column mapping for Non Aggregated Accounts:**For accounts in the Source Table, which does not satisfy the filter condition will not be aggregated and will be moved to the destination table as is. But whether column mappings which are defined in aggregation tab and under defaults will be applicable or not for non-aggregated records, will be dependent on this switch. If switch is ON, then the aggregated records column mappings will be applicable to the non-aggregated records. Else the non-aggregated records will be moved to the destination aggregated table without using the column mappings.

3. Click **Continue**.

Step 2: Defaults section

1. Navigate to the **Defaults** section.

Figure 4-100 Defaults section



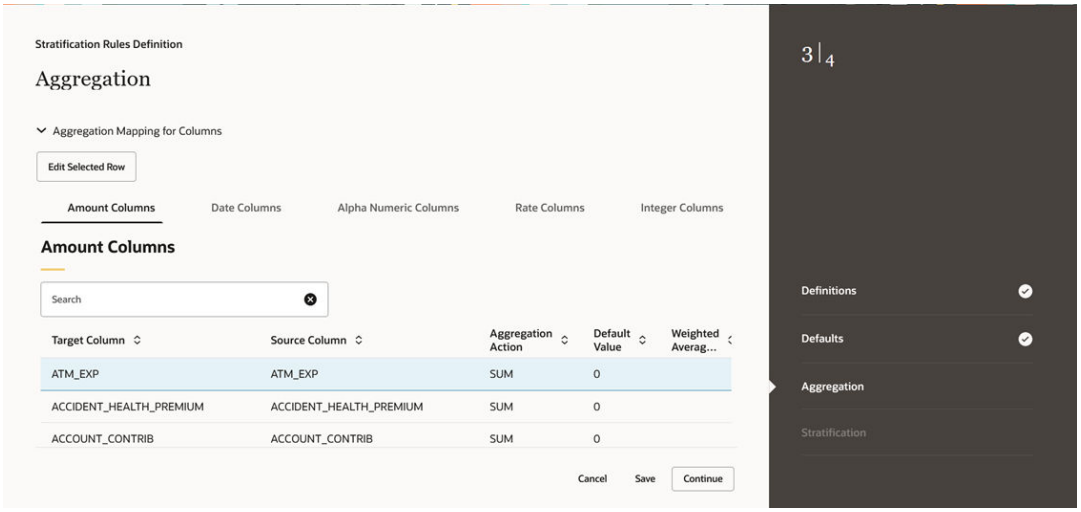
2. Select the Amount default. Possible selections are MAX, MIN, SUM, AVG. The recommended selection is SUM.
3. Select the Date default. Possible selections are MAX, MIN, MEDIAN. The recommended selection is MEDIAN.
4. Select the Alpha Numeric default. Possible selections are MAX, MIN. The recommended selection is MAX.
5. 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.
6. Select the Integer default. Possible selections are MAX, MIN. The recommended selection is MAX
7. Click **Continue**.

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Step 3: Aggregation

1. Navigate to the **Aggregation** section.

Figure 4-101 Aggregation section

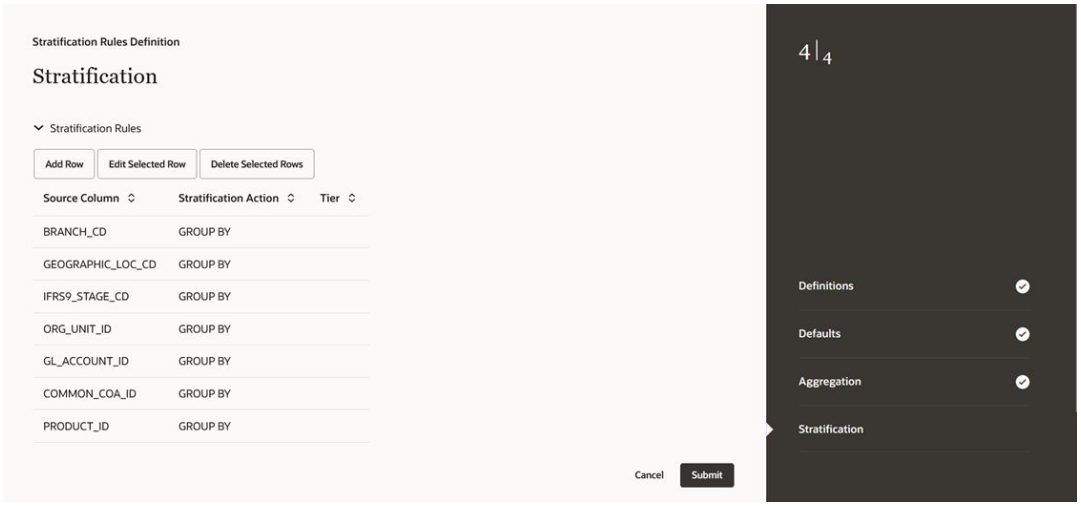


2. Select the specific row you want to define from the bottom half of the page. You have the option to use the default values previously input on the Defaults tab or you can input a different Aggregation Action at the top of the page.
3. Use the pagination selections at the bottom of the page to address/review all columns or type the column name or a portion of the column name to navigate directly to a specific column.
4. Click **Continue**.

Step 4: Stratification section

1. Navigate to **Stratification** section.

Figure 4-102 Stratification section



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2. 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.
3. 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.
4. Select Submit to save your inputs and close the rule

4.14.2.2 Executing a Stratification Rule

You can execute Data Stratification Rule using following methods:

- Data Stratification Rule UI
- Scheduler Service
- Using Data Stratification Rule UI
- Using Scheduler Service

4.14.2.2.1 Using Data Stratification Rule UI

To execute the Data Stratification Rule, follow these steps:

- Navigate to the **Data Stratification Rule Summary** page.
- Search for a Data Stratification Rule.
- Click on the **Action** icon against the Data Stratification Rule Name and select **Execute** to execute an existing Data Stratification Rule. The Run Parameter Execution window is displayed.
- Select the **As of Date (Execution Date)**, then click **Run**.

> **Note**
>
> You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected then data of selected entity along with its child and descendants are processed.

- The **Data Stratification Rule Run Confirmation** page is displayed. The status of the process is displayed in the **Status** column. After completion of the process, you can navigate to the Execution Details page by selecting the **Execution Details** option under the **Action** column.

4.14.2.2.2 Using Scheduler Service

To execute the Stratification Rule, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Define a new batch.
3. Enter the **Batch Name** and **Description**, and then save the batch.
4. To add a task, navigate to **Define Task.**
5. Select the Batch from Batch drop-down list on Define Task window.

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6. Click the **Add** button.
7. Define the Task Code, Task Name, and Description.
8. Select Components as “Stratification Rule”.
9. Input the following mandatory parameters:
    - Rule Name: Select the Stratification Rule from drop-down list.
10. Save and Execute the batch with Batch ID and MIS Date.

For more information, see the Scheduler Service.

4.15 Account Summary

The Account Summary table consolidates account and instrument-level output data from Funds Transfer Pricing (FTP), Profitability Management (PFT), and other Profitability and Balance Sheet Management Cloud Service applications into a single, unified table. This consolidated table can be used for dashboard reporting, extraction, and other downstream consumption, without the need to separately query multiple application-specific output tables.

- Introduction to Account Summary
  Account Summary is a single, shared table that consolidates account and instrument-level data across Funds Transfer Pricing Cloud Service (FTPCS), Profitability Management Cloud Service (PFTCS), Process Automation Cloud Service (PACS), Asset Liability Management Cloud Service (ALMCS), and Cash Flow Edits Cloud Service (CFECS). FTP and PFT currently update the Instrument tables, so the Account Summary table is populated with output from both applications in a common structure. This avoids the need to maintain separate common and application-specific account summary tables, and avoids joining large result sets between them.
- Source Instrument Tables
  Account Summary is populated from the following source Instrument tables:
- Account Summary Load Configuration
  The Account Summary Load Configuration screen allows you to select the columns that must be populated into the Account Summary table from the Portfolio table class. Columns are grouped into two categories: Mandatory columns, which are populated out-of-the-box, and User-selected columns, which you choose from the Available Columns list. You can also select the dynamic output columns generated from FTP, PFT, or other rule executions, to include in the Account Summary table.

4.15.1 Introduction to Account Summary

Account Summary is a single, shared table that consolidates account and instrument-level data across Funds Transfer Pricing Cloud Service (FTPCS), Profitability Management Cloud Service (PFTCS), Process Automation Cloud Service (PACS), Asset Liability Management Cloud Service (ALMCS), and Cash Flow Edits Cloud Service (CFECS). FTP and PFT currently update the Instrument tables, so the Account Summary table is populated with output from both applications in a common structure. This avoids the need to maintain separate common and application-specific account summary tables, and avoids joining large result sets between them.

Account Summary provides the following key benefits:

- Common Account Summary for FTP, PFT, and other applications: Data can be extracted from Account Summary for FTP only, PFT only, both FTP and PFT, or all other applications.

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- Avoids joins between a common Account Summary table and application-specific Account Summary tables, which reduces query complexity and improves performance for downstream reads and extractions.
- Dimension-based analysis: Analysis on dimensions can be performed directly on the Account Summary table using dimension IDs. Where additional descriptive attributes are required, you can perform selected joins to dimension tables as needed.
- Performance benefits: A single data push operation loads Account Summary, instead of separate pushes into multiple application-specific summary tables. The Account Summary table is populated based on the currently executed rules and their available outputs, regardless of how many times data is loaded.
- Automatic selection of output columns: The Account Summary population process automatically identifies the relevant output columns produced by FTP and PFT rules that have been executed, so the table reflects the currently available outputs without manual handling for each rule.
- Traceability: Each record in Account Summary retains a reference to its source Instrument table, so the origin of account and instrument-level data can be traced.
- Read availability during data push: Account Summary uses a staging and swap-based load approach instead of a repeated delete-and-insert pattern. This keeps the table readable while the population process is running, so reporting, analysis, and extraction are not blocked.
- Scheduler-based population: The Account Summary population process is available as a Scheduler task, so it can be triggered as part of a controlled post-execution workflow. For information about creating and running a Scheduler task, see *Scheduler Services*.

Each population of Account Summary includes a snapshot timestamp, which allows you to identify when the data was generated and loaded.

> **Note**
>
> Asset Liability Management (ALM) and Cash Flow Edits (CFE) do not output to the Instrument tables, and are therefore not currently reflected in Account Summary.

4.15.2 Source Instrument Tables

Account Summary is populated from the following source Instrument tables:

Table 4-33 Source Instrument Tables

Source Instrument Table	Source Category
FSI_D_ASSET	ASSET
FSI_D_LIABILITY	LIABILITY
FSI_D_LOAN_COMMITMENTS	LOAN_COMMITMENTS
FSI_D_OFF_BALANCE_SHEET	OFF_BALANCE_SHEET
FSI_D_DERIVATIVE	DERIVATIVE
FSI_D_FEE_BASED_SERVICE	FEE_BASED_SERVICE

For each source table, Account Summary loads a fixed set of business-relevant columns, plus any dynamic output columns produced by the FTP, PFT, and other rules that have been

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executed for the given As of Date. It does not load every column available in the source Instrument table.

Columns are identified for load using the following categories:

- Fixed columns: A seeded, fixed list of relevant columns required by downstream dashboard and extraction use cases.
- Dynamic output columns: Output columns produced by the FTP, PFT, and other rules that have been executed, identified from the process execution output details.
- User-selected columns: Any additional column that is not part of the fixed or dynamic output columns can also be configured for load into Account Summary, using the Account Summary Load Configuration screen. Review any custom placeholder columns carefully before selecting them for load.

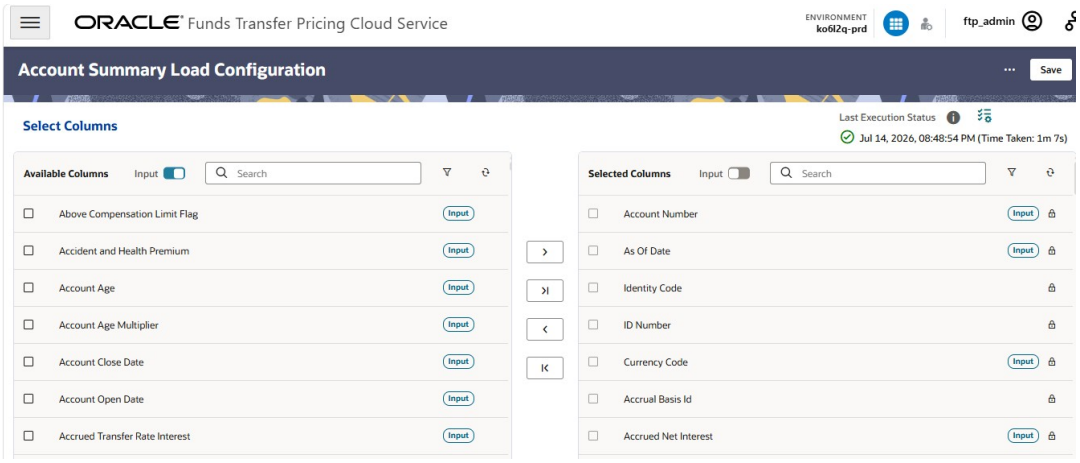
4.15.3 Account Summary Load Configuration

The Account Summary Load Configuration screen allows you to select the columns that must be populated into the Account Summary table from the Portfolio table class. Columns are grouped into two categories: Mandatory columns, which are populated out-of-the-box, and User-selected columns, which you choose from the Available Columns list. You can also select the dynamic output columns generated from FTP, PFT, or other rule executions, to include in the Account Summary table.

To configure the Account Summary Load Configuration:

1. From the LHS menu, select **Maintenance**, and then select **Account Summary Load Configuration**.

Figure 4-103 Account Summary Load Configuration Screen



2. From the **Account Summary Load Configuration** page, review the Available Columns list on the left.

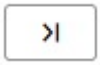
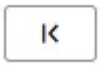
   Columns marked with an Input tag identify the input columns for convenient selection — this lets you select all input columns at once. To add one or a few more columns beyond the tagged ones, use the Input toggle to switch and view the full column list.

3. Use the **Search** field above the Available Columns list to locate a specific column by name.

4. Use the shuttle controls to move columns between the Available Columns and Selected Columns lists:

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Table 4-34 Available Columns and Selected Columns lists

Control	Action
Figure 4-104 Move icon 	Moves the selected column(s) to the Selected Columns list
Figure 4-105 Move All icon 	Moves all columns to the Selected Columns list
Figure 4-106 Remove icon 	Removes the selected column(s) from the Selected Columns list and returns them to Available Columns
Figure 4-107 Remove All icon 	Removes all columns from Selected Columns and returns them to Available Columns

5. Review the Selected Columns list on the right. This list displays the columns that will be included in the load, in the order they were added.

   Columns marked with a lock icon are mandatory system columns (for example, Account Number, As Of Date, Identity Code) and cannot be removed.

6. Use the **Search** field above the Selected Columns list to locate a column already added to the configuration.
7. (Optional) To clear the filter or search, click the **Refresh** icon. This clears any search text and sort order currently applied to the list.
8. Click **Save** to save the load configuration.
9. To run the configuration immediately, click the **Actions** icon (...), and then select one of the following:
   - **Execute** – Runs the Account Summary load using the saved column configuration.

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- **Execution Logs** – Displays the log history for previous load executions.
- **Help** – Opens contextual help for this page.

- Executing the Account Summary Load
  Use the Execute Account Summary Loader panel to run the Account Summary load for a specific date.
- Viewing Execution Logs
  Use the Logviewer Service page to monitor and review the execution details of an Account Summary load run.

4.15.3.1 Executing the Account Summary Load

Use the Execute Account Summary Loader panel to run the Account Summary load for a specific date.

To execute the Account Summary load:

1. From the Account Summary Load Configuration page, click the **Actions** icon (...), and then select **Execute**.

   The Execute Account Summary Loader panel is displayed.
2. In the **Select As of Date** field, enter or select the date for which the account summary data must be loaded.

   Click the **Calendar** icon to select the date from the date picker, or type the date directly in the field.
3. (Optional) Click the eye icon to view the list of As of Dates for which data has already been loaded into the setup. You can select an As of Date directly from this list instead of entering it manually.
4. Click **Execute** to start the load process using the saved column configuration and the specified As of Date.

   Click **Cancel** to close the panel without running the load.
5. Once execution starts, you can monitor its progress and outcome from the **Execution Logs** page (accessible from the Actions icon on the Account Summary Load Configuration page).

4.15.3.2 Viewing Execution Logs

Use the Logviewer Service page to monitor and review the execution details of an Account Summary load run.

To view execution logs:

1. From the Account Summary Load Configuration page, click the Actions icon (...), and then select Execution Logs.

   The **Logviewer Service** page is displayed.
2. Review the following summary details displayed on the left panel:

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Table 4-35 Logviewer Service

Field	Description
Batch Run Id	Unique identifier for the batch execution (for example, ACCOUNT_SUMMARY_LOADER_2026-07-17_1)
Process Id	Identifier of the task within the batch run (for example, TASK1)
Time Elapsed	Total time taken for the execution
Total Logs	Total number of log entries generated
Timezone	Timezone in which log timestamps are displayed
Log Frequency	Interval at which logs are refreshed

3. Use the severity filter tiles (All, Debug, Info, Warn, Error, Fatal) to filter the log entries by severity level. Each tile displays the count of logs for that severity.
4. Use the **Search** field to locate a specific log entry by keyword.
5. Review the log entries displayed in the table, which includes the following columns:
   - **Sequence** – The order in which the log entry was generated.
   - **Timestamp** – The date and time the log entry was recorded.
   - **Severity** – The severity level of the log entry (Info, Warn, Error, Fatal, or Debug).
   - **Message** – The description of the action or event logged.
6. Click the column header sort icons (Sequence, Timestamp, Severity) to sort the log entries.
7. (Optional) Toggle **auto-refresh** to enable automatic log updates at the configured interval, shown next to Last refreshed.
8. To export the logs, click **Download**, and then select one of the following formats:
   - PDF
   - Excel
9. 9. Click **Close** to close the **Logviewer Service** page and return to the **Account Summary Load Configuration** page.

4.16 Cash Flow Edits

In this section, you can find the details about all Cash Flow Edits.

- Configure Cash Flow Edit Rules: The Cash Flow Edits Configuration window allows you to configure a new Cash Flow Edits Rule and this rule configuration can be used and executed using Cash Flow Edits Process.
- Cash Flow Edits Process: The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.
- Configure Cash Flow Edits Rule
- Cash Flow Edits Process

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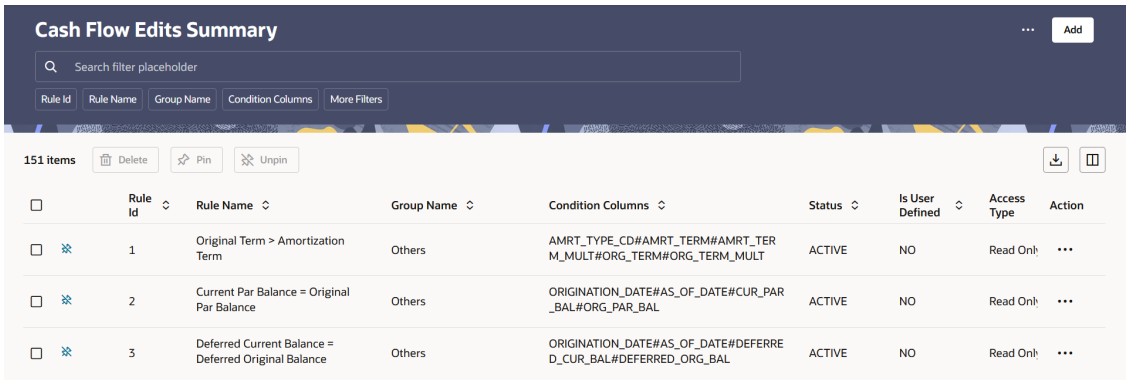
4.16.1 Configure Cash Flow Edits Rule

The Cash Flow Edits Configuration Window allows you to configure a new Cash Flow Edits Rule. Later, this rule configuration can be used and executed using Cash Flow Edits Process UI. 140 rules are seeded as part of Cloud Service.

Cash Flow Edits Rule Summary

This page is the gateway to all Cash Flow Edits Rules and related functionality. You can navigate to other pages relating to Cash Flow Edits Rules from this point.

Figure 4-108 Cash Flow Edits Summary



Search Cash Flow Edits Rule

Prerequisites: Predefined Cash Flow Edits rule

To search for a Cash Flow Edits Rule, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Edits rules that meet the search criteria.

Or

The other method to search a Cash Flow Edits rule is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Cash Flow Edits rule and click **Search**.

The Cash Flow Edits summary displays the following information:

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

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Columns: Allows you to view the summary page data using a customized list of columns.

Add: Click **Add** icon at the top right of the summary page to build a new Cash Flow Edits rule.

The Cash Flow Edits summary table displays the following columns:

- **Rule Id:** The code of Cash Flow Edits rule.
- **Rule Name:** The Cash Flow Edits Rule's short name.
- **Group:** The Group of Cash Flow Edits Rule.
- **Condition Columns:** The Columns on which of Cash Flow Edits Rule is made.
- **Last Modified By:** The user who last modified the Cash Flow Edits Rule.
- **Last Modified Date:** The Date and Time when the Cash Flow Edits Rule was last modified.
- **Status:** The Status of Cash Flow Edits Rule.
- **Is Editable:** The editable status of Cash Flow Edits Rule.
- **Is User Defined:** The user defined status of Cash Flow Edits Rule.
- **Access Type:** Shows the access type as Readonly or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Cash Flow Edits Rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Cash Flow Edits rules. To edit a rule, you must have Read/Write privilege.

    > **Note**
    >
    > You cannot edit out-of-box seeded rules.

  - **Save As:** You can reuse a Cash Flow Edits rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Cash Flow Edits rules that you no longer require. Note that only Cash Flow Edits Rule owners and those with Read/Write privileges can delete Cash Flow Edits Rules. A Cash Flow Edits Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.

    > **Note**
    >
    > You cannot delete out-of-box seeded rules.

You must create and run Cash Flow Edits processes on your Instrument Table Data before you submit Cash Flow Engine based rules for processing.

Also See:

- Create Cash Flow Edits Rule
- Cash Flow Edits Process Errors
- Create Cash Flow Edits Rule
- Cash Flow Edits Process Errors

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4.16.1.1 Create Cash Flow Edits Rule

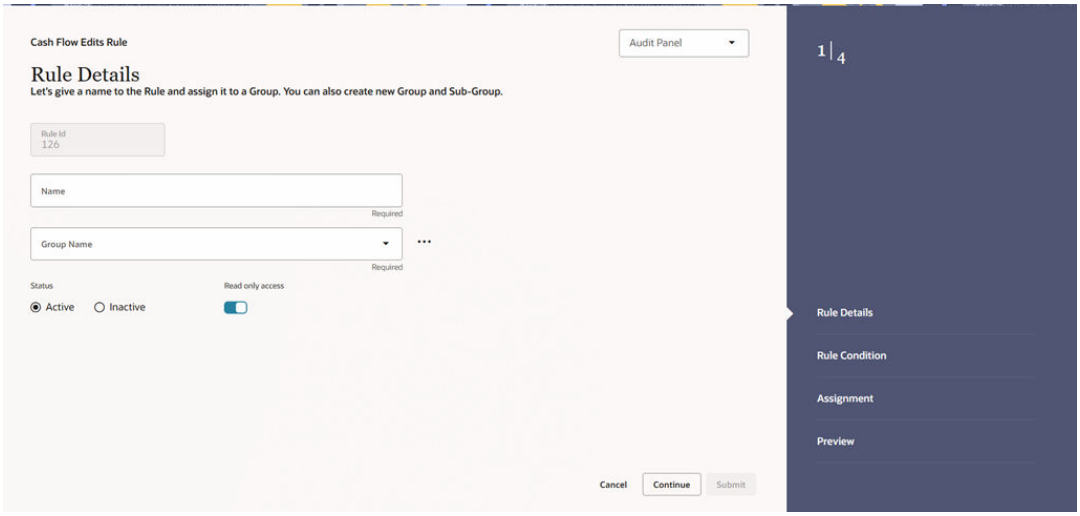
To add a new Cash Flow Edits Rule, follow these steps:

1. Navigate to **Cash Flow Edits Summary** Page.
2. Click the **Add** . The **Rule Details** window is displayed.
3. Follow the steps mentioned in below sections:
   - Step 1: Rule Details
   - Step 2: Rule Condition
   - Step 3: Assignment
   - Step 4: Preview

Step 1: Rule Details

1. Navigate to Rule Details page.

Figure 4-109 Rule Details



2. Enter the following details:

Table 4-36 List of fields used for Creating Cash Flow Edits Process

Field	Description
Rule ID	Shows the ID of the Cash Flow Edits Rule. This is an auto generated numeric field. You cannot modify this.
Rule Name	Enter the name of the Cash Flow Edits Rule. This is an alphanumeric field. The maximum length of this field is 1000 characters.

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Table 4-36 (Cont.) List of fields used for Creating Cash Flow Edits Process

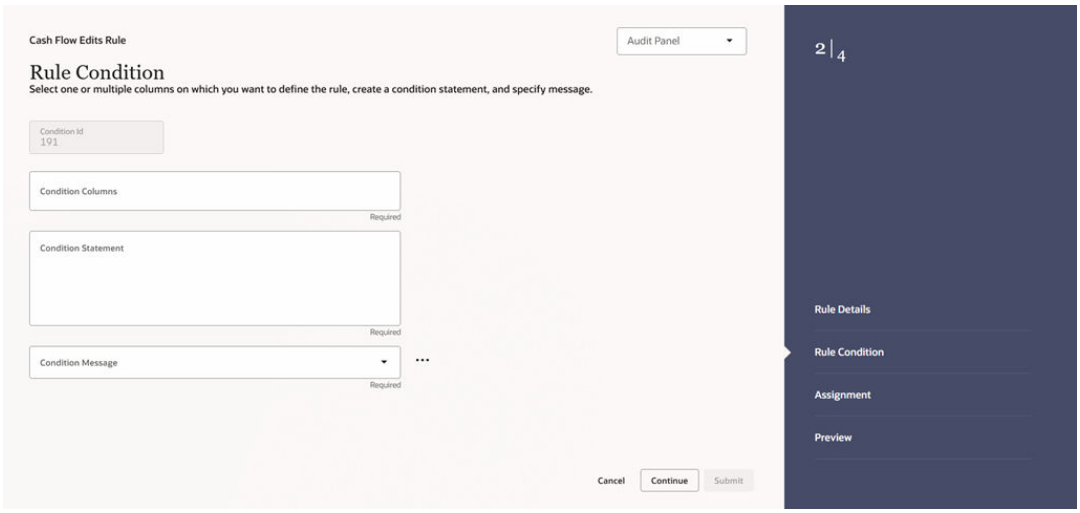
Field	Description
Group Name	Select the Group Name from Group Name drop-down list. For example, Cash Flow. You can add new a Group and Sub Group using Add icon. Adding a Sub Group To add a Sub Group, follow these steps: a. Click Add. The Add Group Window is displayed. b. Enter the following details: • **Group Name:** Name of new Group • **Parent Group:** Select Parent Group • **Group Id** is auto populated. To add a new Group select the 'Praent Group' switch and enter Group Name. These added Group/Sub Group Names will be populated in Cash Flow Edits Details section of Cash Flow Edits Process window.
Status	Set the status of the rule as Active or Inactive.
Access Type	Select the Access Type as Read-Only or Read/ Write.

3. Click **Continue**.

Step 2: Rule Condition

1. Navigate to Rule Condition page.

Figure 4-110 Rule Condition



2. Enter the following details:

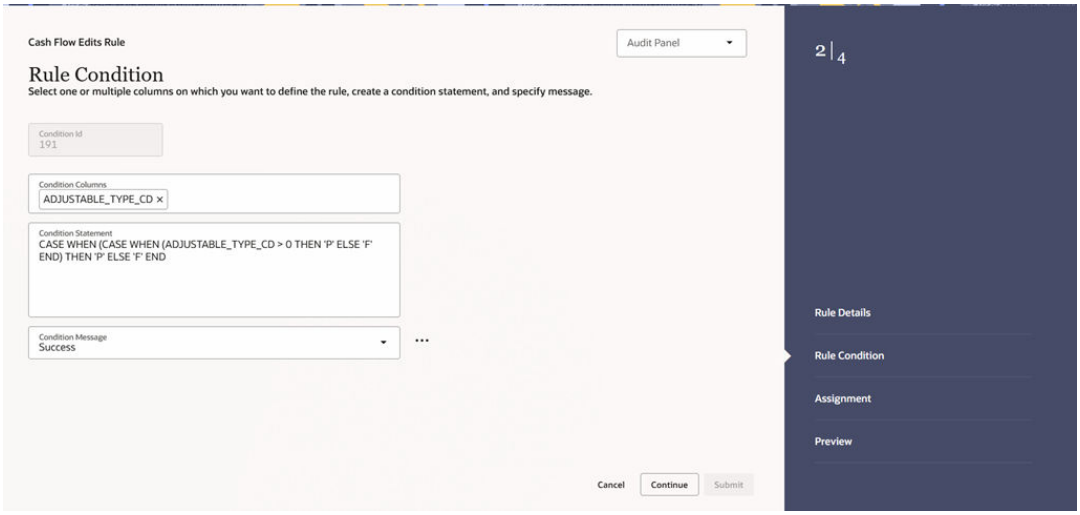
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Table 4-37 List of fields used for Creating Cash Flow Edits Process

Field	Description
Condition ID	This field shows the Condition ID. This is an auto generated numeric field. You cannot modify this.
Condition Columns	Select the Columns using which you want to define the error condition expression.
Condition Statement	This field allows you to define the expression of a rule. You can define condition expression for selected Condition Columns (using the Condition Columns field). When you click the Condition Statement Field, the Expression Window is displayed. Define the condition and click **Save**.
Condition Message	Select the Condition message. You can add a new condition message using Add icon. For more information on Cash Flow Edits messages, see the Cash Flow Edits Execution section. To add a Condition Message, follow these steps: a. Click **Action** icon and select **Add** icon. The **Add Message** window is displayed. Enter the following details: • **Message Type:** Select as Error, Warning, or Information • **Message Description:** Enter the Message details. • **Message ID** is auto populated. b. Click **Save**.

Below is an example:

Figure 4-111 Example



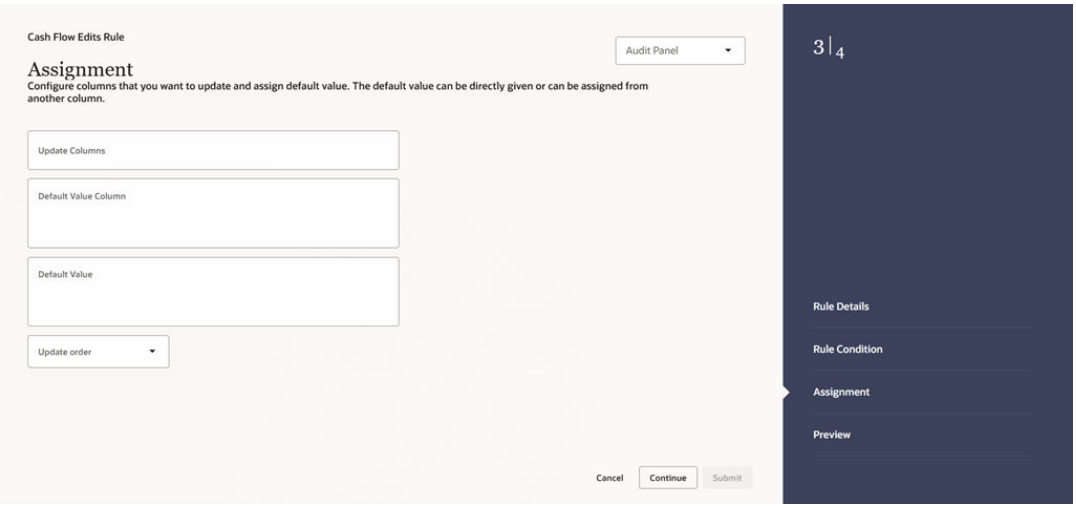
3. Click **Continue**.

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Step 3: Assignment

1. Navigate to Assignment page.

Figure 4-112 Assignment Details



2. Enter the following details:

Table 4-38 List of fields used for Creating Cash Flow Edits Process

Field	Description
Update Columns	Select the columns which you want to update if error condition is met.
Default Value Column	Select the columns from which you want to update columns selected in Update Columns.
Default Value	Enter the values that you want to update the columns selected in Update Columns.
Update Order	If the same column is getting updated by more than one rule then the order in which each rule applies must be selected here.

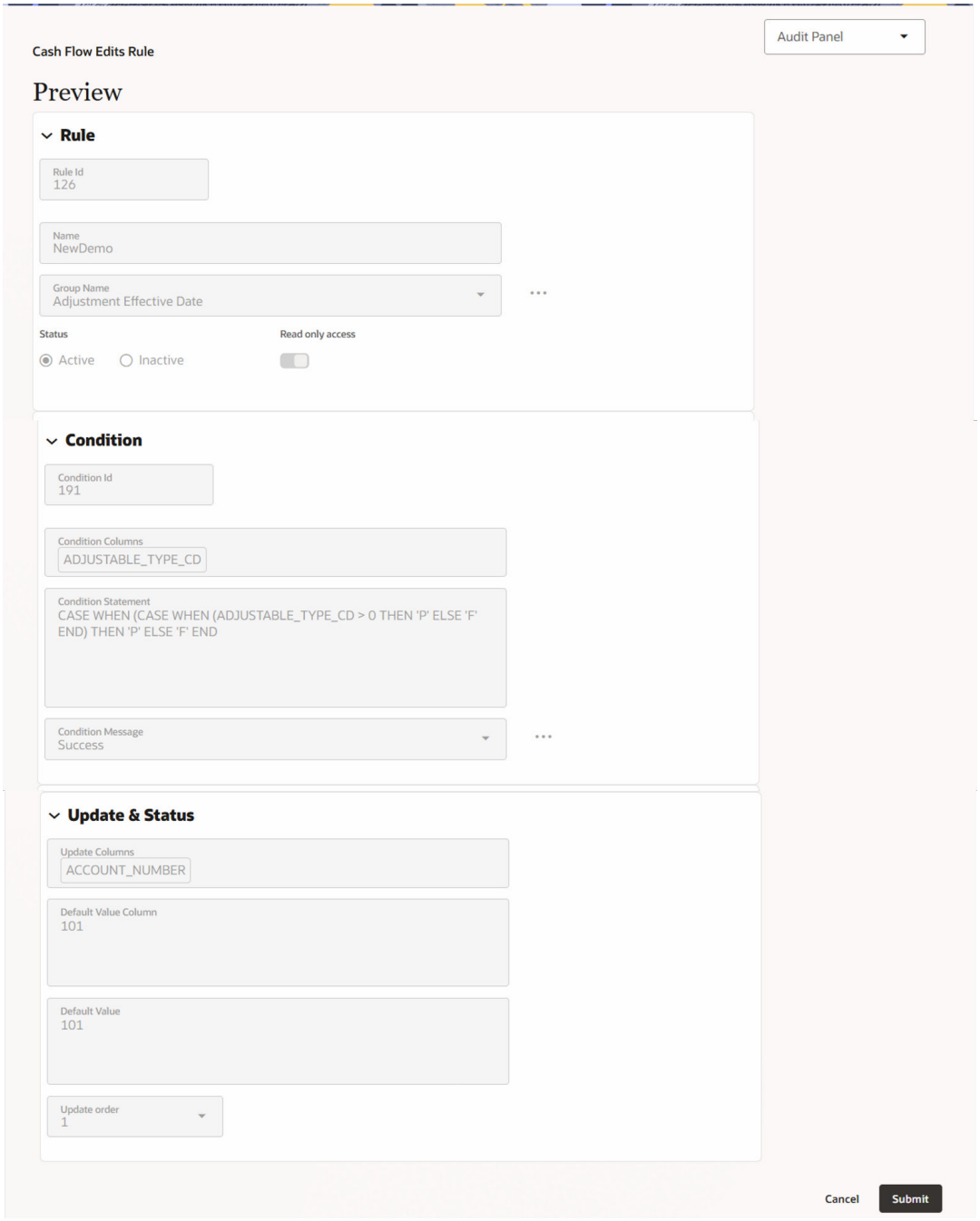
3. Click **Continue**.

Step 4: Preview

1. Navigate to Preview page. Review the rule details.

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Figure 4-113 Preview



2. Click **Submit** to create the rule. The created rule will be displayed on **Cash Flow Edits Summary** page.

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4.16.1.2 Cash Flow Edits Process Errors

> **Note**
>
> - **Error:** Engine does not process, however sometimes default value can get used for calculations.
> - **Warning:** Engine may use the default value or given wrong data for calculation, results may be incorrect.
> - **Info:** Does not impact any processing but results may not be as expected.

- **Rule ID: 1**

Error Condition	(AMRT_TYPE_CD <> 700 OR (amrt_type_cd = 700 AND amrt_term <> 0)) AND (CASE amrt_term_mult WHEN 'Y' THEN amrt_term * 365 WHEN 'M' THEN amrt_term * 30.41667 ELSE amrt_term END) < (CASE org_term_mult WHEN 'Y' THEN org_term * 365 WHEN 'M' THEN org_term * 30.41667 ELSE org_term END) THEN 'P' ELSE 'F' END
Error Description	Amortization term can only be equal to zero on Non-Amortizing instruments
Assignment	AMRT_TERM = ORG_TERM and AMRT_TERM_MULT = ORG_TERM_MULT
Warning	Original Term > Amortization Term
Error Level	Warning

- **Rule ID: 2**

Error Condition	(ORIGINATION_DATE < AS_OF_DATE and CUR_PAR_BAL is not NULL and ORG_PAR_BAL is not NULL and CUR_PAR_BAL = ORG_PAR_BAL)
Error Description	Instrument has originated in past but Current Par Balance and Original Par Balance are equal
Assignment	
Warning	Current Par Balance = Original Par Balance
Error Level	Warning

- **Rule ID: 3**

Error Condition	(ORIGINATION_DATE < AS_OF_DATE and DEFERRED_CUR_BAL is not NULL and DEFERRED_ORG_BAL is not NULL and DEFERRED_CUR_BAL = DEFERRED_ORG_BAL)
Error Description	Instrument has originated in past but Deferred Current Balance and Deferred Original Balance are equal
Assignment	

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Warning	Deferred Current Balance = Deferred Original Balance
Error Level	Warning

- **Rule ID: 4**

Error Condition	(CUR_GROSS_RATE is NULL or CUR_GROSS_RATE < 0)
Error Description	Current gross rate is negative
Assignment	
Warning	Current Gross Rate < 0
Error Level	Info

- **Rule ID: 5**

Error Condition	(CUR_NET_RATE is NULL or CUR_NET_RATE < 0)
Error Description	Current net rate is negative
Assignment	
Warning	Current Net Rate < 0
Error Level	Info

- **Rule ID: 6**

Error Condition	(ACCRUAL_BASIS_CD is NULL or ACCRUAL_BASIS_CD <1 or ACCRUAL_BASIS_CD >7)
Error Description	Accrual basis code must be between 1 and 7 inclusively
Assignment	ACCRUAL_BASIS_CD = 3
Warning	Invalid Accrual Basis
Error Level	Warning

- **Rule ID: 7**

Error Condition	(AMRT_TYPE_CD is NULL or AMRT_TYPE_CD not in (100, 400, 600, 700, 710, 800, 801, 802, 820, 840, 850, 10, 20))
Error Description	Amortization type must be a valid code
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Amortization Type
Error Level	Warning

- **Rule ID: 8**

Error Condition	(AMRT_TYPE_CD = 20 and (PMT_PATTERN_CD is null or PMT_PATTERN_CD <= 0))
Error Description	Amortization type is Payment Pattern but Payment Pattern Code is invalid
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Payment Pattern
Error Level	Warning

- **Rule ID: 9**

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Error Condition	(AMRT_TYPE_CD = 20 and PMT_PATTERN_CD is not null and PMT_PATTERN_CD > 0 and PMT_PATTERN_CD not in (select AMRT_TYPE_CD from fsi_payment_pattern))
Error Description	Amortization type is Payment Pattern but Payment Pattern definition does not exist
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Payment Pattern
Error Level	Warning

- **Rule ID: 10**

Error Condition	(AMRT_TYPE_CD = 10 and (BEHAVIOUR_PATTERN_CD is null or BEHAVIOUR_PATTERN_CD <= 0))
Error Description	Amortization type is Behaviour Pattern but Behaviour Pattern Code is invalid
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Behaviour Pattern
Error Level	Warning

- **Rule ID: 11**

Error Condition	(AMRT_TYPE_CD = 10 and BEHAVIOUR_PATTERN_CD is not NULL and BEHAVIOUR_PATTERN_CD > 0 and BEHAVIOUR_PATTERN_CD not in (select PATTERN_CD from fsi_behaviour_pattern_master))
Error Description	Amortization type is Behaviour Pattern but Behaviour Pattern definition does not exist
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Behaviour Pattern
Error Level	Warning

- **Rule ID: 12**

Error Condition	(AMRT_TYPE_CD in (800, 801, 802) and NOT EXISTS (select 1 from FSI_D_Payment_Schedule WHERE FSI_D_Payment_Schedule.ID_NUMBER=SOURCE_TABLE.ID_NUMBER AND FSI_D_Payment_Schedule.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE AND FSI_D_Payment_Schedule.INSTRUMENT_TYPE_CD = SOURCE_TABLE.INSTRUMENT_TYPE_CD))
Error Description	Cannot find record with matching ID Number, Identity Code and Instrument Type Code in Payment Schedule table
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Payment schedule data
Error Level	Warning

- **Rule ID: 13**

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Error Condition	(AMRT_TYPE_CD in (800, 801, 802) and ORIGINATION_DATE > (select max(PAYMENT_DATE) from FSI_D_Payment_Schedule WHERE FSI_D_Payment_Schedule.ID_NUMBER=SOURCE_TABLE.ID_NUMBER AND FSI_D_Payment_Schedule.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE AND FSI_D_Payment_Schedule.INSTRUMENT_TYPE_CD = SOURCE_TABLE.INSTRUMENT_TYPE_CD))
Error Description	Origination Date is greater than highest date in Payment Schedule
Assignment	AMRT_TYPE_CD = 700
Warning	Invalid Payment schedule data
Error Level	Warning

- **Rule ID: 14**

Error Condition	(AMRT_TERM_MULT is NULL or AMRT_TERM_MULT not in ('D', 'M', 'Y'))
Error Description	Amortization term multiplier must be D, M, or Y
Assignment	AMRT_TERM_MULT = M
Warning	Invalid Amortization Term Multiplier
Error Level	Warning

- **Rule ID: 15**

Error Condition	(AMRT_TYPE_CD = 600 AND (NEG_AMRT_EQ_MULT is NULL or NEG_AMRT_EQ_MULT not in ('D', 'M', 'Y')))
Error Description	Negative Amortization Equalization Frequency multiplier must be D, M, or Y
Assignment	NEG_AMRT_EQ_MULT = M
Warning	Invalid Negative Amortization Equalization Frequency Multiplier
Error Level	Warning

- **Rule ID: 16**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_LIMIT is NULL or NEG_AMRT_LIMIT >=200 or NEG_AMRT_LIMIT < 0))
Error Description	Negative Amortization limit value does not fall in a valid range (0 to 200), Applicable to Negative amortization instruments only
Assignment	NEG_AMRT_LIMIT = 0
Warning	Invalid Negative Amortization Limit
Error Level	Warning

- **Rule ID: 17**

Error Condition	(ORG_TERM_MULT is NULL or ORG_TERM_MULT not in ('D', 'M', 'Y'))
Error Description	Original term multiplier must be D, M, or Y

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Assignment	ORG_TERM_MULT= M
Warning	Invalid Original Term Multiplier
Error Level	Warning

- **Rule ID: 18**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_CHG_FREQ is NULL or NEG_AMRT_PMT_CHG_FREQ < 0))
Error Description	Payment Change Frequency cannot be negative, Applicable to Negative amortization instruments only
Assignment	NEG_AMRT_PMT_CHG_FREQ = 0
Warning	Invalid Negative Amortization Payment Change Frequency
Error Level	Warning

- **Rule ID: 19**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_CHG_FREQ_MULT is NULL or NEG_AMRT_PMT_CHG_FREQ_MULT not in ('D', 'M', 'Y')))
Error Description	Negative Amortization Payment Change Frequency Multiplier must be D, M, or Y
Assignment	NEG_AMRT_PMT_CHG_FREQ_MULT = M
Warning	Invalid Negative Amortization Payment Change Frequency Multiplier
Error Level	Warning

- **Rule ID: 20**

Error Condition	(INT_PMT_FREQ_MULT is NULL or INT_PMT_FREQ_MULT not in ('D', 'M', 'Y'))
Error Description	Interest Payment frequency multiplier must be D, M, or Y
Assignment	INT_PMT_FREQ_MULT = M
Warning	Invalid Interest Payment Frequency Multiplier
Error Level	Warning

- **Rule ID: 21**

Error Condition	(PRIN_PMT_FREQ_MULT is NULL or PRIN_PMT_FREQ_MULT not in ('D', 'M', 'Y'))
Error Description	Principal Payment frequency multiplier must be D, M, or Y
Assignment	PRIN_PMT_FREQ_MULT = M
Warning	Invalid Principal Payment Frequency Multiplier
Error Level	Warning

- **Rule ID: 22**

Error Condition	(RATE_CHG_RND_CD is NULL or RATE_CHG_RND_CD < 0 or RATE_CHG_RND_CD > 4)

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Error Description	Rate change round code must be between 0 and 4
Assignment	RATE_CHG_RND_CD = 0
Warning	Invalid Rate Change Rounding Code
Error Level	Warning

- **Rule ID: 23**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and (RATE_SET_LAG_MULT is NULL or RATE_SET_LAG_MULT not in ('D', 'M', 'Y')))
Error Description	Rate Set Lag Multiplier must be D, M, or Y
Assignment	RATE_SET_LAG_MULT = M
Warning	Invalid Rate Set Lag Multiplier
Error Level	Warning

- **Rule ID: 24**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and (REPRICE_FREQ_MULT is NULL or REPRICE_FREQ_MULT not in ('D', 'M', 'Y')))
Error Description	Repricing Frequency Multiplier must be D, M, or Y
Assignment	REPRICE_FREQ_MULT = M
Warning	Invalid Repricing Frequency Multiplier
Error Level	Warning

- **Rule ID: 25**

Error Condition	(RATE_CHG_RND_FAC is NULL or RATE_CHG_RND_FAC < 0 or RATE_CHG_RND_FAC > 1)
Error Description	Rate change round factor must be between 0 and 1
Assignment	RATE_CHG_RND_FAC = 0
Warning	Invalid Rate Change Rounding Factor
Error Level	Warning

- **Rule ID: 26**

Error Condition	(MATURITY_DATE < NEXT_INT_PAYMENT_DATE)
Error Description	Maturity date cannot be before the next interest payment date
Assignment	MATURITY_DATE = (CASE PRIN_PMT_FREQ_MULT WHEN 'Y' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ * 12)) WHEN 'M' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ)) ELSE NEXT_PRIN_PAYMENT_DATE + ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ) END)
Warning	Maturity Date < Next Interest Payment Date

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Error Level	Warning

- **Rule ID: 27**

Error Condition	(MATURITY_DATE < NEXT_PRIN_PAYMENT_DATE)
Error Description	Maturity date cannot be before the next principal payment date
Assignment	MATURITY_DATE = (CASE PRIN_PMT_FREQ_MULT WHEN 'Y' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ * 12)) WHEN 'M' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ)) ELSE NEXT_PRIN_PAYMENT_DATE + ((REMAIN_NO_PMTS -1)* PRIN_PMT_FREQ) END)
Warning	Maturity Date < Next Principal Payment Date
Error Level	Warning

- **Rule ID: 28**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_EQ_FREQ is NULL or NEG_AMRT_EQ_FREQ < 0))
Error Description	Negative amortization equalization frequency cannot be negative, Applicable to Negative amortization instruments only
Assignment	NEG_AMRT_EQ_FREQ = 0
Warning	Negative Amortization Equalization Frequency < 0
Error Level	Warning

- **Rule ID: 29**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_EQ_FREQ is not null and NEG_AMRT_EQ_FREQ > 0 and NEG_AMRT_EQ_DATE <= greatest(ORIGINATION_DATE, AS_OF_DATE))
Error Description	Negative Amortization equalization date is less than origination date (future origination) or less than the as-of-date (past origination), Applicable to Negative Amortization instruments only
Assignment	NEG_AMRT_EQ_DATE = NEXT_REPRICE_DATE
Warning	Negative Amortization Equalization Date < Origination Date or As of Date
Error Level	Warning

- **Rule ID: 30**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_EQ_FREQ is not NULL and NEG_AMRT_EQ_FREQ > 0 and NEG_AMRT_EQ_DATE > MATURITY_DATE)

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Error Description	Next interest payment date is less than as-of-date (past origination case), As of Date cannot be greater than the origination date and greater than the next payment date.
Assignment	NEG_AMRT_EQ_DATE = NEXT_REPRICE_DATE
Warning	Negative Amortization Equalization Date > Maturity Date
Error Level	Warning

- **Rule ID: 31**

Error Condition	(AS_OF_DATE > ORIGINATION_DATE and AS_OF_DATE >= NEXT_INT_PAYMENT_DATE)
Error Description	Negative Amortization equalization date is after Maturity Date, Applicable to Negative Amortization instruments only
Assignment	NEXT_INT_PAYMENT_DATE = AS_OF_DATE + 1
Warning	Next Interest Payment Date < As of Date
Error Level	Warning

- **Rule ID: 32**

Error Condition	(AS_OF_DATE > ORIGINATION_DATE and AS_OF_DATE >= NEXT_PRIN_PAYMENT_DATE)
Error Description	Next principal payment date is less than as-of-date (past origination case), As of Date cannot be greater than the origination date and greater than the next payment date.
Assignment	NEXT_PRIN_PAYMENT_DATE= AS_OF_DATE + 1
Warning	Next Principal Payment Date < As of Date
Error Level	Warning

- **Rule ID: 33**

Error Condition	(ORIGINATION_DATE >= AS_OF_DATE and ORIGINATION_DATE >= NEXT_INT_PAYMENT_DATE)
Error Description	Next interest payment date is less than origination date (future origination case)
Assignment	NEXT_INT_PAYMENT_DATE = ORIGINATION_DATE + 1
Warning	Next Interest Payment Date < Origination Date
Error Level	Warning

- **Rule ID: 34**

Error Condition	(ORIGINATION_DATE >= AS_OF_DATE and ORIGINATION_DATE >= NEXT_PRIN_PAYMENT_DATE)
Error Description	Next principal payment date is less than origination date (future origination case)

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Assignment	NEXT_PRIN_PAYMENT_DATE= ORIGINATION_DATE + 1
Warning	Next Principal Payment Date < Origination Date
Error Level	Warning

- **Rule ID: 35**

Error Condition	(ORIGINATION_DATE <= AS_OF_DATE and NEXT_REPRICE_DATE <= AS_OF_DATE and REPRICE_FREQ > 0)
Error Description	Next repricing date is less than as-of-date (past origination case)
Assignment	NEXT_REPRICE_DATE = AS_OF_DATE + 1
Warning	Next Reprice Date < As of Date
Error Level	Warning

- **Rule ID: 36**

Error Condition	(ORIGINATION_DATE > AS_OF_DATE and NEXT_REPRICE_DATE < ORIGINATION_DATE and REPRICE_FREQ > 0)
Error Description	Next repricing date is less than the origination date (future origination case)
Assignment	NEXT_REPRICE_DATE = ORIGINATION_DATE + 1
Warning	Next Reprice Date < Origination Date
Error Level	Warning

- **Rule ID: 37**

Error Condition	(AMRT_TYPE_CD = 600 and (ORG_PAYMENT_AMT is NULL or ORG_PAYMENT_AMT = 0) and NEG_AMRT_PMT_DECR_LIFE > 0)
Error Description	Payment decrease life is expressed as a percent of a original payment, Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_DECR_LIFE = 0
Warning	Original Payment Amount = 0 and Negative Amortization Payment Decrease Limit (Life) <> 0
Error Level	Warning

- **Rule ID: 38**

Error Condition	(AMRT_TYPE_CD = 600 and (ORG_PAYMENT_AMT is NULL or ORG_PAYMENT_AMT = 0) and NEG_AMRT_PMT_INCR_LIFE > 0)
Error Description	Payment increase life is expressed as a percent of a original payment, Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_INCR_LIFE = 0
Warning	Original Payment Amount = 0 and Negative Amortization Payment Increase Limit (Life) <> 0
Error Level	Warning

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- **Rule ID: 39**

Error Condition	(ORG_TERM = 0 OR ORG_TERM <> (CASE ORG_TERM_MULT WHEN 'Y' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)*12 WHEN 'M' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) ELSE (MATURITY_DATE - ORIGINATION_DATE) END))
Error Description	Original term should equal the time between the origination date and the maturity date
Assignment - Default Value	ORG_TERM#ORG_TERM_MULT = If MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END#
Warning	Original Term <> Maturity Date - Orgination Date
Error Level	Warning

- **Rule ID: 40**

Error Condition	(ORIGINATION_DATE is NULL or ORIGINATION_DATE < '1-Aug-1950' or ORIGINATION_DATE > '1-Aug-2099')
Error Description	Origination date must be acceptable
Assignment	ORIGINATION_DATE = 1-Jan-50
Warning	Origination date < 01/01/1950
Error Level	Warning

- **Rule ID: 41**

Error Condition	(INT_PMT_FREQ > (CASE INT_PMT_FREQ_MULT WHEN 'Y' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)*12 WHEN 'M' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) ELSE (MATURITY_DATE - ORIGINATION_DATE) END))
Error Description	Interest Payment frequency cannot be greater than original term
Assignment - Default Value	INT_PMT_FREQ#INT_PMT_FREQ_MULT = If MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END#
Warning	Interest Payment Freq > Original Term
Error Level	Warning

- **Rule ID: 42**

Error Condition	(PRIN_PMT_FREQ >(CASE PRIN_PMT_FREQ_MULT WHEN 'Y' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE)*12 WHEN 'M' THEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) ELSE (MATURITY_DATE - ORIGINATION_DATE) END))

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Error Description	Principal Payment frequency cannot be greater than original term
Assignment - Default Value	PRIN_PMT_FREQ#PRIN_PMT_FREQ_MULT= If MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END#
Warning	Principal Payment Freq > Original Term
Error Level	Warning

- **Rule ID: 43**

Error Condition	((CUR_PAYMENT is NULL or CUR_PAYMENT < 0 and CUR_PAR_BAL > 0) or (CUR_PAYMENT > 0 and CUR_PAR_BAL < 0))
Error Description	Current payment and current par balance cannot have opposite signs
Assignment	CUR_PAYMENT = 0
Warning	Current Payment and Current Par Balance have opposite signs
Error Level	Warning

- **Rule ID: 44**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_PMT_CHG_FREQ > 0 and AS_OF_DATE > NEG_AMRT_PMT_ADJUST_DATE)
Error Description	Negative Amortization Payment Adjustment Date is less than the as-of-date (past origination), Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_ADJUST_DATE=NEXT_REPRICE_DATE
Warning	Negative Amortization Payment Adjustment Date < As of Date
Error Level	Warning

- **Rule ID: 45**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_PMT_CHG_FREQ > 0 and AS_OF_DATE < NEG_AMRT_PMT_ADJUST_DATE and NEG_AMRT_PMT_ADJUST_DATE < ORIGINATION_DATE)
Error Description	Negative Amortization Payment adjustment date is less than origination date (future origination), Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_ADJUST_DATE=NEXT_REPRICE_DATE
Warning	Negative Amortization Payment Adjustment Date < Origination Date
Error Level	Warning

- **Rule ID: 46**

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Error Condition	((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE and MATURITY_DATE > ORIGINATION_DATE)))
Error Description	Interest Payment frequency is less than or equal to zero, and both maturity date and origination date are valid dates and can be used to calculate payment frequency.
Assignment	NEXT_INT_PAYMENT_DATE#ORG_TERM#ORG_TERM_MULT#INT_PMT_FREQ#INT_PMT_FREQ_MULT#REMAIN_NO_PMTS=MATURITY_DATE#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Interest Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 47**

Error Condition	((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE and MATURITY_DATE > ORIGINATION_DATE)))
Error Description	Principal Payment frequency is less than or equal to zero, and both maturity date and origination date are valid dates and can be used to calculate payment frequency.
Assignment	NEXT_PRIN_PAYMENT_DATE#ORG_TERM#ORG_TERM_MULT#PRIN_PMT_FREQ#PRIN_PMT_FREQ_MULT#REMAIN_NO_PMTS=MATURITY_DATE#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Principal Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 48**

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Error Condition	((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE <= AS_OF_DATE and NEXT_INT_PAYMENT_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATION_DATE and NEXT_INT_PAYMENT_DATE > ORIGINATION_DATE)))
Error Description	Interest payment frequency is less than or equal to zero and maturity date is invalid, but next interest payment date can be used to calculate a valid payment frequency
Assignment	MATURITY_DATE#ORG_TERM#ORG_TERM_MULT#INT_PMT_FREQ#INT_PMT_FREQ_MULT#REMAIN_NO_PMTS=NEXT_INT_PAYMENT_DATE#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Interest Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 49**

Error Condition	((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE <= AS_OF_DATE and NEXT_PRIN_PAYMENT_DATE > AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATION_DATE and NEXT_PRIN_PAYMENT_DATE > ORIGINATION_DATE)))
Error Description	Principal payment frequency is less than or equal to zero and maturity date is invalid, but next interest payment date can be used to calculate a valid payment frequency
Assignment	MATURITY_DATE#ORG_TERM#ORG_TERM_MULT#PRIN_PMT_FREQ#PRIN_PMT_FREQ_MULT#REMAIN_NO_PMTS=NEXT_PRIN_PAYMENT_DATE#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Principal Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 50**

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Error Condition	((INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE <= AS_OF_DATE and NEXT_INT_PAYMENT_DATE <= AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATION_DATE and NEXT_INT_PAYMENT_DATE < ORIGINATION_DATE)))
Error Description	Interest payment frequency is less than or equal to zero and all dates which can be used to calculate payment frequency are in the past
Assignment	MATURITY_DATE#NEXT_INT_PAYMENT_DATE#ORG_TERM#ORG_TERM_MULT#INT_PMT_FREQ#INT_PMT_FREQ_MULT#REMAIN_NO_PMTS=AS_OF_DATE + 1#AS_OF_DATE + 1#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Interest Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 51**

Error Condition	((PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0) and ((ORIGINATION_DATE <= AS_OF_DATE and MATURITY_DATE <= AS_OF_DATE and NEXT_PRIN_PAYMENT_DATE <= AS_OF_DATE) or (ORIGINATION_DATE > AS_OF_DATE AND MATURITY_DATE < ORIGINATION_DATE and NEXT_PRIN_PAYMENT_DATE < ORIGINATION_DATE)))
Error Description	Principal payment frequency is less than or equal to zero and all dates which can be used to calculate payment frequency are in the past
Assignment	MATURITY_DATE#NEXT_PRIN_PAYMENT_DATE#ORG_TERM#ORG_TERM_MULT#PRIN_PMT_FREQ#PRIN_PMT_FREQ_MULT#REMAIN_NO_PMTS=AS_OF_DATE + 1#AS_OF_DATE + 1#CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##CASE WHEN MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) < 1 THEN 1 ELSE MONTHS_BETWEEN(MATURITY_DATE, ORIGINATION_DATE) END##
Warning	Principal Payment Frequency <= 0
Error Level	Warning

- **Rule ID: 52**

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Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_INCR_CYCLE is NULL or NEG_AMRT_PMT_INCR_CYCLE < 0))
Error Description	Negative Amortization Payment increase limit (cycle) cannot be less than zero, Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_INCR_CYCLE=0
Warning	Negative Amortization Payment Increase Limit (Cycle) < 0
Error Level	Warning

- **Rule ID: 53**

Error Condition	(RATE_CAP_LIFE < CUR_GROSS_RATE and RATE_CAP_LIFE <> 0 and CUR_GROSS_RATE <> 0 and TEASER_END_DATE < AS_OF_DATE)
Error Description	Current gross rate is greater than the rate cap life
Assignment	RATE_CAP_LIFE=CUR_GROSS_RATE
Warning	Rate Cap Life < Current Gross Interest Rate
Error Level	Info

- **Rule ID: 54**

Error Condition	(RATE_CAP_LIFE < CUR_NET_RATE and RATE_CAP_LIFE <> 0)
Error Description	Current net rate is greater than the rate cap
Assignment	
Warning	Rate Cap Life < Current Net Interest Rate
Error Level	Info

- **Rule ID: 55**

Error Condition	(RATE_CHG_MIN is NULL or RATE_CHG_MIN < 0)
Error Description	Minimum rate change cannot be negative
Assignment	RATE_CHG_MIN=0
Warning	Rate Change Minimum < 0
Error Level	Warning

- **Rule ID: 56**

Error Condition	(RATE_DECR_CYCLE is NULL or RATE_DECR_CYCLE < 0)
Error Description	Rate decrease limit (cycle) must not be negative
Assignment	RATE_DECR_CYCLE=0
Warning	Rate Decrease Limit (Cycle) < 0
Error Level	Warning

- **Rule ID: 57**

Error Condition	(RATE_FLOOR_LIFE > CUR_GROSS_RATE and CUR_GROSS_RATE <> 0 and TEASER_END_DATE < AS_OF_DATE)
Error Description	Current gross rate is less than the rate floor

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Assignment	
Warning	Rate Floor Life > Currrent Gross Interest Rate
Error Level	Info

- **Rule ID: 58**

Error Condition	(RATE_FLOOR_LIFE > CUR_NET_RATE)
Error Description	Rate floor life must not be greater than the current net rate
Assignment	RATE_FLOOR_LIFE=CUR_GROSS_RATE
Warning	Rate Floor Life > Currrent Net Interest Rate
Error Level	Info

- **Rule ID: 59**

Error Condition	(RATE_INCR_CYCLE is NULL or RATE_INCR_CYCLE < 0)
Error Description	Rate increase limit (cycle) cannot be less than 0
Assignment	RATE_INCR_CYCLE=0
Warning	Rate Increase Limit (Cycle) < 0
Error Level	Warning

- **Rule ID: 60**

Error Condition	(REMAIN_NO_PMTS is NULL or REMAIN_NO_PMTS < 1)
Error Description	There has to be at least 1 payment left
Assignment	REMAIN_NO_PMTS=1
Warning	Remaining Number of Payments < 1
Error Level	Warning

- **Rule ID: 61**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and (RATE_SET_LAG is NULL or RATE_SET_LAG < 0))
Error Description	Rate set lag cannot be negative
Assignment	RATE_SET_LAG=0
Warning	Rate Set Lag < 0
Error Level	Warning

- **Rule ID: 62**

Error Condition	(TEASER_END_DATE < ORIGINATION_DATE)
Error Description	Teaser End Date cannot be before Origination Date
Assignment	TEASER_END_DATE=ORIGINATION_DATE
Warning	Teaser End Date < Origination Date
Error Level	Warning

- **Rule ID: 63**

Error Condition	(TEASER_END_DATE > MATURITY_DATE)

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Error Description	Teaser End Date cannot be after Maturity Date
Assignment	TEASER_END_DATE=MATURITY_DATE
Warning	Teaser End Date > Maturity Date
Error Level	Warning

- **Rule ID: 64**

Error Condition	(AMRT_TYPE_CD = 710 and ORG_PAR_BAL < CUR_PAR_BAL)
Error Description	Original balance on Rule of 78's instruments should be greater than current balance
Assignment	
Warning	Orginal Par Balance < Current Par Balance
Error Level	Info

- **Rule ID: 65**

Error Condition	(AMRT_TYPE_CD = 600 and (REPRICE_FREQ is NULL or REPRICE_FREQ = 0))
Error Description	Reprice Frequency cannot be zero for Adjustable Negative Amortization instrument
Assignment	
Warning	Adjustable Negative Amortization instrument has Reprice Frequency = 0
Error Level	Info

- **Rule ID: 66**

Error Condition	(REPRICE_FREQ <> 0 and LAST_REPRICE_DATE > NEXT_REPRICE_DATE)
Error Description	Last repricing date is greater than next repricing date
Assignment	LAST_REPRICE_DATE=(CASE REPRICE_FREQ_MULT WHEN 'Y' THEN ADD_MONTHS(NEXT_REPRICE_DATE, -REPRICE_FREQ*12) WHEN 'M' THEN ADD_MONTHS(NEXT_REPRICE_DATE, -REPRICE_FREQ) ELSE NEXT_REPRICE_DATE - REPRICE_FREQ END)
Warning	Last Reprice Date > Next Reprice Date
Error Level	Warning

- **Rule ID: 67**

Error Condition	(ADJUSTABLE_TYPE_CD in (50, 250) and (INTEREST_RATE_CD is NULL or INTEREST_RATE_CD <= 0))
Error Description	Interest rate code must be valid for adjustable rate instruments
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Adjustable Rate instrument has invalid Interest Rate Code
Error Level	Warning

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- **Rule ID: 68**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and INTEREST_RATE_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.interest_rate_cd = SOURCE_TABLE.interest_rate_cd and fsi_ircs.volatility_curve_flg > 0))
Error Description	Interest rate code of instrument is not an yield curve. Repricing attributes will be ignored and processed as fixed interest rate;
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Invalid Interest Rate Code. Curve Type is not Interest Rate Curve
Error Level	Warning

- **Rule ID: 69**

Error Condition	(NET_MARGIN_CD is NULL or NET_MARGIN_CD not in (0, 1))
Error Description	Valid net margin codes are 0 or 1.
Assignment	NET_MARGIN_CD=0
Warning	Invalid Net Margin Code
Error Level	Warning

- **Rule ID: 70**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_DECR_CYCLE is NULL or NEG_AMRT_PMT_DECR_CYCLE < 0))
Error Description	Payment Decrease Limit (Cycle) cannot be less than zero. Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_DECR_CYCLE=0
Warning	Negative Amortization Payment Decrease Limit (Cycle) = 0
Error Level	Warning

- **Rule ID: 71**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_DECR_LIFE is NULL or NEG_AMRT_PMT_DECR_LIFE < 0))
Error Description	Payment Decrease Limit (Life) cannot be less than zero. Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_DECR_LIFE=0
Warning	Negative Amortization Payment Decrease Limit (Life) = 0
Error Level	Warning

- **Rule ID: 72**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_PMT_DECR_LIFE <> 0 and CUR_PAYMENT < ORG_PAYMENT_AMT * (1 - NEG_AMRT_PMT_DECR_LIFE/100))

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Error Description	Current payment is less than the minimum payment amount. Applicable to negative amortization instruments only
Assignment	
Warning	Current Payment is less than Life Pay Floor
Error Level	Info

- **Rule ID: 73**

Error Condition	(AMRT_TYPE_CD = 600 and (NEG_AMRT_PMT_INCR_LIFE is NULL or NEG_AMRT_PMT_INCR_LIFE < 0))
Error Description	Payment Increase Limit (Life) cannot be less than zero. Applicable to negative amortization instruments only
Assignment	NEG_AMRT_PMT_INCR_LIFE=0
Warning	Negative Amortization Payment Increase Limit (Life) = 0
Error Level	Warning

- **Rule ID: 74**

Error Condition	(AMRT_TYPE_CD = 600 and NEG_AMRT_PMT_INCR_LIFE <> 0 and CUR_PAYMENT > ORG_PAYMENT_AMT * (1 + NEG_AMRT_PMT_INCR_LIFE/100))
Error Description	Current payment is greater than the maximum payment amount. Applicable to negative amortization instruments only
Assignment	
Warning	Current Payment is greater than Life Pay Cap
Error Level	Info

- **Rule ID: 75**

Error Condition	(ISSUE_DATE > ORIGINATION_DATE)
Error Description	Issue date cannot be greater than origination date
Assignment	ISSUE_DATE=ORIGINATION_DATE
Warning	Issue Date > Origination Date
Error Level	Warning

- **Rule ID: 76**

Error Condition	(REPRICE_FREQ is NULL or REPRICE_FREQ < 0)
Error Description	Repricing frequency must not be negative
Assignment	REPRICE_FREQ=0
Warning	Reprice Frequency < 0
Error Level	Warning

- **Rule ID: 77**

Error Condition	(AMRT_TYPE_CD = 710 and REPRICE_FREQ <> 0)

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Error Description	Rule of 78's instruments are implicitly fixed rate.
Assignment	REPRICE_FREQ=0
Warning	Amortization type is Rule of 78's but Reprice Frequency is not 0
Error Level	Warning

- **Rule ID: 78**

Error Condition	(ORG_PAR_BAL = 0 and (REPRICE_FREQ is NULL or REPRICE_FREQ = 0))
Error Description	For transfer pricing of fixed rate instruments, the original balance should be populated.
Assignment	
Warning	Original Par Balance is 0 for a fixed rate instrument
Error Level	Info

- **Rule ID: 79**

Error Condition	(REPRICE_FREQ <> 0 and TEASER_END_DATE > ORIGINATION_DATE and TEASER_END_DATE > AS_OF_DATE and NEXT_REPRICE_DATE > TEASER_END_DATE)
Error Description	Next repricing date is greater than teaser end date.
Assignment	NEXT_REPRICE_DATE=TEASER_END_DATE
Warning	Next Reprice Date > Teaser End Date
Error Level	Warning

- **Rule ID: 80**

Error Condition	(ADJUSTABLE_TYPE_CD <> 0 and (LRD_BALANCE is NULL or LRD_BALANCE = 0))
Error Description	The balance as of the last repricing date cannot be equal to 0
Assignment	LRD_BALANCE=CUR_PAR_BAL
Warning	Balance on Last Reprice Date = 0
Error Level	Warning

- **Rule ID: 81**

Error Condition	(ADJUSTABLE_TYPE_CD <> 0 and (LAST_REPRICE_DATE < ISSUE_DATE or LAST_REPRICE_DATE < ORIGINATION_DATE))
Error Description	Transfer pricing will not occur when the last repricing date is less than the issue date and origination date
Assignment	LAST_REPRICE_DATE=ORIGINATION_DATE
Warning	Last Reprice Date < Issue/Origination Date
Error Level	Info

- **Rule ID: 82**

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Error Condition	(ADJUSTABLE_TYPE_CD = 0 and REPRICE_FREQ > 0)
Error Description	Repricing frequency and adjustable type code are inconsistent
Assignment	REPRICE_FREQ=0
Warning	Reprice Frequency > 0 for fixed rate instrument
Error Level	Info

- **Rule ID: 83**

Error Condition	(ADJUSTABLE_TYPE_CD <> 0 and (REPRICE_FREQ is NULL or REPRICE_FREQ = 0))
Error Description	Repricing frequency and adjustable type code are inconsistent
Assignment	
Warning	Adjustable Type is not fixed but Reprice Frequency is 0
Error Level	Info

- **Rule ID: 84**

Error Condition	(AMRT_TYPE_CD = 710 and ADJUSTABLE_TYPE_CD <> 0)
Error Description	Rule of 78's instrument should only have a Fixed adjustable type code.
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Amortization type is Rule of 78's but Adjustable Type is not fixed
Error Level	Warning

- **Rule ID: 85**

Error Condition	(AMRT_TYPE_CD = 600 and ADJUSTABLE_TYPE_CD = 0)
Error Description	Negative amortization instruments cannot have fixed adjustable type code
Assignment	AMRT_TYPE_CD=100
Warning	Adjustable Type is fixed rate for Negative amortization instrument
Error Level	Info

- **Rule ID: 86**

Error Condition	(LAST_INT_PAYMENT_DATE > NEXT_INT_PAYMENT_DATE and INT_PMT_FREQ > 0)
Error Description	Last interest payment date is greater than next interest payment date and can be calculated using interest payment frequency

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Assignment	LAST_INT_PAYMENT_DATE=(CASE INT_PMT_FREQ_MULT WHEN 'Y' THEN ADD_MONTHS(NEXT_INT_PAYMENT_DATE, -INT_PMT_FREQ*12) WHEN 'M' THEN ADD_MONTHS(NEXT_INT_PAYMENT_DATE, -INT_PMT_FREQ) ELSE NEXT_INT_PAYMENT_DATE - INT_PMT_FREQ END)
Warning	
Error Level	Warning

- **Rule ID: 87**

Error Condition	(LAST_INT_PAYMENT_DATE > NEXT_INT_PAYMENT_DATE and (INT_PMT_FREQ is NULL or INT_PMT_FREQ <= 0))
Error Description	Last interest payment date is greater than next interest payment date, but cannot be calculated using interest payment frequency.
Assignment	LAST_INT_PAYMENT_DATE=ORIGINATION_DATE
Warning	
Error Level	Warning

- **Rule ID: 88**

Error Condition	(LAST_PRIN_PAYMENT_DATE > NEXT_PRIN_PAYMENT_DATE and PRIN_PMT_FREQ > 0)
Error Description	Last principal payment date is greater than next principal payment date and can be calculated using principal payment frequency
Assignment	LAST_PRIN_PAYMENT_DATE=(CASE PRIN_PMT_FREQ_MULT WHEN 'Y' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, -PRIN_PMT_FREQ*12) WHEN 'M' THEN ADD_MONTHS(NEXT_PRIN_PAYMENT_DATE, -PRIN_PMT_FREQ) ELSE NEXT_PRIN_PAYMENT_DATE - PRIN_PMT_FREQ END)
Warning	
Error Level	Warning

- **Rule ID: 89**

Error Condition	(LAST_PRIN_PAYMENT_DATE > NEXT_PRIN_PAYMENT_DATE and (PRIN_PMT_FREQ is NULL or PRIN_PMT_FREQ <= 0))
Error Description	Last principal payment date is greater than next principal payment date, but cannot be calculated using principal payment frequency.
Assignment	LAST_PRIN_PAYMENT_DATE=ORIGINATION_DATE
Warning	Last principal payment date > Next principal payment date

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Error Level	Warning

- **Rule ID: 90**

Error Condition	(LAST_INT_PAYMENT_DATE < ORIGINATION_DATE)
Error Description	Last interest payment date cannot be less than the origination date
Assignment	LAST_INT_PAYMENT_DATE=ORIGINATION_DATE
Warning	Last Interest Payment Date < Origination Date
Error Level	Warning

- **Rule ID: 91**

Error Condition	(LAST_PRIN_PAYMENT_DATE < ORIGINATION_DATE)
Error Description	Last principal payment date cannot be less than the origination date
Assignment	LAST_PRIN_PAYMENT_DATE=ORIGINATION_DATE
Warning	Last Principal Payment Date < Origination Date
Error Level	Warning

- **Rule ID: 92**

Error Condition	(LAST_INT_PAYMENT_DATE > AS_OF_DATE and ORIGINATION_DATE <= AS_OF_DATE)
Error Description	Last interest payment date cannot be greater than the as-of-date if the instrument originated in the past.
Assignment	LAST_INT_PAYMENT_DATE=AS_OF_DATE
Warning	Last interest payment date > As of Date
Error Level	Warning

- **Rule ID: 93**

Error Condition	(LAST_PRIN_PAYMENT_DATE > AS_OF_DATE and ORIGINATION_DATE <= AS_OF_DATE)
Error Description	Last principal payment date cannot be greater than the as-of-date if the instrument originated in the past.
Assignment	LAST_PRIN_PAYMENT_DATE=AS_OF_DATE
Warning	Last principal payment date > As of Date
Error Level	Warning

- **Rule ID: 94**

Error Condition	(INTEREST_TIMING_TYPE_CD = 2 and AMRT_TYPE_CD in (100, 400, 600, 710, 800, 840, 850))
Error Description	Interest type can only be arrears for conventionally amortizing instruments.
Assignment	INTEREST_TIMING_TYPE_CD=1

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Warning	Amortization Type is conventional but interest timing is Advance
Error Level	Warning

- **Rule ID: 95**

Error Condition	(INTEREST_TIMING_TYPE_CD is NULL or INTEREST_TIMING_TYPE_CD not in (1, 2, 3))
Error Description	Interest type must be a valid code.
Assignment	INTEREST_TIMING_TYPE_CD=1
Warning	Invalid interest timing type
Error Level	Warning

- **Rule ID: 96**

Error Condition	(COMPOUND_BASIS_CD is NULL or COMPOUND_BASIS_CD not in (110, 120, 130, 140, 150, 160, 170))
Error Description	Compounding basis code must be a valid code
Assignment	COMPOUND_BASIS_CD=160
Warning	Invalid Compounding Basis Code
Error Level	Warning

- **Rule ID: 97**

Error Condition	(ACCRUAL_BASIS_CD IN (1, 4, 5) and (INT_PMT_FREQ_MULT = 'D' or AMRT_TYPE_CD in (800,801, 802)))
Error Description	Accrual basis code cannot have a 30 day month assumption on instruments defined by a payment schedule
Assignment	ACCRUAL_BASIS_CD=3
Warning	Amortization Type / Accrual Basis Error
Error Level	Warning

- **Rule ID: 98**

Error Condition	(ACCRUAL_BASIS_CD = 7 and (HOLIDAY_CALENDAR_CODE is NULL or HOLIDAY_CALENDAR_CODE <=0 or HOLIDAY_CALC_OPTION_CD is NULL or HOLIDAY_CALC_OPTION_CD not in (1, 2) or HOLIDAY_ROLLING_CONVENTION_CD is NULL or HOLIDAY_ROLLING_CONVENTION_CD not in (2,3,4,5)))
Error Description	Holiday calendar must be give when using Business/252 accrual basis
Assignment	
Warning	Holiday calendar not given for B/252 accrual basis
Error Level	Info

- **Rule ID: 99**

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Error Condition	(AMRT_TYPE_CD = 10 and BEHAVIOUR_TYPE_CD is NULL)
Error Description	Behaviour Type Code is Null, defaulted to 1 (Non-Maturity)
Assignment	BEHAVIOUR_TYPE_CD=1
Warning	Behaviour Type Code is Null
Error Level	Warning

- **Rule ID: 100**

Error Condition	(AMRT_TYPE_CD = 10 and BEHAVIOUR_TYPE_CD not in (1,2,3))
Error Description	Behaviour Type Code is invalid, defaulted to 1 (Non-Maturity)
Assignment	BEHAVIOUR_TYPE_CD=1
Warning	Invalid Behaviour Type Code
Error Level	Warning

- **Rule ID: 101**

Error Condition	(AMRT_TYPE_CD = 10 and BEHAVIOUR_TYPE_CD = 2 and (BEHAVIOUR_SUB_TYPE_CD is NULL or BEHAVIOUR_SUB_TYPE_CD not in (201, 202, 203)))
Error Description	Behaviour Sub Type should be 201 or 202 or 203 when Behaviour Type is Non-Performing
Assignment	BEHAVIOUR_SUB_TYPE_CD=201
Warning	Invalid Behavior Sub Type Code
Error Level	Warning

- **Rule ID: 102**

Error Condition	(AMRT_TYPE_CD = 10 and BEHAVIOUR_TYPE_CD = 3 and (BEHAVIOUR_SUB_TYPE_CD is NULL or BEHAVIOUR_SUB_TYPE_CD not in (305, 306)))
Error Description	Behaviour Sub Type should be 305 or 306 when Behaviour Type is Devolvement and Recovery
Assignment	BEHAVIOUR_SUB_TYPE_CD=305
Warning	Invalid Behavior Sub Type Code
Error Level	Warning

- **Rule ID: 103**

Error Condition	(AMRT_TYPE_CD = 840 and RESIDUAL_AMOUNT < 0)
Error Description	Residual Amount cannot be less than 0 for Lease instrument
Assignment	RESIDUAL_AMOUNT=0
Warning	Invalid Residual Amount for Lease instrument
Error Level	Warning

- **Rule ID: 104**

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Error Condition	(AMRT_TYPE_CD = 840 and RESIDUAL_AMOUNT > CUR_PAR_BAL)
Error Description	Residual Amount cannot be higher than Current Par Balance for Lease instrument
Assignment	RESIDUAL_AMOUNT=0
Warning	Invalid Residual Amount for Lease instrument
Error Level	Warning

- **Rule ID: 105**

Error Condition	(AMRT_TYPE_CD = 850 and MATURITY_AMOUNT > 0 and ADJUSTABLE_TYPE_CD > 0)
Error Description	Annuity instrument with maturity amount must have fixed interest rate
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Invalid Adjustable Type for Annuity with Maturity Amount
Error Level	Warning

- **Rule ID: 106**

Error Condition	(MOA_EXPECTED_BAL > 0 and (MOA_OFFSET_PERCENT is NULL or MOA_OFFSET_PERCENT < 0))
Error Description	Expected balance is greater than 0 but offset percentage is less than 0
Assignment	MOA_OFFSET_PERCENT=0
Warning	Invalid offset percent
Error Level	Warning

- **Rule ID: 107**

Error Condition	((MOA_EXPECTED_BAL * MOA_OFFSET_PERCENT/100) > CUR_PAR_BAL)
Error Description	Calculated Offset Balance is higher than Current Par Balance
Assignment	
Warning	Calculated Offset Balance > Current Par Balance
Error Level	Info

- **Rule ID: 108**

Error Condition	(ADJUSTABLE_TYPE_CD = 10 and (REPRICE_PATTERN_CD is NULL or REPRICE_PATTERN_CD <= 0))
Error Description	Invalid reprice pattern code given for instrument
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Invalid reprice pattern code
Error Level	Warning

- **Rule ID: 109**

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Error Condition	(ADJUSTABLE_TYPE_CD = 10 and REPRICE_PATTERN_CD > 0 and REPRICE_PATTERN_CD not in (select ADJUSTABLE_TYPE_CD from fsi_reprice_pattern))
Error Description	Invalid reprice pattern code given for instrument
Assignment	ADJUSTABLE_TYPE_CD=0
Warning	Invalid reprice pattern code
Error Level	Warning

- **Rule ID: 110**

Error Condition	(ADJUSTABLE_TYPE_CD = 0 and (ORG_PAYMENT_AMT is NULL or ORG_PAYMENT_AMT <= 0))
Error Description	Original payment amount is required for fixed-rate instruments
Assignment	ORG_PAYMENT_AMT=CUR_PAYMENT
Warning	Invalid Original Payment Amount
Error Level	Warning

- **Rule ID: 111**

Error Condition	(PERCENT_SOLD < 0 or PERCENT_SOLD > 99)
Error Description	Percent Sold must be greater than or equal to zero and less than 100
Assignment	PERCENT_SOLD=0
Warning	Invalid Percent Sold
Error Level	Warning

- **Rule ID: 112**

Error Condition	(CUR_PAR_BAL is NULL or CUR_PAR_BAL = 0)
Error Description	Instruments with Current Par Balance zero are not processed.
Assignment	
Warning	Current Par Balance = 0
Error Level	Warning

- **Rule ID: 113**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and AMRT_TYPE_CD <> 700)
Error Description	Embedded option is supported only for non-amortizing instrument
Assignment	EMBEDDED_OPTIONS_FLG=0
Warning	Invalid embedded options flag
Error Level	Warning

- **Rule ID: 114**

Error Condition	(ADJUSTABLE_TYPE_CD = 0 and TP_EFFECTIVE_DATE > ORIGINATION_DATE)

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Error Description	TP Effective Date must not be after Origination Date for fixed rate instrument
Assignment	
Warning	Invalid TP Effective Date
Error Level	Info

- **Rule ID: 115**

Error Condition	(ADJUSTABLE_TYPE_CD = 0 and TP_EFFECTIVE_DATE < ORIGINATION_DATE)
Error Description	TP Effective Date must not be before Origination Date for fixed rate instrument
Assignment	
Warning	Invalid TP Effective Date
Error Level	Info

- **Rule ID: 116**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and TP_EFFECTIVE_DATE > LAST_REPRICE_DATE)
Error Description	TP Effective Date must not be after Last Reprice Date for non-fixed rate instrument
Assignment	
Warning	Invalid TP Effective Date
Error Level	Info

- **Rule ID: 117**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and TP_EFFECTIVE_DATE <= NEXT_REPRICE_DATE)
Error Description	TP Effective Date must not equal to Next Reprice Date for non-fixed rate instrument
Assignment	
Warning	Invalid TP Effective Date
Error Level	Info

- **Rule ID: 118**

Error Condition	(TP_EFFECTIVE_DATE is not NULL and TP_EFFECTIVE_DATE < '01-JAN-1970')
Error Description	TP Effective Date is before '01-JAN-1970'
Assignment	TP_EFFECTIVE_DATE=ORIGINATION_DATE
Warning	Invalid TP Effective Date
Error Level	Info

- **Rule ID: 119**

Error Condition	(TP_EFFECTIVE_DATE > MATURITY_DATE)
Error Description	TP Effective Date is after maturity date
Assignment	TP_EFFECTIVE_DATE=ORIGINATION_DATE
Warning	Invalid TP Effective Date
Error Level	Info

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- **Rule ID: 120**

Error Condition	(ADJUSTABLE_TYPE_CD = 0 and ADJ_EFFECTIVE_DATE > ORIGINATION_DATE)
Error Description	Adjustment Effective Date must not be after Origination Date for fixed rate instrument
Assignment	
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 121**

Error Condition	(ADJUSTABLE_TYPE_CD = 0 and ADJ_EFFECTIVE_DATE < ORIGINATION_DATE)
Error Description	Adjustment Effective Date must not be before Origination Date for fixed rate instrument
Assignment	
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 122**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and ADJ_EFFECTIVE_DATE > LAST_REPRICE_DATE)
Error Description	Adjustment Effective Date must not be after Last Reprice Date for non-fixed rate instrument
Assignment	
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 123**

Error Condition	(ADJUSTABLE_TYPE_CD > 0 and ADJ_EFFECTIVE_DATE <= NEXT_REPRICE_DATE)
Error Description	Adjustment Effective Date must not equal to Next Reprice Date for non-fixed rate instrument
Assignment	
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 124**

Error Condition	(ADJ_EFFECTIVE_DATE is not NULL and ADJ_EFFECTIVE_DATE < '01-JAN-1970')
Error Description	Adjustment Effective Date is before '01-JAN-1970'
Assignment	ADJ_EFFECTIVE_DATE=ORIGINATION_DATE
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 125**

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Error Condition	(ADJ_EFFECTIVE_DATE > MATURITY_DATE)
Error Description	Adjustment Effective Date is after maturity date
Assignment	ADJ_EFFECTIVE_DATE=ORIGINATION_DATE
Warning	Invalid Adjustment Effective Date
Error Level	Info

- **Rule ID: 10001**

Error Condition	(OPTION_RFR_IRC_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.RISK_FREE_RATE_FLG is null or fsi_ircs.RISK_FREE_RATE_FLG = 0 and fsi_ircs.INTEREST_RATE_CD=SOURCE_TABLE.OPTION_RFR_IRC_CD))
Error Description	Risk Free Interest Rate Curve is not defined as Risk-Free.
Assignment	
Warning	Invalid Risk Free Interest Rate Curve
Error Level	Error

- **Rule ID: 10002**

Error Condition	(OPTION_RFR_IRC_CD > 0 and exists (select 1 from fsi_ircs where fsi_ircs.ISO_CURRENCY_CD != SOURCE_TABLE.ISO_CURRENCY_CD and fsi_ircs.INTEREST_RATE_CD=SOURCE_TABLE.OPTION_RFR_IRC_CD))
Error Description	Currency of risk free Interest Rate Curve is different from currency of instrument record.
Assignment	
Warning	Invalid Risk Free Interest Rate Curve
Error Level	Error

- **Rule ID: 10003**

Error Condition	(OPTION_VOL_IRC_CD > 0 and exists (select 1 from FSI_VOL_SURFACE_MASTER where FSI_VOL_SURFACE_MASTER.ISO_CURRENCY_CD != SOURCE_TABLE.ISO_CURRENCY_CD and FSI_VOL_SURFACE_MASTER.VOL_SURFACE_SYS_ID=SOURCE_TABLE.OPTION_VOL_IRC_CD))
Error Description	Currency of Volatility Surface is different from currency of instrument record.
Assignment	
Warning	Invalid Volatility Surface
Error Level	Error

- **Rule ID: 10004**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and STRIKE_TYPE_CD not in (1,2))
Error Description	Strike Type must be Rate or Price for instruments with embedded options.

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Assignment	
Warning	Invalid Strike Type for Embedded Option
Error Level	Error

- **Rule ID: 10005**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and EXERCISE_TYPE_CD not in (1,2,3))
Error Description	Exercise type for instrument with embedded options must be American, Bermudan or European.
Assignment	
Warning	Invalid Exercise Type for Embedded Option
Error Level	Error

- **Rule ID: 10006**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and EXERCISE_TYPE_CD = 1 and OPTION_START_DATE <= AS_OF_DATE)
Error Description	Option Start Date for an American option must be after As of Date.
Assignment	
Warning	Invalid Option Start Date for American Option
Error Level	Info

- **Rule ID: 10007**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and OPTION_TYPE_CD not in (1,2))
Error Description	Option Type must be Call or Put for instrument with Embedded Option.
Assignment	
Warning	Invalid Option Type for Embedded Option
Error Level	Error

- **Rule ID: 10008**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and STRIKE_TYPE_CD = 2 and nvl(STRIKE_IRC_CD,0) < 1)
Error Description	Strike type is Rate for instrument with Embedded Option but Strike Interest Rate Curve is not available.
Assignment	
Warning	Invalid Strike Interest Rate Curve for Embedded Option
Error Level	Error

- **Rule ID: 10009**

Error Condition	(EMBEDDED_OPTIONS_FLG = 1 and STRIKE_TYPE_CD = 2 and nvl(RATE_LOOKUP_CD,0) not in (1,2,3,4))

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Error Description	Strike type is Rate for instrument with Embedded Option but Rate Lookup Code is not available.
Assignment	
Warning	Invalid Rate Lookup Code for Embedded Option
Error Level	Error

- **Rule ID: 10010**

Error Condition	(EXCHG_OF_PRINCIPAL is NULL OR EXCHG_OF_PRINCIPAL not in (0,1))
Error Description	Invalid Exchange of Principal flag
Assignment - Default Value	1
Warning	Invalid Exchange of Principal flag.
Error Level	Warning

- **Rule ID: 10011**

Error Condition	(ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and AMRT_TYPE_CD not in (10, 820, 801, 700, 802))
Error Description	Invalid Amortization Type.
Assignment	
Warning	Invalid Amortization Type for non earning assets and liabilities
Error Level	Warning

- **Rule ID: 10012**

Error Condition	(ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and (CUR_NET_RATE <> 0 or CUR_GROSS_RATE <> 0))
Error Description	Interest Rate of non earning assets and liabilities must be 0.
Assignment	
Warning	Invalid Interest Rate for non earning assets and liabilities
Error Level	Warning

- **Rule ID: 10013**

Error Condition	(ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and ADJUSTABLE_TYPE_CD <> 0)
Error Description	Adjustable Type of non earning assets and liabilities must be 0.
Assignment	
Warning	Invalid Adjustable Type for non earning assets and liabilities
Error Level	Warning

- **Rule ID: 10014**

Error Condition	(ACCOUNT_TYPE in (150, 200, 350, 400, 610, 620) and INTEREST_TIMING_TYPE_CD <> 1)
Error Description	Interest timing type of non earning assets and liabilities must be Arrears.

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Assignment	
Warning	Invalid Interest timing type for non earning assets and liabilities
Error Level	Warning

- **Rule ID: 10015**

Error Condition	(ADJUSTABLE_TYPE_CD in (50, 250) and not exists (select 1 from fsi_ircs where fsi_ircs.interest_rate_cd = SOURCE_TABLE.interest_rate_cd and nvl(fsi_ircs.volatility_curve_flg,0) = 0))
Error Description	Interest rate code of instrument does not exist. Repricing attributes will be ignored and processed as fixed interest rate.
Assignment	
Warning	Wrong Interest Rate Code for adjustable rate instrument
Error Level	Warning

- **Rule ID: 10016**

Error Condition	(ORG_INT_PAYMENT_DATE is NULL OR ORG_INT_PAYMENT_DATE < ORIGINATION_DATE)
Error Description	Invalid Original Interest Payment Date
Assignment	
Warning	Invalid Original Interest Payment Date
Error Level	Warning

- **Rule ID: 10017**

Error Condition	(ORG_PRIN_PAYMENT_DATE is NULL OR ORG_INT_PAYMENT_DATE < ORIGINATION_DATE)
Error Description	Invalid Original Principal Payment Date
Assignment	
Warning	Invalid Original Principal Payment Date
Error Level	Warning

- **Rule ID: 10018**

Error Condition	(ADJUSTABLE_TYPE_CD = 300 and AMRT_TYPE_CD in (600, 850, 840))
Error Description	Amortization Type of Tiered Rate Account must not be negative amortization, annuity, and lease
Assignment	
Warning	Tiered rate functionality does not apply to negative amortization, annuity, and lease amortization types
Error Level	Warning

- **Rule ID: 10019**

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Error Condition	(ADJUSTABLE_TYPE_CD = 300 and nvl(INTEREST_TIMING_TYPE_CD,1) != 1)
Error Description	Interest Timing Type of Tiered Rate Account must be Interest in Arrears
Assignment	
Warning	Interest Timing Type of Tiered Rate Account cannot be Interest in Advance or Set in Arrears
Error Level	Warning

- **Rule ID: 10020**

Error Condition	(ADJUSTABLE_TYPE_CD NOT IN (0, 50, 250))
Error Description	Adjustable Type of tiers must be Fixed, Floating or Other Adjustable
Assignment	
Warning	Adjustable Type of tier must be Fixed, Floating or Other Adjustable
Error Level	Warning

- **Rule ID: 10021**

Error Condition	(ADJUSTABLE_TYPE_CD = 300 and EXISTS (select 1 from FSI_D_ACCOUNT_RATE_TIERS WHERE FSI_D_ACCOUNT_RATE_TIERS.ID_NUMBER= SOURCE_TABLE.ID_NUMBER AND FSI_D_ACCOUNT_RATE_TIERS.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE AND (select SUM(CUR_PAR_BAL) from FSI_D_ACCOUNT_RATE_TIERS WHERE FSI_D_ACCOUNT_RATE_TIERS.ID_NUMBER= SOURCE_TABLE.ID_NUMBER AND FSI_D_ACCOUNT_RATE_TIERS.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE) != SOURCE_TABLE.CUR_PAR_BAL))
Error Description	Tiered Rate Accounts Current Par Balance mismatch
Assignment	
Warning	Sum of CUR_PAR_BAL of tiers is different from CUR_PAR_BAL of account
Error Level	Info

- **Rule ID: 10022**

Error Condition	(ADJUSTABLE_TYPE_CD = 300 and EXISTS (select 1 from FSI_D_ACCOUNT_RATE_TIERS WHERE FSI_D_ACCOUNT_RATE_TIERS.ID_NUMBER= SOURCE_TABLE.ID_NUMBER AND FSI_D_ACCOUNT_RATE_TIERS.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE AND (select SUM(ORG_PAR_BAL) from FSI_D_ACCOUNT_RATE_TIERS WHERE FSI_D_ACCOUNT_RATE_TIERS.ID_NUMBER= SOURCE_TABLE.ID_NUMBER AND FSI_D_ACCOUNT_RATE_TIERS.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE) != SOURCE_TABLE.ORG_PAR_BAL))

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Error Description	Tiered Rate Accounts Original Par Balance mismatch
Assignment	
Warning	Sum of ORG_PAR_BAL of tiers is different from ORG_PAR_BAL of account
Error Level	Info

- **Rule ID: 10023**

Error Condition	(ADJUSTABLE_TYPE_CD IN (50, 250) AND (INTEREST_RATE_CD is NULL or INTEREST_RATE_CD <= 0))
Error Description	Adjustable Rate tier has invalid Interest Rate Code
Assignment	
Warning	Interest rate code must be valid for adjustable rate tiers
Error Level	Warning

- **Rule ID: 10024**

Error Condition	(ADJUSTABLE_TYPE_CD IN (50, 250) AND (NEXT_REPRICE_DATE is NULL or NEXT_REPRICE_DATE <= AS_OF_DATE) AND REPRICE_FREQ > 0)
Error Description	Adjustable Rate tier has invalid Next Reprice Date
Assignment	
Warning	Next Reprice Date must be valid for adjustable rate tiers
Error Level	Warning

- **Rule ID: 10025**

Error Condition	(ADJUSTABLE_TYPE_CD IN (50, 250) AND (REPRICE_FREQ_MULT is NULL or REPRICE_FREQ_MULT not in ('D','M','Y')))
Error Description	Adjustable Rate tier has invalid Reprice Frequency Multiplier
Assignment	
Warning	Repricing Frequency Multiplier must be D, M, or Y for adjustable rate tiers
Error Level	Warning

- **Rule ID: 10026**

Error Condition	(ADJUSTABLE_TYPE_CD IN (50, 250) AND (REPRICE_FREQ is NULL or REPRICE_FREQ <= 0))
Error Description	Adjustable Rate tier has invalid Reprice Frequency
Assignment	
Warning	Repricing Frequency must not be negative for adjustable rate tiers
Error Level	Warning

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- **Rule ID: 10027**

Error Condition	(ADJUSTABLE_TYPE_CD = 300 and NOT EXISTS (select 1 from FSI_D_ACCOUNT_RATE_TIERS WHERE FSI_D_ACCOUNT_RATE_TIERS.ID_NUMBER= SOURCE_TABLE.ID_NUMBER AND FSI_D_ACCOUNT_RATE_TIERS.IDENTITY_CODE = SOURCE_TABLE.IDENTITY_CODE))
Error Description	Rate tier details of account is not available
Assignment	
Warning	Adjustable Type of account is Tiered Rate but data of Account Rate Tiers is not available
Error Level	Warning

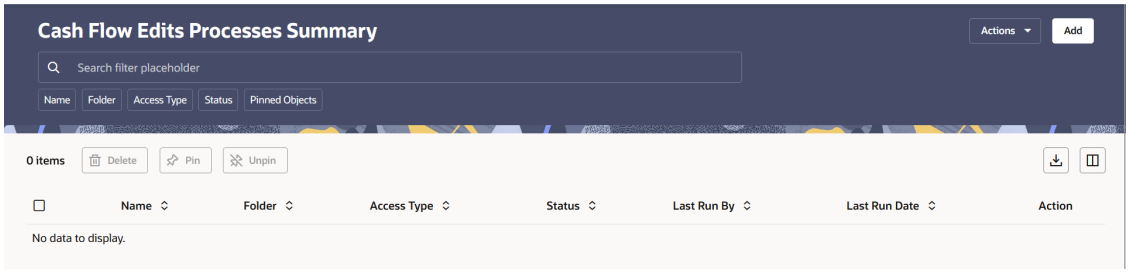
4.16.2 Cash Flow Edits Process

This module discusses the procedure for validating and cleansing your Instrument Table Data before you process it to generate Cash Flow-based results. The Cash Flow Edits Process allows you to verify the accuracy and check the completeness of your Instrument Table Data.

Cash Flow Edits Process Summary

This page is the gateway to all Cash Flow Edits Process Rules and related functionality. You can navigate to other pages relating to Cash Flow Edits Process Rules from this point.

Figure 4-114 Cash Flow Edits Process Summary Page



Search Cash Flow Edits Process

Prerequisites: Predefined Cash Flow Edits Process

To search for a Cash Flow Edits Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Edits Process Rules that meet the search criteria.

Or

The other method to search a Cash Flow Edits Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Id, Name, Group, Condition Column,** or **Is User Defined** of the Cash Flow Edits Process and click **Search**.

The Cash Flow Edits Process summary displays the following information:

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Add: Click **Add** icon at the top right of the summary page to build a new Cash Flow Edits Process.

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:**Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple processes in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected process.

Export: Enables you to download the summary page details in **.CSV** format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Cash Flow Edits Process summary table displays the following columns:

- **Name:** Displays the Cash Flow Edits Process's short name.
- **Folder:** Displays the Folder name where the Cash Flow Edits Process is saved.
- **Access Type:** Displays the access type of process. It can be Read-Only or Read/Write.
- **Last Run By:** Displays the Name of the user who last runs the Cash Flow Edits Process.
- **Last Run Date:** Displays the Date and Time when Cash Flow Edits Process was run last.
- **Status:** Displays the status of the Cash Flow Edits Process.
- **Action:** Displays the following list of actions that can be performed on the selected Cash Flow Edits Process.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Cash Flow Edits Processes. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Cash Flow Edits Process rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Cash Flow Edits Process rules that are no longer required. Click on the **Action** icon against the Cash Flow Edits Process Name and select **Delete** to delete an existing Cash Flow Edits Process. A process cannot be retrieved after deletion.

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

  - **Dependency Check:** You can check dependencies for rules to know where a particular Cash Flow Edits Process has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Cash Flow

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Edits Process Name and select Dependency Check to generate a report on all Rules that utilize your selected Cash Flow Edits Process.

- **Execute:** Select Execute to execute an existing Cash Flow Edits Process. After clicking Execute, the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run.
- **Execute Details:** Select Execute Details to view execution details of the Cash Flow Edits Process.

Also See:

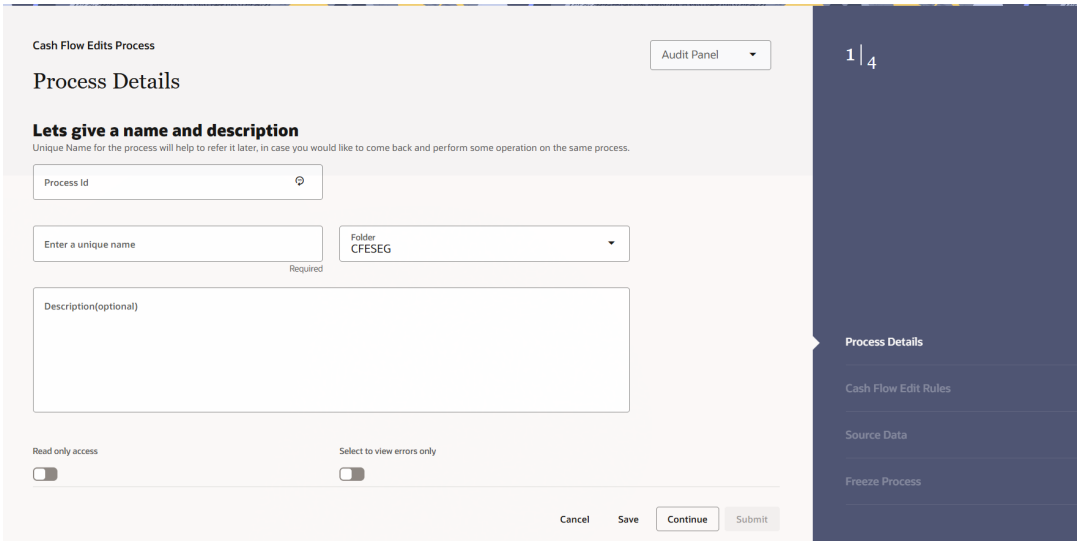
- Create Cash Flow Edits Process
- Execute Cash Flow Edits Process
- View Cash Flow Edits Process Execution Details
- Create Cash Flow Edits Process
- Executing Cash Flow Edits Process
- Viewing Execution Details of Cash Flow Edits Process

4.16.2.1 Create Cash Flow Edits Process

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

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

Figure 4-115 Process Details



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

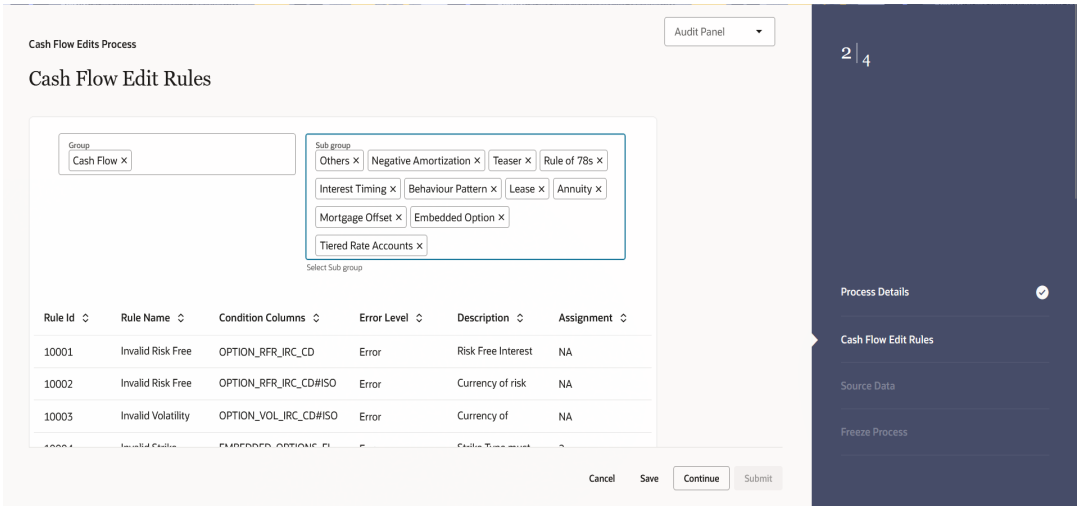
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Table 4-39 List of Process details used for Creating Cash Flow Edits Process

Field	Description
Process ID	Enter the Process ID manually, or click Autogenerate to generate it automatically.
Name	Enter the name of the Cash Flow Edits Process.
Description	Enter the description of the Cash Flow Edits Process.
Select to view errors only	Selecting this parameter allows you to view the results of running a Cash Flow Edits Process before the system updates the underlying records in the Instrument tables. The default value of this parameter is checked.
Folder	Enter the Folder details where Cash Flow Edits Process needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/ Write.

4. Click **Apply** to navigate to the **Cash Flow Edits Rules** section.

Figure 4-116 Cash Flow Edits Rules



5. Enter the Cash Flow Edits Rules details shown in the following table:

Table 4-40 List of Cash Flow Edits Rules details used for Creating Cash Flow Edits Process

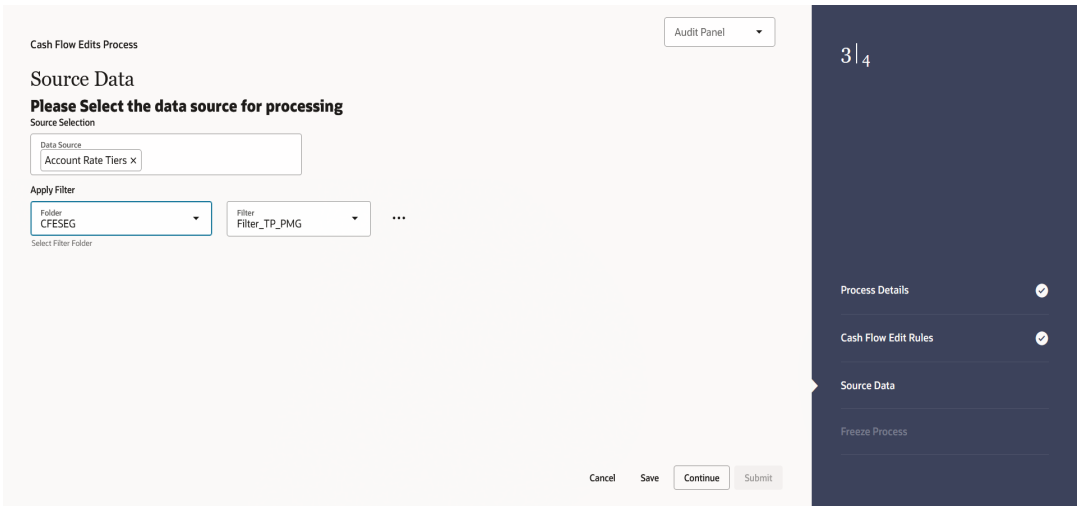
Field	Description
Group	Select the group of Cash Flow Edits Rules that you want to include in the process. For example, Cash Flow
Sub Group	Select the sub group of Cash Flow Edits Rules that you want to include in the process. The value of this field varies based on the selected Group. The list of Rules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

The details of the process for the selected group and sub-group are listed on the screen for reference.

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

Figure 4-117 Source Data



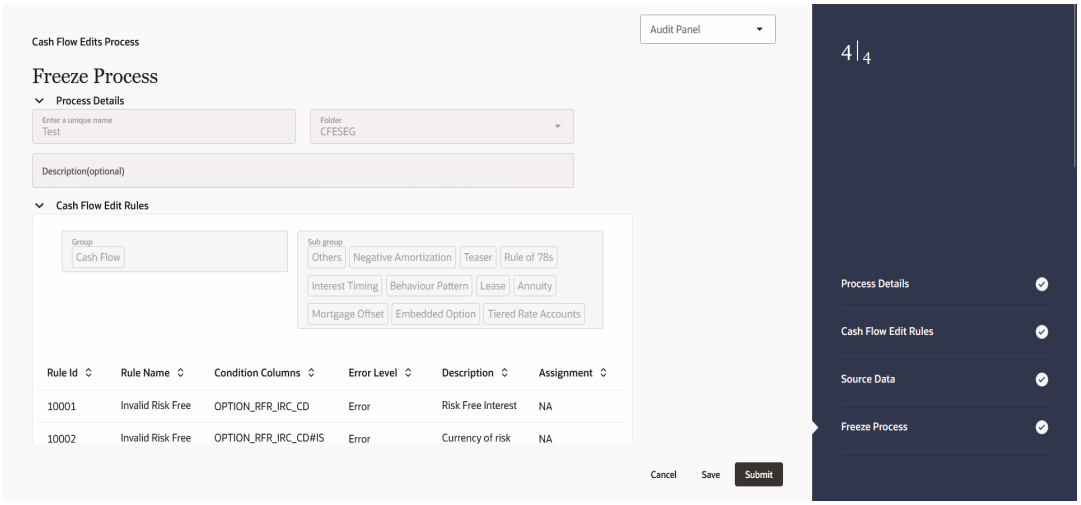
7. Enter the Source Data details as shown in the following table:

Table 4-41 List of Source Data details used for Creating Cash Flow Edits Process

Field	Description
Data Source	This field allows you to select the Instrument tables that must be included in a Cash Flow Edits Process.
Data Filter Folder	Select the Folder from which you want to apply Data Filter.
Data Filter	This field allows you to select a subset of data for processing by selecting a filter that was previously created. Click **Action** button next to Data Filter to add, edit or view the Data Filter.

8. Click **Apply** to navigate to the **Freeze Process** section.

Figure 4-118 Freeze Process



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9. Click **Save** on the **Freeze Process** Window after verifying all the details.
10. The Cash Flow Edits Process is saved and the Summary Page is displayed.

4.16.2.2 Executing Cash Flow Edits Process

Execute a Cash Flow Edits Process to check the accuracy and the completeness of your Instrument Table Data. When run in Preview Mode, you can view the results of running a Cash Flow Edits Process by querying the FSI_O_CFE_EDITS_MESSAGES_HIST table for generated errors before the system updates the underlying records in the Instrument tables.

You can execute Cash Flow Edits Process using following methods:

- Cash Flow Edits Process UI
- Scheduler Service
- Using Cash Flow Edits Process UI
- Using Scheduler Service

4.16.2.2.1 Using Cash Flow Edits Process UI

To execute the Cash Flow Edits Process, follow these steps:

1. Navigate to the **Cash Flow Edits Process Summary** Page.
2. Search for a process.
3. Click on the **Action** icon against the Cash Flow Edits Process Name and select Execute to execute an existing Cash Flow Edits Process. The **Run Parameter Execution** window is displayed.
4. Here, Default Legal Entity Member (as mentioned in the Application Preference UI) gets populated in the **Run Execute Details** window. You can modify the **As of Date (Execution Date)** and **Legal Entity**, and then click **Run**.

> **Note**
>
> You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected, then data of selected entity along with its child and descendants are processed.

5. The **Cash Flow Edits Run Confirmation** Page is displayed. The status of the process is displayed in the **Status** Column. After completion of the process, you can navigate to the Execution Details Page by selecting the **Execution Details** option under the **Action** Column.

> **Note**
>
> You can view the results of running a Cash Flow Edits Process before the system updates the underlying records in the Instrument tables, provided you selected Preview Mode while defining it. If the Process runs in Preview Mode, query the FSI_O_CFE_EDITS_MESSAGES_HIST table for any generated errors

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4.16.2.2.2 Using Scheduler Service

A batch with following details gets automatically created when Cash Flow Edits Process is saved:

- **Code:** Process Id of Cash Flow Edits Process
- **Name:** Name of Cash Flow Edits Process
- **Description:** Description of Cash Flow Edits Process

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

You can also define new batch to execute any Cash Flow Edits Process by following these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Define a new batch.
3. Enter the Batch Name and Description, and then Save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from the **Batch** drop-down list on the **Define Task** Window.
6. Click the **Add** button.
7. Define the task with below details:
    - **Task Code:** Must be same as the Process Id of Cash Flow Edits Process
    - **Task Name:** This can be same a name of the Cash Flow Edits Process or something else
    - **Task Description:** This can be same a name of the Cash Flow Edits Process or something else
    - **Task Type:** REST
    - **Component:** Cash Flow Edits
    - **Process Name:** Select one value from the list
    - **Legal Entity Hierarchy:** Select one value from the list
    - **Legal Entity:** Select one value from the list
8. **Save** and **Execute** the batch with Batch ID and MIS Date.

For more information, see the Scheduler Service.

4.16.2.3 Viewing Execution Details of Cash Flow Edits Process

To view the log for the latest execution of a Cash Flow Edits Process, follow these steps:

1. Navigate to the **Cash Flow Edits Processes Summary** page.
2. Search for the Cash Flow Edits Process.
3. Click the process status to open the log for the latest execution.

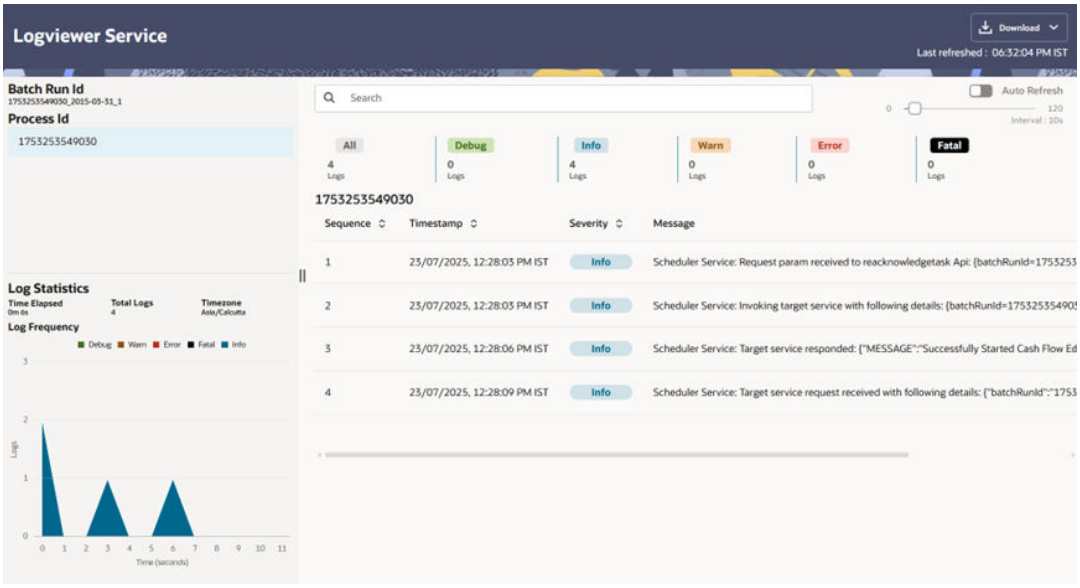
To select an earlier execution or download the cash flow edits details, follow these steps:

1. Navigate to the **Cash Flow Edits Processes Summary** Page.
2. Search for the Cash Flow Edits Process.

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3. Click the **Action** icon for the process and select **Execution Details**. The **Execution Details** window opens.
4. Click the required **Execution ID** to open its log. In the **Logviewer** window, review the process details and Batch Run ID information.
5. Click **Download** to export the cash flow edits details in CSV format. Review the exported details to identify errors in the instrument data. Use **Auto Refresh** to refresh the log status in the Logviewer window.

Figure 4-119 Logviewer window



6. For a process that runs in **Non-preview** mode, check the `CF_EDITS_BATCH_RUN_ID` and `UPDATED_BY_CF_EDITS` columns in the instrument processing table to identify records that the Cash Flow Edits Process modifies.

4.17 Cash Flow Table Cleanup

This module discusses the procedure to delete data from Cash Flow Output Tables. During the delete process, partitions of Output Tables are truncated. The procedure deletes the data from Output Tables permanently and no backup is retained.

Steps

To clean up the Cash Flow Output, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Select **Define Batch**. Create a new batch by entering Code, Name and Description.
3. Save the batch.
4. Navigate to **Define Task**.
5. Select the Batch created above from the **Batch** drop-down list.
6. Click the **Add** button from **Actions** drop-down.
7. Enter the following details in the Task Details Section:

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- **Task Code:** Enter a Code for the task.
- **Task Name:** Enter Name for the task.
  The Task Name must be alphanumeric and must not start with a number. The Task Name must not exceed 60 characters in length. The Task Name must not contain any special characters except underscore (_).
- **Description:** Enter the Task Description. Special characters are not allowed in Task Description. Words like Select From or Delete From (identified as potential SQL injection vulnerable strings) should not be entered in the Description.

8. Select the **Task Type** as **REST**.
9. Select **Batch Service URL** as **DMT_SERVICE**.
10. Select **Component** as **Transform Data**.
11. Enter the following mandatory Task Parameters:
    - **Name:** Select Name as **CASH_FLOW_OUTPUT_DEL**
    - **Extra Parameters:** Enter the following extra parameters:
      – **TABLE_NAME:** Name of the Output Table. You can enter the table name in Upper or Lower case. Only one table is allowed at a time. The following tables store output from the Cash Flow Engine.
      FSI_O_CFE_OUTPUT_HIST

      FSI_O_CFE_MESSAGES_HIST

      FSI_O_FCAST_IRC_RATES_HIST

      FSI_O_FCAST_ECO_IND_RATES_HIST

      FSI_O_CFE_EDITS_MESSAGES_HIST

      FSI_O_CFE_ACCOUNT_OUTPUT_HIST

      – **EXECUTION_ID_VALUE:** Enter the Execution ID of Cash Flow Process
    - **Use Effective Date:** Select this as YES or NO. This parameter does not impact on Cash Flow Table Cleanup functionality.
12. Save the Task.
13. Navigate to **Schedule Batch** and execute the batch created above created batch with **Batch ID** and **MIS Date**.

For more information, see the Scheduler Service.

4.18 Cash Flow Output Export

This module discusses the procedure to download the Cash Flow Output details. When you download the data, it moves to Object Store. To export the Cash Flow Output, follow these steps:

1. Navigate to **Operations and Processes**, and then select **Scheduler**.
2. Select **Define Batch**. Create a new batch by entering Code, Name and Description.
3. Save the batch.
4. Navigate to **Define Task**. Select the Batch created above from the **Batch** drop-down list.
5. Click the **Add** button from **Actions** drop-down.
6. Enter the following details in the Task Details section:

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- **Task Code:** Enter a code for the task.
- **Task Name:** Enter name for the task.

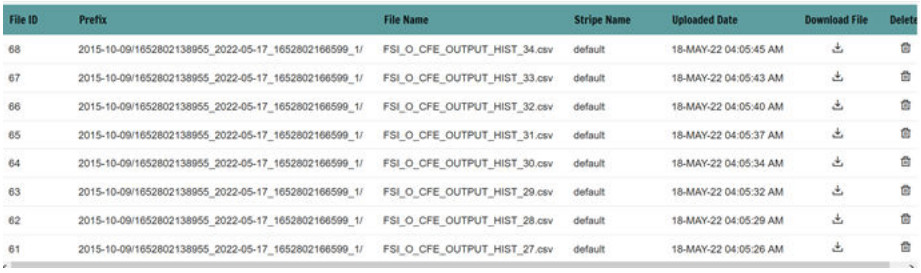
The Task Name must be alphanumeric and must not start with a number. The Task Name must not exceed 60 characters in length. The Task Name must not contain any special characters except underscore (_).

- **Description:** Enter the Task Description. Special characters are not allowed in Task Description. Words like Select From or Delete From (identified as potential SQL injection vulnerable strings) should not be entered in the Description.
- Select **Component** as “Cash Flow Output Data Export”.
- Leave **Batch Service URL** blank.
- Enter the following Mandatory Task parameters:
  - **Output Table Name:** Select one table for the displayed list.
  - **Execution IDs:** Select one or more execution IDs from displayed list. You may prefer to select only one Execution ID at a time so that separate files get created for each else one file may have data from multiple executions.

Save the task and execute the batch with Batch ID and MIS Date. For more information, see the Scheduler Service.

After the batch is completed successfully, navigate to **Data Management Tools**, select the **Data File Administration**, and then select **File Upload and Download**. Download the exported file from object store.

Figure 4-120 Cash Flow Output Export



File ID	Prefix	File Name	Stripe Name	Uploaded Date	Download File	Delete
68	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_34.csv	default	18-MAY-22 04:05:45 AM		
67	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_33.csv	default	18-MAY-22 04:05:43 AM		
66	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_32.csv	default	18-MAY-22 04:05:40 AM		
65	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_31.csv	default	18-MAY-22 04:05:37 AM		
64	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_30.csv	default	18-MAY-22 04:05:34 AM		
63	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_29.csv	default	18-MAY-22 04:05:32 AM		
62	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_28.csv	default	18-MAY-22 04:05:29 AM		
61	2015-10-09/1652802138955_2022-05-17_1652802166599_1/	FSI_O_CFE_OUTPUT_HIST_27.csv	default	18-MAY-22 04:05:26 AM		

You can define the maximum number of rows to include in the file using the EXPORT_FILE_ROW_COUNT. For more information, see the Application Preferences.

For example, if you have 11000 records in a table and the EXPORT_FILE_ROW_COUNT parameter is set to 10000, then two part files will be created. The first file will have 10000 records and the second file will have rest 1000 records. When these part files are created, a suffix number such as _1, _2 and so on will be added to Name of these files.

The File Name Column shows the name of file with Part number. The Prefix is displayed as a combination of As of Date, Process ID and Run execution ID.

Data can be exported from the following list of tables:

- Cash Flow Process Output
- Cash Flow Process Messages
- Forecast Interest Rates
- Forecast Economic Indicators

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- Cash Flow Edits Messages

You can export the Cash Flow Output using Export option of Cash Flow Process UI. For more information, see the View Cash Flow Process Log section.

Cash flows can also be exported from Data Management Interface. You can select table and columns to export as one time activity or schedule as recurring job. Exported file can then be downloaded by using File Upload and Download Utility. For more information, see the Data Management Interface section.

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5

Administrative Tools

This topic covers the following sub-topics:

- PLSQL Extension
- Data Foundation Integration
- Custom PLSQL Extension
  Financial Institutions are required to meet various statutory, regulatory and management reporting requirements that are released by the central banks of the geographies in which they operate. Quite often, these requirements are specific to the given region, and more importantly, compliance with these regulations are time bound. PBSM intends to allow customers to introduce custom PL/SQL code into the cloud services that helps them meet these statutory, regulatory, or even internal management requirements.
- PLSQL Archive Summary
- Data Foundation Integration
  This chapter is applicable if you have subscribed to Data Foundation Cloud Service (DFCS) along with Profitability and Balance Sheet Management Cloud Service (PBSMCS) and you want to bring data into PBSMCS from DFCS. Below topics are covered here:
- Tenant DB Dashboard
  The Tenant DB Dashboard is a centralized monitoring tool designed to provide administrators and power users with real-time insights into the database environment. It tracks storage utilization, ECPU consumption, and provides detailed metrics on categorized tables to ensure optimal performance of FTP processes.
- Data Retention
  Data Retention enables you to view policies that manage data lifecycle by archiving or deleting data based on retention criteria, and to monitor execution history. Retention policies visible on screen depends on the type of environment - Production, Non-Production - as different policies apply to them.
- Database Views

5.1 Custom PLSQL Extension

Financial Institutions are required to meet various statutory, regulatory and management reporting requirements that are released by the central banks of the geographies in which they operate. Quite often, these requirements are specific to the given region, and more importantly, compliance with these regulations are time bound. PBSM intends to allow customers to introduce custom PL/SQL code into the cloud services that helps them meet these statutory, regulatory, or even internal management requirements.

This a feature allows you to extend the functionality of the cloud service via custom PL/SQLs (subject to appropriate restrictions and controls), to complement/extend current calculation capabilities.

- PLSQL Starter Kit
  The Starter Kit is bundled with pre-packaged set of artefacts which will assist in the following:

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- Steps to introduce Custom PLSQLs
  Support for Custom PLSQL is a workflow-based capability.
- PLSQL Starter Kit User Interface
  The PLSQL Starter Kit UI will allow users to generate a Starter Kit. UI has options to Include Custom tables & Include data for all Custom tables. The UI will display the current status and previously generated Starter Kit Status. The UI has a Download button using which you can download the generated Starter Kit.
- PLSQL Starter Kit Installation
  Users who wish to install Starter Kit should download the StarterKit installer.
- PLSQL Properties
  The Custom PLSQL Properties (Setup Parameters) user interface is used to capture placeholder configuration which might be required during the development of custom PLSQL extensions.
- Post-Upgrade Actions for Custom PLSQL Extensions
  For upgrades from 25B to 25C/D, migration scripts for previously deployed Custom PLSQL extensions are not included in the upgrade process.
- Object Migration
- Appendix
  This appendix covers the following topics:

5.1.1 PLSQL Starter Kit

The Starter Kit is bundled with pre-packaged set of artefacts which will assist in the following:

- Creation of application specific factory bundled database objects for example – Tables, Synonyms, Functions, Procedures, etc.
- Bundles sample data which the you can choose to deploy.
- Bundles pre-packaged archival scripts along with basic validations.

Prerequisite: You should have a database schema created (referred to as Sandbox Database Schema in this document) in one of their local on-premises Data Center. For more information, see PLSQL Starter Kit Installation section.

5.1.2 Steps to introduce Custom PLSQLs

Support for Custom PLSQL is a workflow-based capability.

The different stages involved are:

- Generate, Download and Install the Starter Kit
- Develop Custom PLSQL Extensions
- Extract and Submit the Custom PLSQLs for Oracle Due Diligence
- Request for Archive Deployment of the Custom PLSQLs on the preferred PBSM SaaS Instance
- Access User Extension through Scheduler
- Generate, Download and Install the Starter Kit
  PLSQL Starter Kit can be generated using Cloud Service User Interface located under the LHS menu ‘Admin Tools’. UI has options to Include Custom tables & Include data for all Custom tables as optional selections while generating a Starter Kit. The UI will display the

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current Status and previously generated Starter Kit Status details. The UI has a Download button using which you can download the generated Starter Kit.

- Develop Custom PLSQL Extensions
  After installing the starter kit, you can develop Custom PLSQL extensions as per your business / functional requirements on the sandbox database schema which was created by using the Starter Kit. You must test the developed extensions in your sandbox database schema with test data. Thereafter, generate Custom PLSQL Archives using the Starter Kit bundled archival scripts. Custom PLSQL extensions are validated by the Archive Validation Scripts during the archival process.
- Extract and Upload the Custom PLSQL Archive
- Submit the Custom PLSQLs for Oracle Due Diligence
  Oracle Due Diligence is an Oracle internal process to validate the submitted archives and confirm that the archives are ready for deployment on a target PBMS SaaS Instance. Refer the PLSQL Archive Summary Submit for Due Diligence section of this document for more details.
- Submit Archive for Deployment
- Access User Extension through Scheduler
  You can access the Customer PLSQL Extension using the Scheduler service.

5.1.2.1 Generate, Download and Install the Starter Kit

PLSQL Starter Kit can be generated using Cloud Service User Interface located under the LHS menu ‘Admin Tools’. UI has options to Include Custom tables & Include data for all Custom tables as optional selections while generating a Starter Kit. The UI will display the current Status and previously generated Starter Kit Status details. The UI has a Download button using which you can download the generated Starter Kit.

Starter Kit will assist you to set up a sandbox database schema on your preferred on-premises database. Linux Shell operating environment is required to run the Starter Kit installation and deployment.

Refer Installation Guide for more details on system requirements and installation and deployment steps.

Starter Kit Components:

- Installation Guide: To assist users on how to Install Starter Kit artefacts.
- Deploys pre-packaged create table DDLs, insert DMLs & archive validation scripts.
- Archival scripts: for generating Custom PLSQL archives.

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> **Note**
>
> Customers upgrading from a lower version to 25c and above should follow the below steps
>
> 1. Regenerate the latest Starter Kit from the upgraded (or latest) application version using the Starter Kit User Interface.
> 2. Upgrade the existing Starter Kit installation and deployment environment with the latest Starter Kit setup. This is the customers on-premises environment.
> 3. Regenerate the archive using the latest Starter Kit version.
> 4. Use the self-service UIs to upload and deploy the latest archive version. For detailed instructions, refer to the User Guide.

5.1.2.2 Develop Custom PLSQL Extensions

After installing the starter kit, you can develop Custom PLSQL extensions as per your business / functional requirements on the sandbox database schema which was created by using the Starter Kit. You must test the developed extensions in your sandbox database schema with test data. Thereafter, generate Custom PLSQL Archives using the Starter Kit bundled archival scripts. Custom PLSQL extensions are validated by the Archive Validation Scripts during the archival process.

Archives are generated with a Project ID or Project name, which is accepted as an input parameter during the archival script execution. The Project ID or name will be used while baselining the scripts by Oracle.

You must submit the full archive, including all earlier Custom extensions, every time against a project ID; Oracle will not merge one archive with previous archive submissions (if any) for a project ID.

Rules to be followed while developing custom PL/SQL extension objects are listed below:

- Naming Conventions to be followed while developing Custom PLSQL Extensions.
- Tables should not be altered or dropped.
- Seeded Data should not be altered or deleted.

See the following table for more details.

Table 5-1 Rules

SL No.	Rules	Details
1	Naming Conventions to be used while creating Custom Extensions	Please use a suffix while naming the PLSQL objects with “_CUSTOM” Example: FN_UPD_FSI_D_ASSETS_**CUSTOM**
2	Operations Allowed on Starter Kit Objects	Refer Appendix Section B
3	Creation of Global Temporary Tables (Dynamic Tables within Custom PLSQLs using execute immediate)	Allowed
4	Creation of Views	Allowed
5	Creation of Synonyms	Allowed
6	Creation of Functions	Allowed

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Table 5-1 (Cont.) Rules

SL No.	Rules	Details
7	Creation of Procedures	Allowed
8	Creation of Packages	Allowed
9	Creation of Materialized Views	Not Allowed

For more details on the process of submitting the archive, see Appendix 5.1.1.

5.1.2.3 Extract and Upload the Custom PLSQL Archive

Users can use the PLSQL Archive Summary User Interface to upload the archive. Please refer the PLSQL Archive Summary section of this document for more details.

5.1.2.4 Submit the Custom PLSQLs for Oracle Due Diligence

Oracle Due Diligence is an Oracle internal process to validate the submitted archives and confirm that the archives are ready for deployment on a target PBMS SaaS Instance. Refer the PLSQL Archive Summary Submit for Due Diligence section of this document for more details.

> **Note**
>
> For detail refer appendix ….. (Processing for submitting Custom PLSQL Archives to Oracle).

5.1.2.5 Submit Archive for Deployment

Using the Submit for Deployment option users can choose to deploy the Custom PLSQLs onto their SaaS instance. Please refer the PLSQL Archive Summary Archive Deploy section of this document for more details.

5.1.2.6 Access User Extension through Scheduler

You can access the Customer PLSQL Extension using the Scheduler service.

To access User Extension using the scheduler service:

1. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**. For more details, see Define Batch.
2. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**. For more details, see Define Tasks.
    a. **Task Type**: REST
    b. **Component**: Select **Execute Custom PLSQL**.
    c. Under Task Parameters, select/enter the following:
        i. **CustomPLSQL Definition**: Select the relevant PLSQL function.
        ii. **Consumer Group**: There are 3 option which the user can select.
            i. High
            ii. Medium

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iii. Low
The default selection is Medium. The use can choose the appropriate Consumer Group.

Figure 5-1 Consumer Group



When executing this function, the parameter will be assigned to the selected function as show below. It is mandatory to develop Customer PLSQL extensions with BatchID and MisDate as the first 2 parameters.

For example: Given below function signature:

```
create or replace FUNCTION FNUPDATERECORD (BatchID Varchar2,
                                                                    MisDate
Varchar2,

vCurrency varchar2,

vBalance number) return number is
```

The wrapper will be created in the following fashion:

```
DECLARE
                batchid     VARCHAR2(32767) :=
'user_extension_2024-09-30_16';
                misdate     VARCHAR2(32767) := '20240930';
                vCurrency    VARCHAR2(32767) := 'USD';
                vBalance     number := '100';
                vreturn     NUMBER(30);
BEGIN
                vreturn := fnupdaterecord(
                batchid     => batchid,
                misdate     => misdate,
                vCurrency    => vCurrency,
                vBalance    => vBalance);
END;
```

iii. **CustomPLSQL Params**: Enter the required parameters for selected PLSQL function. If there are multiple parameters use comma separator. For example: USD,200.

3. Save the Task.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**. For more information, see Execute Batch.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
6. Select the Batch and then select the **MISDATE** and the **Batch name**. Select the latest execution and click **Start Monitor**.

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The UI displays the Status of the batch.

5.1.3 PLSQL Starter Kit User Interface

The PLSQL Starter Kit UI will allow users to generate a Starter Kit. UI has options to Include Custom tables & Include data for all Custom tables. The UI will display the current status and previously generated Starter Kit Status. The UI has a Download button using which you can download the generated Starter Kit.

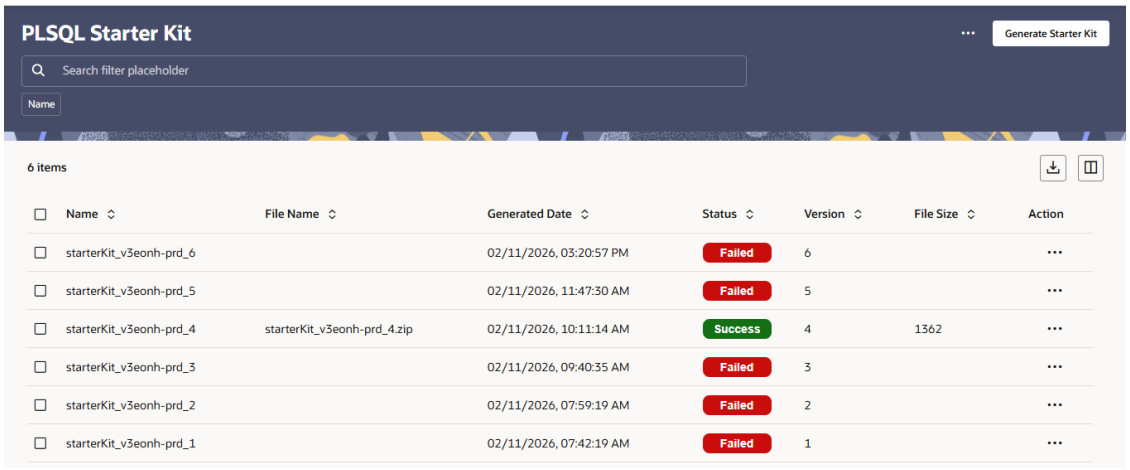
User must be mapped to below groups to access PLSQL Starter Kit UI:

- UG_GEN_STARTER_KIT_ADMIN
- UG_GEN_STARTER_KIT_ANALYST

For more details on mapping user groups, refer to Managing User Groups.

From the LHS menu, select **Admin Tools**, and then select **PLSQL Starter Kit**.

Figure 5-2 PLSQL Starter Kit



The PLSQL Starter Kit UI displays the following details:

- **Name**: Displays the name of the starter kit generation instance.
- **File Name**: Displays the Starter Kit file name (only populated for successful generations).
- **Generated Date**: Displays the date and time of starter kit generation.
- **Status**: Displays the status of Starter Kit generation (Success or Failed).
- **Version**: Displays the version number of the starter kit.
- **File Size**: Displays the Starter Kit file size (only populated for successful generations).
- **Action**: Provides additional actions for each starter kit entry.
- **Execution Status**:
  - **Last Generated on**: Displays the date of starter kit generation.
  - **Version**: Displays the Version number if starter kit.
  - **File Name**: Displays the Starter Kit File Name.

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  - **File Size**: Displays the Starter Kit File Size.
  - **Status**: Displays the Status of Starter Kit Generation.
- Previous Execution Status shows the details of a previously generated Starter Kit:
  - **Generated on**: Displays the date of starter kit generation.
  - **Version**: Displays the Version number if starter kit.
  - **File Name**: Displays the Starter Kit File Name.
  - **File Size**: Displays the Starter Kit File Size.
  - **Status**: Displays the Status of Starter Kit Generation.
- Click **Generate Starter Kit** button to start generating the Starter Kit.
- **Refresh** button can be used to refresh the page to view the latest Status.
- **Download** button can be used to download the latest generated Starter Kit.

5.1.4 PLSQL Starter Kit Installation

Users who wish to install Starter Kit should download the StarterKit installer.

> **Note**
>
> For more information, see the PLSQL Starter Kit UI in the User Guide.

The following steps guide you to install the PLSQL Extension Starter Kit.

> **Note**
>
> The installer supports both fresh and upgrade installations.

Installation Tasks	Description
Verify the system requirements	This will entail the prerequisites required to start with the installation of Stater Kit.
Configure and create a Database Schema	Starter Kit installation requires a Database Schema. For more information, see the Create and Configure Database Schema Creation.
Configure Environment Variables	For more information. see the .profile Changes.
Install StarterKit	For instructions to install the Starter Kit, see Installation of Starter Kit.
Create User Extensions	For instructions, see Create PLSQL Extensions.

- Verify the System Requirements
  The following tables list the pre-installation checklist items.
- Configure and Create a Database Schema
  Creation of a Database Schema requires sysdba access.
- Configure Environment Variables
  Do the following changes in the .profile file.
- Install StarterKit
  To install the starterkit:

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- Create PLSQL Extensions
  The following object types can be used while developing User-Extensions:

5.1.4.1 Verify the System Requirements

The following tables list the pre-installation checklist items.

Client Machine Requirements

Operating System	Linux Server 8.6+
Software to be installed	• Oracle Client Version 19.17.0.0.0 and above • ksh • jq version 1.6 • Zip 3.0 • UnZip 6.00 • rsync version 3.1.3 • dos2unix

Server Requirements

Database Name	Oracle Database 19c Enterprise Edition Release 19.26.0.1.0 – Production or above
Oracle Database Instance Settings	Ensure that the following database instance settings are configured: • NLS_CHARACTERSET to AL32UTF8 • NLS_LENGTH_SEMANTICS to BYTE • OPEN CURSORS limit to greater than 1000

5.1.4.2 Configure and Create a Database Schema

Creation of a Database Schema requires sysdba access.

Log in as sys user and create an Oracle schema. This schema will be used by the Starter Kit during installation to deploy the Starter Kit objects.

Sample syntax to create a database schema:

```
create user <username> identified by <password>
```

> **Note**
> - `<username>` refers to the actual schema user name.
> - `<password>` refers to the actual schema password.

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Example:

```
create user skituser identified by password123
```

Assign Tablespace and Quota to the Schema created.

DEFAULT TABLESPACE	Default Users tables or Assign any permissible existing valid tablespace.
TEMPTABLESPACE	Default TEMP or Any Permissible existing valid temporary tablespace name.
QUOTA	Enter the quota to be set on the DEFAULTTABLESPACE attribute for the schema/ user. By default, the quota size is set to 500M. Minimum: 500M or Unlimited on default Tablespace.

Sample syntax to assign tablespace and quota to a database schema:

```
alter user <<username>> DEFAULT TABLESPACE <<USERS>> quota unlimited on
<<USERS>>;
```

Note

- <username> refers to the actual schema user name.
- <USERS> refers to the actual default tablespace.

Example:

```
alter user skituser DEFAULT TABLESPACE USERS quota unlimited on USERS;
```

- Assign Grants for Schema
  Provide the following grants:

5.1.4.2.1 Assign Grants for Schema

Provide the following grants:

- grant create SESSION to <<username>>;
- grant create PROCEDURE to <<username>>;
- grant create SEQUENCE to <<username>>;
- grant create TABLE to <<username>>;
- grant create VIEW to <<username>>;
- grant create SYNONYM to <<username>>;
- grant create TYPE to <<username>>;

5.1.4.3 Configure Environment Variables

Do the following changes in the .profile file.

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Table 5-2 .profile File Changes

Description	Example Value
set ORACLE_HOME pointing to the appropriate Oracle Client installation.	export ORACLE_HOME=/scratch/oraofss/app_client19c/product/ 19.0.0/client_1
Set the PATH	export PATH=/scratch/oraofss/app/product/19.0.0/dbhome_1/bin:$PATH
Set the STARTER_KIT_HOME	export STARTER_KIT_HOME=/scratch/iutusrext/shome
Set TNS_ADMIN pointing to the folder where tnsnames.ora file exists.	TNS_ADMIN=$HOME/tns

Example (.profile)

```
#!/bin/bash
export ORACLE_HOME=/scratch/oraofss/app/product/19.0.0/dbhome_1
export PATH=/scratch/oraofss/app/product/19.0.0/dbhome_1/bin:$PATH
echo "PATH $PATH"
export STARTER_KIT_HOME=/scratch/iutusrext/shome
export TNS_ADMIN=$HOME/tns
```

Login to the Linux terminal and execute the .profile.

```
. ./.profile
```

5.1.4.4 Install StarterKit

To install the starterkit:

1. Create a directory and copy the generated starterkit zip file and unzip it.
2. mkdir -p <dir_name>
   Example:

   ```
   mkdir -p starterKit
   ```

3. Copy the downloaded starterkit zip file into the created directory.
4. cd <dir_name>

   ```
   cd starterKit
   ```

5. unzip <starterKitzipfilename>
   Example:

   ```
   unzip starterKit_cappsalm10dec-prd_20.zip
   ```

6. Assign EXECUTE permission installer script using the command:

   ```
   chmod 755 *
   ```

7. rm <starterKitzipfilename>

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Example:

```
rm starterKit_cappsalm10dec-prd_20.zip
```

Ensure that the path specified in $STARTER_KIT_HOME exists. If it doesn't exist create the STARTER_KIT_HOME directory.STARTER_KIT_HOME is the same as what is mentioned in .profile in the Pre-installation Checklist section.

mkdir -p <starterkithome>

Example:mkdir -p shome

Edit the initParam.props file present inside starterKit/attributes folder.

Table 5-3 initParam.props file

Parameter Name	Parameter Desc
HOST	Schema name where starterkit is installed. Same schema which was created in section. *Assign Grants for Schema*
DB_HOST	Database Host name
DB_PORT	Database Port number
DB_SERVICE_NAME	Database Service Name or SID
LOG_PATH	ABSOLUTE Log path where log files should reside.
EXTRACTOR_DUMP_HOME	ABSOLUTE Extractor Dump Home Folder path where export dump and import dump resides.
EXP_DUMP	Extractor Export Dump Folder name where extracted scripts reside.

> **Note**
>
> Values are defaulted and should not be changed.

PAR_HOME	ABSOLUTE PAR Home path
MANIFEST_FSAPPS_CREATE_SCRIPTS	Name of manifest file create scripts deployment.

> **Note**
>
> Values are defaulted and should not be changed.

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Table 5-3 (Cont.) initParam.props file

Parameter Name	Parameter Desc
MANIFEST_FSAPPS_INSERT_SCRIPTS	Name of manifest file insert scripts deployment. **Note** Values are defaulted and should not be changed.
IMP_DUMP	Extractor Import Dump Folder name. **Note** Values are defaulted and should not be changed.

Sample initParam.props file

```
#Enter HOME Schema name
HOST=custom
#Enter DB Host name
DB_HOST=<DB HOST IP ADDRESS>
#Enter DB Port number
DB_PORT=<DB PORT NUMBER>
#Enter DB Service Name or SID
DB_SERVICE_NAME=NXG19PDB
#Provide ABSOLUTE Log path
LOG_PATH=/scratch/iutusrext/shome/logs
#Sleep param value
SLEEP_VAL=sleep 3
#Provide ABSOLUTE Extractor Dump Home Folder path
EXTRACTOR_DUMP_HOME=/scratch/iutusrext/objExtDump
#Extractor Export Dump Folder name
EXP_DUMP=expDump
#Extractor Import Dump Folder name
IMP_DUMP=impDump
#Provide ABSOLUTE PAR Home path
PAR_HOME=/scratch/iutusrext/parDump
#Manifest fsapps for create scripts deployment
MANIFEST_FSAPPS_CREATE_SCRIPTS=manifest_fsapps_create.sql
#Manifest fsapps for insert DML scripts deployment
MANIFEST_FSAPPS_INSERT_SCRIPTS=manifest_fsapps_insert.sql
```

Installation of starter kit

Navigate to the starter kit directory.

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1. In case of upgrade installation of starterkit of version 25.03.01 or above on top of version 25.02.02 or below. Run the following script:
   `F_CEXTN_ARCHIVE_HANDLE_ERRORS.sql` in the paths `/objectExtractor/scripts/create` and `/objectExtractor/scripts/insert` in the upgrade version of starterkit has to be executed before applying the upgrade.

   You can ignore this step in case of fresh installation.

2. Run the command to invoke `setup.sh` as follows:
   `. ./setup.sh`

   During its run this shell prompts you to enter the username, password, etc. of the database in which the Starter Kit files are to be deployed. Please provide them carefully.

3. Verify the execution status by running the following query:
   `select * from setup_info`

   Check the column F_STATUS for value S (Success).

   In case of failure, this column will be updated with value F (Failed).

   Additionally, verify the `starterkit.log` file. The log path is mentioned in the properties file against the LOG_PATH parameter.

   In case of upgrade installation, ignore the following message: *ORA-01430: column being added already exists in table* that appears in the installation log file `update_install_fsapps_create_script.log`.

5.1.4.5 Create PLSQL Extensions

The following object types can be used while developing User-Extensions:

- Sequence
- Procedure
- Function
- Package
- Type
- Views

Follow the naming convention and usage instruction mentioned in the User Guide while developing the User Extensions.

Generate an Archive of Created User Extensions

Create a par File
The par file list the object that need to be extracted during archival process. The par file is a newline delimited file. The par file path is passed a parameter during archive.

```
FN_UPD_FSI_D_ASSETS_CUSTOM

FN_UPD_FSI_D_LIABILITY_CUSTOM

CUSTOM_NO_SEQ_CUSTOM
```

To execute the archive, execute the following command:

```
cd $STARTER_KIT_HOME/bin
 . ./archive.sh SILENT "par file absolute path" "project_name"
```


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Example:

```
. ./archive.sh SILENT "/scratch/devextusr/sampleobjects.par" "project_1"
```

The archived file will be present under path mentioned against the parameter `EXTRACTOR_DUMP_HOME` and `EXP_DUMP` in the init.props file.

For Example given the below values in the init.props file

`EXTRACTOR_DUMP_HOME=/scratch/iutusrext/objExtDump`

`EXP_DUMP=expDump`

`<EXTRACTION_ID>:` This generated by the Archive.

The path will be created as follows:

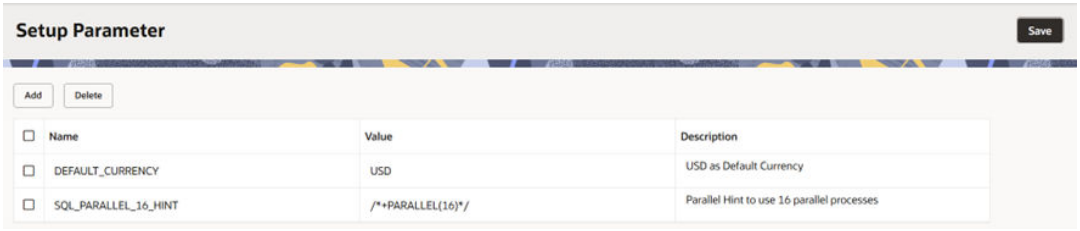
`/scratch/iutusrext/objExtDump/expDump/8/OFS_ALMCS_USER_EXT_2000_29.10.01_1.tar.gz`

5.1.5 PLSQL Properties

The Custom PLSQL Properties (Setup Parameters) user interface is used to capture placeholder configuration which might be required during the development of custom PLSQL extensions.

1. To access Custom PLSQL Properties user interface, select **Admin Tools**, and then select **Custom PLSQL Properties**.
   The Custom PLSQL Properties – Setup Parameters window is displayed.

Figure 5-3 Setup Parameter



2. Click **Add** to define a new custom parameter and enter the following details:
   - **Name**: Configuration parameter key or name. Name can accept up to 200 characters.
   - **Value**: Configuration parameter value. Value can accept up to 1000 characters.
   - **Description** (not mandatory): Provide a description for the parameter and value added. Description can accept up to 1000 characters.
3. Click **Save**.
4. If you want to edit an already defined parameter, select the checkbox against the Name and change the **Name** or **Value**.
   If the Name is already defined, then the system displays a message *Parameter name already exists*.

Example

The following is an example of how to consume the Custom PLSQL Properties parameter and its value:

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- Declare a local variable (lv) in the Custom PLSQL extension definition for parameter SQL_PARALLEL_16_HINT for eg: lv_sql_parallel_16_hint
- Using a SELECT statement fetch the value of the SQL_PARALLEL_16_HINT parameter and assign it to the local variable defined.
  Example:

```
lv_sql_parallel_16_hint setup_master.parameter_value%TYPE;
select parameter_value into lv_sql_parallel_16_hint from setup_master
where parameter_name=" SQL_PARALLEL_16_HINT";
```

5.1.6 Post-Upgrade Actions for Custom PLSQL Extensions

For upgrades from 25B to 25C/D, migration scripts for previously deployed Custom PLSQL extensions are not included in the upgrade process.

You must perform the following steps for all previously deployed custom extensions:

- Regenerate the Starter Kit
- Regenerate the archive
- Redeploy the extension using the Self-Service UI

If these steps are not performed, previously deployed Custom PLSQL extensions may not function as expected after the upgrade.

5.1.7 Object Migration

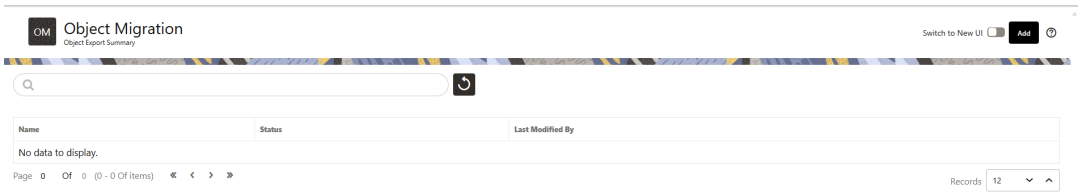
The Custom Archives objects can be Exported / Imported from one setup to another setup using the **Object Migration** framework. The Object Type **Custom Archives** is available in **Object Migration Export** window.

For more information, see the Object Migration section.

To export the Custom Archive objects, follow these step:

1. Click **Add** in the **Object Export Summary** page to view the Migration Definition page.

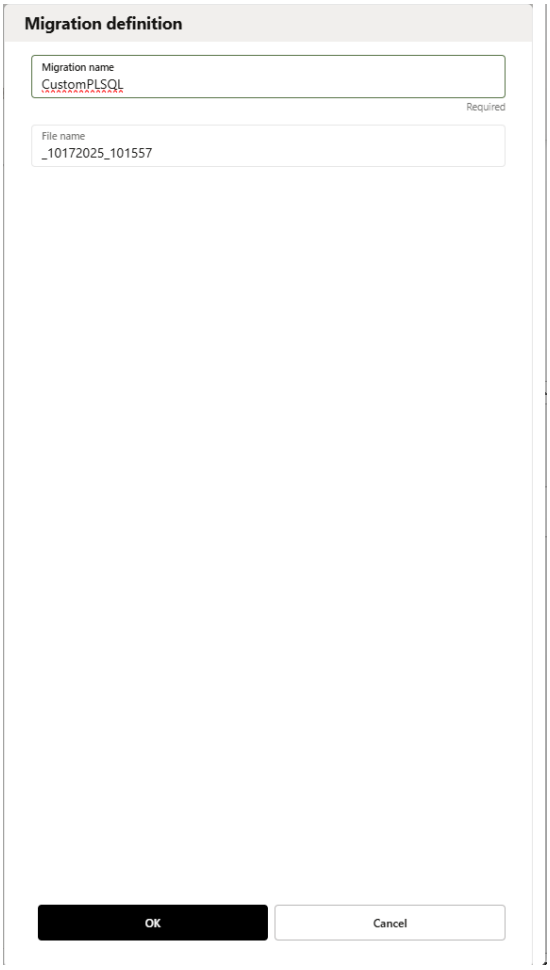
Figure 5-4 Object Export Summary page



2. Enter the following details, in the Migration Definition page.

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Figure 5-5 Migration Definition Page

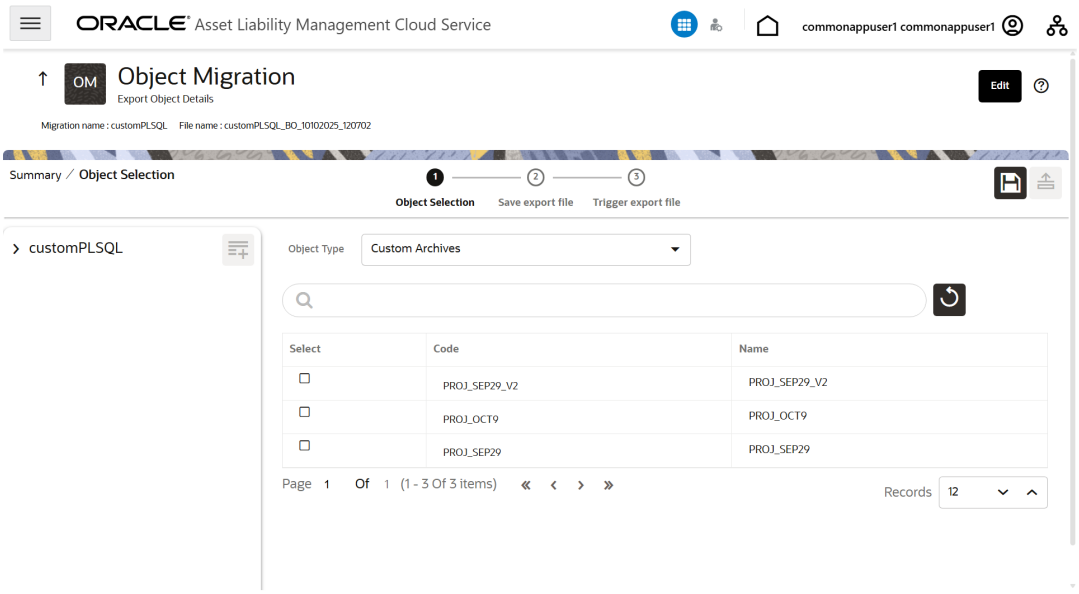


- **Migration Name:** Enter the code of the export of objects to be migrated definition. This is a unique identifier.
- **File Name:** The system auto-creates the file name of the objects that can be used to export the definition in the following format:
  - For Business Objects: Migration Name_BO_Time Stamp_Tenant_Release Version (time stamp format: MMDDYYY HHMMSS)
    Example: EXP_DQRULE_BO_07312025_162240_zqvzly-prd_25_09_01.DMP
  - For Identity Objects: Migration Name_IDM_Time Stamp_Tenant_Release Version (time stamp format: MMDDYYY HHMMSS)
    Example: EXP_DQRULE_IDM_07312025_162240_zqvzly-prd_25_09_01.DMP

3. Click **Ok** to save the details and view the Object Selection Page.
4. Click **Add Member** icon to include Migration objects to the definition.
5. Select the Object Type as **Custom Archive** from the **Object Types** drop-down list.

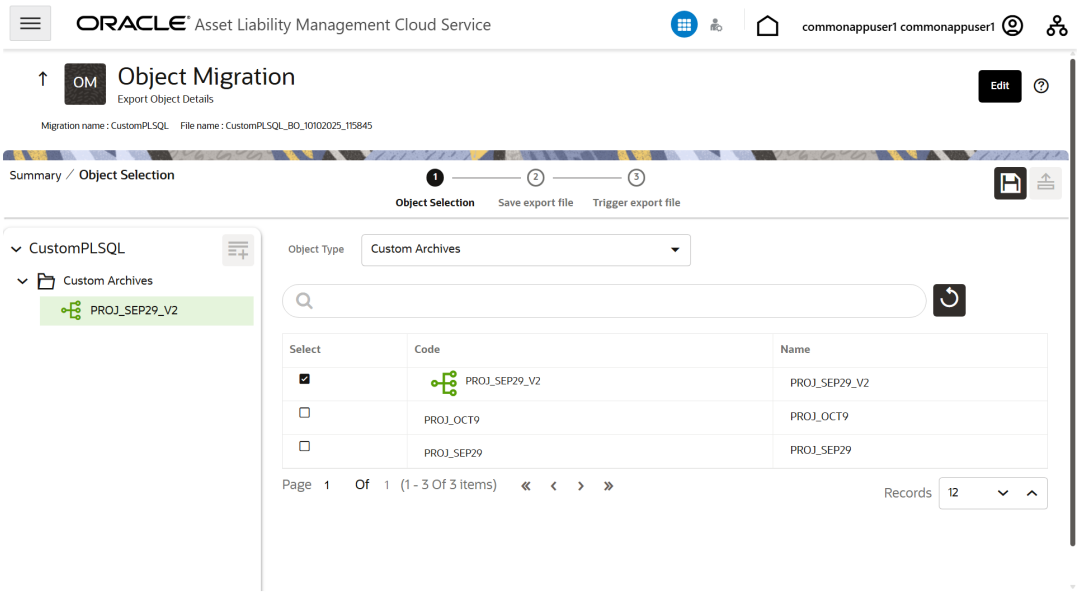
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Figure 5-6 Add Object



6. Select the objects to be added to the Migrate Definition and click **Save**, to create a new migration object. To select all objects, click the check box adjacent to Code. The selected objects appear under Selected Objects on the right.

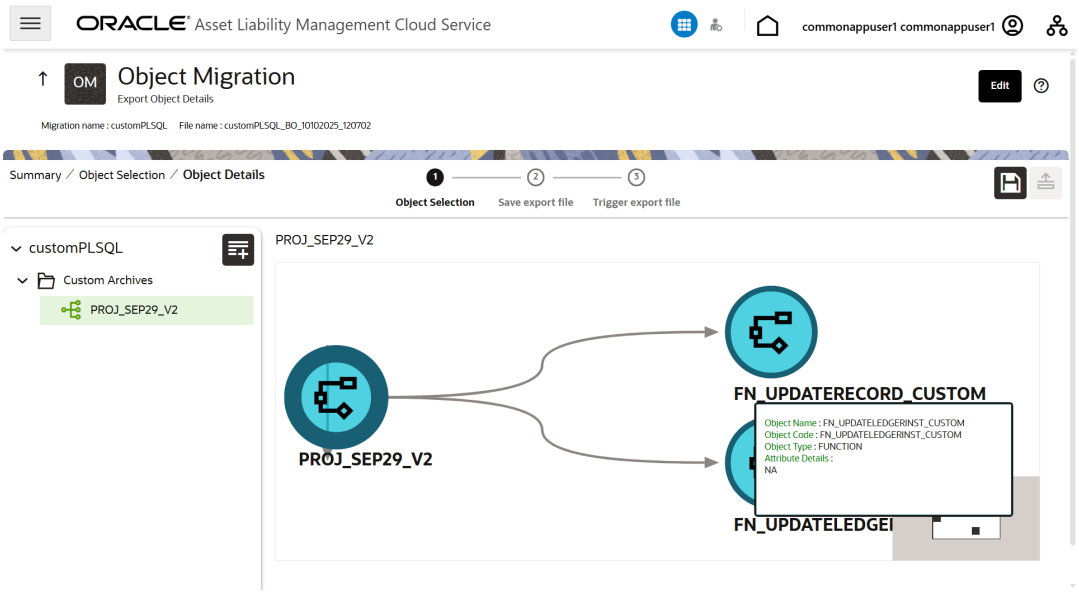
Figure 5-7 Create a new migration object



Click **Show Details** to view the details.

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Figure 5-8 View Details



A confirmation message is displayed, when the definition is saved successfully. The new migration definition is listed in the Object Export Summary Page and the status is set to Saved.

7. You can also click **Export**, to export the object.

You can use the Export dump generated to import in a target environment. For more information on Import, see the Object Migration.

5.1.8 Appendix

This appendix covers the following topics:

- Process for Submitting of Custom PLSQL Archives to Oracle
- Frequently Asked Questions
- Custom PLSQL Master Tables List
- Process for Submitting of Custom PLSQL Archives to Oracle
  This section explains the process to be followed for submitting the customer developed Custom PLSQL extensions to Oracle.
- Frequently Asked Questions
  This topic covers the frequently asked questions.
- Custom PLSQL Master Tables List
- Redaction DDLs [Data Definition Language]
- Index DDLs [Data Definition Language]
  Starter kit bundles index DDL's from tables that have indexes as part of Starter Kit Generation. These scripts can be executed manually by following the below steps.

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- Partition DDLs [Data Definition Language]
  Starter kit bundles partition DDL's from tables that have partitioning enabled as part of Starter Kit Generation. These scripts can be executed manually by following the below steps.

5.1.8.1 Process for Submitting of Custom PLSQL Archives to Oracle

This section explains the process to be followed for submitting the customer developed Custom PLSQL extensions to Oracle.

The process is a workflow-based approach and is broadly categorized as follows:

- Uploading the Custom PLSQL Extensions as an Archive
- Uploading the Custom PLSQL Extensions as an Archive
  This section explains the following questions on Custom PLSQL Extensions – what, how to generate an archive and where to upload the archive.

5.1.8.1.1 Uploading the Custom PLSQL Extensions as an Archive

This section explains the following questions on Custom PLSQL Extensions – what, how to generate an archive and where to upload the archive.

Custom PLSQL Extensions

Custom PLSQL Extensions here refers to the database objects that users may have created in their On-premises data center on a database schema containing of application objects which were created using the Starter Kit generated using Oracle's PLSQL Starter Kit User Interface.

Custom database Object Types are limited to the following:

Table 5-4 Database Object Types

Functions
Procedures
Packages
Views (Materialized Views not Supported)
Global Temporary Tables
Synonyms

Generating an Archive

Users are required to use the archive scripts bundled as part of the Starter Kit utility to generate Custom PLSQL extension archive.

For more details on How to Generate Custom PLSQL Extension Archive, see the Installation Guide.

Upload the Archive

Customerscan use the PLSQL Archive Summary user interface to upload the Custom PLSQL extension archive. The Project ID / Name will be considered as the main identifier for every archive.

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Table 5-5 Project ID or Name Details

Product ID	The Project Name / ID used while generating the Archive using Starter Kit Archive scripts

Project Name is a argument passed when executing the `archive.sh` shell. The project name should be a valid alpha numeric string.

- Project name can contain alphabets (A-Z, a-z).
- Project name can contain numbers (0-9).
- Spaces are NOT allowed.
- Underscore is allowed. Other special character (other than underscore) are not allowed.

Examples:

Valid project name sample: **Project_ALMCS_01**

Invalid project name sample: **Project ALMCS 01 $@**

The project name is an identifier used to tag and logical groups objects for given submission. User can use the same project name when executing the archival process. When the same name is used all objects that are previously submitted using this project name will also be archived.

5.1.8.2 Frequently Asked Questions

This topic covers the frequently asked questions.

1. **What to expect during custom PLSQL archive deployment request?**
   Answer:
   a. Submitted archives should always be cumulative of all earlier submissions. If a custom artefact is no longer required, it should be excluded from the archive.
      i. Sequence value will not be reset during a subsequent archive-deploy request.
   b. If the archive omits database functions that were included in the earlier version of the archive and such functions are referred within one or more batches the archive deployment will be aborted.
      i. Such batches need to be modified to remove dependency tasks or tasks which are no longer required and then request for deployment.
   c. All database functions will be available for inclusion into a batch under the batch component name “Custom PLSQL Definition”.
2. **What is the signature for database Functions?**
   Answer:

   On-prem and SaaS signature comparison of Data Transformation parameters

   ICC - On-Prem Parameters

Parameter Name	Data type
BatchID	Varchar2
MisDate	Varchar2

   ICC - SaaS Parameters

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Parameter Name	Data type
BatchID	Varchar2
MisDate	Varchar2

Batch Id: This is a mandatory parameter expected in the custom PLSQL function. Value will be submitted by the application during runtime.

MisDate: This is a mandatory parameter expected in the custom PLSQL function. Value will be submitted by the application during runtime.

Sample PLSQL Function with expected parameters in the Custom PLSQL Extension is mentioned below for reference:

Default declaration of the function will be as follows:

```
create or replace FUNCTION FNUPDATERECORD_CUSTOM (BatchID Varchar2, MisDate
Varchar2, custom_param1 varchar2)
```

return number is

```
vstatus number;
```

```
/*
```

Signature of function with AUTHID CURRENT_USERwhen redaction is enabled is provided below:

```
create or replace FUNCTION FNUPDATERECORD_CUSTOM (BatchID Varchar2, MisDate
Varchar2, custom_param1 varchar2)
```

return number authid current_user is

```
vstatus number;
```

authid current_user: The user extension function should be created with AUTHID CURRENT_USER invoker rights. DML operation on any redacted tables will be allowed only for functions defined with AUTHID CURRENT_USER invoker rights.

Batch Id: This is a mandatory parameter expected in the custom PLSQL function. Value will be submitted by the application.

Misstate: This is a mandatory parameter expected in the custom PLSQL function. Value will be submitted by the application.

custom_param1: Optional parameters which custom PLSQL functions can have to meet their requirements. You have to provide the parameter value during Batch definition under the Custom PLSQL Parameter field. This field is available in the UI at the time of defining the Task.

```
*/
```

```
begin
```

/* Functional requirement based DML operations */

/* Calling Logger */

```
PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE(Piv_message => Message ',
Piv_msg_severity_cd => 20);
```

```
commit;
```

```
return 1;
```

Exception

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```
PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE(Piv_message => 'ERROR IN FUNCTION ',
Piv_msg_severity_cd => 75);

return 0;

end;
```

3. **How will the custom database functions or procedures or packages access parameters?**
Answer:

   The parameters are batch run ID, Task ID, component ID, MisDate, tenant ID, workspace ID, service ID, process ID, etc.

   These parameters are generally used for logging by the Logger functions. The application passes these parameter values into the logger table during runtime and custom PLSQL functions need not have to pass these parameters explicitly.

   However, if the custom procedures still want to include these parameter they can do so by using the below parameter names in the custom procedures

Parameter Name	Description	Data type
Gv_workspace_id	Workspace Id	Varchar2
Gv_tenant_id	Tenant Id	Varchar2
Gv_service_id	Service Id	Varchar2
Gv_process_id	Process id	Varchar2
Gv_batch_run_id	Batch Run Id	Varchar2
Gv_misdate	Misdate	Varchar2

4. **How to perform Logging?**
Answer:

   To perform Logging, use below Package:

Package Name	Parameter No	Parameter Name	Data Type	Details
PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE	1	Piv_message	VARCHAR2	
	2	Piv_msg_severity_cd	VARCHAR2 DEFAULT 20	20 for Info 75 for Error

   a. Add your message in the **Piv_message** field.

   b. The **Piv_msg_severity_cd** should be fixed to 20 for Information type messages and 75 for Error messages.

   For more details on sample PLSQL function, see Question 2.

   Other Examples:

   /* Calling Logger */

```
PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE(Piv_message => 'My Custom message here' ',
Piv_msg_severity_cd => 20);

PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE(Piv_message => SQLCODE ',
Piv_msg_severity_cd => 20);

PKG_CUSTEXT_LOGGER.PR_LOG_MESSAGE(Piv_message => SQLERRM ',
Piv_msg_severity_cd => 20);
```

5. **How to view the view the logs in the starter kit schema?**

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Answer: To view the logs in Starter Kit Schema, use below query:

```
SELECT * FROM AAICL_MESSAGE_LOG
```

5.1.8.3 Custom PLSQL Master Tables List

For downloading the Custom PLSQL Master Tables list (Custom_PLSQL_Master_Table_List.xls), refer to the Doc ID: 2869409..

5.1.8.4 Redaction DDLs [Data Definition Language]

Starter kit bundles redaction policy ddls for all the objects extracted as part of Starter Kit Generation. Redaction policy DDLs will be extracted and bundled as part of Starter Kit only if a redaction policy is enforced for an object using the redaction framework UI.

Please refer to Data Redaction on how to enable redaction using redaction framework user interface.

How to use the redaction policy DDLs bundled in the Starter Kit [Optional]:

- Redaction policy DDLs are bundled in a separate folder named redaction in the Starter Kit.
- Redaction policy DDLs can be executed in the schema where Starter Kit bundled objects are installed.
- Redaction policy DDLs are NOT executed as part of Starter Kit installation and needs to be executed manually.

Steps to execute:

1. Copy the redaction.sql available in the redaction folder to any user specified folder.
2. Login to database schema user where Starter Kit objects are installed.
   Example: sqlplus <schema_username>/<schema_password> @<db_service_name>
3. For logging enable spooling of execution logs:
   Example: spool <absolute_folderpath_for_logging>/redaction.log
4. Execute the redaction.sql from the sqlplus prompt.
   Example: @<absolute_path_of_redaction.sql>

5.1.8.5 Index DDLs [Data Definition Language]

Starter kit bundles index DDL's from tables that have indexes as part of Starter Kit Generation. These scripts can be executed manually by following the below steps.

Steps to execute:

- Copy the `manifest_fsapps_Table_Index_create.sql` available in the IndexDDL folder to any user specified folder.
- Logan to database schema user where Starter Kit objects are installed.
  Example: `sqlplus <schema_username>/<schema_password> @<db_service_name>`
- For logging enable spooling of execution logs:
  Example: `spool <absolute_folderpath_for_logging>/IndexDDL.log`
- Execute the `manifest_fsapps_Table_Index_create.sql` from the sqlplus prompt.
  Example: `@<absolute_path_of_ manifest_fsapps_Table_Index_create.sql.sql>`

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5.1.8.6 Partition DDLs [Data Definition Language]

Starter kit bundles partition DDL's from tables that have partitioning enabled as part of Starter Kit Generation. These scripts can be executed manually by following the below steps.

Steps to execute:

- Copy the `manifest_fsapps_Partition_Table_create.sql` available in the partitionDDL folder to any user specified folder.
- Log into database schema user where Starter Kit objects are installed.
  Example: `sqlplus <schema_username>/<schema_password> @<db_service_name>`
- For logging enable spooling of execution logs:
  Example: `spool <absolute_folderpath_for_logging>/PartitionDDL.log`
- Execute the `manifest_fsapps_Table_Index_create.sql` from the sqlplus prompt.
  Example: `@<absolute_path_of_ manifest_fsapps_Partition_Table_create>`

5.2 PLSQL Archive Summary

PLSQL Archive Summary User Interface allows customers to introduce custom PLSQLs (also referred to as user-extensions) into the PBSM cloud service.

The PLSQL Archive Summary UI enables you to perform the following:

- Upload of a Custom PLSQL archive.
- Submit the uploaded archive for Due Diligence process.
- Submit the archive for Deployment

Submit the archive for Deployment. Here, Archive refers to a zip extension file containing custom objects like PLSQL functions, procedures, packages, synonyms etc. For more information, see Custom PLSQL Extension.

Other features that are provided as part of the PLSQL Archive Summary are:

- View History of archives processed.
- Refresh or Reload of the archive details page to view the latest updated status.
- View Contents of an uploaded archive.
- Download an archive.
- Discard an archive.
- View Logs of Archive Upload, Due Diligence process and Archive Deployment.

> **Note**
>
> The deployment log also captures the actions performed for custom views, including view deployment, recompilation, grant creation, synonym creation, and updates to the Custom PLSQL Master table. You can review these details from the **View Log** option for the archive deployment step.

Users must be mapped to the below groups to access the PLSQL Archive Summary:

- UG_GEN_STARTER_KIT_ADMIN

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- UG_GEN_STARTER_KIT_ANALYST

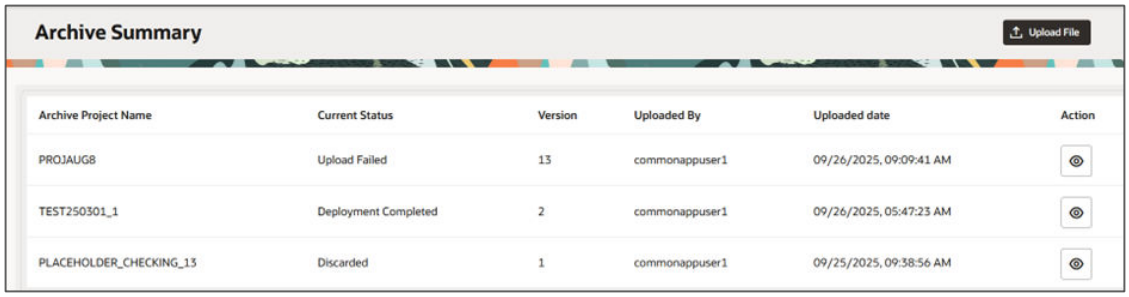
From the LHS menu, select **Admin Tools**, and then select **PLSQL Archive Summary**.

- PLSQL Archive Summary
- Upload Custom PLSQL User Extension Archives
  The Upload File button on PLSQL Archive Summary page is used to upload a custom PLSQL archive.
- Submit Custom PLSQL User Extension Archives

5.2.1 PLSQL Archive Summary

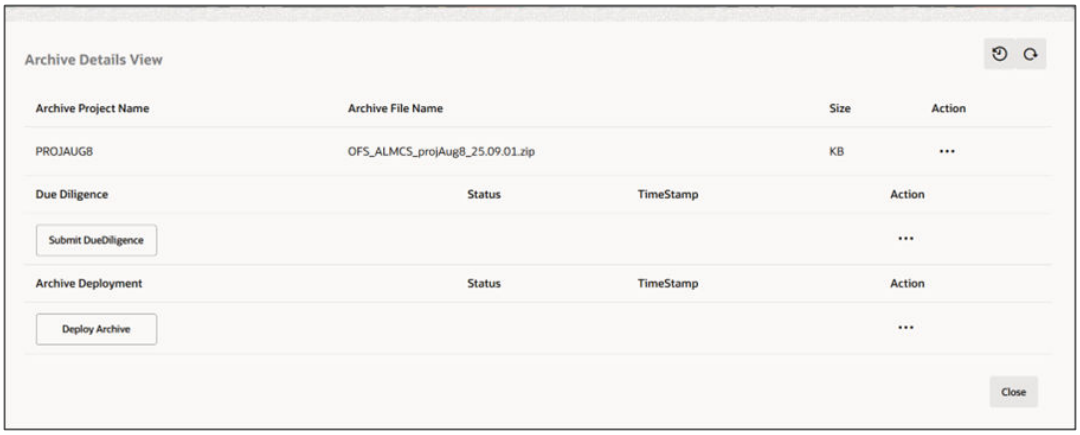
This page is the gateway to all PLSQL Archive Projects and related functionality. You can navigate to other pages relating to PLSQL Archive Projects from this point.

Figure 5-9 PLSQL Archive Summary



- **Archive Project Name:** Shows the name of Archive project
- **Current Status:** Displays the current status of archive project as Upload Failed, Upload Successful, etc.
- **Version:** Shows the Current or Latest version of Archive
- **Uploaded by:** The user who last modified the Archive.
- **Uploaded Date:** The Date and Time when the archive was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Archive.

Figure 5-10 View Archive Details



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The View Archive Details page shows following details:

- **Archive Project Name:** Displays a unique number for the selected archive
- **Archive File Name:** Shows the name of Archive file.
- **Archive Size:** Shows the size of Archive file.

Click Action icon to view a list of actions that you can perform on the Archive.

Figure 5-11 History



Shows the list of all the versions that were processed for the selected Archive Project Name. The **Archive History** window is displayed with basic details like the Archive Project Name, App Name, Version of archive, Upload date, Deleted status, and Deployment status of archive.

Figure 5-12 Archive History window

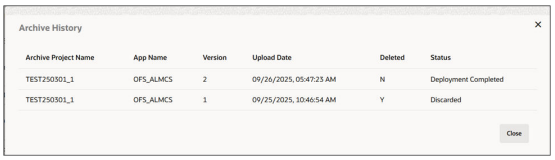


Figure 5-13 Refresh



Refreshes the latest status of due diligence & archive deployment. This is a reload of the view details page data contents. In case a due diligence / archive deployment is in progress, then you can use the refresh button to reload the page to see the updated status whether successful, failed or discarded.

Figure 5-14 Download



Allows you to download of the selected archive.

Figure 5-15 Discard Archive



Allows you to discard the selected archive.

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Figure 5-16 View Contents



To view the contents of the selected archive/ version. The **Archive Content** window displays the contents of the archive in the current release with Object Names and Object Types.

Figure 5-17 Archive Content window

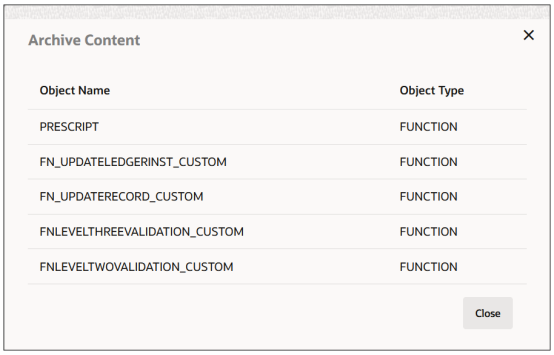


Figure 5-18 View Archive Log

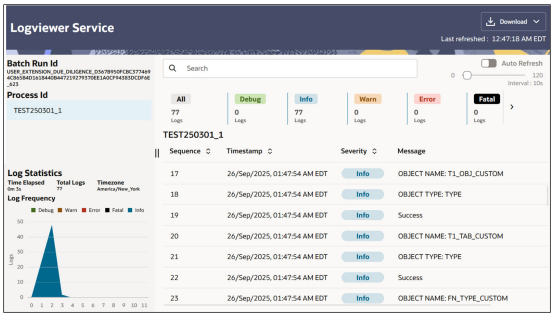


Allows you to access the log details. The Log View window displays the below log details:
View log of the archive upload - Shows the archive upload logs.

View log of the due diligence step - Shows the different diligence checks performed on each object and their status.

View log of the archive deployment step – Shows the deployment status at overall and each object level.

Figure 5-19 Log View window



Submit for Due Diligence	The **Submit for Due Diligence** button allows you to submit the selected archive for processing the archive diligence checks.

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Auto Due Diligence	In addition to manually clicking **Submit for Due Diligence**, the archive diligence checks can now be initiated automatically once the archive reaches an eligible state, without requiring to click **Submit for Due Diligence**.
Deploy Archive	The **Deploy Archive** button allows you to invoke the deployment process of the selected archive.

5.2.2 Upload Custom PLSQL User Extension Archives

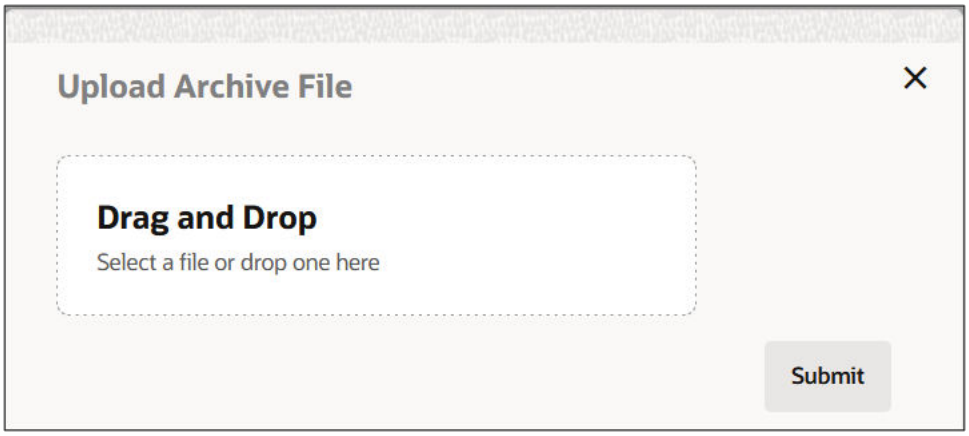
The Upload File button on PLSQL Archive Summary page is used to upload a custom PLSQL archive.

> **Note**
>
> Only Starter Kit generated archives will be uploaded via the Archive Summary Upload File option. Only ZIP file are supported for upload.

To upload the file, follow these steps:

1. Navigate to **Archive Summary** page.
2. Click Upload File button. The **Upload Archive File** window is displayed.

Figure 5-20 Upload Archive File window



3. Select the locally stored zip archive for upload and click **Submit**.

5.2.3 Submit Custom PLSQL User Extension Archives

Custom PLSQL extensions post successful upload via the PLSQL Archive Summary page is available for consumption for due diligence processing and deployment in next stages.

First, submit the custom archive for a series of due diligence checks using the Submit for Due Diligence button.

Second, deploy the custom archive in the specified environment.

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Using the **View Archive Details** window, you can access the Due Diligence and Archive Deployment for submission of Custom PLSQL user extensions.

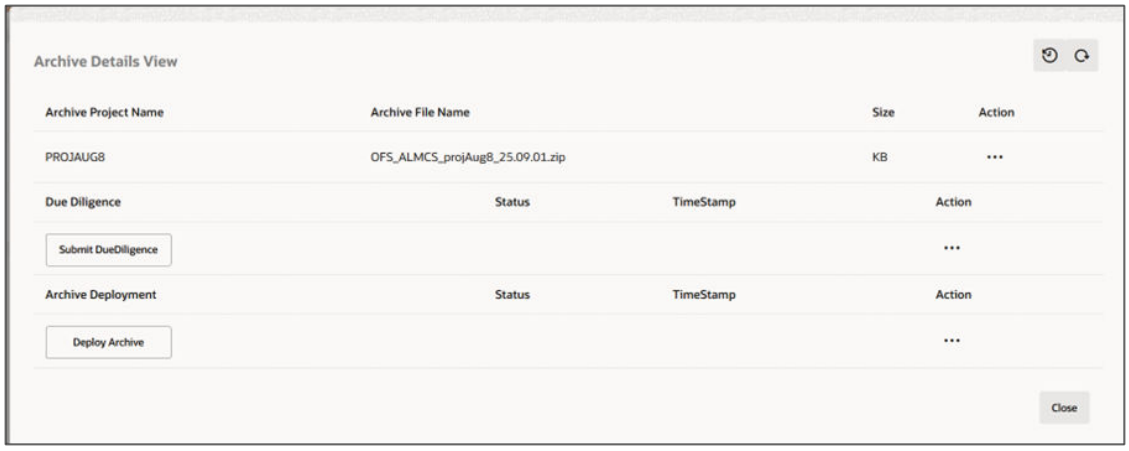
Click **View**

Figure 5-21 View



icon on the corresponding archive project from the **PLSQL Archives Summary** page to access the **View Archive Details** window.

Figure 5-22 View Archive Details window



- Submit for Due Diligence
- Deploy Archive
- Analytics Access for Custom Views
  After a Custom PLSQL archive is deployed successfully, all custom objects of type View that are included in the archive are identified and enabled for Analytics usage.

5.2.3.1 Submit for Due Diligence

In Due diligence, Custom PLSQL archive contents will go through a series of checks before being moved or considered for deployment into the preferred Cloud Service tenant.

Below is the list of checks:

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Check Type	Description	Status
Naming Convention	Naming Conventions to be used while creating Custom Extensions. Objects names will be validated for the presence of "_CUSTOM" as suffix Example: FN_UPD_FSI_D_ASSETS_CUSTOM	Success/Fail
Dependency	This checks if the user-extensions are mapped to any existing batch definitions	Completed
Difference	Checks to validate that submitted archives should always be cumulative of all earlier submissions.	Success/Fail
Keyword	Validates for whitelisted keywords within the user extension	Success/Fail
Security	Security Scans	Success/Fail
Compilation Check	Validates that the custom PL/SQL objects in the archive compile successfully against the target schema before further checks proceed.	Success/Fail
Run Check	Executes the custom PL/SQL objects that passed the Compilation Check using real data retrieved from the CUSTOM_SHADOW schema, to validate execution against actual business data rather than mock values.	Completed

Run Check requires that the Compilation Check has already completed successfully. Individual object execution failures are recorded as warnings and do not stop the check; however, unlike some other checks, Run Check always completes with an overall status of Completed — it does not cause the overall Due Diligence process to fail.

> **Note**
>
> Because Run Check executes objects against real data, representative data must be present in the corresponding CUSTOM_SHADOW tables beforehand.

To perform check on Archive project, follow these steps:

1. Navigate to **Archive Summary** page.
2. Click the **View**

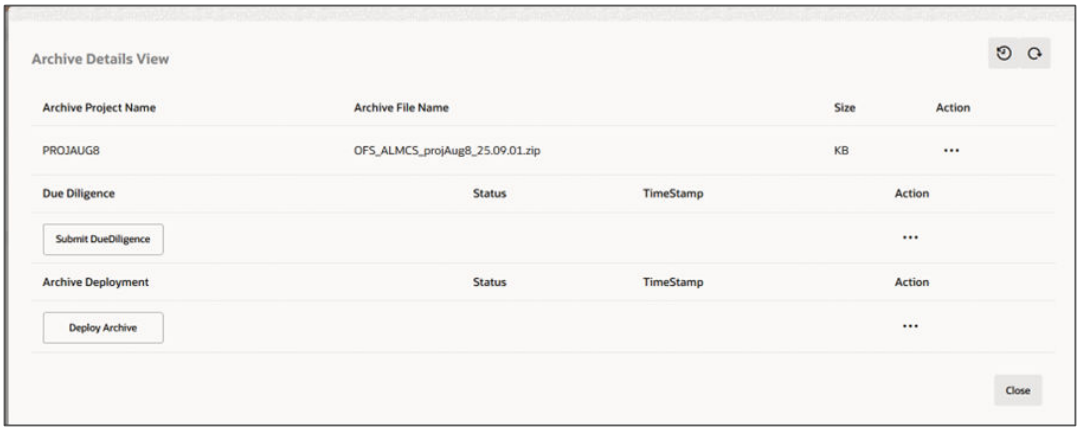
Figure 5-23 View



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icon under Action. The **Archive Details View** window is displayed.

Figure 5-24 Archive Details View



3. Click **Select DueDiligence**. The status of Archive is displayed. For more information on status, see Table Status Details. Click **Ok**.

Figure 5-25 Status of Archive



4. Click **Action**

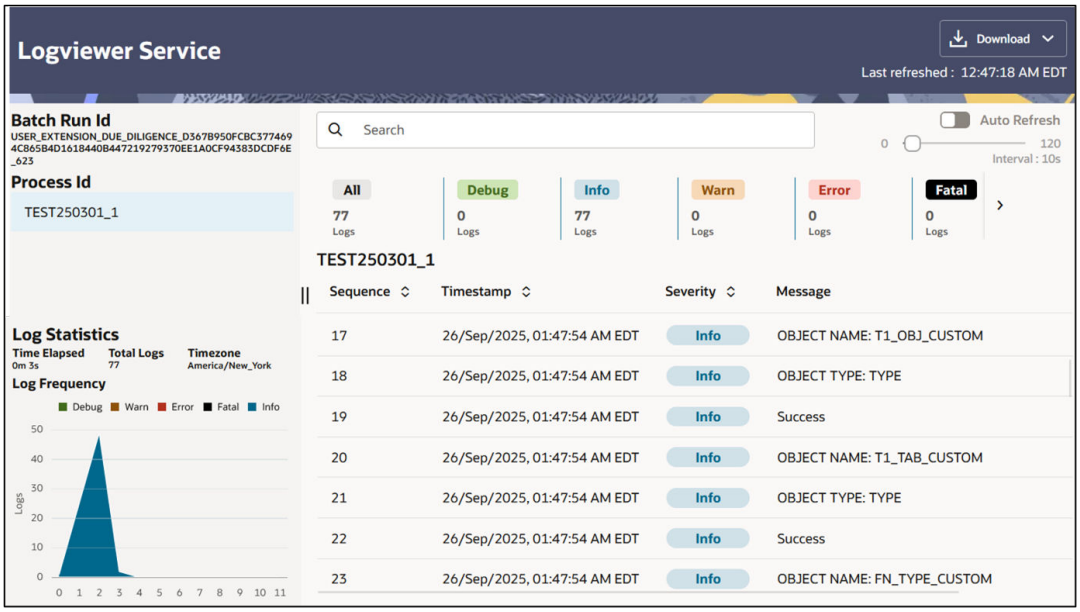
Figure 5-26 Action

icon next to **Select DueDiligence** button to view a list of actions. Below actions can be performed:

- **Discard:** This will allow users to discard the selected archive. You cannot Discard an Archive if it is in Deployment stage.
- **View Log:** Allows you to access the log details post Due Diligence check.

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Figure 5-27 Logviewer Service



5.2.3.2 Deploy Archive

Post successful completion of Due Diligence checks, you can deploy an Archive.

> **Note**
>
> Archive Deployment will not be enabled is there are errors in Due Diligence checks.

To deploy an Archive, follow these steps:

1. Navigate to **Archive Summary** page.
2. Click the **View**

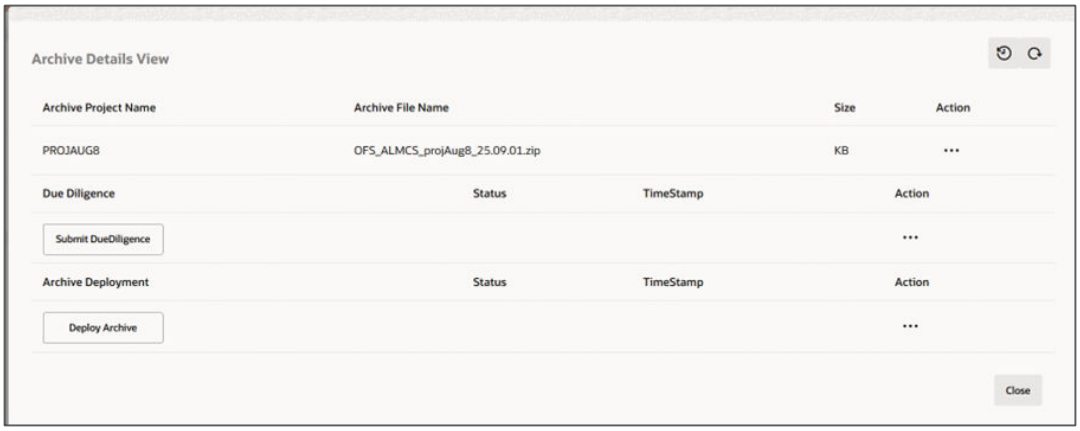
Figure 5-28 View



icon under Action. The **Archive Details View** window is displayed.

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Figure 5-29 Archive Details View



3. Click **Deploy Archive**. The deploy status of Archive is displayed. Click **Ok**.

Figure 5-30 Status of Archive



4. Click **Action**

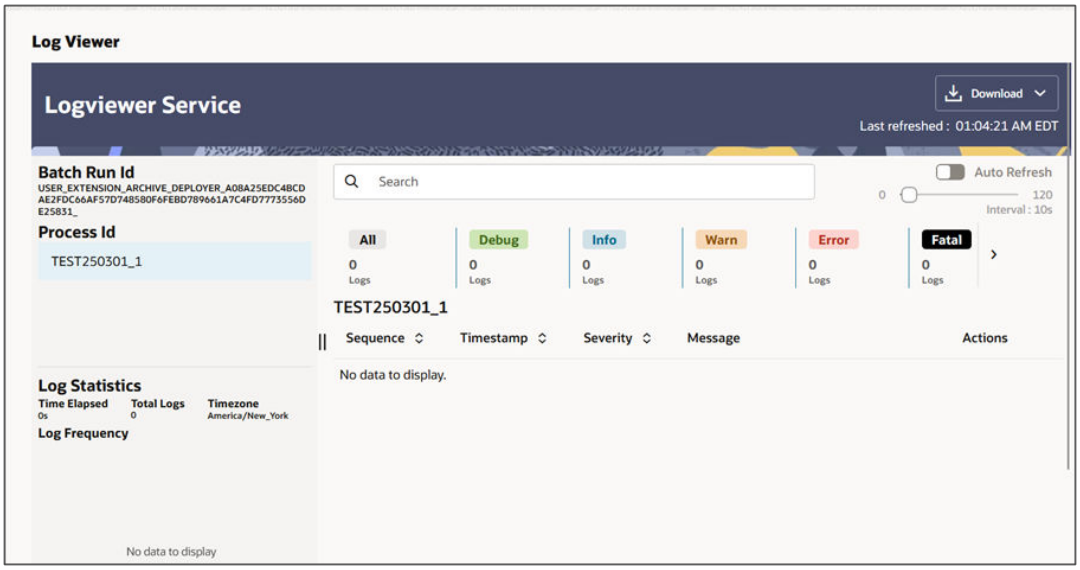
Figure 5-31 Action

icon next to Select **Deploy Archive** button to view a list of actions. Below actions can be performed:

- **Discard:** This will allow users to discard the selected archive. You cannot Discard an Archive if it is in Deployment stage.
- **View Log:** Allows you to access the log details post Due Diligence check.

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Figure 5-32 Log Viewer



5.2.3.3 Analytics Access for Custom Views

After a Custom PLSQL archive is deployed successfully, all custom objects of type View that are included in the archive are identified and enabled for Analytics usage.

For each successfully deployed custom view, the deployment process performs the following actions:

- Grants SELECT access on the view to the OFSAA_ANALYTICS_PUB schema using GRANT WITH GRANT OPTION.
- Creates a synonym in the OFSAA_ANALYTICS_PUB schema for the corresponding view in the custom schema.
- Inserts the view details into the Custom PLSQL Master table with SRC_ID = ARC and SCHEMA_NAME = CUSTOM.
- Enables the SELECT grant for the view. Other grant types are marked as not applicable.
- If the view already exists in the Custom PLSQL Master table, the existing record is updated with the latest GRANT_DATE instead of creating a duplicate record.

After these actions are completed, the view can be queried from the SQL Query Browser in Oracle Analytics and used for creating reports and datasets.

> **Note**
>
> The grant and synonym are created only for views that are deployed successfully. If archive deployment fails, or if a view fails during deployment, the Analytics grant and synonym creation are not completed for that view.

5.3 Data Foundation Integration

This chapter is applicable if you have subscribed to Data Foundation Cloud Service (DFCS) along with Profitability and Balance Sheet Management Cloud Service (PBSMCS) and you want to bring data into PBSMCS from DFCS. Below topics are covered here:

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- Data Services Subscriptions: DFCS has pre-built connectors (called Application Data Services or ADS) to supply data to from its database to PBSMCS database. To use this feature the connection between both cloud services must be activated by configuring the required parameters from Data Services Subscriptions UI.
- ADS Run History: When the jobs to move data from DFCS to PBSMCS are executed, the progress and information of previous executions can be viewed from ADS Run History UI.

To access the Data Foundation services, from the LHS menu, select **Admin Tools**, select **Data Foundation Integration**, and then select any of the menu options.

For more information on Data Foundation Integration, see DFCS Integration with PBSMCS for ADS User Guide

- User Group for Managing Data Foundation Integration
  User must be mapped to below user group to access Data Services Subscriptions, ADS Run History, create Scheduler batches and execute them.
- ADS OPC to Integrated App Migration
  Integrated App Migration enables an existing DFCS-PBSM Application Data Services (ADS) subscription that uses the legacy OPC App authentication model to use an Integrated App authentication model.
- Data Services Subscription
  It is necessary to have the subscription to the Data Foundation Cloud Service to operate.
- Add a Subscription
- Edit a Subscription
- Refresh the Extension from DFCS
- ADS Run History
  The ADS Run History provides information related to Batches that have been processed to move data from DFCS to PBSM.
- Create and Execute Batch
  To create and execute the batch:
- List of Seeded Data File Specifications
  The following pre-defined Data File Specifications are available for your use. You can choose to use them or your own definition while creating the batch as explained in previous section.

5.3.1 User Group for Managing Data Foundation Integration

User must be mapped to below user group to access Data Services Subscriptions, ADS Run History, create Scheduler batches and execute them.

Table 5-6 User Group

USER	ROLE CODE	FUNCTION	Role Name	Role Description
ADMIN	ADS_ADMIN_ROLE	DFBADSSCBR,DFBADSEXEC,DFBADSVW	Application Data Service Administrator	This role helps to Subscribe, Update, View and Execute the Application Data Service
BATCH EXECUTOR	DFBADSEXEC_ROLE	DFBADSEXEC, DFBADSVW	Application Data Service Executor	This role helps to Execute the Application Data Service

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Table 5-6 (Cont.) User Group

USER	ROLE CODE	FUNCTION	Role Name	Role Description
BATCH VIEWER	DFBADSVW_ROLE	DFBADSVW	Application Data Service Viewer	This role helps to View the Application Data Service

> **Note**
>
> Unmap DFCS_PBSM_INTEGRATION to any user mapped to application after upgrading to 25C.

The following seeded user groups are available for managing Data Foundation Integration. For fresh 26B tenants, these groups are automatically available in the IDCS console. For upgrade tenants, these groups must be manually mapped from the application console.

Table 5-7 Seeded User Groups for Data Foundation Integration

Group	Description
DFCS_PBSM_ADMIN	PBSM Data Foundation Administrator
DFCS_PBSM_EXEC	PBSM Data Foundation Operator
DFCS_PBSM_VIEW	PBSM Data Foundation Auditor

5.3.2 ADS OPC to Integrated App Migration

Integrated App Migration enables an existing DFCS-PBSM Application Data Services (ADS) subscription that uses the legacy OPC App authentication model to use an Integrated App authentication model.

For legacy tenants, the OPC App and its client credentials were created during tenant provisioning. In the Integrated App model, a dedicated Integrated App is configured in the Oracle Identity Domain and its Client ID and Client Secret are used by the PBSM Data Services Subscription.

> **Note**
>
> The ADS OPC to Integrated App Migration feature is available from release 26B and later versions.

The migration is enabled in PBSM from **Admin Tools** > **Data Foundation Integration** > **Data Services Subscriptions**.

Before enabling Integrated App Migration on the PBSM subscription:

- Create a Confidential (Integrated) App in the Oracle Identity Domain (OCI Console → Identity & Security → Domains → Integrated Applications).

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- Bind the required resource (the DFCS resource server) to the new Confidential App, with its OAuth configuration — grant types, token issuance policy, and the DFCS resource scope — set up correctly.
- Enable the Confidential App User Authentication flow in the ADS Subscriber UI.
- Confirm the tenant is mapped in OPC Support, and obtain the Client Id and Client Secret for the Confidential App from OPC Support.
- An Integrated Application must be created and active in the Oracle Identity Domain (accessible through **Oracle Cloud Infrastructure** > **Identity & Security** > **Domains** > **Integrated Applications**), with its OAuth configuration properly set up including the DFCS resource scope.
- ADS Credential Validation through the IDCS Integrated Application
  The Integrated App Migration feature allows tenants registered in OPC (Oracle Platform Cloud) Support to transition their Application Data Services (ADS) subscription to an Integrated Application model. You can configure this migration from the OCI Application Data Services Subscriptions interface.
- Subscribing with Integrated App Migration
- Modifying Credentials Post-Subscription

5.3.2.1 ADS Credential Validation through the IDCS Integrated Application

The Integrated App Migration feature allows tenants registered in OPC (Oracle Platform Cloud) Support to transition their Application Data Services (ADS) subscription to an Integrated Application model. You can configure this migration from the OCI Application Data Services Subscriptions interface.

To use ADS, you need to set up secure credentials using an Integrated Application in IDCS. This is a one-time setup that replaces the older Oracle Cloud Services (OPC) method.

> **Note**
>
> Tenants with existing credentials can continue using the older automatic Oracle Cloud Services (OPC), based setup until further notice.

Unlike the older Oracle Cloud Services (OPC) setup, the new Integrated Application approach requires the administrator to manually create an application in IDCS. Once created, a Client ID and Client Secret are generated.

- **First-time Subscription:** Enter the Client ID and Client Secret from the Integration Application, along with any other required credentials.
- **Existing Subscription:** Update your subscription by replacing the current credentials with the new Client ID and Client Secret generated from the Integration Application.

Adding a Confidential Application

1. Go to **Oracle Cloud Console** and navigate to **Identity & Security** > **Domains**.
2. On the **Domains** list page, select the domain in which you want to make changes. Select your domain to **Open Details** tab.
3. On the details page, select **Integrated applications**. A list of applications in the domain is displayed.
4. Select **Add application**.

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5. In the **Add application** window, select **Confidential Application**.
6. Click **Launch workflow**.
7. In the **Add application** details page, use the following table to configure application details and the display settings.

Option	Description
Name	Enter a name for the confidential application. You can enter up to 125 characters. It is recommended to enter the tenant name. For applications with lengthy names, the application name appears truncated in the **My Apps** page. Consider keeping application names as short as possible.
Description	Enter a description for the confidential application. You can enter up to 250 characters.

8. On the **Client configuration OAuth** pane, select **Configure this application as a client now**.

   Use the following table to provide the information needed to configure this application as a client.

Option	Description
Resource owner	Use when the resource owner has a trust relationship with the confidential application, such as a computer operating system or a highly privileged application, because the confidential application must discard the password after using it to obtain the access token. **Note** *DFCS_PBSM_INTEGRATION* must be unmapped to the application.

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Option	Description
Resources	The Resources section lists the scopes currently assigned to the application. Each row shows the resource name, whether it is protected, and the associated scope value. **Adding a Scope** a. In the Resources section, select the edit action if the page is not already in edit mode. b. Select **Add scope**. The Add scope window opens. c. Use the Add scope window to locate and select the resources that provide the scopes required by your application. d. Optional: Enter a resource name in Search and Filter, then select Search to narrow the list. e. Select the checkbox next to every resource scope you want to add. You may select multiple scopes before continuing. f. If needed, use the expand arrow next to a resource to view available scope details. g. Select **Add**. All checked scopes are added to the OAuth configuration. **Note** You can select multiple scopes at the same time. Use the checkbox next to each required scope, then choose Add once. h. After you select Add, you return to the Edit OAuth configuration page. The Resources table shows the scopes selected for the application. i. Review the Resource, Protected, and Scope columns to confirm that all required scopes are present. j. To remove an unwanted scope, select its checkbox and choose Remove. k. Select **Submit** to save the updated OAuth configuration. Select **Cancel** if you do not want to save the changes.

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Option	Description
Client credentials	Use when the authorization scope is limited to the protected resources under the control of the client or to the protected resources registered with the authorization server. The client presents its own credentials to obtain an access token. This access token is either associated with the client's own resources, and not a particular resource owner, or is associated with a resource owner for whom the client is otherwise authorized to act.
Refresh token	Select this grant type when you want a refresh token supplied by the authorization server, and then use it to obtain a new access token. Refresh tokens are used when the current access token becomes invalid or expires and don't require the resource owner to reauthenticate.

9. Click **Submit**.
10. Select **Finish.**
11. Record the **Client ID** and **Client secret** in the Application added dialog box.

    To integrate with your confidential application, use this **Client ID** and **Client Secret** as part of your connection settings.
12. Select **Close.**

    The new application's details page is displayed.
13. To Update Subscription UI, open the ADS Subscription UI and enter the following details.
    - Domain URL
    - Client ID
    - Client Secret
    - Username
    - Password

    > **Note**
    >
    > Do not check in the **Integrated App Migration** check box.

14. Click **Update Credentials**.
15. To test connection, click **Test Connection**. The system validates the subscriber, publisher.
16. If successful, the connection is established, credentials are saved.

> **Note**
>
> - OPC to Integrated App Migration is one-time only
> - You cannot revert to old (OPC) method

Regenerating a Client Secret for Confidential Applications

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When you create a confidential application, you use a **Client ID** and a **Client Secret** as part of your connection settings. You can regenerate your **Client Secret** at any time for a confidential application using the identity domains console. For more details, see Adding a Confidential Application.

1. On the **Domains** list page, select **Integrated applications** tab. A list of applications in the domain is displayed.
2. Select the confidential application for which you want to regenerate a client secret.
3. Depending on the options you see, do one of the following:
   - Select the **OAuth configuration** tab and then select **Regenerate secret**, or
   - In the **General information** section of the application detail page, select **Regenerate**.
4. Confirm your choice to regenerate the secret. The new Client Secret appears in the **New Client Secret** dialog box.
5. Update the ADS subscription credentials with the new **Client Secret**.

5.3.2.2 Subscribing with Integrated App Migration

To subscribe to the Profitability and Balance Sheet Management Application Data Services with Integrated App Migration:

1. Navigate to **Data Services Subscriptions** from the PBSM screen.
2. Click on **Profitability and Balance Sheet Management Application Data Services**.

   The Subscription panel opens on the right side of the screen displaying the heading: `"Subscription – Profitability and Balance Sheet Management Application Data Services"`.
3. In the subscription form, locate the **Integrated App Migration** checkbox at the top of the panel.
4. Select the **Integrated App Migration** checkbox.
5. Complete the following required fields:
   - **IDCS URL** – The Identity Cloud Service URL for your domain. o
   - **DFCS URL** – The Data Foundation Cloud Service URL for your tenant.
   - **Client Id** (required) – Enter the unique Client ID provided by OPC Support for the Integrated Application.
   - **Client Secret** (required) – Enter the Client Secret provided by OPC Support for the Integrated Application.
   - **DFCS Tenant Id** – The tenant identifier, populated based on the mapped DFCS tenant.
   - **User Id** – The administrator user ID.
   - **Password** – The administrator password.
6. Click **Test Connection** to validate the credentials.

   A **"Test Connection successful"** confirmation message will appear upon success.
7. Click **Submit** to complete the subscription.
8. After the subscription is updated, verify that the subscription status remains SUBSCRIBED and that the ADS pipeline codes are displayed.

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9. Run a representative ADS batch and review ADS Run History and the Scheduler monitor to confirm successful processing.

> **Note**
>
> Selecting Integrated App Migration is a one-way change for the subscription. After submission, the subscription remains in Integrated App Migration mode. Verify the Integrated App configuration, scope binding, and credentials before submitting.

5.3.2.3 Modifying Credentials Post-Subscription

Even after a successful subscription with Integrated App Migration enabled, an ADMIN user retains the ability to modify the Client ID and Client Secret. To update credentials:

1. Navigate to **Admin Tools** > **Data Foundation Integration** > **Data Services Subscriptions**.
2. Select the subscribed PBSM Application Data Services entry and click **Edit Subscription**.
3. Verify that Integrated App Migration remains selected. The check box is read-only after migration.
4. Update the **Client ID** and/or **Client Secret** fields as required.
5. Click **Update Credentials** to save the changes.
6. Click **Test Connection** to verify the updated credentials.
7. After a successful test, click **Update Credentials**.
8. Run an ADS batch and verify successful completion in ADS Run History.

Table 5-8 Field Reference Table

Field	Description	Editable Post-Subscription
Integrated App Migration	Checkbox to enable migration to Integrated App model	No (irreversible)
IDCS URL	Identity Cloud Service URL	No
DFCS URL	Data Foundation Cloud Service URL	No
Client Id	Client ID of the Confidential/ Integrated App (from OPC Support)	Yes (Admin only)
Client Secret	Client Secret of the Confidential/Integrated App (from OPC Support)	Yes (Admin only)
DFCS Tenant Id	Tenant identifier in DFCS	No
User Id	Administrator user ID	Yes
Password	Administrator password	Yes

5.3.3 Data Services Subscription

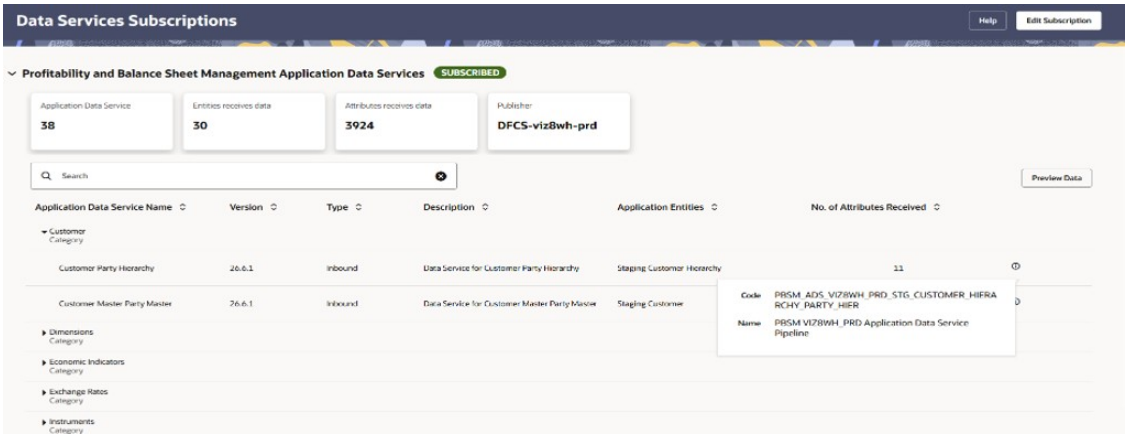
It is necessary to have the subscription to the Data Foundation Cloud Service to operate.

To fill in subscription details of Data Foundation Services, select **Admin Tools**, select **Data Foundation Integration**, and then select **Data Services Subscriptions**.

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The Data Services Subscriptions dashboard is displayed.

Figure 5-33 Data Services Subscriptions dashboardData Services Subscriptions dashboard



The dashboard displays the following details:

- **Application Data Service**: Displays the total number of ADS or Connectors present.
- **Version**: Displays the version number of the Application Data Service.
- **Type**: Displays the type of the Application Data Service, for example, Inbound.
- **Entities receives data**: The number entities receiving data.
- **Attributes receives data**: The number of attributes receiving data.
- **Publisher**: The Data Foundation Cloud Service tenant name. This option will be available if you have subscribed for Data Service subscription.
  You can expand each of the Application Data Service Name to see the Name, Description, Application Entities, Number of Attributes received.
- **Figure 5-34 Data Services Subscriptions top pane**



- **Preview Data**: Click Preview Data to view the available data for the selected Application Data Service. This opens the ADS Connector Summary Report, which displays the As of Date and Application Data Service Name filters, along with a Submit button. The report table displays the following columns:
  - Category Name
  - Group Name
  - Connector Name
  - As of Date
  - Data Source Code
  - Record Count

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- **More Details icon**: Click or hover over the Information icon displayed for an Application Data Service to view its details, including the Code and Name of the Application Data Service pipeline.

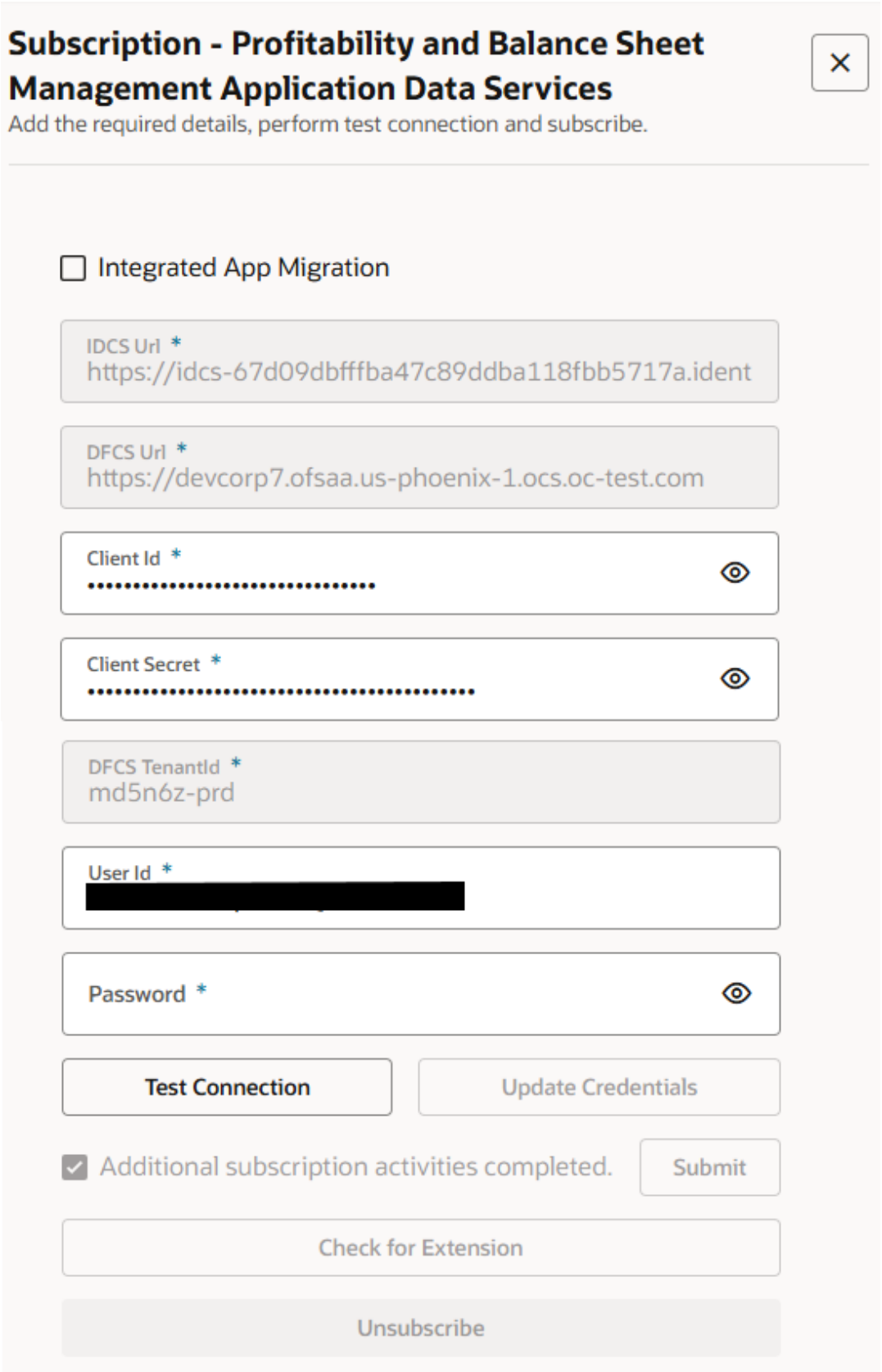
5.3.4 Add a Subscription

To add a Subscription, follow these steps:

1. Navigate to Data Services Subscriptions page.
2. Click **Add Subscription** button. The Subscription window is displayed.

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Figure 5-35 Subscription window



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> **Note**
>
> Do not select the **Integrated App Migration** check box when using **Oracle Cloud Services (OPC)** or the **Integrated Application** method during subscription. To identify which method you are using, see the DFCS Integration with PBSMCS for ADS User Guide. Once the OPC Integrated App is created, ensure that the **Client ID** and **Client Secret** fields are updated with the credentials generated specifically for that Integrated App. These credentials are unique and will differ from the common Client ID and Client Secret shared among all tenants.

3. Enter the following fields (all fields are mandatory):

Table 5-9 Application Data Service

Field	Description
IDCS URL	The URL of the **Identity Cloud Service (IDCS)** instance used for authentication. This allows PBSMCS to authenticate securely with DFCS. **Note** For more information on how to obtain the IDCS URL, see Get the OAuth Client ID and Client Secret section in the Application Data Services (DFCS Only) chapter.
DFCS URL	The base URL of the **Data Foundation Cloud Service (DFCS)** instance. It specifies the source environment from which PBSMCS will receive data. **Note** For more information on how to obtain the IDCS URL, see Get the OAuth Client ID and Client Secret section in the Application Data Services (DFCS Only) chapter. **Note** Hover over the info icon next to the DFCS URL field to view a sample URL: *https://pre-prod.ofsaa.us-ashburn-1.ocs.oraclecloud.com*

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Table 5-9 (Cont.) Application Data Service

Field	Description
Client ID	A unique identifier registered in IDCS for the application (PBSMCS). It is used as part of the OAuth2 authentication process when establishing a connection with DFCS. **Note** When using the OPC Integrated App, the Client ID must be updated with the one generated specifically for that Integrated App. This will be unique and different from the common Client ID shared among all tenants. **Note** For more information on how to obtain the IDCS URL, see Get the OAuth Client ID and Client Secret section in the Application Data Services (DFCS Only) chapter.
Client Secret	A confidential key associated with the Client ID. It is used to authorize the PBSMCS application to access DFCS data securely. **Note** When using the OPC Integrated App, the Client Secret must be updated with the one generated specifically for that Integrated App. This will be unique and different from the common Client Secret shared among all tenants. **Note** For more information on how to obtain the IDCS URL, see Get the OAuth Client ID and Client Secret section in the Application Data Services (DFCS Only) chapter.

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Table 5-9 (Cont.) Application Data Service

Field	Description
DFCS Tenant ID	The unique identifier for your DFCS tenant environment. It ensures that the connection and data transfer are scoped correctly to your organization's DFCS instance. **Note** DFCS and PBSMCS must use the same tenant type (-prd or -nprd). Cross-tenant usage is not supported. For example, if DFCS is a production tenant then the subscriber tenant must also be a production tenant.
User ID	The DFCS application user's login ID authorized to access and retrieve data from the DFCS environment. This user must have the appropriate roles and permissions for data publishing. **Note** The User ID is case-sensitive and must be created in lowercase letters.
Password	The corresponding password for the DFCS User ID. It is used during authentication to validate the user's access when connecting PBSMCS to DFCS.

4. After entering the details, click **Test Connection**. If all the details are correct, then the **Subscribe**button will get enabled.

   Note

   This checks if the current credentials are working or if there's a connection issue.

5. Once the credentials are entered correctly, you can click **Update Credentials** to save your changes.
6. If successful, a message *"Operation successfully connected"* appears at the top of the pane, and the **Subscribe** button is enabled.
7. If the test fails, recheck and verify the entered details.
8. Click **Subscribe**.
9. When the subscription starts, a message *"Please Contact Oracle Support to Complete Additional Activities"* will appear.

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> **Note**
>
> Subscription completion may take a few minutes.

10. If you've already subscribed, you can unsubscribe from the service or make changes to your subscription, click **Unsubscribe**. The pop-up message informs you that unsubscribing from the **DFCS Tenant** is **permanent** and **cannot be undone**.
    You have two options:
    a. **Cancel**: If you change your mind and do not want to unsubscribe, click the **Cancel** button. This will close the prompt and allow you to continue using the service.
    b. **Yes, Continue**: If you're sure you want to unsubscribe, click the **Yes, Continue** button. This will confirm the action and unsubscribe you from the service permanently.
11. If you have already subscribed to DFCS and are upgrading from 26A to 26B, perform the following additional steps:
    a. After the subscription is completed, raise a **Service Request (SR)** with the DFCS Tenant details and PBSMCS Tenant details to finalize the additional subscription process. The additional subscription is applicable for the existing subscribed users.

    > **Note**
    >
    > When you are raising the SR for additional subscription process, you must provide the IDCS URL and DFCS URL details in SR details. The SR should be raised under DFCS product

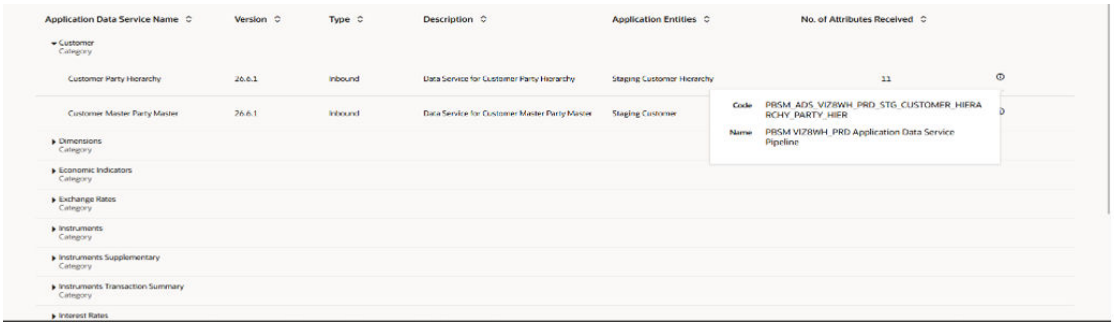
    b. Once the SR is processed and confirmation is received, select the **Additional Subscription Activities Completed** check box to upload the wallet details. After this step, you will be connected to the Data Foundation Cloud Service tenant. For Wallet Upload, contact to Oracle Support.

    > **Note**
    >
    > Following any G2 certification renewal or update of the PBSM tenant, the updated PBSM wallet must be re-uploaded to DFCS. Oracle communicates G2 certificate renewal timelines via official release notes and patch notifications. Customers are advised to monitor Oracle's official release communications or contact Oracle Support to stay informed of upcoming G2 certificate renewals. Failure to upload the updated wallet after a G2 certificate change will result in ADS batch execution failures with an SSL/TLS certificate path error (ORA-17002: PKIX path building failed). To re-upload the wallet after a G2 certificate update, contact Oracle Support and raise an SR under the DFCS product.

12. Click **Submit** to complete the subscription.

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Figure 5-36 Data Services Subscriptions top pane



After the subscription is successful, in the dashboard, expand the Application Data Service Name and verify if the ADS Pipeline Code is displayed for the services. Data Services Subscriptions top pane

You can expand each Application Data Service Name category to view the Version, Type, Description, Application Entities, and Number of Attributes Received for each data service. Click the **More Details** icon next to a data service to view its ADS pipeline Code and Name.

> **Note**
>
> ADS pipeline code is displayed only when you have subscribed for DFCS.

5.3.5 Edit a Subscription

If you are already subscribed, then click **Edit Subscription** to edit the User Id and Password. You cannot edit IDCS URL, DFCS URL, Client Id, Client Secret, and DFCS Tenant Id as they are already populated after subscription.

To edit a Subscription, follow these steps:

1. Update the **User ID** and/or **Password** if required.
2. Click **Update Credentials** to save the changes.

For more information, see Add a Subscription.

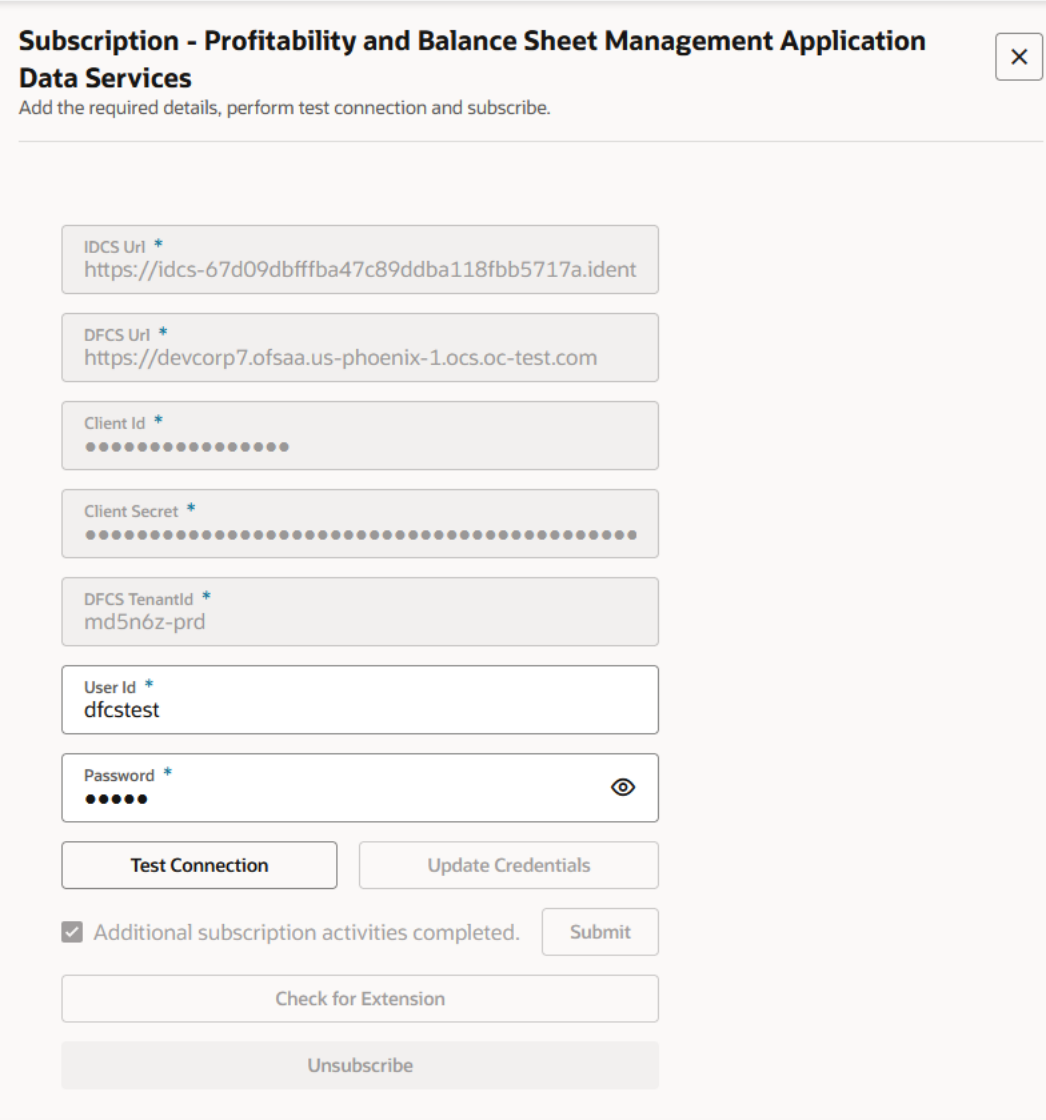
If you are already subscribed, click **Edit Subscription** to update the User ID and Password. Note that fields such as **IDCS URL, DFCS URL, Client ID, Client Secret,** and **DFCS Tenant ID** cannot be edited, as they are mapped/ created by the admin during the initial subscription.

You can also click **Check for Extension** if extensions have been already published.

You can Unsubscribe an exiting Subscription using the **Unsubscribe** button.

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Figure 5-37 Subscription window



5.3.6 Refresh the Extension from DFCS

After subscribing to Application Data Services (ADS), you may need to apply **extensions** to include additional data elements or custom mappings. The following steps outline how to verify, extend, and execute the required processes.

> **Note**
>
> When creating Placeholder Columns (PLC) for an ADS extension, use the target column name of the registered PLC column consistently across all source tables. PBSM does not support multiple logical names for the same PLC column. If a PLC column is created in PBSM, the same PLC column must be used for all applicable tables. Follow the same approach when creating PLC columns from the DFCS tenant.

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Check for Extension (PBSMCS - Subscriber)

- After completing the ADS Extension in the DFCS setup, click **Check for Extension**. A confirmation message appears: **Do you want to proceed with the extension?**
- Click **Confirm** to proceed.
- Then click **Submit** to finalize the confirmation.

Refresh ADS

- Click **Extend ADS** to trigger the extension of Application Data Services.
- This updates the existing process specific to the extensions.

5.3.7 ADS Run History

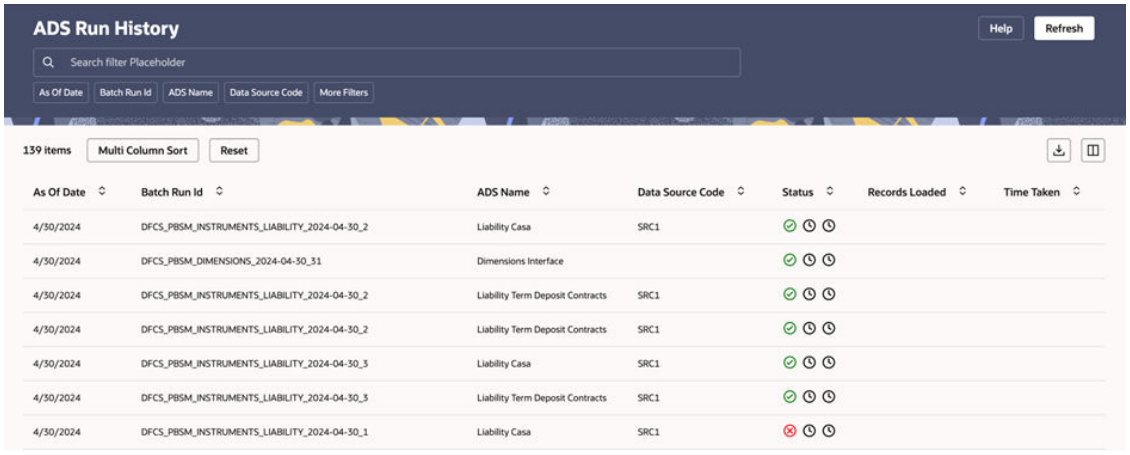
The ADS Run History provides information related to Batches that have been processed to move data from DFCS to PBSM.

> **Note**
>
> For the user to be able to see the ADS History, the user must be mapped to a group that has the required role (RLADSHISTVIEW). Role is not mapped in the OOTB set up.

To open the ADS Run History, from the LHS menu, , select **Admin Tools**, select **Data Foundation Integration**, and then select **ADS Run History**.

The ADS Run History page is displayed.

Figure 5-38 ADS Run History

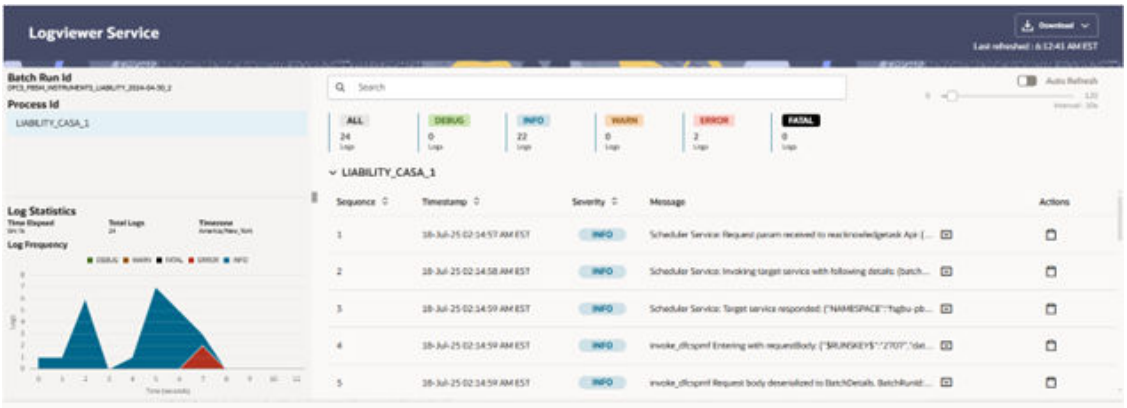


This UI allows you to apply various filters namely, As Of Date, Batch Run Id, ADS Name, and Data Source Code. The default view of ADS Run History displays the mentioned details. You can click **More Filters** which are Data Load Status, Batch Name, Task Name, and Task Id to change the view from default.

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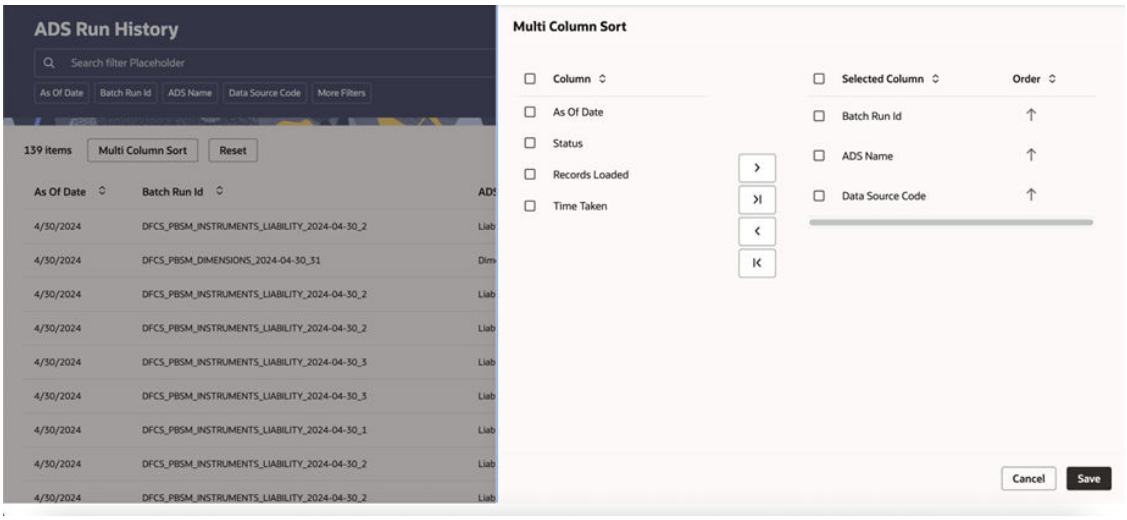
You can click the icons under Status to see the status of the batch. The status displays Passed, Failed, and Pending status icons.

Figure 5-39 Log Viewer Service



The Multi Column Sort allows you to define different columns to be displayed in the UI.

Figure 5-40 Multi Column Sort



Select the required Columns and move them to the **Selected Columns** box and then click **Save**. You can also define the order of the column appearance by selecting ascending or descending setting the order. The ADS Run History UI displays the rows as per selection.

If you click **Reset**, all the filters, columns order will be reset and the ADS Run History UI displays the default view.

You can download the ADS Run History in Excel (.xlsx) format using the **Download** icon.

Click the **Columns** icon to select or deselect the columns you want to display in the ADS Run History data.

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> **Note**
>
> If an ADS batch fails with the generic error *DIE0021 - Unknown exception occurred, this error can mask an underlying Oracle error*. Use the Log Viewer Service to review the detailed execution logs. If the underlying error is *ORA-01723: zero-length* columns are not allowed, the custom ADS SQL or mapping likely contains a derived CASE expression that returns only NULL without an explicit datatype. See Datatype Requirements for Custom ADS Mappings for the required correction, then rerun the batch after the extension is refreshed.

5.3.8 Create and Execute Batch

To create and execute the batch:

> **Note**
>
> Before executing the ADS batch, ensure the following prerequisite is met:
>
> - If the PBSM tenant has undergone a G2 certification update, the updated PBSM wallet must be uploaded to DFCS prior to batch execution.
> - If the ADS batch fails with *DIE0021 - Unknown exception occurred and the underlying log error is ORA-01723*, see Datatype Requirements for Custom ADS Mappings.
> - If the wallet is not updated post-G2 certification, all ADS batch runs will fail regardless of data availability. Contact Oracle Support to complete the wallet upload.

1. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch**. For more details, see Define Batch.
2. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Task**. For more details, see Adding a Task.
   Refer to the following table for Component and Parameters to be defined for different tasks.

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Table 5-10 Components and Parameters

Component	Parameters	Target Tables
PBSM_DFCS_Data_Transfer_instruments	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Data File Specification Id**: This displays list of seeded and user defined DFS definitions. Select one relevant value for the selected ADS. **Data Source Id**: This displays members of 'Instrument Data Source' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Stage Assets Stage Liabilities Stage Derivatives Stage Fee Based Services Stage Loan Commitments Stage Off Balance Sheet
PBSM_DFCS_Data_Transfer_Dimensions	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads dimension members, attributes, and hierarchies from staging dimension tables into the dimension tables.
PBSM_DFCS_Data_Transfer_ExchangeRates	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Rate Data Source Id**: This displays members of 'Rate Data Source' dimension. Select one value from LOV. Data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for exchange rates.
PBSM_DFCS_Data_Transfer_InterestRates	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Rate Data Source Id**: This displays members of 'Rate Data Source' dimension. Select one value from LOV. Data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for interest rates.

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Table 5-10 (Cont.) Components and Parameters

Component	Parameters	Target Tables
PBSM_DFCS_Data_Transfer_InstrumentSupplementary	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Data File Specification Id**: This displays list of seeded and user defined DFS definitions. Select one relevant value for the selected ADS. **Data Source Id**: This displays members of 'Instrument Data Source' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Stage Account Index History Stage Account Rate Tiers Stage Embedded Options Schedule Stage Payment Schedule Stage Interest Rate Schedule
PBSM_DFCS_Data_Transfer_Transaction_Summary	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Data File Specification Id**: This displays the list of DFS rules defined for a Staging table. Select one relevant value for the selected ADS. **Data Source Id**: This displays members of 'Transaction' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Stage Asset Transaction Stage Liability Transaction Stage Fee Based Transaction Stage Off Balance Sheet Transaction
PBSM_DFCS_Data_Transfer_Customer	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Data Source Id**: This displays members of 'Customer' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for customer data.

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Table 5-10 (Cont.) Components and Parameters

Component	Parameters	Target Tables
PBSM_DFCS_Data_Transfer_Management_Ledger	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Data File Specification Id**: This displays the list of DFS rules defined for a Staging table. Select one relevant value for the selected ADS. **Data Source Id**: This displays members of 'Transaction' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Stage Management Ledger
PBSM_DFCS_Data_Transfer_EconomicInd	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Rate Data Source Id**: This displays members of 'Transaction' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for economic indicators.
PBSM_DFCS_Data_Transfer_VolatilityRates	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Rate Data Source Id**: This displays members of 'Transaction' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for volatility rates.

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Table 5-10 (Cont.) Components and Parameters

Component	Parameters	Target Tables
PBSM_DFCS_Data_Transfer_VolatilitySurface	**ADS Id**: This displays list of data connectors available. Select one value from LOV. **Rate Data Source Id**: This displays members of 'Transaction' dimension. Select one value from LOV. Instrument data belonging to this source only will be moved from DFCS to PBSM. **Optional Input**: This can be used to specify any other input parameter in JSON Object/ String.	Loads stage and processing tables for customer volatility surface rate history.

3. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant As-of-Date, and then save the batch.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**. For more information, see Schedule Batch.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
6. Select the **Batch**, **MISDATE** and the **Batch name**. Select the latest execution and click **Start Monitor**.

5.3.9 List of Seeded Data File Specifications

The following pre-defined Data File Specifications are available for your use. You can choose to use them or your own definition while creating the batch as explained in previous section.

- ADS_Account_Index_History.csv
- ADS_Account_Rate_Tiers.csv
- ADS_Asset_Bill_Contracts.csv
- ADS_Asset_Cards.csv
- ADS_Asset_Investments.csv
- ADS_Asset_Leases_Contracts.csv
- ADS_Asset_Loan_Contracts.csv
- ADS_Asset_Overdraft_Accounts.csv
- ADS_Embedded_Options_Schedule.csv
- ADS_Fee_Based_Service_Other_Services.csv
- ADS_Ledger_Instrument_General_Ledger_Data.csv
- ADS_Liability_Borrowings.csv
- ADS_Liability_Casa.csv
- ADS_Liability_Prepaid_Cards.csv
- ADS_Liability_Term_Deposit_Contracts.csv

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- ADS_Loan_Commitments_Commitment_Contracts.csv
- ADS_Payment_Schedule.csv
- ADS_Off_Balance_Letter_Of_Credit_Contracts.csv
- ADS_Off_Balance_Credit_Line_Details.csv
- ADS_Derivative_Foreign_Exchange_Contracts.csv
- ADS_Derivative_Forwards_Contracts.csv
- ADS_Derivative_Option_Contracts.csv
- ADS_Derivative_Swaps_Contracts.csv
- ADS_Off_Balance_Sheet_Transaction_Account_Cost_Summary.csv
- ADS_Liability_Transaction_Account_Cost_Summary.csv
- ADS_Fee_Based_Service_Transaction_Account_Cost_Summary.csv
- ADS_Asset_Transaction_Account_Cost_Summary.csv
- ADS_Management_Ledger.csv

5.4 Tenant DB Dashboard

The Tenant DB Dashboard is a centralized monitoring tool designed to provide administrators and power users with real-time insights into the database environment. It tracks storage utilization, ECPU consumption, and provides detailed metrics on categorized tables to ensure optimal performance of FTP processes.

The following are the key functions of the Tenant DB Dashboard:

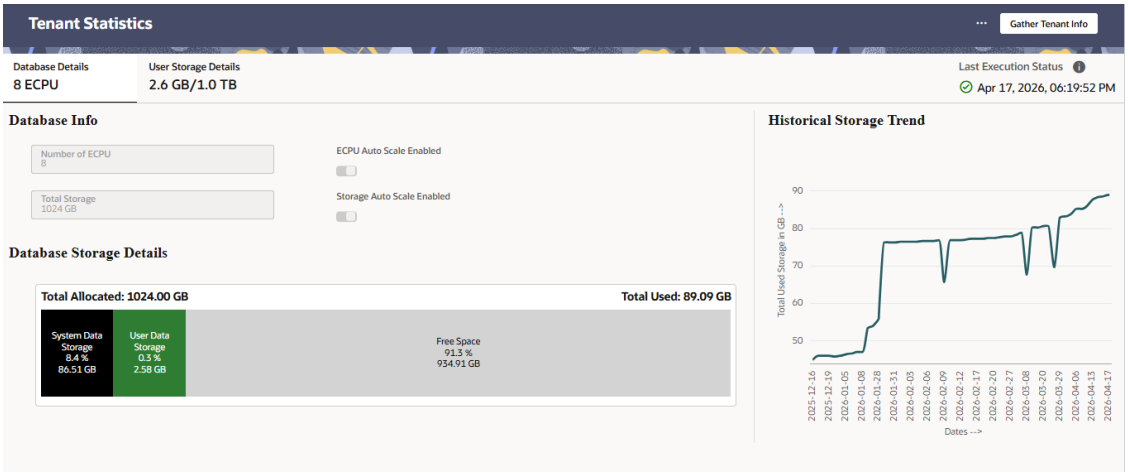
- **Monitor Resource Usage**: Track ECPU count and storage statistics to manage cloud resource allocation.
- **Table Management**: Register and deregister dynamically created tables for storage tracking.
- **Data Categorization**: View storage distribution across categories such as Logs, Lookup, Staging, Processing, Dimensions, and more.
- **Historical Trend Analysis**: Review a line graph of total storage usage over the past 6 months.
- **On-Demand Refresh**: Manually trigger the data gathering process using the Gather Tenant Info action.
- **Execution Tracking**: Review batch executions through the Execution Logs view.
- Accessing the Tenant Statistics Screen
  To access the Tenant Statistics Screen, from the LHS menu, navigate to **Admin Tools** and Click **Tenant Statistics**.
- Dashboard Components
- Managing Dashboard Data

5.4.1 Accessing the Tenant Statistics Screen

To access the Tenant Statistics Screen, from the LHS menu, navigate to **Admin Tools** and Click **Tenant Statistics**.

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Figure 5-41 Tenant Statistics Screen



The screen is only visible to users assigned the ADMIN role. The required menu, role, and function mappings are listed below:

Table 5-11 Tenant Statics Screen Required Mappings

Parameter	Value	Description
Menu ID	PBSM_TENANT_STATISTICS	Unique identifier for the Tenant Statistics menu
Menu Description	Tenant Statistics	Display label in the navigation menu
Role	RLTENANTSTATSVIEW	Role required to access this screen
Role Description	Tenant Statistics View	Describes the role purpose
Function	TENANTSTATISTICSVIEW	Function code controlling access
Function Description	Tenant Statistics - view	Describes the function scope

5.4.2 Dashboard Components

The dashboard is divided into several visual panels. The sections below describe each panel and the data it presents.

Summary Metrics Bar

The top section of the screen presents a quick-view summary of the most important resource metrics:

- **Database Details**: Displays the currently allocated ECPU count (for example, 8 ECPU).
- **User Storage Details**: Shows user data storage consumed versus total available (e.g., 2.6 GB / 1.0 TB).
- **Last Refreshed**: Timestamp of the most recent batch execution.

Database Info Panel

This panel shows the configuration of the underlying Autonomous Database (ADB):

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- **Number of ECPU**: Total Elastic Compute Units allocated to the tenant.
- **Total Storage**: Total allocated storage capacity in GB (for example., 1024 GB).
- **ECPU Auto Scale Enabled**: Toggle indicating whether ECPU auto-scaling is active.
- **Storage Auto Scale Enabled**: Toggle indicating whether storage auto-scaling is active.

Figure 5-42 Database Info Panel



Database Storage Details

A horizontal bar chart visualizes storage distribution across the following segments:

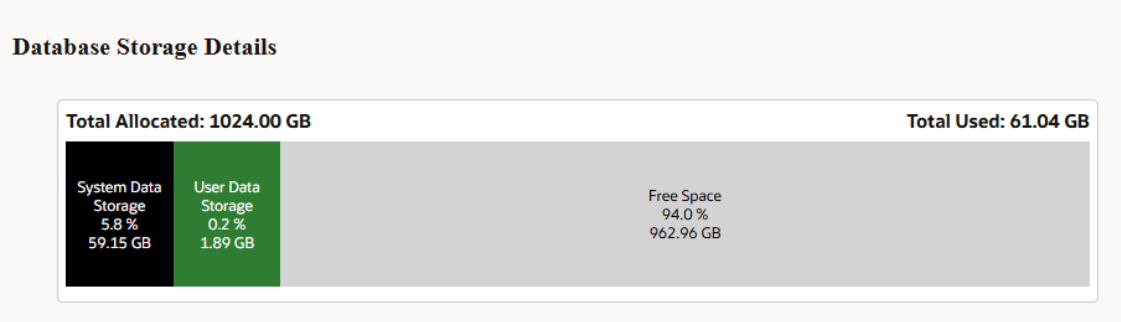
Table 5-12 Database Storage Details

Storage Segment	Description
Total Allocated	Total provisioned storage (for example, 1024.00 GB).
Total Used	Total storage currently consumed (for example, 89.09 GB).
System Data Storage	Storage used by tables not mapped to any user-defined category. Derived as: ADB Total Used minus User Data Storage.
User Data Storage	Sum of storage used by all tables assigned a category in TENANT_DASHBOARD_TABLE_CATEGORY.
Free Space	Remaining available storage.

> **Note**
>
> Each segment is labeled with its percentage share and absolute GB value for quick reference.

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Figure 5-43 Database Storage Details



Historical Storage Trend Chart

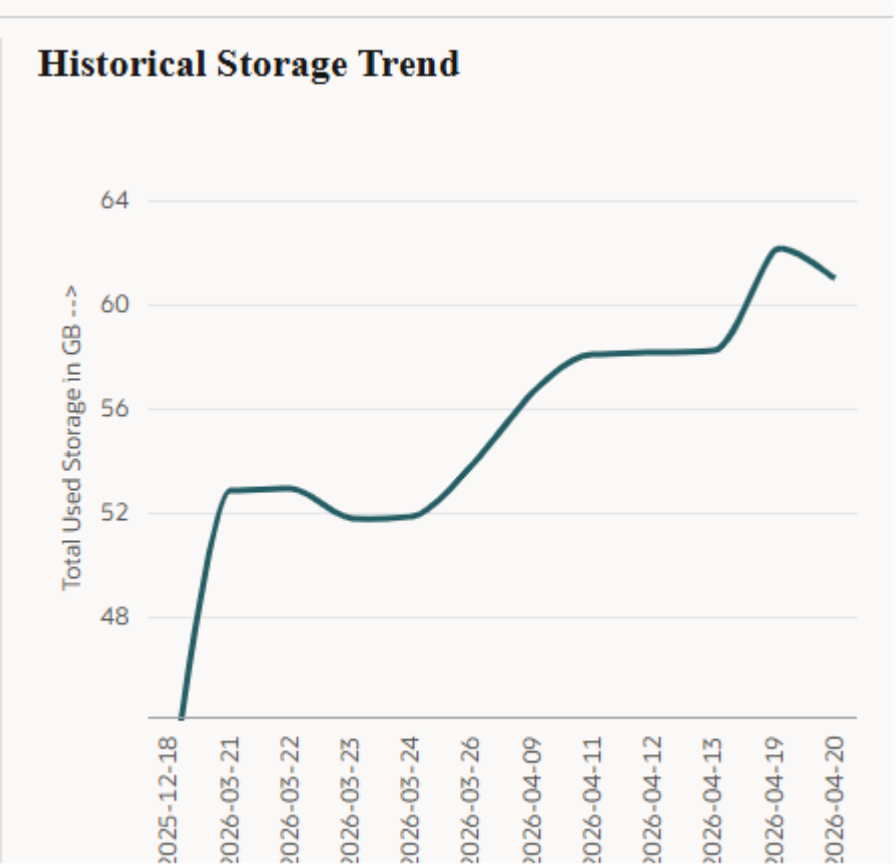
The right panel displays a time-series line chart of Total Used Storage in GB. Key characteristics:

- **Time Range**: Last 6 months of collected data.
- **X-Axis**: Dates in chronological order.
- **Y-Axis**: Total Used Storage in GB.

> **Note**
>
> The historical trend chart is only displayed when the scheduled batch has collected sufficient data. If fewer than 6 months of data is available, only the collected period is shown.

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Figure 5-44 Historical Storage Trend Chart



Action Menu

Click the **Action** menu in the top-right corner of the dashboard to access the following actions:

Table 5-13 Action Menu

Action	Description
Gather Tenant Info	Triggers an on-demand batch execution to immediately refresh storage and ECPU statistics. Use this between scheduled runs when current data is needed.
Help	Opens the contextual help documentation for the Tenant DB Dashboard.
Refresh	Reloads the dashboard UI to display the latest gathered data without triggering a new batch run.
Execution Logs	Opens the execution logs and details of the last batch executions.

User Storage Details Tab

Clicking the User Storage Details metric in the Summary Metrics Bar opens a detailed view of storage consumption broken down by table category.

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This panel displays a tabular breakdown of user data storage across the following categories:

Table 5-14 Table Categories Panel

Column	Description
Table Category	The logical grouping of tables (for example, Logs, Lookup, Processing, Dimensions, Staging, CFE Process Results, Cash Flow Edits, ALM Process Results, ALM Reports, Forecast Rates, Archived Data).
Size	The storage size consumed by tables in that category, displayed in GB.
% of total User Data	A horizontal bar chart representing each category's proportional share of total user data storage.

> **Note**
>
> Tables are classified as System data if they are not assigned to any category in TENANT_DASHBOARD_TABLE_CATEGORY. Of the seeded categories, only Temp and Lookup are updated automatically during each Tenant DB Dashboard execution; all other categories rely on seeded classification data.

Storage Distribution Chart

A pie chart on the right side of the panel provides a visual summary of the percentage share of each table category relative to total user data storage. Each segment is labelled with its percentage value for quick reference.

5.4.3 Managing Dashboard Data

The information displayed in the dashboard is maintained through service executions and API registrations.

Refreshing Dashboard Information

By default, tenant statistics are gathered daily at 00:00 AM (UTC). If required, users can also trigger this on demand from the UI or through the scheduler service by defining a batch (select component name as "Tenant Dashboard") and task.

To update the Storage stats and ECPU count, execute the following batch components:

1. Navigate to the **Batch Maintenance** screen.
2. Select the batch associated with Tenant DB Info Refresh..
3. Trigger the execution.
   This process refreshes statistics for all schemas listed in the List of Schema to Gather Storage Stats.

Dashboard data is automatically refreshed by a pre-seeded, non-editable batch that runs on a fixed schedule:

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Table 5-15 Dashboard data

Parameter	Value
Batch ID	PBSM_TENANT_STATISTICS
Batch Name	PBSM_TENANT_STATISTICS
Task ID	DATABASESTATISTICS
Task Name	DatabaseStatistics
Run Frequency	Daily at 00:00 AM (UTC)

The following schemas are scanned during each execution:

- OFSAAMETA
- PBSMDD
- OFSAACONF
- OFSAALOGS
- CUSTOM
- OFSAAMETACONF
- PBSMARCHIVE

> **Note**
>
> Only objects of type TABLE are scanned for storage data. The batch frequency and scheduled time cannot be changed by users.

Viewing Execution Logs

View the last execution logs:

Table 5-16 Viewing Execution Logs

Field	Description
Batch Run ID	Unique identifier generated for the execution.
Task ID	The specific task executed (for example, DATABASESTATISTICS).
Status	Execution result: SUCCESS, ERROR, or IN PROGRESS.
Start Time	Timestamp when the execution began.
End Time	Timestamp when the execution completed.
Executed By	The user account or scheduler that triggered the run.
Snapshot Date	The as-of date for which statistics were gathered.

Troubleshooting

Use the table below to resolve common issues with the Tenant DB Dashboard:

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Table 5-17 Troubleshooting Issues

Issue	Resolution
Dashboard shows no data	Verify that the PBSM_TENANT_STATISTICS batch has run at least once. Use Gather Tenant Info for an on-demand execution.
Historical trend chart is empty	The chart requires at least one historical data point. Data is shown for the last 6 months only.
Dynamically created table not visible	Register the table using the POST /tenant-dashboard/v1/registerTablesToCategory API with a valid schema and categoryId.
Tenant Statistics menu not visible	Confirm your account has the RLTENANTSTATSVIEW role and the TENANTSTATISTICSVIEW function assigned.
Stale statistics warning on a table	Informational only. Trigger a new batch run to refresh table statistics.
400 error from Registration API	Verify that the schema and categoryId values in your request are from the supported lists.

5.5 Data Retention

Data Retention enables you to view policies that manage data lifecycle by archiving or deleting data based on retention criteria, and to monitor execution history. Retention policies visible on screen depends on the type of environment - Production, Non-Production - as different policies apply to them.

To access Data Retention, from the LHS menu, navigate to:

- **Admin Tools** > **Data Retention** > **Data Retention Policy**
- **Admin Tools** > **Data Retention** > **Data Retention Execution History**

Roles and Access

The following roles and access are required to use the Data Retention UI.

Table 5-18 Roles and Access

Role Code	Description
CLEANUP_ADMIN	Provides access to execute and monitor data retention policies
CLEANUP_VIEWER	Provides read-only access to view policies and execution history

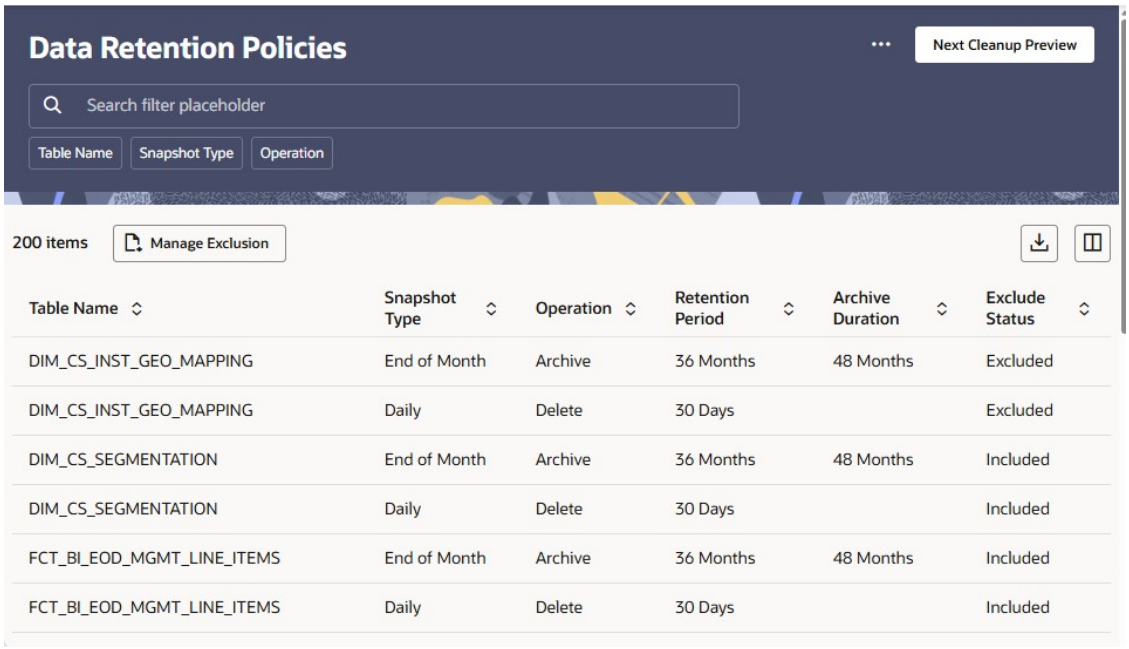
Data Retention Policy

The **Data Retention Policy** screen displays predefined retention policies available in the system.

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> **Note**
>
> Users cannot create or modify policies. Policies are system-defined and vary based on the environment (Production and Non-Production).

Figure 5-45 Data Retention Policy Screen



The screen displays the following attributes:

- Table Name
- Snapshot Type (for example, Daily, End of Month)
- Operation (Archive or Delete)
- Retention Period
- Archive Duration
- Exclude Status: Indicates whether a table is currently Included or Excluded from data retention processing. This column is populated based on selections made on the Manage Exclusion screen.

The Data Retention Policy Screen includes the following Key Actions:

- **Next Cleanup Preview**: Displays a preview of upcoming cleanup operations based on defined policies.
- **Manage Exclusion**: Opens the Manage Exclusion screen, where users can select one or more tables to include in or exclude from data retention processing.
- **Refresh**: Reloads the data on the screen.
- **Reset**: Clears applied filters and restores default view.

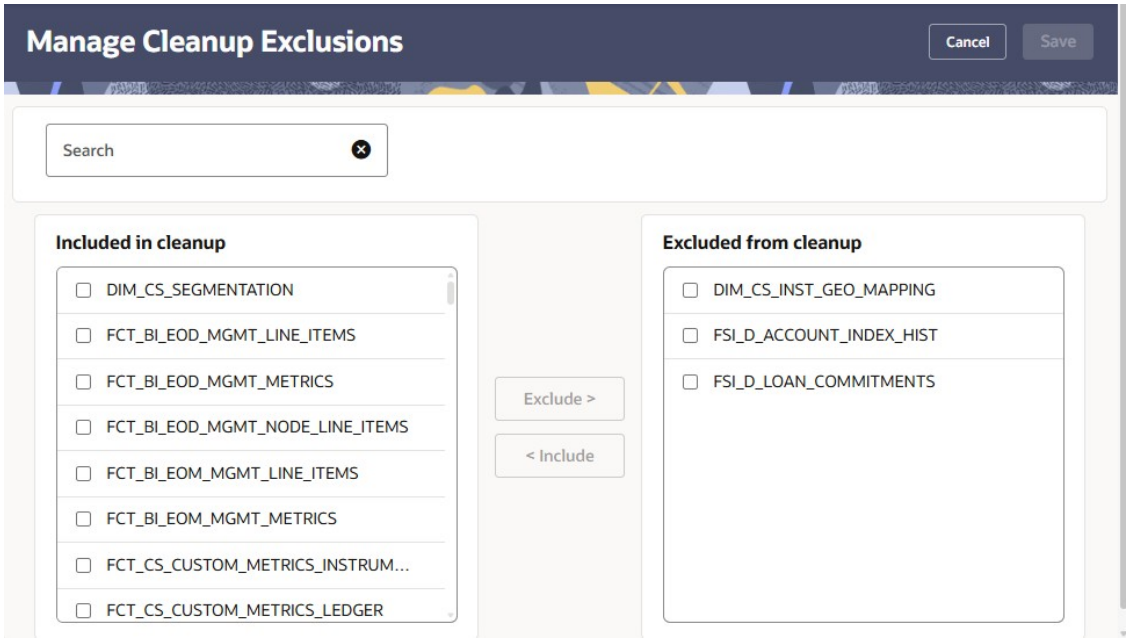
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Managing Exclusions

The Manage Exclusion screen allows users to control which tables are processed by data retention policies. From the Data Retention Policy screen, click Manage Exclusion to open this screen.

On the Manage Exclusion screen, users can select tables and mark them as included or excluded from data retention processing. Once saved, the selected status is reflected in the Exclude Status column on the Data Retention Policy screen — showing whether each table is currently Included or Excluded.

Figure 5-46 Manage Cleanup Exclusions



Executing Data Retention via Scheduler Service

Data retention policies are executed through the Scheduler Service.

To execute data retention through scheduler:

1. Navigate to **Operations and Processes** > **Scheduler Service**.
2. Click **Batches** and create a new batch (or use an existing batch)
3. Click **Tasks**.
4. Click **Add** to open the **Create Batch** screen.
5. Enter the required Batch Details.
6. Click **Save**.
   A confirmation message is displayed:

   Batch is saved successfully. Would you like to navigate to Task Screen?
7. Click **Yes** to navigate to the **Define Task** screen.
8. In the **Define Task** screen, click **Add**.

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9. In the **Create Task** screen, enter the following details:
    - In the **Task Type** field, select **REST** from the drop-down list.
    - In the **Component** field, select Data Retention Policy from the drop-down list.
10. Verify the Task Parameters:
    - **$BATCHDATE$** is auto-populated.
    - **$BATCHRUNID$** is auto-populated.
11. Click **Save**.
12. Navigate to **Schedule Batch**.
13. Select the required batch.
14. (Optional) Click **Edit Parameters** and verify the MIS Date.
15. Click **Execute** to run the batch.
16. Navigate to **Monitor Batch**.
17. Select the **Batch Name** and **MIS Date**, and click **Start Monitor**.
18. Verify the execution status
19. To view execution results, navigate to: **Admin Tools** > **Data Retention** > **Data Retention Execution History**.
20. Review the execution details such as Batch Run Id, Table Name, Operation, and Status. Click **Download Logs** if required.

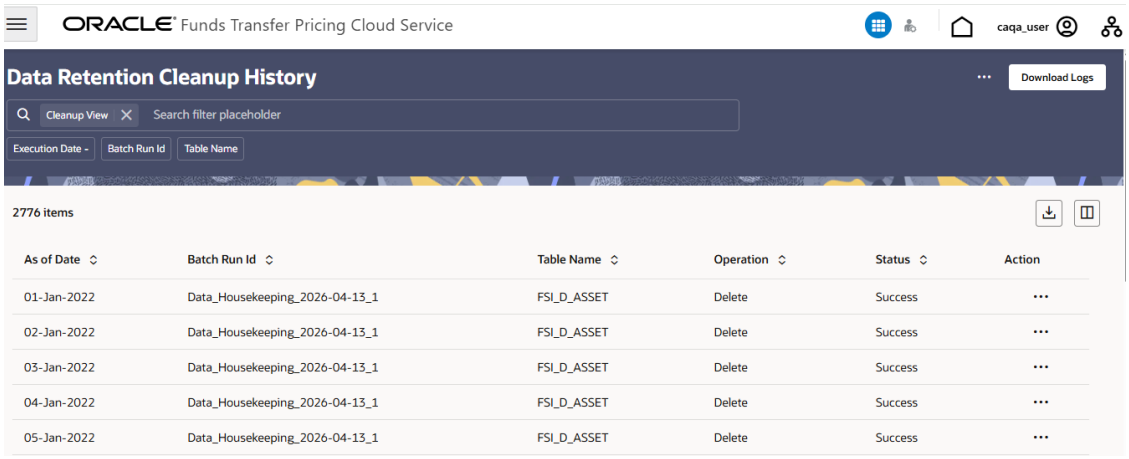
> **Note**
>
> - Data Retention policies are predefined and cannot be created or modified by users.
> - Policies may differ based on the environment (Production or Non-Production).
> - Scheduler execution triggers the predefined policies configured in the system.

Data Retention Execution History

The Data Retention Execution History screen provides details of executed data retention jobs.

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Figure 5-47 Data Retention Execution History



The screen displays the following attributes:

- As of Date
- Batch Run Id
- Table Name
- Operation (Delete or Archive)
- Status (for example, Success or Failed)
- Action menu

The Data Retention Execution History Screen includes the following Key Actions:

- **Download Logs**: Downloads execution logs for analysis.
- **Refresh**: Reloads the execution history data.
- **Reset**: Clears applied filters.

Data Retention Features

Data Retention supports the following operations:

- Delete data from selected tables based on retention criteria
- Archive data for long-term storage
- Automatically execute cleanup jobs based on defined policies
- Track execution status and history for audit and monitoring purposes
- Actions Performed on Data Retention

5.5.1 Actions Performed on Data Retention

To View Data Retention Policies:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Policy**.
   The **Data Retention Policy** screen is displayed.
2. View the list of policies along with Table Name, Snapshot Type, Operation, Retention Period, and Archive Duration.

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To Preview Cleanup Activities:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Policy**.
2. Click **Next Cleanup Preview**.
   The system displays upcoming cleanup operations based on defined policies.

To Refresh or Reset Policy List:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Policy**.
2. Do either of the following:
   - Click **Refresh** to reload the data.
   - Click **Reset** to clear filters and restore the default view.

To View Execution History:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Execution History**.
   The **Data Retention Execution History** screen is displayed.
2. View execution details such as As-of Date, Batch Run Id, Table Name, Operation, and Status.

To Download Execution Logs:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Execution History**.
2. Click **Download Logs**.
   The system downloads the execution logs for the selected or filtered records.

To Filter Execution History:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Execution History**.
2. Use the search bar or filters such as Execution Date, Batch Run Id, and Table Name to refine the results.

To Defer a Cleanup Action:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Policy**.
2. Click **Next Cleanup Preview**.
   The system displays cleanup operations scheduled for the next day, based on defined policies.
3. Locate the required table row.
4. In the D**efer Action Until** column, click the date field and select a date (up to three months from the current date) from the date picker.
   The selected table's cleanup action is deferred until the chosen date.

To Manage Exclusions:

1. Navigate to **Admin Tools** > **Data Retention** > **Data Retention Policy**.
2. Click **Manage Exclusion**.
3. On the **Manage Cleanup Exclusions** screen, select the required tables and mark them as included or excluded.
4. Click **Save** to save your changes.
5. Return to the Data Retention Policy screen and verify the updated status in the **Exclude Status** column.

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5.6 Database Views

The Database Views feature allows you to create database views by selecting a primary table (based on a classification code), optionally adding secondary tables for joins, and selecting the required columns. Once created, a view can be used as an alternative to a physical table wherever the consuming module supports selecting a database view as a source — for example, as an input to a business rule, calculation, or process that accepts a table-based source.

This is achieved through the following steps:

- **View Category (Classification) Selection**: Select the classification (Base Instrument, FTP Instrument, PFT Instrument, Txn Summary, ML, Portfolio, and so on) that determines the list of eligible primary tables.
- **Table Selection**: Select the primary table and, optionally, one or more secondary tables for joins (including self-joins on the same table).
- **Column Selection**: Select the columns to include in the view, with mandatory columns validated based on the selected classification.

- Database View Summary
- Creating a Database View
- Table UDP Mapping for View Classification
- Table UDP to View UDP Mapping

5.6.1 Database View Summary

The Database View Summary page is the gateway to all database views and related functionality. You can navigate to other pages relating to database views from this point.

- Search Database View

5.6.1.1 Search Database View

Prerequisites: Predefined Database View

To search for a database view:

- Enter the View Name or Pinned Objects in Search Criteria and click the Search icon.
- Rows that contain the string you are searching for are fetched and displayed in the Database View Summary.

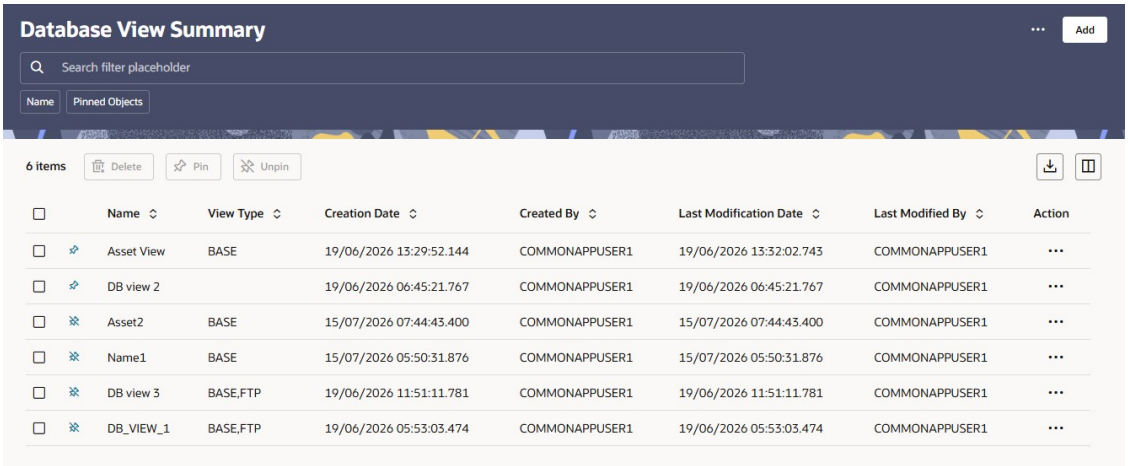
The Database View Summary displays the following information:

- **Add:** Click the Add button on the page header to create a new database view.
- **Actions:** Enables you to perform the following tasks.
  - **Refresh**: Retains the selected filters and refreshes the summary page with the latest status.
  - **Reset**: Clears the selected filters and refreshes the summary page.
  - **Help**: Redirects you to the latest documentation.
- **Delete**: Enables you to select and delete one or more views in the table simultaneously.
- **Pin/Unpin**: Enables you to pin/unpin the selected view.

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- **Export**: Enables you to download the summary page details in .CSV format.
- **Columns**: Allows you to view the summary page data using a customized list of columns.

Figure 5-48 Database View Summary Screen



The Database View Summary table displays the following columns:

Table 5-19 Database View Summary

Column	Description
Name	The database view name. All views created through this page are prefixed with PBSM_View.
View Type	Indicates whether the view is classified. View Type is derived from the Register View and Primary Classification settings used when the view was created: • If Register View is left off, the view is a plain database view. View Type displays BASE, and the view is not available for selection as a classified source in consuming modules. • If Register View is enabled, the view inherits the classification of the Primary Classification (and its underlying table UDP) selected at creation. View Type displays BASE plus that classification — for example, BASE, FTP — indicating the view is registered under the FTP classification and is available for selection wherever that classification is used as a source.
Creation Date	The date and time when the view was created.
Created By	Displays the name of the user who created the view.
Last Modification Date	The date and time when the view was last modified.
Last Modified By	Displays the name of the user who last modified the view.
Action	Click this icon to view a list of actions that you can perform on the view: View, Edit, Save As, Delete, Dependency Information.

5.6.2 Creating a Database View

To create a database view, follow these steps:

1. Navigate to the Database View Summary page.

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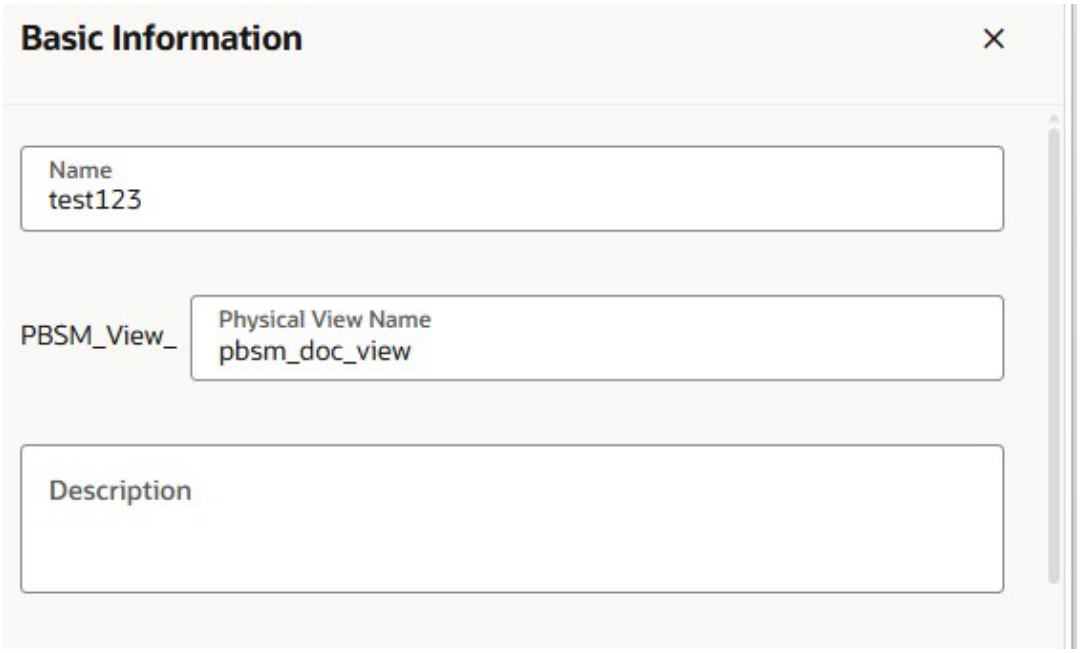
2. Click the **Add** button.

   The Basic Information panel is displayed.

3. Enter the following details in the Basic Information panel:

   - **Name** : Enter a unique, logical name for the view (for example, test123).
   - **Physical View Name** : Enter the physical view name. The prefix PBSM_View_ is applied automatically; you only need to enter the remaining suffix (for example, entering pbsm_doc_view results in the physical view name PBSM_View_pbsm_doc_view).
   - **Description** : Optionally enter a brief description of the view.

Figure 5-49 Basic Information panel



4. Enable the Register View toggle if this view should be classified and made available for selection as a source in consuming modules.

> **Note**
>
> Register View is the trigger for classification-based behavior. Only when Register View is enabled does the Primary Classification field appear, and only then is the view's classification code (and the associated table UDP → view UDP mapping) applied.

5. With Register View enabled, select the **Primary Classification** from the dropdown. T

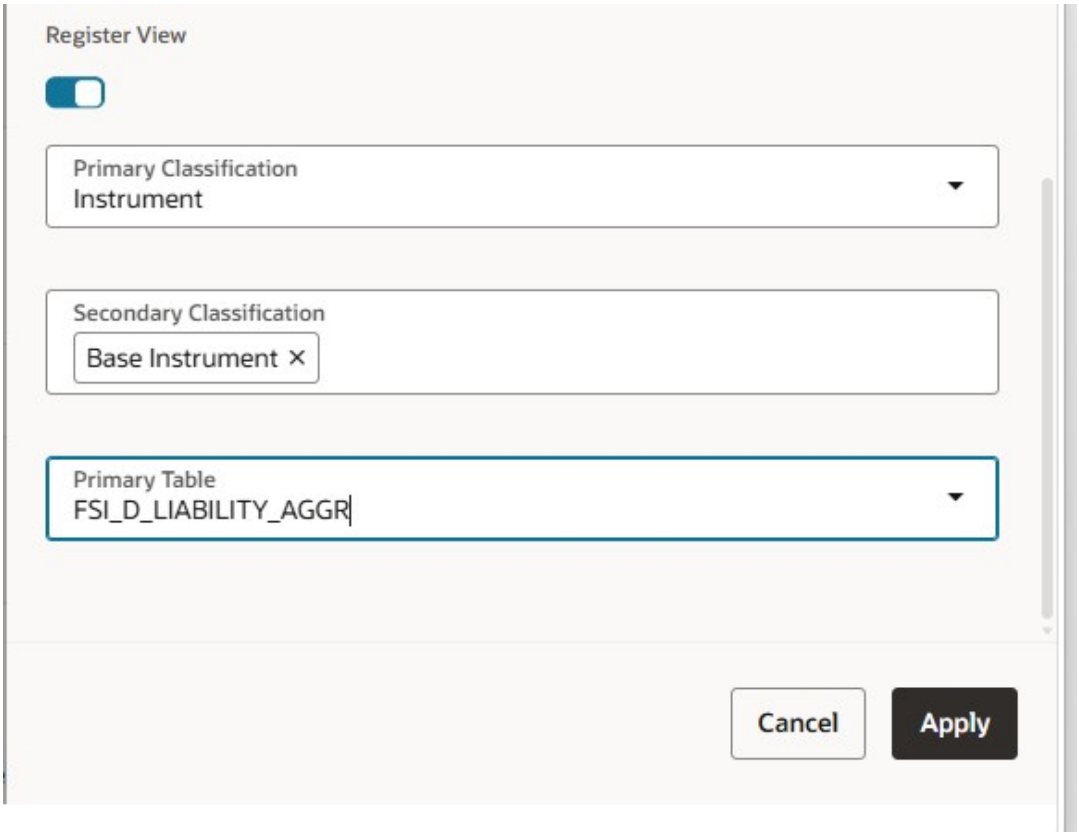
   he available values are: Instrument , Management Ledger , Portfolio , and Transaction Summary .

6. Select the **Primary Table** from the dropdown. The list of tables is filtered based on the Primary Classification selected in the previous step (for example, selecting Instrument populates tables such as FSI_D_LIABILITY_AGGR).

7. Click **Apply** to confirm the Basic Information and primary table selection, or Cancel to discard your entries and close the panel.

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Figure 5-50 Register View



8. If secondary tables are required (for example, to self-join or bring in additional data), add them in the Tables Selection section:
   a. Click Add in the Tables Selection section.
   The Add Tables window is displayed.
   b. Select the required table(s).
   The primary table can also be reselected here as a secondary table to support a self-join.
   c. Click View Selected to confirm, then click **Ok** .
   d. Edit the Table Alias as required.
9. Enter the required columns in the Columns Selection section: a.
   a. Click **Add** to select columns from the chosen table(s), or click Add Expression to define a derived/computed column.
   b. Select the Table Name, Table Alias, and Column Name(s).
   c. Enter a Column Alias and Column Display Name for each selected column.
10. Update the Other Details section with the required table join conditions if more than one table is selected.
11. Click **Save** .

5.6.3 Table UDP Mapping for View Classification

A dropdown list for selecting the view category is provided on the Database View creation page. The list of tables under each category is displayed based on the table UDPs mapped to

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the dropdown values. The table below lists all possible dropdown values and the corresponding table UDPs mapped to each value.

Table 5-20 Table UDP Mapping for View Classification

Dropdown List Value	Table UDPs
Instrument	20, 612, 611, 200, 210, 530, 703, 310
Management Ledger	55
Portfolio	100
Transaction Summary	300

5.6.4 Table UDP to View UDP Mapping

The table below lists the default UDP applied to any view and the resulting view UDP for each table UDP.

Table 5-21 Table UDP to View UDP Mapping

Table UDP	View UDP
20	2020
612	2612
611	2611
200	2200
210	2210
530	2530
703	2703
310	2310
300	2300
55	2055
100	2100

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6

Business Rules Administration

This section covers the following topics:

1. Reference Data: This section explains about the baseline configurations like interest rate curves, Currencies set up, Economic indicators on which Various rules/assumptions can be defined. These configurations are referred across various modules and used in subsequent calculations.
2. Common Rules: This section explains about rules which are common across all multiple applications in Profitability and Balance Sheet Management Cloud Service suite like ALM, CFE, PFT, and FTP.
3. Cash Flow Engine Cloud Service Specific Rules: This section explains about Cash Flow Engine Cloud Service specific modules which are particularly referenced for Cash Flow Engine calculations.

- Reference Data
  This section covers the following topics:
- Common Rules
  This section covers the following topics:
- Application Specific Rules
  This section explains about the Cash Flow Engine Cloud Service specific modules. This section covers the following topics:
- Modelling
  This section explains about the Modelling specific modules. This section covers the following topics:

6.1 Reference Data

This section covers the following topics:

1. Currencies: Currencies module allows you to define and maintain the currencies and currency rates.
   - Currencies: Currency module supports the definitions and maintenance of currencies.
   - Currency Rates: Currency Rates module uses the currencies defined and activated in the Currency module to support the creation and maintenance of Historical Exchange Rates.
2. Interest Rate Curve: The Interest Rate Curve in PBSM Cloud Service allows you to define and manage complex Yield Curve definitions using multiple Rate Formats and other Rate Attributes to give you data storage capabilities appropriate to your market. The Interest Rate Curve supports the creation and maintenance of Historical Rate Data for each Yield Curve you define.
3. Economic Indicator: An Economic Indicator is any economic statistic such as the Consumer Price Index (CPI), growth rate of the Gross Domestic Product (GDP), unemployment rate, Purchasing Managers Index, indices of consumer confidence, and so on.

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4. Dimension Management: Dimension Management facilitates you to categorize data into a single object as a Member; define levels and aggregate data to form the Hierarchies, and distinguish each member by defining the required Attributes.
    - Members: Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object such as Product, Organization, Time, and so on.
    - Attributes: Attributes refers to the distinguished properties or qualifiers that describes a Dimension Member.
    - Hierarchies: Hierarchies refer to Dimension Members that are arranged in levels, with each level representing the aggregated total of the data from the level below. One dimension type can have multiple hierarchies associated with it.

- Currencies Setup
- Interest Rates
- Economic Indicators
- Dimension Management

6.1.1 Currencies Setup

Currencies module supports the definitions and maintenance of currencies. Currency definitions are fundamental to the definition of both interest rate yield curves and currency exchange rates.

- Currency Setup
- Currency Rates

6.1.1.1 Currency Setup

Financial institutions transact business in more than one currency. Transacting business in multiple currencies demands functional capabilities for multi-currency accounting and currency rate management.

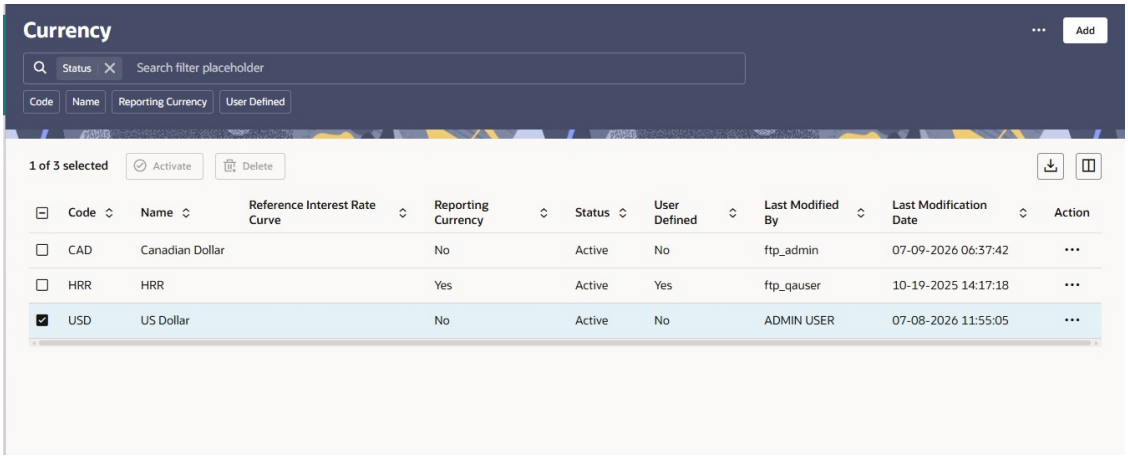
Currency module supports the definitions and maintenance of currencies. Currency definitions are fundamental to the definition of both interest rate yield curves and currency exchange rates. A key attribute of every yield curve is the currency with which it is associated, and currency exchange rates can only be established between defined currencies. A comprehensive list of ISO-defined currencies is provided; you can also define and add your user-defined currencies.

Currency Summary

This page is the gateway to all Currencies and related functionality. You can navigate to other pages relating to Currencies from this point.

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Figure 6-1 Currency Summary



Search Currency

Prerequisites: Predefined Currency

To search for a Currency:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Currencies that meet the search criteria.

Or

An alternative method to search a Currency Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Currency Rule Summary. Enter the **Code, Name, Status, Reporting Currency**, or **User Defined** of the Currency and click **Search** .

The Currency Summary toolbar provides the following actions:

- **Add**: Click the Add icon to build a new Currency.
- **Activate**: Select one or more Inactive currencies from the summary table to enable the Activate button, and click Activate to change the status of the selected currencies to Active.
- **Delete**: Select one or more currencies from the summary table to enable the Delete button, and click Delete to remove the selected currencies.
  Activate and Delete are enabled only when at least one row is selected.
- **More Actions** (): Click the ellipsis icon in the top-right corner of the Currency Summary page to access:
  - **Refresh**: Reloads the Currency Summary table with the latest data. ○
  - **Reset**: Clears the selected filters and refreshes the summary page. ○
  - **Help**: Redirects you to the latest documentation.

Add: Click the Add icon to build a new Currency Rule.

Activate: Select one or more Inactive currencies from the summary table to enable the Activate button, and click Activate to change the status of the selected currencies to Active.

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Delete: Select one or more currencies from the summary table to enable the Delete button, and click Delete to remove the selected currencies. Activate and Delete are enabled only when at least one row is selected.

The Currency Summary displays the following information:

- **Code:** The 3-letter ISO code of Currency
- **Name:** The Currency's short name.
- **Reference Interest Rate Curve:** Displays the Reference Interest Rate Curve of Currency
- **Reporting Currency:** Indicates whether currency is marked for use as Reporting Currency
- **Status:** Displays the Active or Inactive status of Currency.
- **User Defined:** Identifies any user-defined currency, that is, a currency not seeded by Cloud Service
- **Last Modified By**: Displays the user name of the user who last created or modified the Currency.
- **Last Modification Date**: Displays the date and time the Currency was last created or modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Currency Rule.
  - **View:** Opens the Currency in read-only mode. Available regardless of your privilege level.
  - **Edit:** Opens the Currency in editable mode. To edit a Currency, you must have Read/Write privilege.
  - **Activate:** Changes the status of the selected Currency to Active. This option is disabled (greyed out) if the Currency is already Active.
  - **Delete:** You can delete Currency Rules that you no longer require. Note that only Currency Rule owners and those with Read/Write privileges can delete Currency Rules. A Currency Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion. This option is disabled (greyed out) if the Currency has a dependency.
  - **Dependency Information:** Opens the Dependency Information window, which lists the Higher Order and Lower Order Dependencies of the selected Currency. Before deleting a Currency, it is good practice to check its dependencies to confirm it is not in use elsewhere.

- Add Currency
- View Currency
- Edit Currency
- Delete Currency
  You can delete Currencies that you no longer require. Only Currency owners and users with Read/Write privileges can delete a Currency. A Currency that has a dependency cannot be deleted, and a Currency cannot be retrieved after deletion.
- Activate Currency
  You must activate a currency before it can be used as a Reference Currency, before entering Exchange Rate data, defining Forecast Rates, or defining other business rules for that currency.
- View Dependency Information for a Currency

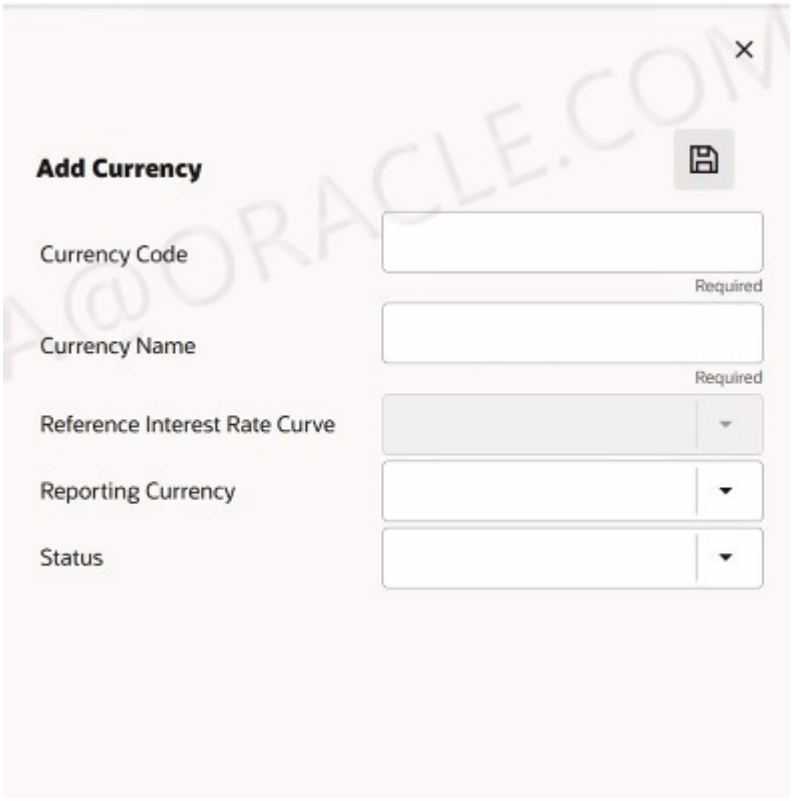
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6.1.1.1.1 Add Currency

To add a Currency, follow these steps:

1. Navigate to **Reference Data** and select **Currency**.
2. Click **Add** icon on Currency summary page. The **Add Currency** page is displayed.

Figure 6-2 Add Currency Page



3. Enter the following details:

Table 6-1 Adding a Currency – Fields and Descriptions

Fields	Description
Currency Code	For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these can be any pure character string (no numbers) up to a length of 3 characters.
Currency Name	For seeded currencies, these are ISO Currency Codes. For user-defined currencies, these can be any string up to a length of 40 characters.
Reference Interest Rate Curve	Reference Interest Rate Curve is the Interest Rate Curve with which currency is associated for exchange rate forecasting purposes. Define multiple yield curves each of which has the same Reference Currency, but a currency can only have one Reference Interest Rate Curve.

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Table 6-1 (Cont.) Adding a Currency – Fields and Descriptions

Fields	Description
Reporting Currency	A reporting currency is an active currency to which balances in other currencies can be consolidated to facilitate reporting. Balances in reporting currencies can be, in turn, consolidated to the functional currency. For example, an American multinational bank might consolidate its holdings in Asian currencies to the Japanese yen (Reporting Currency) and its balances in European currencies to the Euro (Reporting Currency) after which it might consolidate these reporting currencies to the U.S. dollar (Functional Currency).
Status	The status of any currency can be either Active or Inactive. You must Activate a currency before doing the followings: a. Define that currency as a Reference Currency for an Interest Rate curve. b. Enter Exchange Rate data for a currency. c. Define Forecast Rates for that currency. d. Define any other business rule like Prepayment, Transfer Pricing for that currency.

Note

- For the Oracle Financial Services Climate Change Analytics Cloud Service application, select '*Yes*' for the Reporting Currency. This supports the Exchange Rate Conversion in the Currency Rate feature.
- The Reference Interest Rate Curve is not applicable for processing and analytical purposes in Oracle Financial Services Climate Change Analytics Cloud Service.
- On the Add Currency page, the Reference Interest Rate Curve field is disabled until the Currency Code and Currency Name have been entered and the record has been saved.

4. Click **Save**.

6.1.1.1.2 View Currency

To view a Currency, follow these steps:

1. Navigate to Reference Data and select **Currency**.
2. In the Currency Summary table, click the **Action** icon for the required Currency.
3. Select **View** from the Action menu.

   The View Currency page is displayed with all fields shown in read-only, disabled format.

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6.1.1.1.3 Edit Currency

To edit a Currency, you must have Read/Write privilege. Follow these steps:

1. Navigate to Reference Data and select **Currency**.
2. 2. In the Currency Summary table, click the Action icon for the required Currency and select **Edit**.

   The **Edit Currency** page is displayed.
3. Modify the Currency Code, Currency Name, Reference Interest Rate Curve, Reporting Currency, or Status fields as required.
4. Click **Save** to save your changes.

6.1.1.1.4 Delete Currency

You can delete Currencies that you no longer require. Only Currency owners and users with Read/Write privileges can delete a Currency. A Currency that has a dependency cannot be deleted, and a Currency cannot be retrieved after deletion.

To delete one or more Currencies, follow these steps:

1. Navigate to Reference Data and select **Currency**.
2. In the Currency Summary table, select the check box next to one or more Currencies you want to delete.

   This enables the Delete button on the toolbar.
3. Click **Delete**. Alternatively, click the **Action** icon for a single Currency and select Delete from the menu.
4. A confirmation message is displayed. Click **OK** to confirm the deletion.

> **Note**
>
> Before deleting a Currency, use the Dependency Information option to confirm the Currency has no dependencies, since a Currency with a dependency cannot be deleted.

6.1.1.1.5 Activate Currency

You must activate a currency before it can be used as a Reference Currency, before entering Exchange Rate data, defining Forecast Rates, or defining other business rules for that currency.

To activate one or more Currencies, follow these steps:

1. Navigate to Reference Data and select **Currency**.
2. In the Currency Summary table, select the check box next to one or more Inactive Currencies.

   This enables the Activate button on the toolbar.
3. Click **Activate**. Alternatively, click the **Action** icon for a single Currency and select Activate from the menu.
4. The Status of the selected Currency or Currencies changes to **Active** in the Currency Summary table.

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> **Note**
>
> The Activate option is disabled (greyed out) in the Action menu for a Currency that is already Active.

6.1.1.1.6 View Dependency Information for a Currency

To view dependency information for a Currency, follow these steps:

1. Navigate to Reference Data and select **Currency**.
2. In the Currency Summary table, click the **Action** icon for the required Currency and select Dependency Information from the menu.

   The Dependency Information window is displayed for that Currency, showing its Code and Type (Currency).
3. Click **Higher Order Dependencies** to view the objects that depend on this Currency, or click **Lower Order Dependencies** to view the objects this Currency depends on.

   Each tab lists the dependent Object Name, Object Type, Object Subtype, and Object Version.
4. Use the Search field to filter the dependency list, if required.
5. 5. Click the **Close** icon to close the Dependency Information window.

6.1.1.2 Currency Rates

Currency Rates Module uses the currencies defined and activated in the Currency Module to support the creation and maintenance of Historical Exchange Rates. In the Currency Rate Window, you can manage historical Exchange Rates between currencies.

To Currency defaults to the Initial Currency selection from the Assumption Management defaults in the Active Preferences Window. You can select another To Currency from the drop-down list that displays all Active Currencies.

Editing Exchange Rate Data

Select the check box on the left-hand side of any row to enable the **Edit** icon. After clicking Edit, the row becomes active to edit the **Effective Date** and (or) the **Exchange Rate**. Click **Save** to save the changes.

Viewing Exchange Rate Data

By default, both the Floating Currency Rates Pane and the Fixed Currency Rates Pane display the most recent month of historical Exchange Rate Data. You can control the amount of data displayed by selecting a different value from the **Effective Date Range** drop-down list in the **Currency Selection** Window.

From Date and **To Date** can also be modified to view relevant Currency Rates.

Deleting Exchange Rate Data

Select one or more check boxes on the left-hand side of any row to enable the **Delete** icon. After clicking Delete, a confirmation message is displayed. Click **Ok**.

- Adding Exchange Rate Data
- Currency Exchange Rate Validation

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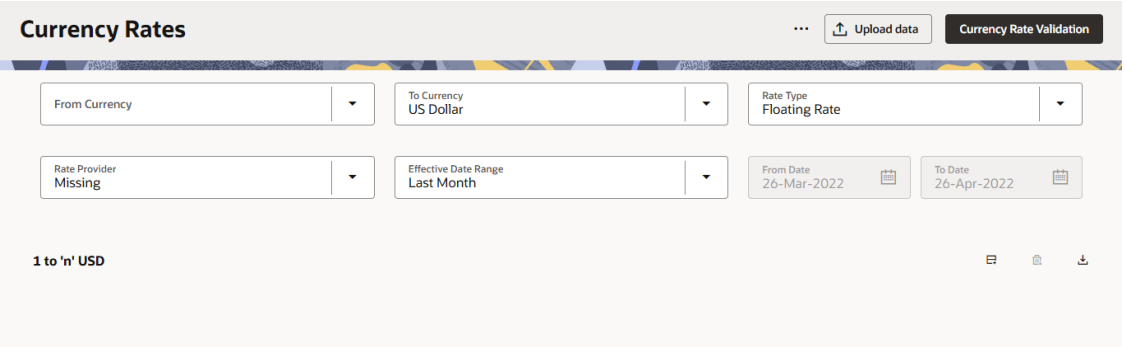
- Download
- Importing Currency Rates

6.1.1.2.1 Adding Exchange Rate Data

Based on the Rate Types, you can add the following Exchange Rate Data:

- **Floating Rates**
  Floating Exchange Rates, such as those between the US Dollar (USD), the Pound Sterling (GBP), the Japanese Yen (JPY), and the Euro (EUR), are market-driven and can change from day-to-day, hour-to-hour, or minute-to-minute.
- **Fixed Rates**
  Some countries, especially smaller countries or countries that have experienced significant inflation in the recent past, can wish to “peg” their currency to a larger, more stable currency such as the US Dollar, Japanese Yen, or Euro.

Figure 6-3 Currency Rates



Adding Floating Rate Data

To add the Exchange Rate Data, follow these steps:

1. Select a **From Currency**.
2. Select a **To Currency**.
3. Select **Rate Type** as **Floating Rate** (default selection is Floating Rate).
4. The RHS pane is displayed as Floating Currency Rates.
5. Select **Effective Date Range** to enter the values in From Date and To Date fields.
6. Select the **Rate Provider**.
7. Currency Rate Pane initially displays a single blank row followed by the most recent month's Exchange Rate data (if any such Exchange Rate Data already exists). To enter a single new Exchange Rate Data Point, enter data into the blank row.

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Table 6-2 Floating Currency Rates

Fields	Description
Effective Date	Directly enter a date or select the Calendar icon to choose an effective date for your new Exchange Rate data point. Rate Management Stores the Historical Exchange Rate Data. You cannot enter Exchange Rate data for dates greater than the current date.
Exchange Rate	This must be entered as 1 unit of From Currency are converted to n unit of To Currency.
Status	Status is a read-only display that is updated after the Currency Rates Validation has been run.
Data Origin	The Data Origin is displayed read-only and indicates whether the rates were input through the UI or the Data Loader.

8. Click **Save**.
9. Click **Add** to add additional blank rows to enter the additional Effective Dates and Exchange Rates. After adding the multiple new Exchange Rates, click **Save**.

Adding Fixed Rate Data

To add the Exchange Rate Data, follow these steps:

1. Select a **From Currency**.
2. Select a **To Currency**.
3. Select **Rate Type** as **Fixed Rate**.
4. After selecting a **To Currency** value, the RHS pane is displayed as Fixed Currency Rates.
5. Select **Effective Date Range** to enter the values in From Date and To Date fields.
6. Select the **Rate Provider**.
7. Currency Rate Pane initially displays a single blank row followed by the most recent month's Exchange Rate Data (if any such Exchange Rate Data already exists). To enter a single new Exchange Rate Data Point, enter data into the blank row.

Table 6-3 Fixed Currency Rates

Fields	Description
Effective From Date	Directly enter a date or select the Calendar icon to choose a starting effective date for your new Exchange Rate Data Point.
Effective To Date	Directly enter a date or select the Calendar icon to choose a ending effective date for your new Exchange Rate Data Point.
Currency Exchange Rate	This must be entered as 1 unit of From Currency are converted to n unit of To Currency.
Status	Status is a read-only display that is updated after the Currency Rates Validation has been run.
Data Origin	The Data Origin is displayed read-only and indicates whether the rates were input through the UI or the Data Loader.

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8. Click **Save**.
9. Click **Add** to add additional blank rows to enter the additional Effective Start and End Dates and Exchange Rates. After adding the multiple new Exchange Rates, click **Save**.

6.1.1.2.2 Currency Exchange Rate Validation

Exchange Rate Validation has the following features:

- Movement of historical Exchange Rates to the Currency Direct Access Table.
- Calculation of inverse Exchange Rates for Reporting Currencies.
- Calculation of triangulated Exchange Rates where possible.

Features of Exchange Rate Validation

The goal of Exchange Rate Validation is to ensure that Exchange Rates from all active currencies to all reporting currencies are available for processing. Some of these rates can come from the validated direct input, others are calculated based on relationships with other rates. To support triangulation, all fixed Exchange Rates are available for all currencies that make up an exchange that needs to be triangulated. Also, a direct Exchange Rate between each Child Currency and each reporting currency is calculated and supplied to support quick access to Exchange Rates. If a Child currency is a Reporting Currency, then Exchange Rates are calculated for all currencies having an exchange relationship with the Parent Currency.

Validating Exchange Rate Relationships

You must run the Exchange Rate Validation Process after adding or modifying Exchange Rate Data. Run the process immediately or schedule one or more to be run in the future.

Each Exchange Rate has one of the following statuses:

Table 6-4 Details of Exchange Rates

Fields	Description
Not Yet Validated	The Exchange Rate has been input or loaded but not yet validated.
Valid	The Exchange Rate has been validated.
Invalid	The Exchange Rate has violated one or more acceptance rules.

Only Exchange Rates in valid status are available for processing and they are not subject to future validation unless you edit them. The Rate Validation Status is displayed in the Currency Rates Window of the Rate Management.

Exchange Rate Validation Criteria

In the Rate Validation Process, all Exchange Rate relationships in the database are examined for compliance with the following criteria. Error messages and warnings are displayed if one or more criteria are not met.

- If a currency is defined as a Child in a fixed exchange relationship then it must not be in any floating (standard) Exchange Rate Relationship at the same time. Consequently, all floating Exchange Rates to or from the Child Currency must be defined through the Parent Currency. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child Currency exists in a standard Exchange Rate within the same time period.

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- A Child Currency within a fixed relationship must not be a Child Currency in any other Fixed Relationship during the same time period. If this criterion is not met then the following message is displayed: Invalid fixed relationship—Child Currency already exists in a fixed relationship for the same time period.
- A Circular Relationship must not exist. In other words, a Child Currency cannot link back to its Parent in any other fixed rate Relationship within the same time period. If it does, then the following message is displayed: Invalid fixed relationship creates a circular relationship with other fixed Exchange Rates.
- Regarding new Floating (standard) Exchange Rates, from and To currencies must not exist as Child Currencies within any Fixed Exchange Rate Relationships. If this criterion is not met then the following message is displayed: From/To/Both currency(ies) in the new Exchange Rate already exist in a fixed relationship for the same time period.
- If any Exchange Rate is equal to 0, then a warning message is displayed. Generally speaking, 0 is a valid value. You can use it, for example, to designate an Exchange Rate with a currency of a country that no longer exists.

If two Exchange Rate Relationships fail to meet these criteria then both of them will be labeled Invalid. (Exception, if one of the relationships is already in Valid status, then the other one will be labeled Invalid.) For example, if a currency is defined as a Child in a Fixed Rate Relationship and is also defined as being in a Floating Relationship at the same time, then both Fixed and Floating Rates for that currency will be labeled Invalid.

If there are both direct and Inverse Floating Exchange Rates defined for any two currencies (in other words, one currency is both a To and a From Currency in relation to the other), then both relationships will be marked valid.

Running an Exchange Rate Validation

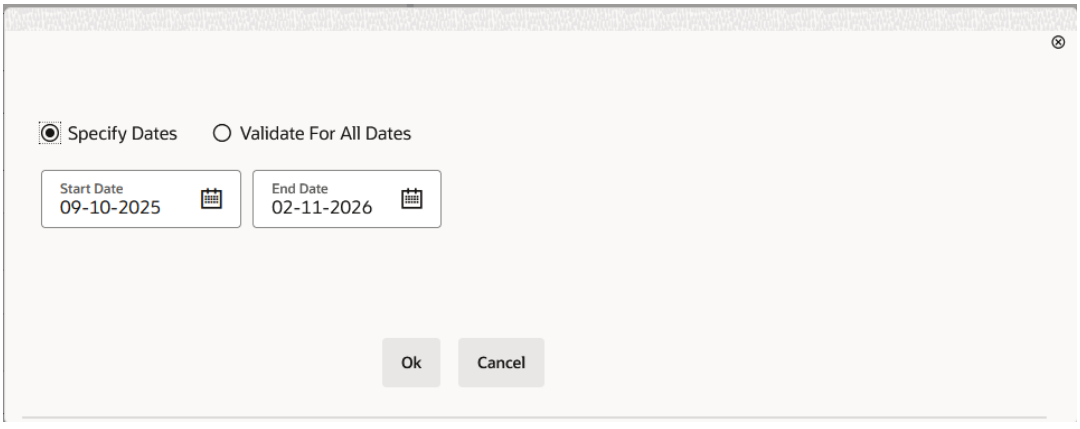
You can run a validation immediately or schedule one or more for later. The Validation Status is displayed in the **Currency Rates** window.

You can execute the Exchange Rate validation using the **Currency Rates Validation** option.

To execute the Exchange Rate Validation, follow these steps:

1. Click **Currency Rates Validation**.

Figure 6-4 Currency Rates Validation



2. To execute Exchange Rate validation from the **Currency Rates** window, the following options are available:

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- **Specify Dates:** After selecting this option, a Select Dates Pane is displayed to enter or verify the Start Date and End parameters. These dates will be passed to the batch for execution.
- **Validate For All Dates:** Select this option to validate all the rates irrespective of dates.
- **Start Date:** This defaults to the date of last rate validation.
- **End Date:** This defaults to the current date.

> **Note**
>
> This option will replace all of the validated Exchange Rate History and can be a time-consuming process depending on the amount of history available to be processed.

6.1.1.2.3 Download

The Download functionality is used to download the Historical Exchange Rates in **.csv** format.

6.1.1.2.4 Importing Currency Rates

To import the Currency Rate, follow these steps:

1. Navigate to the **Currency Rate** page.
2. Click **Actions** drop-down and select **Upload Data**.
3. Select the type of Rate as **Floating** or **Fixed**.
4. Click the **Drag and Drop** option to select the file.

> **Note**
>
> The excel file, you are uploading should be in a specific format. You can download the template using the **Download Template** option. The Templates for Fixed and Floating Rate Types.
> Currency rates UI bulk upload supports only **YYYY-MM-DD** date format

5. Click **Upload**.

6.1.2 Interest Rates

The quality and availability of Interest Rate information vary throughout the world. In many markets, gathering comprehensive rate information is a challenge because of insufficient security types, inconsistent quoting conventions, and lack of liquidity. The Interest Rate Curve in Cloud Service allows you to define and manage complex Yield Curve definitions using multiple Rate Formats and other Rate Attributes to give you data storage capabilities appropriate to your market. The Interest Rate Curve supports the creation and maintenance of Historical Rate Data for each Yield Curve you define.

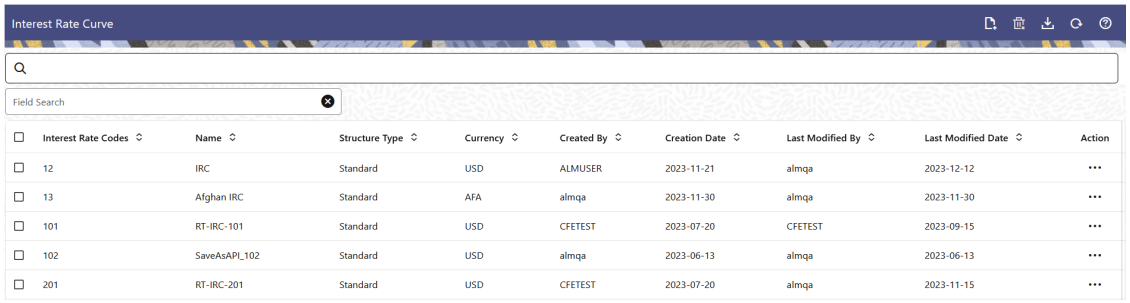
Historical Interest Rate Data is utilized in the Cloud Service to generate the Transfer Rates, add-On Rates, rates for market value calculations, Option Costs, and Forecasted Interest Rate Scenarios.

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Interest Rate Rule Summary

This page is the gateway to all Interest Rate Rules and related functionality. You can navigate to other pages relating to Interest Rate Rules from this point.

Figure 6-5 Interest Rate Curves Summary



Search Interest Rate Rule

Prerequisites: Predefined Interest Rate Rule

To search for an Interest Rate Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Interest Rate Rules that meet the search criteria.

Or

An alternative method to search an Interest Rate Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Interest Rate Rule Summary. You can enter the **Interest Rate Code**, **Name**, **Currency**, **Rate Format**, and **Structure Type** of the Interest Rate Rule and click **Search** .

The Interest Rate Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Interest Rate Rule.

Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Download: Enables you to download the Interest Rate Summary report in .csv format.

- **Interest Rate Code**: The Interest Rate Curve's Code. The code is a unique number in the range of 1 to 9999999. Hover on a row in the pane to display the Interest Rate Curve's detailed description.
- **Name**: The Interest Rate Curve's short name.
- **Structure Type**: The Structure Type (Standard, Hybrid) of the Interest Rate Curve.
- **Currency**: The Currency (Reference Currency) for which Interest rate curve is defined.
- **Created By**: The Name of the user who created the Interest Rate Curve.
- **Creation Date**: The Date and Time when Interest Rate Curve was created.
- **Last Modified By:** The user who last modified the Interest Rate Rule.
- **Last Modified Date:** The Date and Time when the Interest Rate Rule was last modified.

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- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Interest Rate Rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Interest Rate Rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse an Interest Rate Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Interest Rate Rules that you no longer require. Note that only Interest Rate Rule owners and those with Read/Write privileges can delete Interest Rate Rules. An Interest Rate Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Dependency Check:** You can perform a dependency check to know where a particular Interest Rate Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Interest Rate Rules that have dependencies. A report of all rules that utilize the selected Interest Rate Rule is generated.

> **Note**
>
> This is functionality will intended for a future release.

Also See:

- Create Interest Rate Rule
- Creating an Interest Rate Curve
  To create an Interest Rate Curve, perform the following steps:
- IRC Data Migration

6.1.2.1 Creating an Interest Rate Curve

To create an Interest Rate Curve, perform the following steps:

1. Click **Add** from the **Interest Rate Curve Summary** page.
2. Enter the following information in the **Interest Rate Curve Details** window.
   - **Interest Rate Code**: When constructing a new Yield Curve, you must specify an Interest Rate Code between 1 and 9999999. Interest Rate Codes are used internally to uniquely identify Yield Curves. When working with Cloud service, you reference Yield Curves by Name, not by Interest Rate Codes. Interest Rate Codes are embedded within your instrument data (for example, the INTEREST_RATE_CD columns within the Instrument Data are populated with Interest Rate Codes). After you have saved a Yield Curve, you cannot modify its Interest Rate Code.
   - **Name**: Provide a unique Name for the Interest Rate Curve.
   - **Description**: You can enter a description for the Interest Rate Curve. You can modify this description at any time using the Edit action.
   - **Display for All Currencies**: This flag allows you to designate certain Interest Rate Curves to make them available for assumption mapping to any currency. Assumption Rules filter the list of Interest Rate Codes based on the currency when defining

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assumptions for a specific Product/Currency combination. When this option is enabled, the Interest Rate Curve appears in assumption rules for all currencies.

- **Reference Currency**: Select a Reference Currency for your Interest Rate Curve. You can change the Reference Currency for previously saved Interest Rate Curves though such changes are unlikely. An Interest Rate Curve's Reference Currency is the currency for which your market rates are valid. For example, the Reference Currency for a Prime Rate Yield Curve would be US Dollars. The Reference Currencies drop-down list displays only Active currencies. For more information on Active and Inactive currencies, see the Currency Documentation.
- **Date Based Term Points**: This toggle switch is applicable only for Standard Structure Type. If you select Structure Type as Hybrid, the toggle switch is disabled. When you select the Date Based Term Points, and add a Term Point, the Historical Rates Tab allows you to define a Custom Date and Rate for each Term Point. By default, the Date is inserted based on the Term that you define. You can change the Date to a custom Date and define the Rate.
- **Risk-Free**: (Optional) This flag is for tagging the Interest Rate Curve as risk-free. That is Edit Table in new and Edit Modes. It is available for Non-Hybrid Curves and Hybrid Curves.
- **Structure Type**: This attribute is required for each Yield Curve. Structure Type supports Standard, Hybrid Yield Curve, and Managed Rates Definitions. Hybrid Yield Curves are re-expressions of one or more pre-existing Standard Yield Curves. For more information, see Hybrid Term Structure. Managed Rates are free form, user-defined formula, that is, equation based objects. For more information, see Managed Rates. Standard Interest Rate Curves are used to define the Yield Curve and to add, edit, or delete Historical Interest Rate Data. After you have saved the Yield Curve, you cannot change the selected Structure Type.

  > **Note**
  >
  > IRC Structure Type **Managed Rates** is applicable only to ALMCS.

- The Interest Rate Curve tabs are:
  - Terms & Attributes
  - Historical Rates
  - Parameters
  - Hybrid Term Structure
  - Managed Rates

  For new Yield Curves, you must begin with the **Terms & Attributes** tab. After you have selected the term structure and attributes for a Yield Curve, you cannot edit them. After assigning the attributes, navigate to the Terms tab to define a term structure for your Yield Curve, for example, an overnight rate, a one-month rate, a three-month rate, and so on. Click **Apply** after defining the term structure and attributes to the Interest Rate Curve.

  > **Note**
  >
  > You must specify an Interest Rate Code and Name in the **Interest Rate Curve Details** window before navigating to the **Terms & Attributes** tab.

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The first time you navigate to the **Terms & Attributes** tab, an initial 1-month term point is provided, but even if this is the only term point you want for the curve, you must click **Apply** to finish term structure specification. In future revisions to the Curve's Definition, navigate directly to the **Historical Rates** tab, but if you modify the term structure, you must always click **Apply** on the **Terms & Attributes** tab before navigating to the **Historical Rates** tab.

The **Historical Rates** Tab is used to input historical interest rate data. This Tab is used for maintaining the Interest Rates Database. To navigate to the Historical Rates Tab, either click **Apply** on the **Terms & Attributes** tab or select the **Historical Rates** tab if you have already defined your term structure.

> **Note**
>
> You must specify the following before navigating to the **Historical Rates** tab:
>
> – An Interest Rate Code, Name, and Reference Currency in the **Interest Rate Code Details** window.
>
> – A term structure in the **Terms & Attributes** tab.

- Terms & Attributes
  The Terms & Attributes Tab displays the following fields:
- Parameters Tab
  Fixed income instruments are used for forecasting and simulating the Cash Flows. The Cash Flow Engine needs interest rate models to simulate the evolution of interest rates. The Cash Flow Engine uses these models as part of the stochastic engine. You can enter the parameters for these models in the following ways:
- Historical Rates
  Use the Historical Rates Tab to define, modify, or view Interest Rate Data. Enter data in simple percentages (such as 5.125, 4.875, and so on).
- Hybrid Interest Rate Curves
- Managed Rates

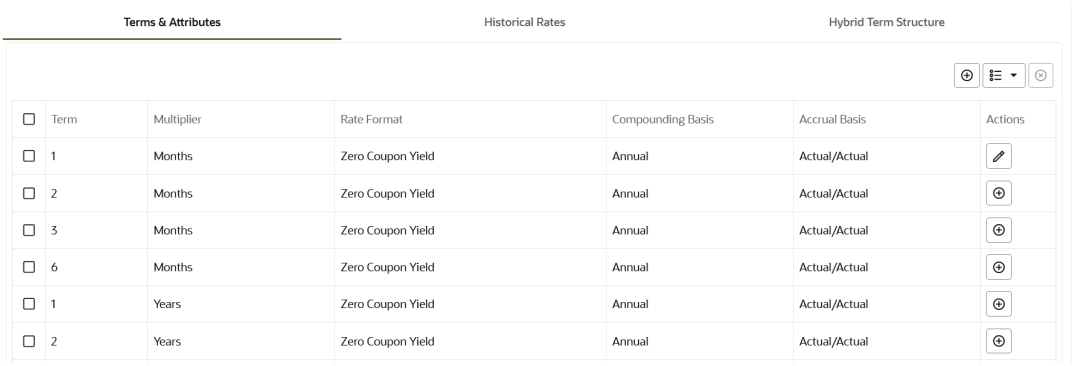
6.1.2.1.1 Terms & Attributes

The Terms & Attributes Tab displays the following fields:

- **Adding New Term Points**: Click **Add** to add a new row. (New term points by entering a Term value and selecting a Multiplier (such as 7 days, 2 months, 5 years, and so on). Rate Format, Compounding Basis, and Accrual Basis can be selected for the term point. Zero Coupon Yield, Annual, Actual/Actual are the pre-selected values in UI which you can modify.
  One Yield Curve can have two combinations of attributes. For example, first 3 term points have Zero Coupon Yield, Annual, Actual/Actual attributes and remaining term points are Yield to Maturity, Annual and 30/360.

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Figure 6-6 Terms and Attributes Tab



Term	Multiplier	Rate Format	Compounding Basis	Accrual Basis	Actions
1	Months	Zero Coupon Yield	Annual	Actual/Actual	
2	Months	Zero Coupon Yield	Annual	Actual/Actual	
3	Months	Zero Coupon Yield	Annual	Actual/Actual	
6	Months	Zero Coupon Yield	Annual	Actual/Actual	
1	Years	Zero Coupon Yield	Annual	Actual/Actual	
2	Years	Zero Coupon Yield	Annual	Actual/Actual	

Click “+” at the term point where you want to modify attributes. Rate Format, Compounding Basis, and Accrual Basis fields are enabled for modification.

- **Rate Format**: You should select either the Zero Coupon Yield or Yield to Maturity Rate Format. Rates entered in the Historical Rates Tab are always entered in the nominal form, such as 5.125% or 6.875%, not as discount factors.
- **Compounding Basis**: Select a Compounding Basis for the term point:
  - Daily
  - Monthly
  - Quarterly
  - Semiannual
  - Annual
  - Simple
  - Continuous
  - At Maturity
- **Accrual Basis**: Select an Accrual Basis for the Yield Curve.
  - 30/360
  - Actual/360
  - Actual/Actual
  - 30/365
  - 30/Actual
  - Actual/365
  - Business/252
- **Deleting Existing Term Points**: To delete an existing term, select the term point (or terms), and click **Delete**.

You can also click **Add Multiple Rows** to select the number of multiple rows that you want to add.

You can construct the Yield Curve's Term Structure. You can specify as many Yield Curve Terms from the 1 day to 100 years range. However, the UI allows only two combinations of Rate Format, Compounding Basis, and Accrual Basis per one Interest Rate Curve Definition.

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The Interest Rate Curve Definition Module automatically selects the combination of Rate Format, Compounding Basis, and Accrual Basis when a new Term Point is greater than the already defined Term Points. For example, if you define two Term Points with 15 Days, one Month Multipliers, and another Term Point with 2 Years Multiplier. When you define a new Term Point with 45 Days Multiplier, the Interest Rate Curve Definition Module automatically selects the combination of Rate Format, Compounding Basis, and Accrual Basis that is selected for the first two Term Points. Similarly, if you define a Term Point, which is greater than the 2 Years Multiplier, then the module selects the combination of Rate Format, Compounding Basis, and Accrual Basis that is selected for the 2 Years Term Point.

6.1.2.1.2 Parameters Tab

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

- Direct input into the UI

The following interest rate models are available:

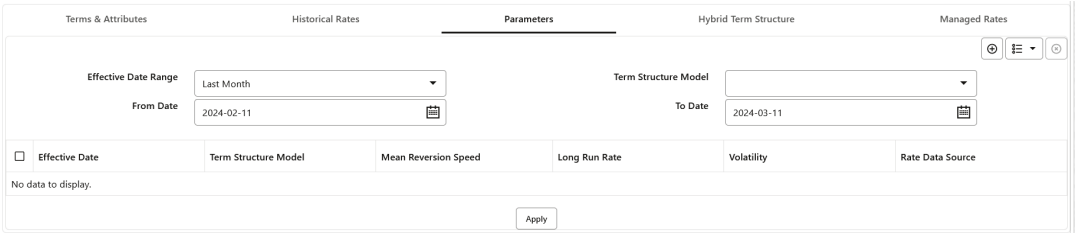
- Extended Vasicek
- Ho and Lee
- Merton
- Vasicek

Parameter

To configure the Parameter, follow these steps:

1. Navigate to Parameters tab of Interest Rate Curve.

Figure 6-7 Parameters Tab on Interest Rate Curve window



2. Enter the Effective Date Range filter.
3. After clicking Add, default parameters for the **Extended Vasicek Model** are displayed for one Effective Date (the System Date on which the Interest Rate Code was created). You can edit these parameters or add new parameters using **Add**.
4. Enter the **Effective Date**. Note that the **Effective Date** cannot be greater than the **Current System Date**.
5. Select the Model from the **Term Structure Model** drop-down list. Effective Date and Term Structure Model combination must be unique within this IRC.
6. The following term structure models of interest rates:
   - Extended Vasicek

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- Ho and Lee
- Merton
- Vasicek

7. The following parameters needed by the models:

Table 6-5 List of supported parameters for Models Term structure models in Interest Rate

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

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

Table 6-6 Valid Range and Default Values of Interest Rate Parameters

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

9. Click Apply.

6.1.2.1.3 Historical Rates

Use the Historical Rates Tab to define, modify, or view Interest Rate Data. Enter data in simple percentages (such as 5.125, 4.875, and so on).

The **Rate Data Source** Column shows from where the rates are taken from, they are either entered through the User Interface, loaded through the Data Loader, or generated using the Generate Rates of Hybrid IRC.

You can perform the following tasks:

- Add Historical Rates
- Excel Import or Export
- Deletion of Historical Rates

> **Note**
>
> FTP engine supports rate lookup from a future date as well, if engine looks for any particular effective date and that is not found, then next it looks for most recent date available in the past, even if that is not available, then it can pick the rate from most recent future date also.

- Add Historical Rates

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- Deletion of Historical Rates
- Excel Import or Export
  To aid in data entry, use the Excel Import or Export functionality to add or edit rate data to Historical Rates. This is an optional step.

6.1.2.1.3.1 Add Historical Rates

By default, the **Historical Rates** Tab displays Interest Rate Data for the past month (for example, for the 30 days leading up to the current date). Click the **Effective Date Range** drop-down list to expand your view to the last 3 months, 6 months, one year, 3 years, 6 years, or all rate data.

6.1.2.1.3.2 Deletion of Historical Rates

To delete Historical Rates entered, select one or more rows and then click **Delete**.

6.1.2.1.3.3 Excel Import or Export

To aid in data entry, use the Excel Import or Export functionality to add or edit rate data to Historical Rates. This is an optional step.

Excel Export:

To export the data, perform the following steps:

1. Click **Export** to export data for the chosen selected effective date range. Within the same block, select Export to Excel, which launches the Excel application and displays the Data Window including headers.

Excel Import:

The excel file exported above can be used as a template to import the Historical Rates.

> **Note**
>
> Ensure that the date format is yyyy-MM-dd in the excel file. For example, 2022-06-13.

1. On the Interest Rates toolbar, click the **Import** icon. Select the file containing the Historical Rates.
2. Data from the file is displayed on the UI. If appending data that pre-existed for the same effective date, the import will overwrite existing data.
3. Add or edit data if required.
4. Click **Apply** to save.

6.1.2.1.4 Hybrid Interest Rate Curves

Hybrid Term Structures allows you to specify the following types of Hybrid Yield Curves:

- Merge
- Spread
- Moving Average
- Custom Weighted Average

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Hybrid Yield Curves are built up from either one or more Standard Yield Curves. When you add, modify, or delete any historical rate data from a Standard Yield Curve, the data associated with any related Hybrid Yield Curve must be updated. After defining, the Hybrid Yield Curves can be used like any other Interest Rate Curve in the system. You can reference these curves within the Cloud Service Business Rules that allow the selection of an Interest Rate Code.

Hybrid Curve Type Spread: A Spread Hybrid Yield Curve is defined as the difference between two standard yield curves. The Spread type of hybrid yield curve is useful in establishing liquidity risk or basis risk yield curves.

- **Merge**: Merge hybrid yield curves represent a blending of two or more underlying yield curves. In constructing a Merge type of Hybrid Yield Curve, specify the percentage weighting applied to each of the underlying Standard Hybrid Yield Curves.
- **Spread**: A Spread hybrid yield curve is defined as the difference between two standard yield curves. The Spread type of Hybrid Yield Curve is useful in establishing liquidity risk or basis Risk Yield Curves.
- **Moving Average**: Moving average Hybrid Yield Curves represent moving average data of a single underlying Standard Yield Curve. These curves are used in Funds Transfer Pricing.
- **Custom Weighted Average**: Custom Weighted Average Rate is the sum of weighted rates as per the defined Custom Weights for the Historical Rates.
- Define Hybrid Curve
  Defining a Hybrid Curve supports the following different definitions based on the Hybrid Curve Type:
- Generate Hybrid Rates
  After a Hybrid Curve is defined, generate the Historical Rates as far back as the Rate Source Curves allow. The Generate Frequency determines the frequency of the historical rates populated with the Generate function. If you select the Generate Frequency as monthly, it generates month-end values only. If you select daily, it generates the maximum number of Historical Values. By default, the Interpolation is selected as Linear and you cannot change it.

6.1.2.1.4.1 Define Hybrid Curve

Defining a Hybrid Curve supports the following different definitions based on the Hybrid Curve Type:

- Hybrid Curve Type as Merge
- Hybrid Curve Type as Spread
- Hybrid Curve Type as Moving Average
- Hybrid Curve Type as Custom Weighted Average
- Defining a Hybrid Curve with Hybrid Curve Type as Merge
  To define a Hybrid Curve, perform the following steps:
- Defining a Hybrid Curve with Hybrid Curve Type as Spread
- Defining a Hybrid Curve with Hybrid Curve Type as Moving Average
- Defining a Hybrid Curve with Hybrid Curve Type as Custom Weighted Average

6.1.2.1.4.1.1 Defining a Hybrid Curve with Hybrid Curve Type as Merge

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Merge**.

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2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. You must select at least two Interest Rate Curve Definitions.

   The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.

3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. You can click on the icon next to the Selected Term Structure to see the Term Points for the Interest Rate Curve. A box displays the Term and Multiplier for the select Interest Rate Curve.
5. Enter the Weights for the selected Terms.
6. Click **Apply** to save the Weights in the grid.

6.1.2.1.4.1.2 Defining a Hybrid Curve with Hybrid Curve Type as Spread

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Spread**.
2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. Only two Interest Rate Curves are allowed for selection.
3. Click the **Swap** icon to re-order the Interest Rate Curves.

   The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.

4. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
5. Click **Apply** to save the selected Terms.

6.1.2.1.4.1.3 Defining a Hybrid Curve with Hybrid Curve Type as Moving Average

To define a hybrid curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Moving Average**.
2. Select the **Interest Rate Curves** for the hybrid type and click **Apply**. Only one Interest Rate Curve Definition is allowed for selection.

   The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.

3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. Enter the Terms and Multipliers for each of the selected Terms.

   OR Optionally, you can select the **Moving Average Term** toggle switch to define the Terms and Multipliers for the selected terms at once.

5. Click **Apply** to save the Terms in the grid.

6.1.2.1.4.1.4 Defining a Hybrid Curve with Hybrid Curve Type as Custom Weighted Average

To define a Hybrid Curve, perform the following steps:

1. Select the **Structure Type** as **Hybrid**, and then select the **Hybrid Curve Type** as **Custom Weighted Average**.
2. Select the **Interest Rate Curves** for the Hybrid Type and click **Apply**. Only one Interest Rate Curve Definition is allowed for selection.

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The screen displays the Hybrid Term Structure Weights for the selected Interest Rate Curves and the Merge type Hybrid Curve.

3. By default, all the Term Points are selected and displayed. You can uncheck one or more Term Points.
4. Enter the Terms and Multipliers for each of the selected Terms.

   OR Optionally, you can select the **Moving Average Term** toggle switch to define the Terms and Multipliers for the selected terms at once.
5. Enter the Weights for the each term and respective Historical Effective Dates. By default, all the Weights are zero. You can change the values as per your requirement.
6. Click **Apply** to save the Terms in the grid.

6.1.2.1.4.2 Generate Hybrid Rates

After a Hybrid Curve is defined, generate the Historical Rates as far back as the Rate Source Curves allow. The Generate Frequency determines the frequency of the historical rates populated with the Generate function. If you select the Generate Frequency as monthly, it generates month-end values only. If you select daily, it generates the maximum number of Historical Values. By default, the Interpolation is selected as Linear and you cannot change it.

To generate the rates, perform the following steps:

1. Select the **Generate Frequency** (Daily, Weekly, Bi-Weekly, or Monthly) and enter the **Specific Date Range** (From Date and To Date). For Custom Weighted Average Hybrid Curve Type, you need to select only the From Date.
2. Click **Generate**. The rates will be populated and you will be directed to the Historical Rates Tab to view the results.

Generating Hybrid Rates using Scheduler

You can also generate the Hybrid rates using the Scheduler Service.

To generate the Hybrid rates:

1. From the LHS menu, navigate to Operations and Processes, select Scheduler, and then select Create Batch. For more details, Define Batch.
2. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Ceate Task**. For more details, see Define Tasks.
   a. Task Type: REST
   b. Component: IRC Hybrid Scheduler
3. Select the seeded batch and click **Edit Parameters**. In the Dynamic Parameters pop-up window, change the date to the relevant As-of-Date, and then save the batch.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Execute Batch**.
5. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. For more information, see Monitor Batch.
6. Select the **Batch** and then select the **MISDATE** and the **Batch name**. There may be multiple executions of the Hybrid rates batch. Select the latest execution and click **Start Monitor**.
   The UI displays the Status of the batch.

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6.1.2.1.5 Managed Rates

Managed rates are IRC objects that are based on a logical and/or mathematical formula instead of being based on a yield curve. This is useful if you do not have a straight forward application function that generates a rate based on a formula. Managed Rates are formula-driven IRC (interest rate curve or yield curve) objects. The Managed Rates UI provides the following functionalities:

- Allows to create a managed rates formula with the help of equation builder.
- You can create a managed rates formula by using existing IRC, Currency, Economic Indicator objects and combining it with various mathematical operators.
- Execute managed rates using Scheduler Service

Managed Rate Formulas

Managed Rates are free form, user-defined formula, that is, equation based objects. You can use a variety of mathematical, logical, or reference functions to define a Managed Rate. Regardless of the complexity of the function, it always return only one numerical value every time when it is evaluated.

For example, there are three basic inputs for Market Rates formulas:

Numerical and mathematical values, including embedded functions (for example, "SUM" or "AVERAGE").

Existing Rate Management objects such as interest rate curves, economic indicators, and foreign currencies

Reference in time specification, that is, a relative or absolute reference in time either in the past, present, or future.

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Note

Formulas are statements. These can be mathematical, logical, or reference one or more Application objects, but it returns a *single* numerical value.

For example:

Formula input: 1+1

Returns: 2

It is not mandatory to include the "=" symbol in the expression as this is already implied.

There is no nominal value of the rate, that is, it cannot be an accrual, day count, compounding, or other rate identities; it is simply a number.

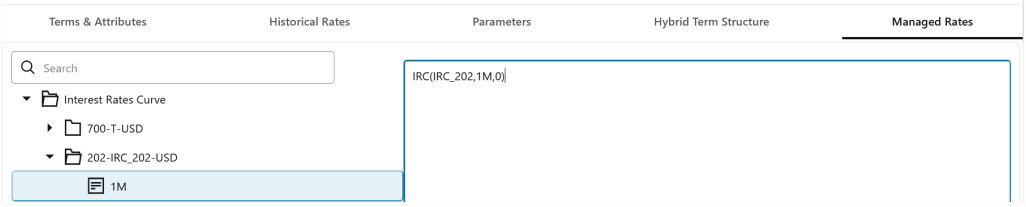
Basic syntax is required if other service objects are reference, then you must specify three distinct components:

1. Object type code or name
2. Object ID
3. Tenor
4. Place in time in the forecast

[Object type code].[Object ID].[Tenor if IRC, 0 if anything else].[Place in time]

For example, suppose you want a formula that refers to an interest rate curve's 1 month tenor on a current basis, then its syntax would look something like this:

Figure 6-8 Example of Managed Rate



Here,

[IRC_202] is the IRC code (Object ID)

[1M] is the Term.

[0] is time. This calculates Past, present or future dates/rates with ease for any term/ tenor and forecast method definition. The default value is 0. [0] means the now. [-1] refers to back one period. [$] refers to constrained time period.

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> **Note**
>
> If the time value falls outside of provided numbers, the Application will refer to the closest matching value. If no value can be retrieved or if the value is null, then the Managed Rate formula will not be evaluated.

Managed Rate Processes

When you validate Managed Rates, it is processed under two conditions:

1. **Managed Rates for Historical Values**

   You can use the entered managed rate to derive one or more historical values as specific points in time at or before the current As-of Date.

   Function is executed at the Rate Management level for Managed Rate functions. Specify one or more historical dates that you want to processed and then execute a batch to derive the associated values. All historical values would be stored in a managed rate historical table.

   If a Managed Rate formula has time references that are constrained, the formula will default to the last available value provided. If no value is provided (e.g. value cannot be retrieved or is null), then no rate will be provided for that historical date.

2. **Managed Rates for Forecasted Values**

   For forecasted values in an ALM process as established in Forecast Rates. Managed Rates will be forecasted using the forecasted base objects like IRC, Currency and Economic Indicator.

   For more information, see Interest Rate Forecast Methods.

To define Managed Rate, follow these steps:

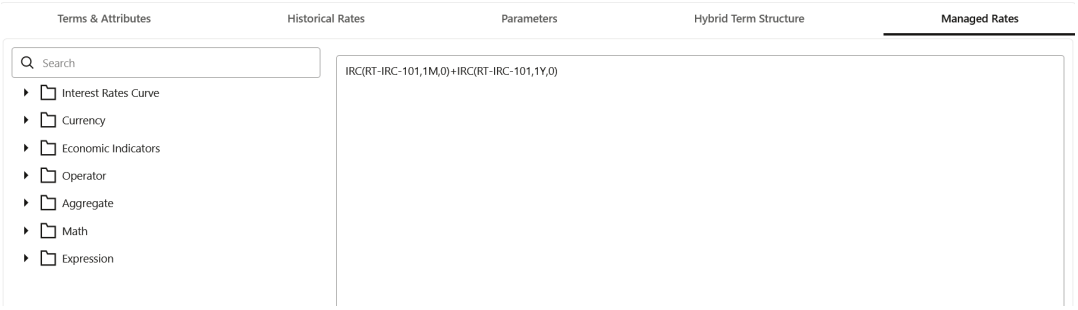
1. Select **Structure Type** as **Managed Rates**.
2. Navigate to **Managed Rates** tab.

   > **Note**
   >
   > This tab will be active only when **Structure Type** is selected as **Managed Rates**.

3. Select the Function type as Interest Rate Curve, Currency, or Economic Indicator to define a formula.
4. Double-click the Function code to move it to Formula section.
5. Update the formula. Use arithmetical operator from Operator to define formula if required.

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Figure 6-9 Formula section



Interest Rate Curve

This function evaluates rate of selected term point of Interest Rate Curve, in the past, present or future

IRC(Name, Term_Point, Time_Reference)

- **Name**: Must be an existing IRC
- **Term Point**: Must be an existing term point of named IRC
- **Time_Reference**: Time_Reference indicates the rate to be forward or backward looking. This should be zero or positive/negative whole number. If left null, replace with zero. 0 indicates current period, positive value indicate forward time and negative value indicates prior period. It can also be relative (moving) or absolute (fixed). Use '$' symbol for absolute Term Reference.

Currency

This function evaluates exchange rate of selected currency pair in the past, present or future

CCY(From_Currency, To_Currency, Time_Reference)

- **From_Currency**: Three letter code of active currency
- **To_Currency**: Three letter code of reporting currency
- **Time_Reference**: Time_Reference indicates the rate to be forward or backward looking. This should be zero or positive/negative whole number. If left null, replace with zero. 0 indicates current period, positive value indicate forward time and negative value indicates prior period. It can also be relative (moving) or absolute (fixed). Use '$' symbol for absolute Term Reference.

Economic Indicator

This function evaluates value of selected Economic Indicator in the past, present or future

ECOIND(Name,Time_Reference)

- **Name**: Must be an existing Economic Indicator
- **Time_Reference**: Time_Reference indicates the rate to be forward or backward looking. This should be zero or positive/negative whole number. If left null, replace with zero. 0 indicates current period, positive value indicate forward time and negative value indicates prior period. It can also be relative (moving) or absolute (fixed). Use '$' symbol for absolute Term Reference.

Aggregate

This includes the following functions:

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Function	Description
Average	Calculates the average (mean) value of an expression in a result set. AVG(expr) *expr* is any expression that evaluates to a numerical value.
Max	Calculates the maximum value (highest numeric value) of an expression in a result set. MAX(expr) *expr* is any expression that evaluates to a numerical value.
Min	Calculates the minimum value (lowest numeric value) of an expression in a result set. MIN(expr) *expr* is any expression that evaluates to a numerical value.
Median	Calculates the median (middle) value of an expression in a result set. MEDIAN(expr) *expr* is any expression that evaluates to a numerical value.
StdDev	Returns the standard deviation for a set of values. STDDEV(expr) *expr* is any expression that evaluates to a numerical value.
Sum	Calculates the sum obtained by adding up all values satisfying the numeric expression argument. SUM(expr) *expr* is any expression that evaluates to a numerical value.
Geometric Mean	Calculates the the geometric mean of an array or range of positive numeric data. GEOMEAN(expr) *expr* is any expression that evaluates to a numerical value.

> **Note**
>
> At least two values/expression are required to calculate above aggregate functions.

Math

Function	Description
Abs	Calculates the absolute value of a numerical expression. ABS(expr) *expr* is any expression that evaluates to a numerical value.

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Log	Calculates the natural logarithm of an expression. LOG(expr) *expr* is any expression that evaluates to a numerical value.
Log10	Calculates the base 10 logarithm of an expression. LOG10(expr) *expr* is any expression that evaluates to a numerical value.
Mod	Divides the first numerical expression by the second numerical expression and returns the remainder portion of the quotient. MOD(expr, divisor) *expr* is any expression that evaluates to a numerical value. *divisor* is any expression or number by which you want to divide
Power	Takes the first numerical expression and raises it to the power specified in the second numerical expression. POWER(expr, power) *expr* is any expression that evaluates to a numerical value. *power* is the exponent, to which the base expression or number is raised
Round	Rounds a numerical expression to n digits of precision. ROUND(expr, num_digits) *expr* is any expression that evaluates to a numerical value. *num_digits* is the number of digits to which you want to round. Negative rounds to the left of the decimal point; zero or omitted, to the nearest integer.
Round Down	Rounds down a number to either a decimal place or a whole number. ROUNDDOWN(expr, num_digits) *expr* is any expression that evaluates to a numerical value. *num_digits* is the number of digits to which you want to round. Negative rounds to the left of the decimal point; zero or omitted, to the nearest integer.
Round Up	Rounds up a number to either a decimal place or a whole number. ROUNDUP(expr, num_digits) *expr* is any expression that evaluates to a numerical value. *integer* is any positive integer that represents the number of digits of precision.

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Sqrt	Calculates the square root of the numerical expression argument. SQRT(expr) *expr* is any expression that evaluates to a nonnegative numerical value.
Product	Multiplies all numerical expressions given as arguments and returns the product. PRODUCT(expr1, expr2) *expr* is any expression that evaluates to a numerical value.
Quotient	Returns one numerical expression divided by numerical expression, without the remainder. QUOTIENT(expr1, expr2) *expr* is any expression that evaluates to a numerical value. Example: QUOTIENT(5,2). This will return 2, unlike division which returns 2.5
Exponent	Calculates e raised to the power of the numerical expression argument. EXP(expr) *expr* is any expression that evaluates to a numerical value.

Expression

Function	Description
Case(If)	This form of the Case statement evaluates each WHEN condition and if satisfied, assigns the value in the corresponding THEN expression. If none of the WHEN conditions are satisfied, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system will automatically add an ELSE NULL. CASE WHEN request_condition1 THEN expr1 ELSE expr2 END *exprs* is any valid expression.

> **Note**
>
> For IRC Managed Rates, the **Historical Rates** tab is view-only. You cannot add or edit the historical rates.

6. Click **Apply and Validate**. A successful formula validation message is displayed. After clicking **Ok**, you will be navigated back to **Interest Rate** Summary page.
7. Enter **From Date** and **To Date**.
8. Click **Generate**. This button will be activated after successful validation of formula. A batch Id is generated, You can use this Id to monitor the progress in Scheduler Service.
9. After defining and verifying the Managed Rates, you can execute the IRC using scheduler service.

Executing Managed Rates using Scheduler

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To execute the batch, navigate to Operations and Processes and select Scheduler. Select Schedule Batch and search for **Historical Managed Rates** and execute.

OR

You can also define new batch to execute the Managed Rates by the following these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Define Batch.**
2. Create a new Batch with a new Task with Component as **IRC Managed Rates**.
3. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Schedule Batch** to execute the batch. Select the batch and click Execute. For more details about Scheduler processes, see the Scheduler Services.
4. From the LHS menu, navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**. There may be multiple executions of the batch. Select the latest execution and click Start Monitor.
   The UI displays the status of the batch.

6.1.2.2 IRC Data Migration

On-prem to SaaS Migration

Data Export from On-prem

Users have to connect to the database and export the data in the prescribed CSV format. Name of the Data File must follow the format as given below:

- A prefix as INPUT_YYYYMMDD where the date format is related to the As of Date (i.e., 02-October-2023 becomes 20231002).
- A suffix as _FILENAME.CSV.
- An example of Data File Name could be: INPUT_20231002_IRC_<DATAFILENAME>.csv. The order of the columns in the input file must be as follows:
  - INTEREST_RATE_NAME
  - EFFECTIVE_DATE (Date format: MM-DD-YYYY)
  - INTEREST_RATE_TERM
  - INTEREST_RATE_TERM_MULT
  - INTEREST_RATE
  - RATE_DATA_SOURCE_CODE

Data Import to SaaS

For more information on importing the data, see Interest Rates Loader.

SaaS to SaaS Migration

Data Export from SaaS

Users have to export data using the Data Maintenance Interface and select the VW_FSI_IRC_RATE_HIST view. For more information about how to export data using the Data Maintenance Interface, see Data Maintenance Interface.

Data Import to SaaS

For importing the data, see Interest Rates Loader.

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6.1.3 Economic Indicators

An Economic Indicator is any economic statistic such as the Consumer Price Index (CPI), growth rate of the Gross Domestic Product (GDP), unemployment rate, Purchasing Managers Index, indices of consumer confidence, and so on. Such macroeconomic statistics tell us how well the economy has behaved in the past. Some economic indicators are referred to as lagging indicators while others are classified as leading indicators. Leading indicators can provide insights into the future direction of the economy.

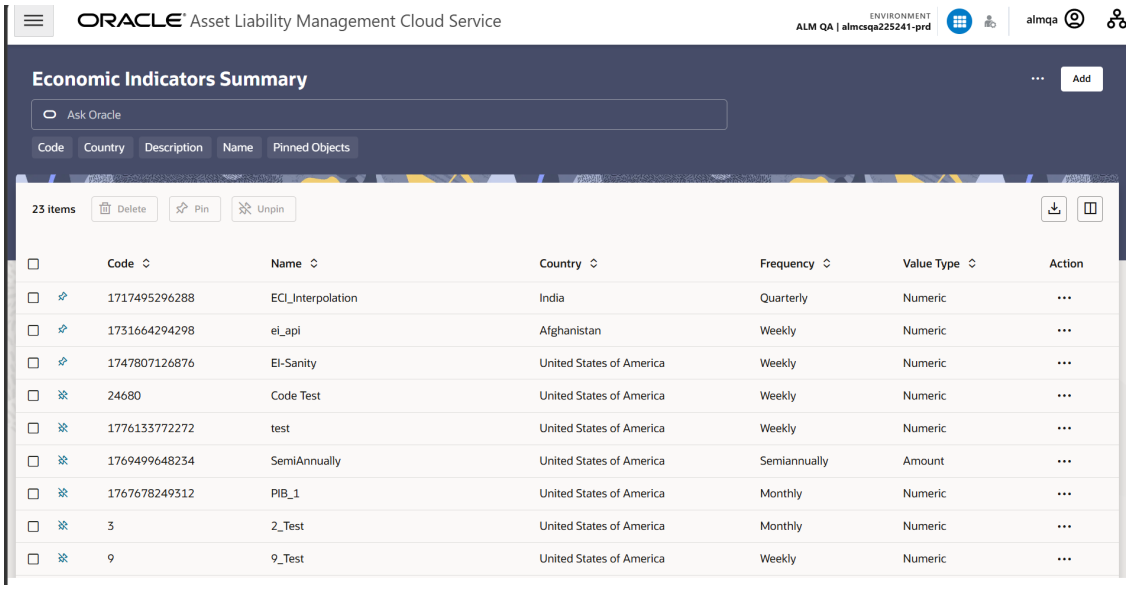
Economic Indicators Module allows you to define and store such historical indicators. It provides baseline from which forecasts of future values can be generated that can affect cash flow calculation for Inflation Indexed Instruments, new business or other modeling assumptions.

To view the Economic Indicators, navigate to Maintenance and then select Economic Indicators, an empty window is displayed. After you have defined one or more Economic Indicators, the Economic Indicators Summary Page shows all the Economic Indicators that you have previously defined.

Economic Indicator Rule Summary

This page is the gateway to all Economic Indicator Rules and related functionality. You can navigate to other pages relating to Economic Indicator Rules from this point.

Figure 6-10 Economic Indicator Summary



Search Economic Indicator Rule

Prerequisites: Predefined Economic Indicator Rule

To search for an Economic Indicator Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Economic Indicator Rules that meet the search criteria.

Or

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The other method to search an Economic Indicator Rule is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Code, Name, Description,** and **Country** of the Economic Indicator Rule and click **Search** .

The Economic Indicator Rule summary displays the following information:

Add: Click the Add icon on the page header to build a new Economic Indicator Rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:**Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Economic Indicator Rule summary table displays the following columns:

- **Code:**Numeric ID associated with a Economic Indicator Rule.
- **Name:** The Economic Indicator Rule's name.
- **Country:** The Country of for which Economic Indicator has been defined.
- **Frequency:** The Frequency at which value of Economic Indicator is expected to be updated.
- **Hierarchy:** Hierarchy that is used to define Economic Indicator Rule.
- **Value Type:** The Value Type of an Economic Indicator.
- **Action:** Click this icon to view a list of actions that you can perform on the Economic Indicator Rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Economic Indicator Rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse the Economic Indicator Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Economic Indicator Rules that you no longer require. Note that only Economic Indicator Rule owners and those with Read/Write privileges can delete Economic Indicator Rules. A Economic Indicator Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Dependency Check:** You can perform a dependency check to know where a particular Economic Indicator Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Economic Indicator Rules that have dependencies. A report of all rules that utilize the selected Economic Indicator Rule is generated.

Also See:

- #unique_456

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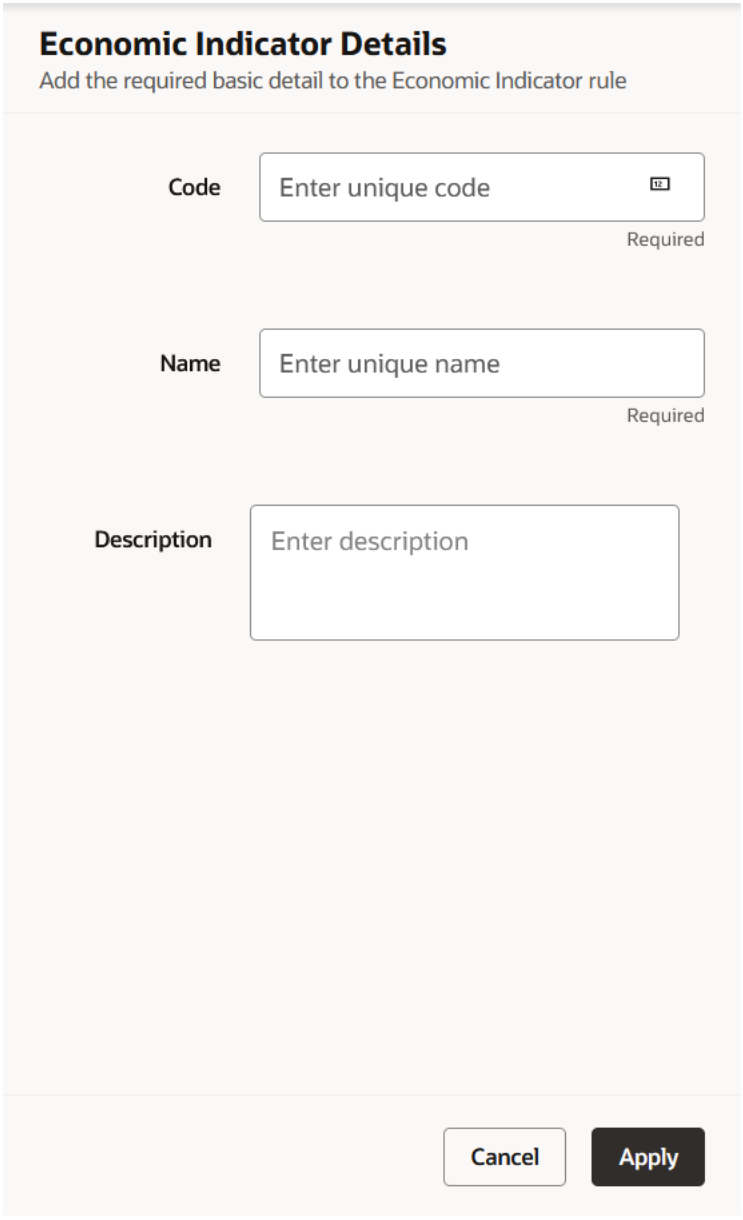
- Add an Economic Indicator

6.1.3.1 Add an Economic Indicator

To add an Economic Indicator, follow these steps:

1. Navigate to the **Economic Indicator Summary** Page.
2. Click **Add**.
   The **Economic Indicator** Page is displayed.

Figure 6-11 Economic Indicator Details Page



3. Enter the following information in the **Economic Indicator Details** section as tabulated.

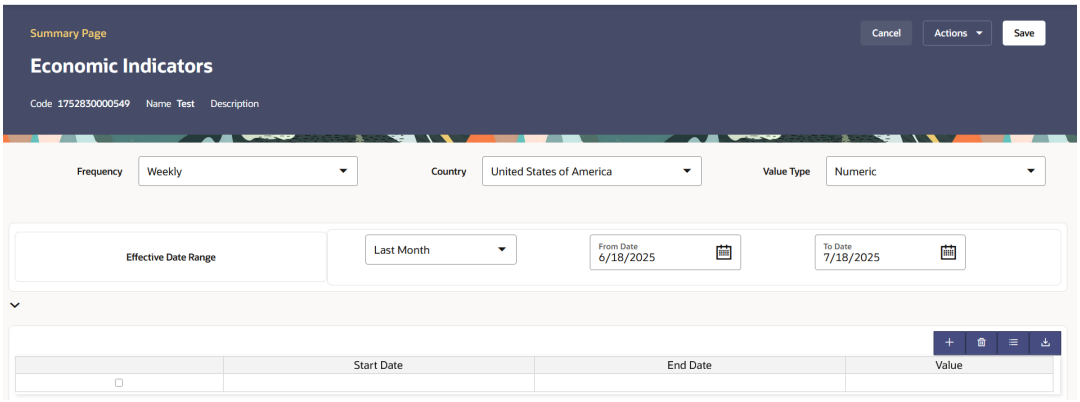
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Table 6-7 Economic Indicator Window – Fields and Descriptions

Fields	Description
Code	Enter the Code of Economic Indicator. You can click Generate Code Option in Code field to generate the code automatically.
Name	The name to your Economic Indicator is how you will subsequently refer to your rule within other the PBSM Services. You cannot rename existing Economic Indicators during Edit.
Description	Enter the Description of Economic Indicator. This field allows maximum 300 characters. Do not enter special characters ~, ‘, &, +, @.

4. To build out your Historical Data, enter data within the **Economic Indicators – Historical Data** section. The **Economic Indicators – Historical Data** Section displays a single blank row followed by the most recent period's data (if data has previously been stored in the database).

Figure 6-12 Economic Indicator window



5. Enter the following information:

Table 6-8 Economic Indicator window – Fields and Descriptions

Fields	Description
Country	Select a country to which your Economic Indicator applies from the Country drop-down list. The value set of Countries is drawn from the seeded Country dimension. PBSM is seeded with over 70 country values, and you can add user-defined countries.
Frequency	The frequency of your Economic Indicator must match the frequency which with the indicator's data is made public. Unemployment statistics, for example, are generally released on a monthly frequency. Select a frequency from the Frequency drop-down list. Available frequencies are Weekly, Monthly, Quarterly, Semi-Annually, and Annually.

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Table 6-8 (Cont.) Economic Indicator window – Fields and Descriptions

Fields	Description
Value Type	Select a Value Type from the Value Type drop-down list. Available Value Types are Numeric, Percentage, and Amount. Numeric 0-999999 Percentage -100 to +100 Amount 0-999999
Effective Date Range	Enter effective Start Date and End Date.
Start Date and End Date	Select the Calendar icon immediately adjacent to the Start Date to choose a starting date for your Economic Indicator data point. The application will automatically populate the End Date based on the Economic Indicator's frequency. For example, if your Economic Indicator is an unemployment statistic that has a monthly frequency, select an start date that is the first day of the month that the unemployment rate describes. In this example, the application will automatically populate the End Date with the last day of the month you have selected.
Value	Enter the value for your Economic Indicator (such as the unemployment rate).
Adding a Data Points	Click Add to add a blank row into which you can enter additional Economic Indicator Data.
Adding Multiple Data Points	Click Add to add multiple blank rows into which you can enter additional Economic Indicator Data.
Deleting Data Points	Select one or more check boxes on the left-hand side of any row to enable the Delete icon. After clicking Delete, a confirmation message is displayed to delete the selected rows.
Download Excel	Excel export functionality is used to download the Economic Indicator information in xlsx format. Click Download Excel Option. After downloading, you can modify the value and paste back in the displayed data grid. Note: The date format in the Excel File should be same as provided in Global Preferences. For more information, see the Global Preference Section.

6.1.4 Dimension Management

Dimension Management facilitates you to categorize data into a single object as a Member; define levels and aggregate data to form the Hierarchies, and distinguish each member by defining the required Attributes.

PBSMCS provides seeded as well as placeholder dimensions that can be activated. These dimensions can be further classified as Key dimensions and Simple dimensions. There are 7 seeded Key dimensions that may be called as Key Processing Dimensions such as, Legal Entity, Organization Unit, Common Chart of Accounts, Product, General Ledger Account, Financial Element and Transaction Type. There are a number of seeded Simple dimensions as well.

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The roles mapped to Dimension Management are as follows:

- Dimension Advanced
- Dimension Authorization
- Dimension Read Only
- Dimension Write
- Object Security
  Object Security helps to secure data and also to decide what each user can access. You can apply Object Security to various object definitions like Hierarchy definitions, Filters, Expressions and Migration definitions.
- Components of Dimension Management
- Attributes
  Attributes refers to the distinguished properties or qualifiers that describes a Dimension Member. Attributes are applicable to key dimensions only.
- Members
  Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object such as Product, Organization, Time, and so on. Members are available within Dimension Management section.
- Hierarchy
  Hierarchies refer to Dimension Members that are arranged in levels, with each level representing the aggregated total of the data from the level below. One dimension type can have multiple hierarchies associated with it. Hierarchies are available within the Dimension Management section.
- Viewing Data in a Summary Page
  A Summary page will contain a list of definitions associated with a specific Dimension Data, Filters, Batch or Schedules.

6.1.4.1 Object Security

Object Security helps to secure data and also to decide what each user can access. You can apply Object Security to various object definitions like Hierarchy definitions, Filters, Expressions and Migration definitions.

You can assign specific user roles and functions to user groups, to implement Object Security. To assign user roles and functions, Seeded User Groups and Seeded User Roles are mapped to the User Groups. If you are using the Seeded User Groups, the security to access objects depends on the associated User Groups.

Map your User Group to the folder in case of public or shared folder, for creating/editing/copying/removing an object in Dimension Management module. You should also be the owner of the folder in case of Private Folder. Additionally, the WRITE role should be mapped to your User Group.

To access the link and the Summary page, map your User Group to ACCESS role. You can view all objects created in Public Folders - Shared Folders to which you are mapped and Private Folders for which you are the owner.

6.1.4.2 Components of Dimension Management

You can create and manage the following Object Definitions using from Dimension Management:

- Members

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- Attributes
- Hierarchy

6.1.4.3 Attributes

Attributes refers to the distinguished properties or qualifiers that describes a Dimension Member. Attributes are applicable to key dimensions only.

- Attribute Summary Page
  The list of created attribute definitions are displayed in the Attribute Summary.
- Creating Attribute Definition
  To create a new Attribute for a dimension, complete the following steps:
- Managing Attribute Definitions
  You can view, edit, copy and delete the existing Attribute Definitions from the Summary Page.
- Dimensions and Associated Attributes
  Dimensions and the associated attributes.

6.1.4.3.1 Attribute Summary Page

The list of created attribute definitions are displayed in the Attribute Summary.

To view the **Attribute Summary** page, the **OFS_SRV_API** or **DIM_SUMM** role should be mapped to your User Group.

To access the attribute summary page :

1. From the left menu, click **Reference Data.**
2. Select **Dimension Management** and select **Attribute**, to access the The **Attribute Summary Page** .

   The Attribute Summary Page provides the list of attribute Definitions with the following details:

   - **Code** - The Numeric Code assigned to the Attribute Definition.
   - **Name** - The unique Attribute Definition Name.
   - **Data Type** - The Data Type associated with the attribute. The Data Type is set to Date, Dimension, Number or String.
   - **Required** - Select **Yes** or **No** to make this attribute a mandatory value for the associated dimension.
   - **Seeded** - Select **Yes**, if the attribute is seeded by the service or **No** if the attribute is created by the user.
   - **Action** - Click to view, edit, copy or delete an attribute definition. You can also access the list of objects dependent on this definition.

   To filter the summary based on specific search criteria, select and add the required search criteria to the **Search** field and enter/select the specific values.

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> **Note**
>
> **Dimension** is a default and mandatory search filter. Select the dimension to access the member definitions available in that dimension. By default the first dimension from the **Dimensions** list is added as the search entry.

- Navigating Attribute Summary Page

6.1.4.3.1.1 Navigating Attribute Summary Page

To access records in a Summary page, you can search, sort and navigate to multiple pages.

6.1.4.3.2 Creating Attribute Definition

To create a new Attribute for a dimension, complete the following steps:

1. Click the **Add** in the Attribute Summary Page.

   The **Add Attribute Definition** Page is displayed.

2. Enter the following **Attribute Details** :
   - **Dimension** - Select the Dimension for which the new Attribute is getting created.
   - **Numeric Code** - The Numeric Code to be assigned to the new Attribute Definition. You can enter any number between 0 and 999,999,999, or click **Generate Code**, to auto-generate a unique code. If you enter the value manually, the system will verify if the value is unique and assigns it.
   - **Name** - The unique Attribute Definition Name. You can enter up to 100 characters. All characters are allowed except " & ' and " ' ".
   - **Alphanumeric Field Value** - The name of physical column name that will be used to store attribute value in the Report Dimension Table. You can enter up to 100 characters. We recommend using only Underscore (“_”) as a special character.
   - **Description** - A brief description about the Attribute Definition. You can enter up to 1000 characters. All characters are allowed except " & ' + @ and ~.
3. Enter the following **Attribute Properties** :
   - **Data Type** - Set the Data Type as Date, Dimension, Number, or String from the drop-down list.

     > **Note**
     >
     > If the data type is **Number**, enter a Scale value >= 0. If it equal to 0, only Integers are enabled. To enable decimal entries, the maximum Scale Value must be > 0 and <= the scale defined for NUMBER in the dimension's underlying attribute table. The maximum value of the NUMBER is set to 22.

   - **Dimension** - (Enabled only for Dimension data type.) Select the Dimension to be associated with the new Attribute Definition.
   - **Default Value** - The default value is set based on the selected data type. The Maximum characters allowed in Default Value field for String Data Type is 1000. The default value is mandatory if this attribute is set as a required attribute.

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Table 6-9 Data Type and Default Values

Data Type	Default Value
Dimension	Select the Default Value from the drop-down list of members mapped to the selected Dimension
Number	Enter a Numeric Value based on the define Scale.
Date	Set a valid date.
String	Enter the Alphanumeric Value

- **Required Attribute** - Select **Yes**, if this attribute is mandatory for the associated dimension members. To set it as an optional attribute, select **No**.
- **Seeded Value** - Select **Yes**, only when the attribute is seeded out of box by the Cloud Service. For a new attribute, select **No**.

4. After entering the required information, click **Save**, to create a new attribute.

6.1.4.3.3 Managing Attribute Definitions

You can view, edit, copy and delete the existing Attribute Definitions from the Summary Page.

In the Attribute Summary Page, highlight a specific Attribute Definition and click the **Action**. The following Options are displayed.

- **View**- View the **Attribute Details** for a specific attribute definition.
- **Edit**- Edit the **Attribute Details** for a specific attribute definition.
- **Copy**- Copy the definition details and create another attribute Definition by changing the Alphanumeric Code, Numeric Code and Name.
- **Delete**- Delete the Attribute definition.
- **Check Dependency** - View the list of objects dependent on this definition.

Field	Description
View	View the **details** for a selected Attribute.
Edit	Edit theselected Attribute.
Copy	Copy the Attribute Definition Details and create another Attribute Definition by changing the unique values like Alphanumeric Field Value, Numeric Code and Name.
Delete	Delete the selected Attribute.

- Viewing Attribute Definition
  You can view individual Attribute Definition Details at any given point. The Read Only role should be mapped to your User Group.
- Modifying Attribute Definition
  Modify the Name, Description, or Default Value fields of an Attribute Definition. The Write role should be mapped to your User Group.
- Copying Attribute Definition
  The Copy Attribute Definition facilitates you to quickly create a new Attribute Definition based on the existing attributes or by updating the values of the required attributes.
- Deleting Attribute Definition
  You can remove the Attribute Definitions which are not required in the system by deleting from the Attributes Summary.

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6.1.4.3.3.1 Viewing Attribute Definition

You can view individual Attribute Definition Details at any given point. The Read Only role should be mapped to your User Group.

To view the existing Attribute Definition details in the Attribute page:

1. Highlight the Attribute Definition and click **Action**.
2. Click **View** .

   The **Attribute Definition** Page is displayed with the details Code, Name, Data Type, Required and Seeded status.

6.1.4.3.3.2 Modifying Attribute Definition

Modify the Name, Description, or Default Value fields of an Attribute Definition. The Write role should be mapped to your User Group.

To modify an existing Attribute Definition in the Attributes summary:

1. Highlight the Attribute Definition and click **Action**.
2. Click **Edit**, to access the Attribute Definition page.

   Edit the required information and click **Save**.
   You can view the updates in the Attributes summary.

6.1.4.3.3.3 Copying Attribute Definition

The Copy Attribute Definition facilitates you to quickly create a new Attribute Definition based on the existing attributes or by updating the values of the required attributes.

To copy an existing Attribute Definition, the Write role should be mapped to your User Group.

Refer to the following steps, to copy an Attribute Definition.

1. Highlight the Attribute Definition and click **Action**.
2. Click **Copy**.

   The Attribute Definition page is displayed with the details: Code, Name, Data Type, Required and Seeded status.

   Edit the unique information such as Name, Alphanumeric Field Value, Numeric Code and click **Save**.

6.1.4.3.3.4 Deleting Attribute Definition

You can remove the Attribute Definitions which are not required in the system by deleting from the Attributes Summary.

To delete an attribute definition, the Write role should be mapped to your User Group.

1. Highlight the Attribute Definition and click the **Menu** button.
2. Click the **Delete** button.

   The Attribute Definition is deleted after confirmation.

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> **Note**
>
> You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

6.1.4.3.4 Dimensions and Associated Attributes

Dimensions and the associated attributes.

The following tables lists the seeded attributes with the details, associated with each dimension.

Table 6-10 Dimensions and Associated Seeded Attributes

Attribute Name	Data Type	Mandatory
Dimension - **Common Chart of Accounts**		
Account Type	Dimension	Yes
Accrual Basis	Dimension	No
Rollup Signage	Dimension	Yes
Dimension - **Financial Element**		
Weighting Financial Element	Dimension	No
Account Type	Dimension	Yes
Column Property	Dimension	Yes
Rollup Signage	Dimension	Yes
Dimension - **General Ledger Account**		
Accrual Basis	Dimension	No
Common Chart of Accounts	Dimension	Yes
Rollup Signage	Dimension	Yes
Account Type	Dimension	Yes
Reconciliation Product	Dimension	Yes
Dimension - **Legal Entity**		
Rate Data Source	Dimension	Yes
Group Company Party	String	Yes
Dimension - **Organizational Unit**		
Offset Organizational Unit	Dimension	No
Dimension - **Product**		
Accrual Basis	Dimension	No
Common Chart of Accounts	Dimension	Yes
Rollup Signage	Dimension	Yes
Account Type	Dimension	Yes
Amenability Rate	Dimension	Yes
Interest Rate Sensitivity	Dimension	Yes
Product Time Value	Number	Yes

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6.1.4.4 Members

Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object such as Product, Organization, Time, and so on. Members are available within Dimension Management section.

- Member Summary Page
  The list of created member definitions are displayed in the Member Summary.
- Creating Member Definitions
  You can add new Member Definitions from the Member Summary page.
- Managing Member Definitions
  You can View, Edit, Copy, and Delete the existing Member Definitions from the Member Summary page.

6.1.4.4.1 Member Summary Page

The list of created member definitions are displayed in the Member Summary.

To view the **Member Summary** page, the **OFS_SRV_API** or **DIM_SUMM** role should be mapped to your User Group.

To access the member summary page:

1. From the left menu, click **Reference Data**.
2. Select **Dimension Management** and select **Members**.

   The **Member Summary page** containing the following details is displayed.

   - **Alphanumeric Code**- The alphanumeric code assigned to a member.
   - **Numeric Code**- The numeric code assigned to a member.
   - **Name**- The unique member name.
   - **Is Leaf**- The leaf node status of the member definition.
     - **Yes**- The member is set as a leaf node in any hierarchy and Child cannot be added to this node.
     - **No**- The member is a not a leaf and can have child nodes.
   - **Enabled** - The status of the member definition (Yes/No).
   - **Action**- Click to view, edit, copy or delete a member definition. You can also access the list of objects dependent on this definition.

   To filter the summary based on specific search criteria, select and add the required search criteria to the **Search** field and enter/select the specific values. Use **More Filters** to add additional search criteria.

> **Note**
>
> **Dimension** is a default and mandatory search filter. Select the dimension to access the member definitions available in that dimension. By default the first dimension from the **Dimensions** list is added as the search entry.

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6.1.4.4.2 Creating Member Definitions

You can add new Member Definitions from the Member Summary page.

To create a member definition :

1. To create a member definition, click the **Add** in the **Member Summary** page, to access the **Member Details** page.
2. Enter the following **Member Details** :
   - **Dimension**- Select the dimension to be associated with the new Member.
   - **Numeric Code**- The numeric code to be assigned to the new member definition. You can enter the value between 0 and 999,999,999 manually or click **Generate Code**, to auto-generate a unique code.
     If you enter the value manually, it is assigned after validation.
   - **Alphanumeric Field Value**- The alphanumeric Code to be assigned to the new Member Definition.
     You can enter up to 100 characters and enter only Underscore (“_”) as a special character.
   - **Name**- The unique member definition name.
     You can enter up to 100 characters. All characters are allowed except " & ' and " ' ".
   - **Description**- A brief description about the member definition.
     You can enter up to 1000 characters. All characters are allowed except " & ' and " ' ".
   - **Is Leaf**- Check this option if the member is a leaf of another member. By default, it is set to **Yes**.
     - **Yes**- The member can be used as a leaf node in any hierarchy and child cannot be added to this node.
     - **No**-The member is not set as a leaf and can have child nodes.

     > **Note**
     >
     > If a member is set as a non-leaf and is associated with child nodes, it cannot be set as a leaf again.

   - **Enabled**- This field is set to **Yes** by default. You can modify the **Enabled** status, after creating the member. To edit a member, refer Editing Member Definition Details.

     > **Note**
     >
     > You can change the option to **No** only when the particular member is not used in any hierarchy. The disabled members will not be displayed in Hierarchy Rules, or utilities which are based on Hierarchies, such as Hierarchy Filters and Hierarchical Assumption Browsers used in applications.

3. (Optional). Click **Copy**, to attach an existing attribute to this new member definition.

   You can also set the attribute values for a new member definition, manually. Enter/select the attribute values in the **Member Attributes** pane. All the attributes associated with the selected dimension are displayed in the Member Attributes pane.
4. Locate the Attribute to be copied and click **Move** and select **Copy**, located under **Actions**.

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5. Click **Save**, to create the new Member definition and view it the Member Summary.

   Click **Actions** and select **Edit Member Details** to edit the member details or select **Save and Add New**, to create the new member definition and proceed with adding another definition.

6.1.4.4.3 Managing Member Definitions

You can View, Edit, Copy, and Delete the existing Member Definitions from the Member Summary page.

In the members summary page, highlight a specific Member Definition and click the **Action**. The following Options are displayed:

- **View**- View the **Member Details** for a specific Member Definition.
- **Edit**- Edit the **Member Details** for a specific Member Definition.
- **Copy**- Copy the Member Definition Details and create another Member Definition by changing Alphanumeric Code, Numeric Code and Name.
- **Delete**- Delete the member definition.
- **Check Dependency** - View the list of objects dependent on this definition.
- Viewing Member Definition Details
  You can view the details of an individual Member Definition, from Member Summary page.
- Editing Member Definition Details
  To edit the existing Member Definition details, the Write role should be mapped to your User Group.
- Copying Member Definition Details
  To copy the Member Definition Details, the Write role should be mapped to your User Group.
- Deleting Member Definition Details
  To delete a Member Definition, the Write role should be mapped to your User Group.

6.1.4.4.3.1 Viewing Member Definition Details

You can view the details of an individual Member Definition, from Member Summary page.

To view a Member Definition, the Read Only Role should be mapped to your User Group.

You can view the details of an individual Member Definition, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **View** button.

   The Member Definition page is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

6.1.4.4.3.2 Editing Member Definition Details

To edit the existing Member Definition details, the Write role should be mapped to your User Group.

You can edit individual Member Definition Details, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Edit** button.

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The Member Definition page is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

Edit the required information and click **Save**.

6.1.4.4.3.3 Copying Member Definition Details

To copy the Member Definition Details, the Write role should be mapped to your User Group.

You can copy individual Member Definition Details, to recreate another new Member Definition, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Copy** button.

   The **Member Definition Page** is displayed with the details Dimension, Alphanumeric Code, Numeric Code, Name, Is Leaf and Enabled status.

   Edit the unique information such as Name, Alphanumeric Code, Numeric Code and click **Save**.

6.1.4.4.3.4 Deleting Member Definition Details

To delete a Member Definition, the Write role should be mapped to your User Group.

You can delete individual Member Definition Details, using the following procedure:

1. Highlight the Member Definition and click the **Action**.
2. Click the **Delete** button.

   The Member Definition is deleted after confirmation.

6.1.4.5 Hierarchy

Hierarchies refer to Dimension Members that are arranged in levels, with each level representing the aggregated total of the data from the level below. One dimension type can have multiple hierarchies associated with it. Hierarchies are available within the Dimension Management section.

> **Note**
>
> The maximum number of levels supported in a dimension hierarchy is 30.

A Default Hierarchy definition is required to support BI Users to perform multidimensional analysis, in the BI reporting. The hierarchy name of a default hierarchy definitions are suffixed with the term **System Hierarchy**. You can only view the details of the default hierarchy, from the Hierarchy Summary page. All orphan members under their corresponding default hierarchy, are automatically updated, when they are added/deleted to/from the system.

- Hierarchy Summary Page
  The list of existing hierarchy definitions is displayed in the Hierarchy Summary page.
- Creating Hierarchy Definitions
  To create a Hierarchy Definition in the Hierarchy Summary page, complete the following steps:

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- Managing Hierarchy Definitions
  You can View, Edit, Copy, and Delete the existing Hierarchy Definitions from the Hierarchy Summary page.

6.1.4.5.1 Hierarchy Summary Page

The list of existing hierarchy definitions is displayed in the Hierarchy Summary page.

To view the **Hierarchy Summary** page, the **OFS_SRV_API** or **DIM_SUMM** role should be mapped to your User Group.

To access the hierarchies summary page:

1. From the left menu, click **Reference Data**.
2. Click **Dimension Management** and select **Hierarchies**, to access the Hierarchies Summary page containing a list of existing hierarchies with the following details:
   - **Name** - The unique Hierarchy Name.

     > **Note**
     >
     > The name of a default hierarchy is always suffixed with the term **System Hierarchy**.

   - **Folder** - Folder in which the hierarchy is stored.
   - **Dimension** - Dimension associated with the hierarchy.
   - **Tags** - Labels to simplify the data search and locate the required details.
   - **Action** - Click to view, edit, copy or delete a hierarchy definition. You can also access the list of objects dependent on this definition.

- Navigating Hierarchy Summary Page

6.1.4.5.1.1 Navigating Hierarchy Summary Page

To access records in a Summary page, you can search, sort and navigate to multiple pages.

6.1.4.5.2 Creating Hierarchy Definitions

To create a Hierarchy Definition in the Hierarchy Summary page, complete the following steps:

1. Click **Add** in the **Hierarchy Summary** page. The **Hierarchy Details** page is displayed.
2. Enter the **Hierarchy Details** as described in the following table:

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Table 6-11 Field Description

Field	Description
Name	The unique Hierarchy Definition Name. **Note** You can enter up to 100 characters. All characters are allowed except " & ' and " ' ".
Description	A brief description about the Hierarchy Definition. **Note** You can enter up to 1000 characters. All characters are allowed except " & ' + @ and ~.
Folder	Select the Folder in which the Hierarchy is to be stored.
Dimensions	Select the Dimension to be associated with the new Hierarchy Definition.
Click **Apply**.	
Hierarchy View	The Members associated with the selected Dimension are displayed. You can sort this list in Ascending/Descending order, expand or collapse the list to view in details and search for a specific Member. You can focus on a Member to view the Member Properties. You can add a Child or add a Sibling to an existing Member in the data grid.
Search View	The search results based on the specific keyword entered to search a Member is populated.

Table 6-12 Viewing interactive options for a Member

Icon	Description
Mouse-over a Member to see the following options. Select the required option to take action such as adding a child, deleting a node, paste as child, paste as sibling	
Figure 6-13 Add child, sibling, and leaf 	Add a child, sibling and/or leaf.

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Table 6-12 (Cont.) Viewing interactive options for a Member

Icon	Description
Figure 6-14 Create and add 	Create and a child, sibling and/or leaf to the Member.
Figure 6-15 Delete/undo delete 	Delete a node or undo deletion.
Figure 6-16 Cut and paste child/ siblings 	Move child/siblings up or down as required.

To Add a Child to the Hierarchy:

a. In the **Hierarchy View** tab, mouse-over the hierarchy to which you want to add a child and click the **Add child, sibling and leaf** icon.

b. Select **Add Child** option. The **Add Members** page is displayed.

c. Select the required Member and click **Move Right**, to move the Member to the Selected Members panel. To select multiple members, press CTRL and select the members.
The selected members are added to the **Selected Members** pane.

- Click **Move All Right** to move all members listed in the Available Members pane, to the Selected Members pane. Click **Fetch from DB** to select all nodes/ members in the server.
- Select a member and click **Move Left** to deselect a Member. To remove multiple members, press CTRL and select the members.
- To remove all the members from the **Selected Members** pane, click **Move All Left**.
- You can click **Search** button for the required member using Alphanumeric Code, Numeric Code, Name, Description, Attribute Name, or Attribute Value. Enter the search criteria and Click **Search**, in the Search Panel.
- You can also click **Search** button to toggle the display of Numeric Code left, right, or name and click button to display Alphanumeric Code left, right, or name.

d. Click **Add**. The selected member is displayed as child under data grid panel in the **Hierarchy View** tab.

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3. **To add a Sibling to the Child in the Hierarchy Definition:**
   a. Mouse-over the child to which you want to add a sibling and click the **Add child, sibling and leaf** icon.).
   b. Select the option **Add Sibling**.
   The **Add Sibling** Page is displayed.
   c. Select the required Members and **Move Right**, to move the Member to the Selected Members panel.
   The Member is displayed in the **Selected Members** panel.
   d. Click **Add**. The selected Member is added as **Sibling** below the **Parent** under data grid Panel in the **Hierarchy View** tab.
4. **To add a Leaf under a Parent/Child or Sibling**:
   a. Mouse-over the Parent or Child and click the **Add child, sibling and leaf** icon.
   b. Select **Add Leaf**.
   The Add Member Page is displayed.
   c. Select the required Members and click **Move Right**, to move the Member to the Selected Members panel.
   The Member is displayed in the **Selected Members** panel.
   d. Click **Add**. The selected Member is displayed as Leaf below the Parent or Sibling under **Show Hierarchy** Panel in the **Hierarchy View** tab.
5. **To cut and paste Child or Sibling:**
   a. Right-click on any node and select **Cut**.
   b. Right-click on any node and **Paste as Child** or **Paste as Sibling**.
6. **To Delete/Undelete**
   a. Right-click on the node to be deleted and select **Delete Node**.
   The node deleted is struck out.
   b. Right-click and select **UnDelete** to cancel deletion of the node.
7. To view the Member Properties and Member Attributes of a node in the **Hierarchy View** Panel:
   a. Click on a Member.
   The properties such as Alphanumeric Code, Numeric Code, Name, Description, Enabled, Is Leaf, Created By, Creation Date, Last Modified By, Last Modification Date, Attribute, and Value of the selected Member are displayed in the Member Properties and Member Attributes Grids.

   In the Hierarchies page you can also:

   - Click **Collapse** or Expand, to collapse or expand a branch .
   - Click **Focus** or **Unfocus**, to focus or unfocus a selected node except the Root Node.
   - Click **Sort** to sort the list in ascending or descending order.
8. Click **Save**.
   The new Hierarchy Definition is created successfully.

- Audit Info

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6.1.4.5.2.1 Audit Info

The Audit Info section provides details such as Created By and Modified By Users, Creation and Modification Date, and Authorized By user Details. You can add additional information as comments and tags. Tags are labels that help to simplify the data search and locate the required details.

6.1.4.5.3 Managing Hierarchy Definitions

You can View, Edit, Copy, and Delete the existing Hierarchy Definitions from the Hierarchy Summary page.

In the Hierarchy Summary page, highlight a specific Hierarchy Definition and click **Action**. The following options are displayed:

- **View** - View the hierarchy details for a specific definition.
- **Edit** - Edit the hierarchy details for a specific definition.
- **Copy** - Copy the hierarchy details and create another definition by changing the unique values like name, description and so on.
- **Delete** - Delete the hierarchy definition.
- **Check Dependency** - View the list of objects dependent on this definition.
- Viewing Hierarchy Definition Details
  You can view the details of an individual Hierarchy Definition, using the following procedure:
- Editing Hierarchy Definition Details
  You can edit individual Hierarchy Definition Details at any given point.
- Copying Hierarchy Definition Details
  You can copy individual Hierarchy Definition Details, to recreate another new Member Definition. To copy the Member Definition Details:
- Deleting Hierarchy Definition Details
  To delete a Hierarchy Definition:

6.1.4.5.3.1 Viewing Hierarchy Definition Details

You can view the details of an individual Hierarchy Definition, using the following procedure:

1. Highlight the Hierarchy Definition and click **Action (three dots)**.
2. Click **View**.

   The Hierarchy Definition page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

6.1.4.5.3.2 Editing Hierarchy Definition Details

You can edit individual Hierarchy Definition Details at any given point.

To edit the existing Hierarchy Definition Details:

1. Highlight the Hierarchy Definition and click the **Action (three dots)**.
2. Click **Edit**.

   The Hierarchy Definition Page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

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Edit the required information and click **Save**.

6.1.4.5.3.3 Copying Hierarchy Definition Details

You can copy individual Hierarchy Definition Details, to recreate another new Member Definition. To copy the Member Definition Details:

1. Highlight the Hierarchy Definition and click **Action**.
2. Click **Copy**.

   The Hierarchy Definition page is displayed with the details Name, Description, Folder, Dimension, Start Date and Hierarchy View details.

   Edit the unique information such as Name, Description, Folder, Dimension, Start Date and Hierarchy View details and click **Save**.

6.1.4.5.3.4 Deleting Hierarchy Definition Details

To delete a Hierarchy Definition:

1. Highlight the Hierarchy Definition and click **Action**.
2. Click **Delete**.

   The Hierarchy Definition is deleted after confirmation.

> **Note**
>
> You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

6.1.4.6 Viewing Data in a Summary Page

A Summary page will contain a list of definitions associated with a specific Dimension Data, Filters, Batch or Schedules.

You can search, filter and customize the view to access the required data faster.

- Searching Summary
  Search for a specific Definition based on the following criteria. Select/Enter one or more unique values/tag or Leaf and Enabled status associated with the definition and click **Search**.
- Sorting a Summary Page
  Sort the list of definitions, to view a specific definition, in a definition Summary .
- Setting Number of Records per Page
  Customize the number of records per page, to access the required record easily.

6.1.4.6.1 Searching Summary

Search for a specific Definition based on the following criteria. Select/Enter one or more unique values/tag or Leaf and Enabled status associated with the definition and click **Search**.

6.1.4.6.2 Sorting a Summary Page

Sort the list of definitions, to view a specific definition, in a definition Summary .

To sort the various Definitions list:

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- **Sort By**: Group the based on the following fields:
  - **Member Summary** - Dimension, Name, Alphanumeric Code, Numeric Code, Enabled and Is Leaf Status, Attribute Name (if the selected Dimension has Dimension Type Attribute) and Attribute Value.
  - **Attribute Summary** - Branch, Name, Code and Data Type.
  - **Hierarchy Summary** - Dimension, Name, Tag and Folders.
  - **Filter Summary** - Name, Folder and Filter Type.
- **Sort Order**: Sort the Complete list in Ascending/Descending order.

6.1.4.6.3 Setting Number of Records per Page

Customize the number of records per page, to access the required record easily.

At the bottom of the page, you can enter the number of entries that are available on a single page in the **Records** box. By default, this value is set to 8. You can increase or decrease the number of entries that are displayed using the up and down arrows.

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

To navigate between pages:

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

6.2 Common Rules

This section covers the following topics:

1. Preferences: This section covers the procedures to set the Global Preference Settings and User Preference Settings.
2. Behavior Patterns: User Defined Behavior Patterns allow you to define Principal Amortization Schedules for Non-Maturity Products in your portfolio.
3. 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.
4. Payment Patterns: User defined payment patterns allow you to define custom repayment patterns for products in your portfolio.
5. Holiday Calendar: A Holiday is a day designated as having special significance for which individuals, a government, or some religious groups have deemed that observance is warranted and thus no business is carried on this day.
6. Management Ledger Configuration: This section covers the procedure to define the Functional Currency and the Fiscal Year Start Month for each registered Management Ledger Table.
7. Filters: Filters allow you to select data using the defined expressions.

- Setup Preferences

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- Patterns
- Holiday Calendars
- Management Ledger Configuration
  This screen enables you to define the Functional Currency and the Fiscal Year Start Month for each registered Management Ledger Table.
- Ledger Load History
  Ledger Load History allows you to review the Runtime History of a Management ledger Load. You may see the order in which Ledger Loads are executed, and you may select any Ledger Load row and Undo the Ledger Load.
- Filters
  Filters allow you to view and select data using the defined expressions.

6.2.1 Setup Preferences

This section discusses the procedure to define and maintain the CFE Application, User, and Global Preference Settings.

Topics:

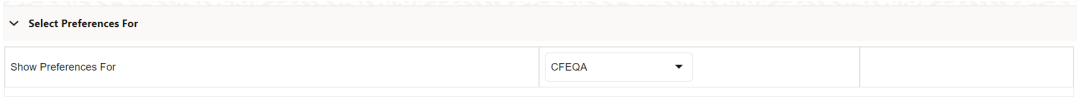
- Select Preference For
- Configure Global Preference
- Configure Application Preference
- Configure User Preference
- Select Preferences For
- Global Preference
- Application Preference
- User Preference

6.2.1.1 Select Preferences For

To setup the Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.

Figure 6-17 Select Preferences For Section



2. Select the user from **Show Preferences For** drop-down list. This has following options:
   - **All User:** If you have Administrator Privileges, you can define preferences for the All User Group and their individual account, which may be the same or different from the All User settings. The Administrator can also designate the All User preferences as Editable or Non-editable on a row by row basis. If the individual preference is selected as is Editable, then End Users can update or override the Administrator's default value for their own individual account. If the Is Editable box is deselected, then End Users cannot change the default for their individual account.

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- **End-User:** If you do not have Administrator Privileges, then certain preference items are pre-set by the Administrator, and you may not be allowed to change the value. All Application Preference Settings are displayed, regardless of the access privilege.

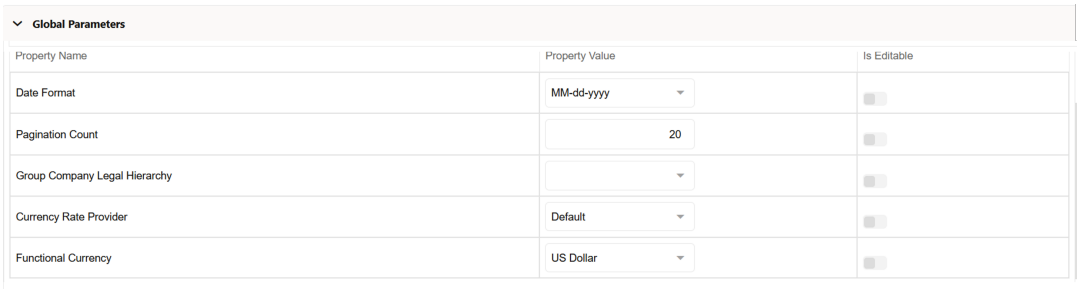
6.2.1.2 Global Preference

Global Preferences options are used to configure your User Interface (UI).

To update the Global Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.
2. Select **Global Parameters**.

Figure 6-18 Global Preference



3. Enter following values as described in Table:

Fields	Description
Date Format	Select one value from Date Format list. dd-MMM-yy yyyy/MM/dd MM/dd/yyyy dd.MM.yyyy MM-dd-yyyy yyyy.MM.dd yyyy/MMM/dd dd-MMM-yyyy dd/MMM/yyyy yyyy.MMM.dd dd/MM/yyyy MM.dd.yyyy dd-MM-yyyy yyyy-MM-dd dd.MMM.yyyy yyyy-MMM-dd
Pagination Count	Pagination Records determine how many rows are displayed on summary and other screens. If you select Pagination Records to be 25 records, then any screen displaying results in a tabular format displays a maximum of 25 records.

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Fields	Description
Group Company Legal Hierarchy	This displays list of Legal Entity Hierarchies that have been configured in Dimension Management. Select one hierarchy that must be used to identify internal (part of same financial group) customers of the institutions.
Currency Rate Provider	This displays list of providers of Currency Exchange Rate. Value “Default” is seeded and selected as default. If you load exchange rates from more than one source like Reuters and Bloomberg, then select one which you want the engine to use during processing. Members of Dimension Rate Data Source are displayed in the drop-down list.
Functional Currency	A common functional currency is required which can be set here. This is required to consolidate the accounts' balances or charges at multiple hierarchy levels. In Cash Flow Engine, this is used in Ledger Reconciliation module.

4. **Is Editable status** cannot be turned on since individual users are not expected to modify these parameters.
5. Click **Save** to confirm the changes.

Reset to Default option enables the factory settings to default.

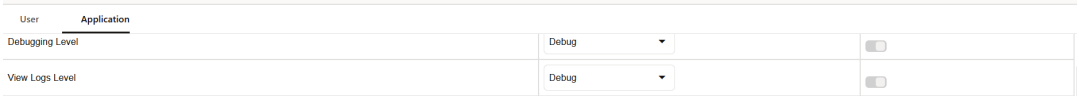
6.2.1.3 Application Preference

Application Preferences UI allow Administrators and End Users to establish default values, manage other Core Application Parameters that affect the way Business Rules are created and the way Cash Flow Processes are run.

To update the Cash Flow Engine Application Preferences, follow these steps:

1. Navigate to **Maintenance** and select **Preferences**.
2. Click **Application** tab.

Figure 6-19 Processing - Cash Flow General section of Application Preference

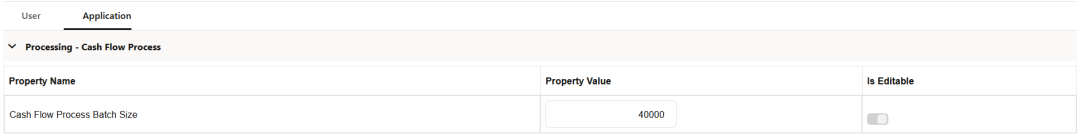


3. Enter the following values in Application tab as described in Table:

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Fields	Description
Debugging Level	The debugging output level determines the amount of SQL that will be written to the processing log. There are eight levels available: a. **Trace:** Designates finer-grained informational events than the DEBUG. b. **Error:** Designates error events that might still allow the application to continue running. c. **Information:** Designates informational messages that highlight the progress of the application at coarse-grained level. d. **Debug:** Designates fine-grained informational events that are most useful to debug an application. e. **Fatal:** Designates very severe error events that will presumably lead the application to abort. f. **Warning:** Designates informational messages that highlight the progress of the application at coarse-grained level. **Note** A log request of level p in a logger with level q is enabled if p >= q. This rule is at the heart of log4j. It assumes that levels are ordered.
View Logs Level	This shows the severity of the information telling you how important a given log message is. This shows the View level of the Log. There are three levels available: a. **Information:** Designates informational messages that highlight the progress of the application at coarse-grained level. b. **Debug:** Designates fine-grained informational events that are most useful to debug an application.

Figure 6-20 Processing - Cash Flow Process section of Application Preference



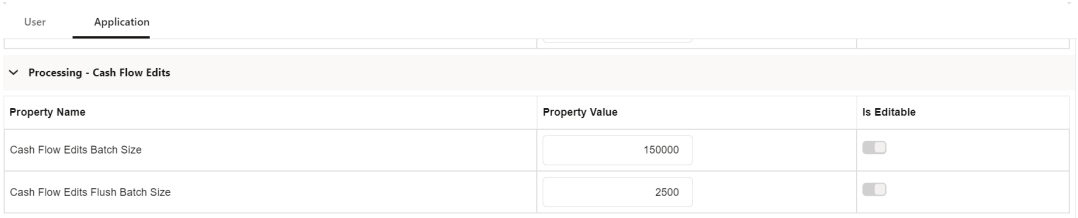
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Fields	Description
Cash Flow Process Batch Size	Number of Account or Instruments that must be processed in a single batch. This is used by Cash Flow Engine for performance tuning. The default value of this parameter will be automatically set based on the tenant environment capacity and you can modify if needed.

> **Note**
>
> Below example shows that how below parameter gets used taking 100k records.
>
> The given "Cash Flow Process Batch Size" values are based on single process execution at a time.
>
> Cash Flow Process Batch Size = Below Cash Flow Process Batch Size/## **no of parallel executions** ##

T-shirt Size	P	Nano	Micro	XXS	XS	S	M	L	XL	XXL
CFECS - Cash Flow Process										
Cash Flow Process Batch Size	100000	100000	200000	200000	300000	400000	400000	400000	400000	400000

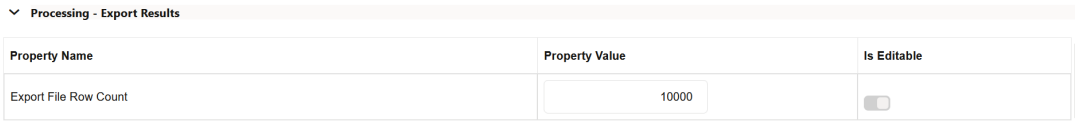
Figure 6-21 Processing - Cash Flow Edits section of Application Preference



Fields	Description
Cash Flow Edits Batch Size	Number of Account or Instruments that must be processed in a single batch. This is used by Cash Flow Edits Engine for performance tuning. Default Value of 150000 is seeded by the service, and you can modify it as needed
Cash Flow Edits Flush Batch Size	Number of records that gets saved or updated in a batch during Cash Flow Process execution. This is used by Cash Flow Engine for performance tuning. Default Value of 2500 is seeded by the service, and you can modify it as needed

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Figure 6-22 Processing - Export Results section of Application Preference



Fields	Description
Export File Row Count	Number of records to be included in one file when cash flow output is exported from database to Object Storage. You must enter value greater than zero Default Value of 10000 is seeded by the service, and you can modify it as needed

4. **Turn-on** the Is Editable status.
5. Click **Save** to confirm the changes.

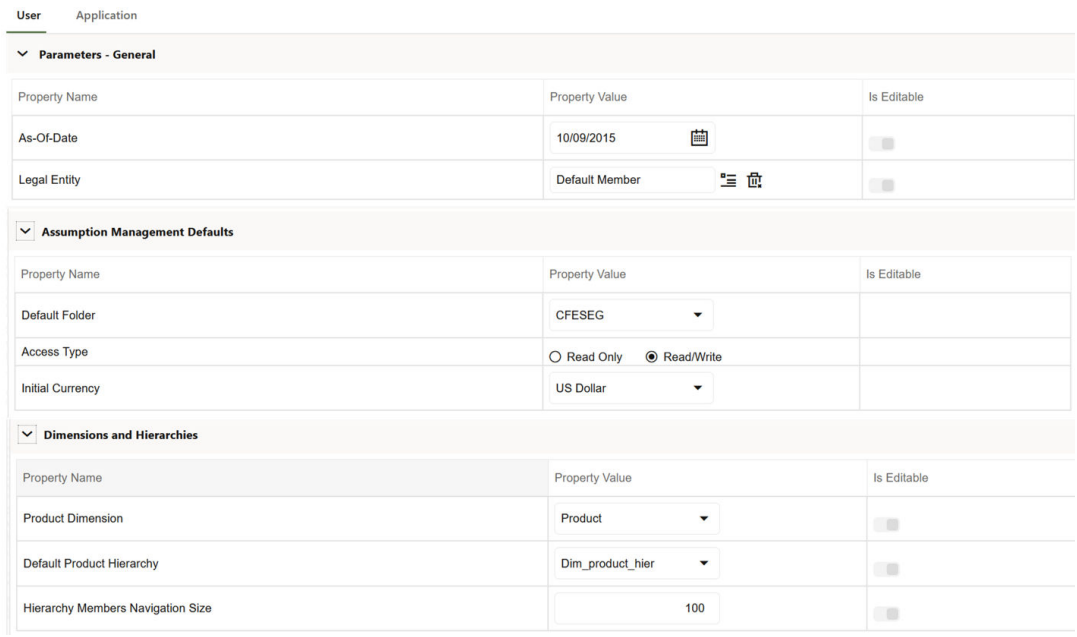
6.2.1.4 User Preference

User Preferences items are used to configure the User Settings.

To update the Cash Flow Engine User Preferences, follow these steps:

1. Navigate to the **Maintenance** and select **Preferences**.
2. Click **User** tab.

Figure 6-23 User Preference Section



3. Enter following values in as described in Table.

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Fields	Description
Parameters – General	
As of Date	All processes reference this date at Runtime to determine the data to include in the process. The As-of-Date value you set in Application Preferences applies to interactive job execution (that is, when you choose to execute a rule directly from a Summary window). For batch processing, the As-of-Date is derived from the Information Date. As of Date is also referenced by some assumptions UI's to display relevant information therein.
Legal Entity	Similar to As-of-Date, all processes reference Legal Entity at Runtime to determine the data to include in the process. The value of the Legal Entity you set in Application Preferences applies to interactive job execution (that is, when you choose to execute a process directly from a Summary Window) and Batch Processing. NOTE: Legal Entity is designed to support implementations that require multi-entity or multi-tenant functionality. If your implementation does not require this functionality, you may utilize the Default Legal Entity in all your processes. Default implies -1 code. The default value for the Legal Entity Dimension Column in the instrument data is -1
Assumption Management Defaults	
Default Folder	This parameter allows you to define the default folder selection. The folder selection for all rule types is defaulted to this selection within the summary page search window and when creating a new rule. This selection acts as the starting value for convenience only and users can change to any other available value at their discretion.
Access Type	This parameter allows you to set the default access type. Selections include Read / Write and Read Only. This selection acts as the starting value for convenience only and users can change at their discretion.
Initial Currency	This parameter allows you to select the starting currency to be displayed within all Business Rules. This selection is made for convenience and can be changed within all business rules at the users' discretion.
Dimensions and Hierarchies	
Product Dimension	Oracle CFE requires users to declare one of the "Product Type" dimensions as the CFE Product Dimension. The model is seeded with the possible selections as follows: • Product • Common Chart of Accounts • General Ledger Account

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Fields	Description
Default Product Hierarchy	The list of values for Default Product Hierarchy is based on the Default Product Dimension Selection. The hierarchy selected here is a default hierarchy selection in all business rules that support node-level assumptions. This selection acts as the starting value for convenience only and users can change at their discretion within each business rule.
Hierarchy Members Navigation Size	This parameter allows you to specify the maximum number of members that a parent node within a Hierarchy or Assumption Browser can show at a given time. When you expand a branch in a Hierarchy or Assumption Browser and the number of members in that branch exceeds the specified Navigation Size, it provides "More" and "Previous" options to enable you to navigate through the member list. Recommended values for Navigation Size are 50 to 100. Higher value settings could impact screen refresh performance. The UI allows you to enter a value up to 10000.

4. Click **Save** to confirm the changes.

6.2.2 Patterns

This section covers the following topics:

1. Behavior Patterns: User Defined Behavior Patterns allow you to define Principal Amortization Schedules for Non-Maturity Products in your portfolio.
2. 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.
3. Payment Patterns: User defined payment patterns allow you to define custom repayment patterns for products in your portfolio.

- Behavior Patterns
- Payment Patterns
- Repricing Patterns

6.2.2.1 Behavior Patterns

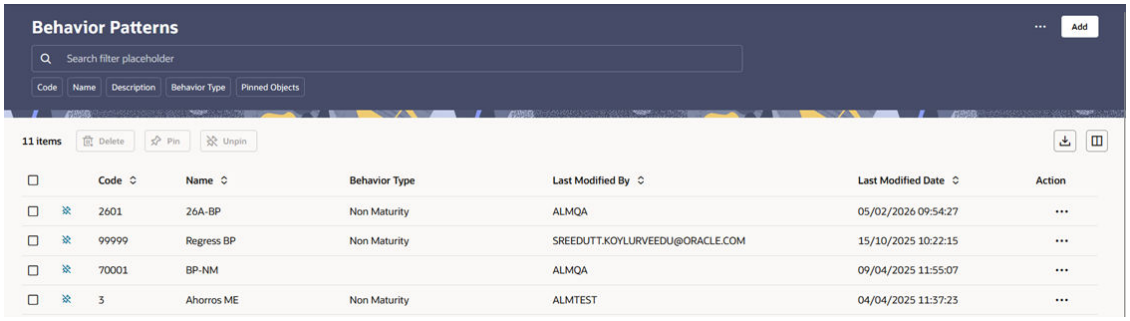
PBSM (Profitability and Balance Sheet Management) Cloud Service's User Defined Behavior Patterns allow you to define Principal Amortization Schedules for Non-Maturity Products in your portfolio. You can utilize a Behavior Pattern to generate Cash Flows by entering the Amortization Type Code as "Behavior Pattern" along with the actual Behavior Pattern Code for the relevant Instrument Records.

Behavior Pattern Summary

This page is the gateway to all Behavior Patterns and related functionality. You can navigate to other pages relating to Behavior Patterns from this point.

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Figure 6-24 Behavior Pattern Summary



The Behavior Pattern Summary displays the following information:

Add: Click the Add on the page header to build a new Behavior Pattern rule.

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Behavior Pattern Summary displays the following information:

- **Code:** Numeric code of the Behavior Pattern
- **Name:** The Behavior Pattern's name.
- **Behavior Type:** The type of Behavior Pattern.
- **Last Modified By:** The user who last modified the Behavior Pattern.
- **Last Modified Date:** The Date and Time when the Behavior Pattern was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Behavior Pattern.
  - **View:** You can view an existing Behavior Patterns.
  - **Edit:** Based on the user privilege assigned, you can edit existing Behavior Patterns. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Behavior Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Behavior Patterns that you no longer require. A Behavior Pattern that has a dependency cannot be deleted.
  - **Dependency Check:** You can perform a dependency check to know where a particular Behavior Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Behavior Patterns

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that have dependencies. A report of all rules that utilize the selected Behavior Pattern is generated.

> **Note**
>
> This is functionality will intended for a future release.

Search Behavior Pattern

Prerequisites: Predefined Behavior Pattern

To search for a Behavior Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Behavior Patterns that meet the search criteria.

Also See:

- Creating a Behavior Pattern
- Creating Behavior Patterns

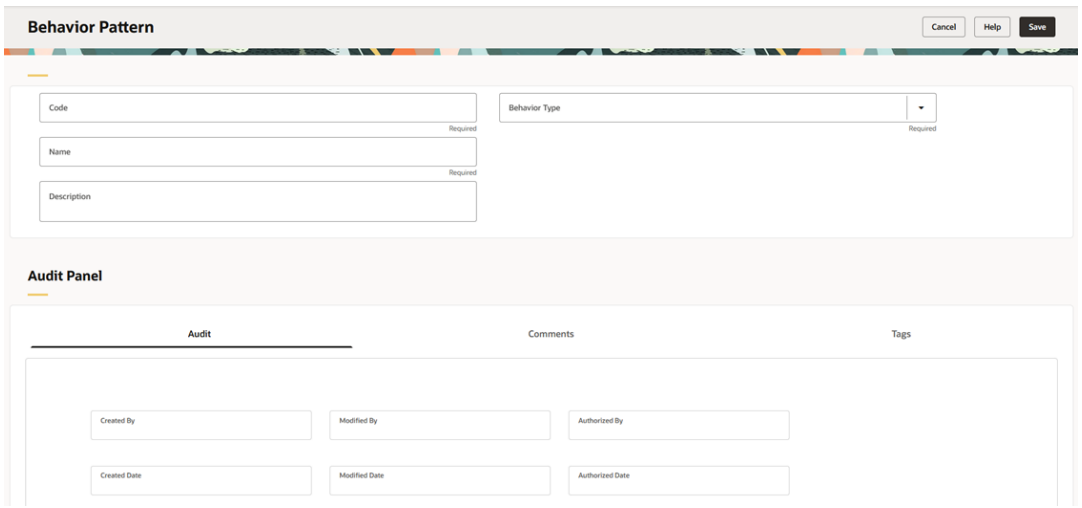
6.2.2.1.1 Creating Behavior Patterns

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

To create a Behavior Pattern, perform the following:

1. Navigate to the **Behavior Pattern Summary** Page.
2. Click **Add** to display the Behavior Pattern Details Page.

Figure 6-25 Behavior Patterns Details Page



3. Enter a unique Numeric Code for the new Behavior Pattern. The code is must be mapped the appropriate instrument record's BEHAVIOUR_PATTERN_CD if Amortization Type is Behavior Pattern to connect the instrument to the appropriate pattern.
4. Enter the **Name** and a **Description** for the pattern.

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5. Select the Behavior Pattern Type from the following options:
   - Non Maturity
   - Non-Performing
   - Devolvement and Recovery.
6. Define the Behavior Pattern Tenor Specifications for the Maturity Branches.
7. The selection of the Behavior Pattern Type made in the previous step determines the information you must provide to successfully define that Pattern Type. For more information, see:
   - Defining Non-Maturity Behavior Patterns
   - Defining Non-Performing Behavior Patterns
   - Defining Devolvement and Recovery Behavior Patterns

> **Note**
>
> The Behavior Pattern Details Page above displays the specifications associated with the Non Maturity Pattern Type. Should you change this value for one of the other two alternatives, Non Performing or Devolvement and Recovery, the payment specifications section corresponding to the new Pattern Type get refreshed. Although you can change your selection of the Pattern Type at any point in this procedure, sometimes this might result in loss of data related to any prior selection.

- Defining Non-Maturity Behavior Patterns
- Defining Non-Performing Behavior Patterns
- Defining Devolvement and Recovery Behavior Patterns

6.2.2.1.1.1 Defining Non-Maturity Behavior Patterns

Non-Maturity Behavior Patterns are commonly used for deposit products like Checking, Savings, and Money Market Accounts as well as for Credit Card Accounts. These account types are similar in that they do not have Contractual Cash Flows because Customers have the option to deposit or withdraw any amount at any time (up to any established limits).

When working with Non-Maturity Behavior Patterns, your percentage weights, assigned to maturity terms must add up to 100%.

For Manual Model, you can perform the following steps:

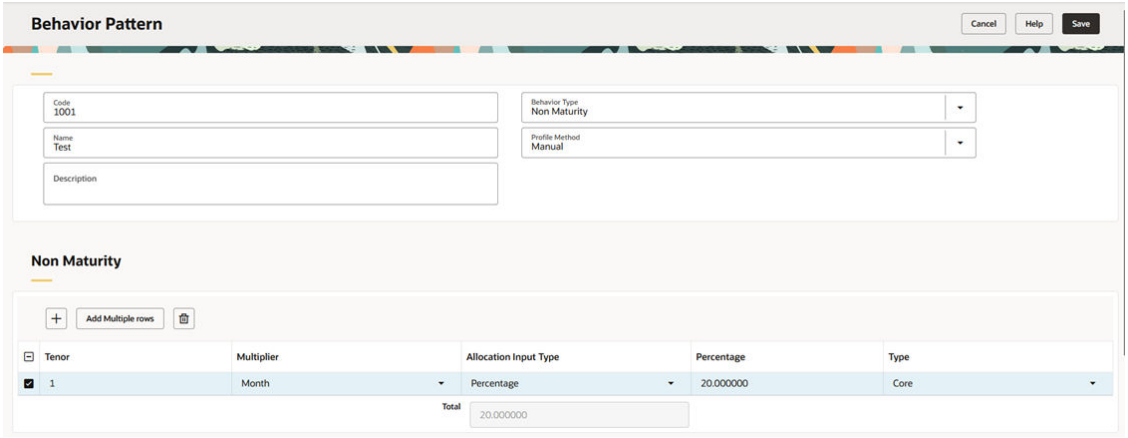
1. In the Behavior Pattern Details Page, select Non Maturity as the Behavior Pattern Type.
2. Select Non-Maturity Products Profile Method as **Manual** or **Non Maturity Products Model**. Based on selected Profile Method, Behavior Pattern UI will vary.

Profile Type as Manual

To define Non Maturity Behavior pattern as manual, follow these steps:

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Figure 6-26 Profile Method as Manual



1. Enter or select the following details:
   - **Tenor:** Used to specify the maturity term for the particular row. For example, if “1 Day”is defined, then the applicable percentage of the balance will runoff (mature) on the As- of-Date + 1 Day.
   - **Multiplier:** Theunit of time applied to the tenor. The choices are as follows:
     - Days
     - Months
     - Years
   - **Allocation Input Type:** This field has a default value of Percentage for each maturity tier.
   - **Percentage:** The outstanding balance indicating how much of the outstanding balance will mature on the specified term. Enter a number 0 and 100.

     > **Note**
     >
     > During calculation, the rows with the 0% is ignored and remaining events from pattern are used.

   - **Type:** This allows you to classify the Runoff based on the appropriate type. If you select Percentage under 'Allocation Input Type', this allows you to select Core or Volatile.
2. Click the **Add**icon to add additional payment strips to the Pattern. After defining the initial strip as Volatile, subsequent strips are usually classified as Core with varying maturity terms assigned.

> **Note**
>
> There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

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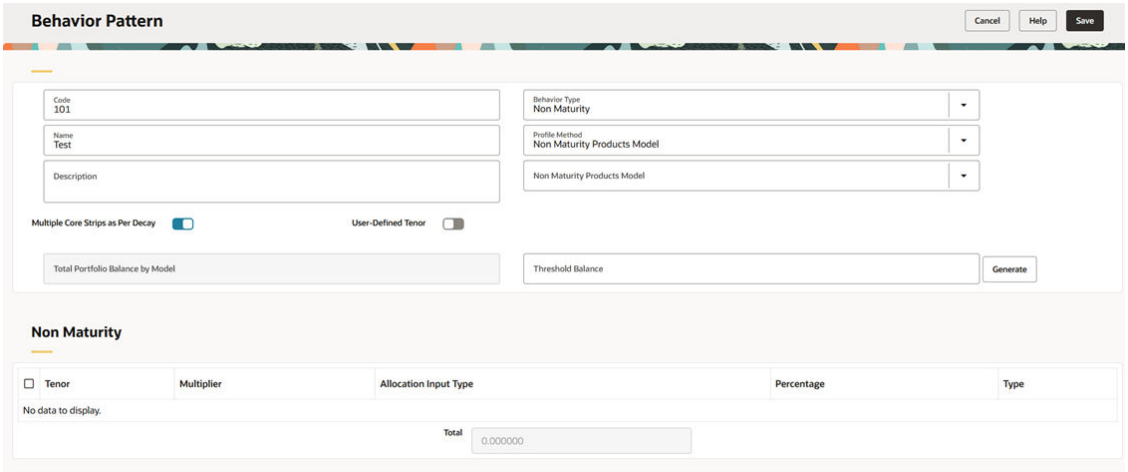
3. Click **Add Multiple Row** icon to open a window. Enter the number of rows you want to add and click Add Rows.
4. To delete a row, select the check box corresponding to the row you want to remove and click the Delete icon.
5. Click **Save**.

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

Profile Type as Non Maturity Products Model

To define Non Maturity Behavior pattern with Non Maturity Product Model, follow these steps:

Figure 6-27 Profile Method as Non Maturity Products Model



1. Select the **Model** from on **Non Maturity Model** drop-down. You can search Non Maturity Product Model using product and currency criterias after clicking **Search** button.
   You can have single Core or Multiple Core strips based on if decay profile is being used:

   This will be based on model calculated core balance and corresponding Weighted average life based on calculated decay rate.

   Multiple Core and Volatile strips in percentage if “Multiple Core Strips as per Decay Profile” is selected.

   Once model is selected, you can define two types of strip definitions:

   - **Single Core Strip**: The model evaluates the core balance against a total point in time balance.
     - **Core Calculation:**Behavior pattern picks the core from the underlying model which is defined at certain portfolio level. Use the Non-Maturity Deposit Model Weighted Average Life as the tenor.
       The core percentage is calculated as:

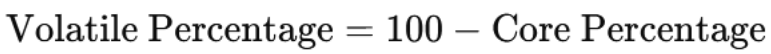
Figure 6-28 Core Calculation

$$\text{Core Percentage} = \left(\frac{\text{NMD Model (Core balance)}}{\text{Total Point in Time balance}} \right) \times 100$$

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- **Volatile Percentage:**This is calculated as:

  Figure 6-29 Volatile Percentage

  The tenor for this calculation is set at 1 day and in relation to the strip tenor, with a default maturity assumption of "At Maturity".

- **Multiple Core Strips as per Decay profile:**
  If this is selected, there are following two options:
  - **Using Generate Profile:** You can select to **Generate Profile** with or without thresholds. Strips will be auto- generated based on decay profile frequency. For example, if the NMD model's decay profile is set to a daily frequency, tenors will be auto-populated on a daily basis.
    Total portfolio balance by Model (Model Output): Total balance is the balance available at the latest As of Date in the Historical Period selected for which model is created. For example, if the historical period is from January 1, 2020, to December 31, 2020, and the most recent date is December 31, 2020, the total available balance of all accounts included in the portfolio (based on product and currency) would represent the total Portfolio Balance.

    The **Threshold Balance** option will be active only when the **Multiple Core Strips as per Decay Profile** toggle button is selected. The default value of this field is

    0.0.It accepts only positive numbers or decimals values.

    When you use Decay Rate profile from the selected model, the balance keeps reducing using every period’s decay rate till threshold balance is reached. So, no further strips can be created beyond the Threshold balance.

    It is recommended to give some valid positive value as threshold balance, else after few initial strips, principal will become small and decaying part will be even smaller. If the number of strips reaches to 500 and the remaining balance is negligible, an error message is displayed.

    Once balance is reached equal or less than given threshold, then rest of the balance will run off in immediate next strip.

    For example, if the initial balance was 10,000 and the threshold is set at 500, and the decay profile indicates that the balance reaches 500 or less in the 11th strip, then in the immediate next strip (the 12th strip), the entire remaining balance will be deducted. This is necessary because the system needs to account for 100% of the remaining balance, and there is a check in the BP to ensure that the total of all strips adds up to 100%.

    The system uses the decay profile/decay rate generated by the model and creates Runoff Profile/Strips as per inputs data frequency to the NMD model which can be in Days/Months and Years. If the frequency is in Days, then the tenor of the defined strips would be days else it would be in months/years as per the model definition.
  - **Using User Defined Tenor:**If this is selected, then + icon will be available to add strips.

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> **Note**
>
> The **User Defined Tenor** option will be active only when the **Multiple Core Strips as per Decay Profile** toggle button is selected. By default, it will be OFF.

Enter or select the following details:

* **Tenor:** Used to specify the maturity term for the particular row. For example, if “1 Day” is defined, then the applicable percentage of the balance will runoff (mature) on the As-of-Date + 1 Day.
* **Multiplier:** The unit of time applied to the tenor. The choices are as follows:
  * Days
  * Months
  * Years
* **Allocation Input Type:** This field has a default value of Percentage for each maturity tier.
* **Percentage:** The outstanding balance indicating how much of the outstanding balance will mature on the specified term. Enter a number 0 and 100.
* **Type:** This allows you to classify the Runoff based on the appropriate type. If you select Percentage under 'Allocation Input Type', this allows you to select Core or Volatile.
* Click the **Add** icon to add additional payment strips to the Pattern. After defining the initial strip as Volatile, subsequent strips are usually classified as Core with varying maturity terms assigned.

> **Note**
>
> Click **Add Multiple Row** icon to open a window. Enter the number of rows you want to add and click Add Rows.
>
> To delete a row, select the check box corresponding to the row you want to remove and click the Delete icon.

As per the defined tenor/multiplier decay rate percentages will be calculated and populated in core allocation. Core allocation input will be percentage if model is used.

2. Click **Generate Profile**. It creates the Profile Strips as per total and threshold balance. The system uses the decay profile/decay rate generated by the model and creates the strips as per tenors given by the user. E.g. if per month decay rate is 10% and user has defined first strip as 3 months, then total runoff in first strip will be 30%. Similarly subsequent strips allocation will be calculated based on user-defined term points. And Once threshold is reached, system will not do any further calculation but runoff all remaining balance in subsequent strip itself.

> **Note**
>
> If number of strips generated is more than 500, then system displays error.

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3. Click **Save**.

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

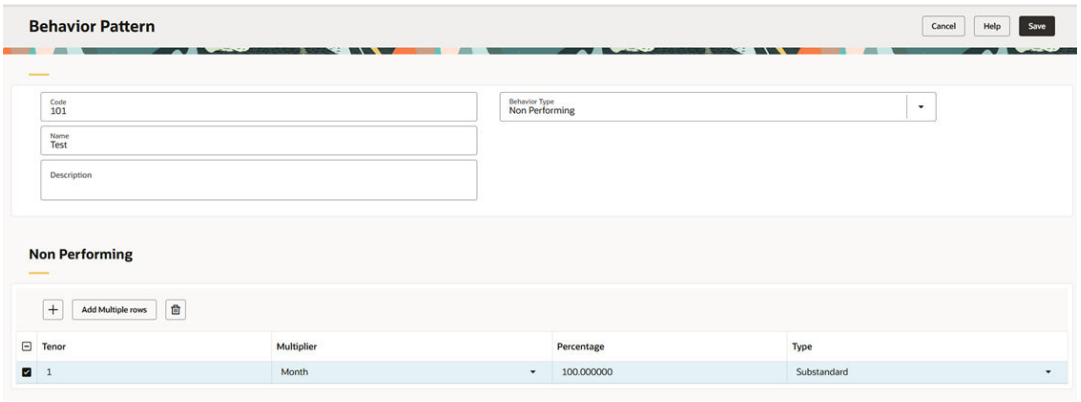
6.2.2.1.1.2 Defining Non-Performing Behavior Patterns

Non-Performing Behavior Patterns are commonly used for instruments that are classified as non-earning assets. Users can assign expected maturity profiles to these balances classifying them into appropriate categories of Sub Standard, Doubtful, or Loss.

To define the Non-Performing Behavior Patterns, perform the following steps:

1. In the Behavior Pattern Details Page, select **Non-Performing** as the **Behavior Pattern Type**.
2. Click the **Add** icon to open the **Non-Performing Behavior Patterns Summary** Page.

Figure 6-30 Behavior Pattern with Type as Non-Performing



3. Enter or select the following details:
   - **Tenor:** Specify the maturity tenor for the first maturity strip. For example, if “1 Day” is defined, then the applicable percentage of the balance will runoff (mature) on the As-of-Date + 1 Day.
   - **Multiplier:** The unit of time applied to the Tenor. The choices are:
     - Days
     - Months
     - Years
   - **Percentage:** The relative amount of the Principal Balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts can exceed 100% for Non-Performing Patterns.

     > **Note**
     >
     > During calculation, the rows with the 0% is ignored and remaining events from pattern are used.

   - **Type:** This allows you to classify the Runoff based on the appropriate type. The options are:
     - Substandard

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- Doubtful
- Loss

> **Note**
>
> There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

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

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

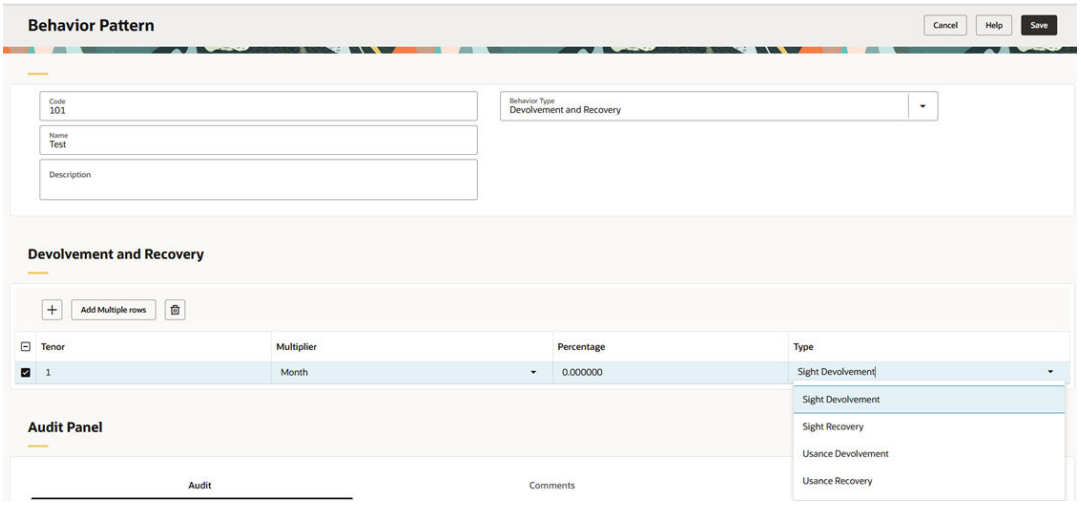
6.2.2.1.1.3 Defining Devolvement and Recovery Behavior Patterns

Devolvement and Recovery Behavior Patterns are commonly used for estimating Cash Flows associated with Letters of Credit and Guarantees. These product types are categorized as Off-Balance-Sheet Accounts. Users can assign expected maturity profiles to the related balances classifying them into appropriate categories of Sight Devolvement and Sight Recovery or Usance Devolvement and Usance Recovery. Sight Devolvement and Recovery are the most common types.

To define the Non-Performing Behavior Patterns, perform the following steps:

1. In the **Behavior Pattern Details** Page, select **Devolvement and Recovery** as the Behavior Pattern Type.
2. Click the **Add** icon to open the Non-Performing Behavior Patterns Summary Page.

Figure 6-31 Behavior Pattern with Type as Devolvement and Recovery



3. Enter or select the following details:

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- **Tenor:** Specify the maturity tenor for the first maturity strip. For example, if “1 Day” is defined, then the applicable percentage of the balance will Runoff (mature) on the As-of-Date + 1 Day.
- **Multiplier:** The unit of time applied to the Tenor. The choices are:
  - Days
  - Months
  - Years
- **Percentage:** The relative amount of the Principal Balance that will mature on the date specified by the Tenor + Multiplier. The percentage amounts can exceed 100% for devolvement and recovery patterns.

> **Note**
>
> During calculation, the rows with the 0% is ignored and remaining events from pattern are used.

- **Type:** This allows you to classify the Runoff based on the appropriate type. The options are:
  - **Sight Devolvement:** indicates the Beneficiary is paid as soon as the Paying Bank has determined that all necessary documents are in order. This is the preferred approach.
  - **Sight Recovery**
  - **Usance Devolvement:** Usance: is a period, which can be between 30 and 180 days after the bill of Lading Date.
  - Usance Recovery

> **Note**
>
> There is no difference in behavior from a Cash Flow perspective, but the Runoff Amount will be written to a Principal Runoff Financial Element corresponding to the selected Runoff Type.

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

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

6.2.2.2 Payment Patterns

User defined payment patterns allow you to define custom repayment patterns for products in your portfolio. You can include a payment pattern while generating cash flows by entering the payment pattern code for the instrument.

This chapter describes the procedure for capturing instrument payment patterns that are too complex to be accommodated in the standard fields of Instrument tables.

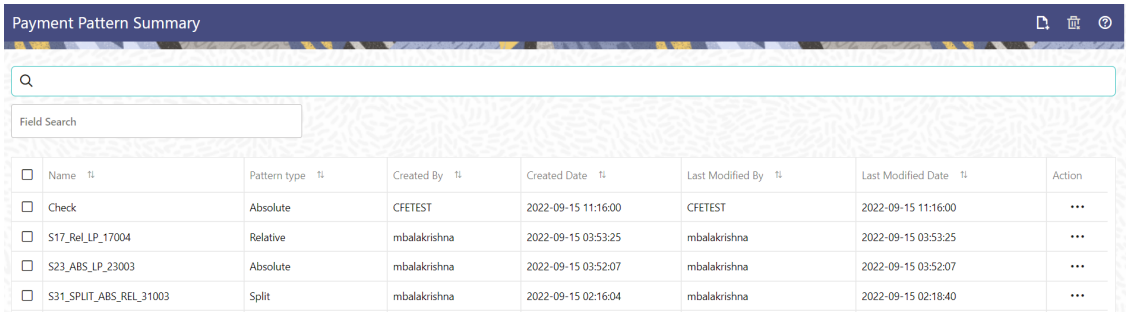
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The procedure for working with and managing Payment Patterns is, similar to that of other Oracle assumption rules.

Payment Pattern Summary

This page is the gateway to all Payment Patterns and related functionality. You can navigate to other pages relating to Payment Patterns from this point.

Figure 6-32 Payment Summary



Search Payment Pattern

Prerequisites: Predefined Payment Pattern

To search for a Payment Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Payment Patterns that meet the search criteria.

Or

An alternative method to search a Payment Pattern is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Payment Pattern Summary. You can enter the **Code, Name, Description** or **Pattern Type** of the Payment Pattern and click **Search** .

The Payment Pattern Summary displays the following information:

Add: Click the Add icon on the page header to build a new Payment Pattern.

- **Name:** The Payment Pattern's short name.
- **Pattern Type:** The Payment Pattern Type, such as Absolute or Relative.
- **Created By:** The Name of the user who created the Payment Pattern.
- **Created Date:** The Date and Time at which the Payment Pattern was created.
- **Last Modified By:** The user who last modified the Payment Pattern.
- **Last Modified Date:** The Date and Time when the Payment Pattern was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Payment Pattern.
  - Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
  - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Payment Patterns. To edit a rule, you must have Read/Write privilege.

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- Save As: You can reuse a Payment Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- Delete: You can delete Payment Patterns that you no longer require. Note that only Payment Pattern owners and those with Read/Write privileges can delete Payment Patterns. A Payment Pattern that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
- Dependency Check: You can perform a dependency check to know where a particular Payment Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Payment Patterns that have dependencies. A report of all rules that utilize the selected Payment Pattern is generated.

Also See:

- Creating Payment Patterns
- Create Payment Patterns

6.2.2.2.1 Create Payment Patterns

You create payment patterns to capture the repayment behavior of instruments that are too complex to be accommodated through the use of the standard instrument table fields.

To create the payment pattern, do the following:

1. Navigate to the **Payment Pattern** summary page.
2. Click **Add** icon. The **Add Payment Patter**n page is displayed.
3. Enter a Code value for the new payment pattern. You can also click Generate Code Option in Code field to generate the code automatically.

> **Note**
>
> The code value you assign to the new pattern must be unique. Also, the code must be mapped to the appropriate instrument records (PMT_PATTERN_CD field) to connect the instrument to the appropriate pattern.

4. Enter the Name for pattern.
5. Enter a brief Description for the pattern.
6. Select the Pattern Type: Absolute, Relative, or Split.
7. Select the Payment Type: Conventional, Level Principal, or Non-amortizing.

> **Note**
>
> The Payment Type option is not available for Split Payment Pattern type.

The selection of the payment pattern type made in the previous step determines the information you must provide to successfully define that pattern type. See:

- Defining Absolute Payment Patterns
- Defining Relative Payment Patterns

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- Defining Split Payment Patterns

8. Click **Save**.

- Define Absolute Payment Patterns
- Define Relative Payment Patterns
- Define Split Payment Patterns

6.2.2.2.1.1 Define Absolute Payment Patterns

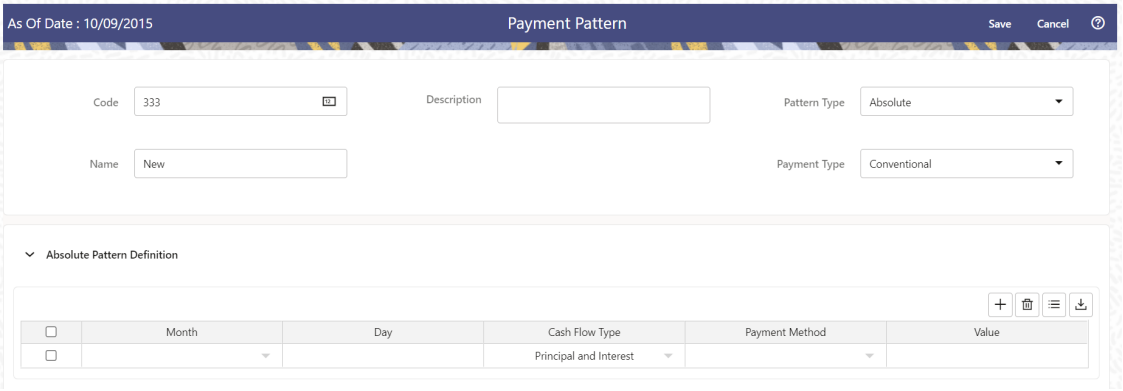
Absolute payment patterns are commonly used for instruments that are on a seasonal schedule, such as agricultural or construction loans that require special payment handling based on months or seasons.

When working with absolute payment patterns, it is sufficient to define payments for one calendar year. Once the term exceeds a year, the payment schedule will loop until the instrument matures.

Prerequisites

Selecting Absolute as the pattern type.

Figure 6-33 Absolute Payment Patterns



To define absolute payment pattern, do the following:

1. In the **Payment Patterns** page, select **Pattern Type** as **Absolute**.
2. Select the Payment Type from the drop-down list: **Conventional**, **Level Principal**, or **Non-Amortizing**. The Payment Type determines the type of information required to successfully define the Payment Phase.
3. Define the **Payment Phases**. A Payment Phase is a set of payment characteristics that defines the timeline of the instrument's amortization.
   a. Define the following parameters:
      - **Month:** This drop-down list allows you to select the month of the payment phase being defined.
      - **Day:** Used to specify the day of the month the payment is due.
   b. Select the **Cash Flow Type**. The available types depends on the Payment Type. This do not apply to the Non-Amortizing Payment Type.
   Table: Relationship between Cash Flow Type and Payment Types

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	Level Principal	Non-Amortizing	Conventional
Principal and Interest	Yes		Yes
Principal Only	Yes		
Interest Only	Yes	Yes	

c. Select the **Payment Method**. The available Payment Methods depend on the Payment Type. For more information, see: Relation between Payment Method and Payment Types. Payment Methods do not apply to the Non-Amortizing Payment Type.

d. Enter the Value for the Payment Method you selected in the previous step for applicable Payment Types.
If you selected the Interest Only Payment Method in the previous step, the Value field does not apply.

4. Click the **Add** icon to add additional Payment Phases to the Pattern. Click Delete icon corresponding to the rows you want to delete.
5. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
6. The **Download Excel** icon helps you to export payment information, modify and paste back in the UI.

> **Note**
>
> A Payment Pattern must have at least one valid Payment Phase to be successfully defined. The system raises a warning if you try to save a Payment Pattern with an incomplete Payment Phase.

7. Click Apply and Save.

The Payment Pattern is saved and the Payment Pattern summary page is displayed.

The following table describes the relationship between Payment Phase properties and Payment Types.

Relationship between Payment Phase Properties and Payment Types

	Level Principal	Non-Amortizing	Conventional
Month	Yes	Yes	Yes
Day	Yes	Yes	Yes
Payment Method	Yes		Yes
Value	Yes		Yes

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

Relationship between Payment Methods and Payment Types

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

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Payment Method	Level Principal	Non-Amortizing	Conventional
Absolute Payment	Yes		Yes
Interest Only	Yes		Yes

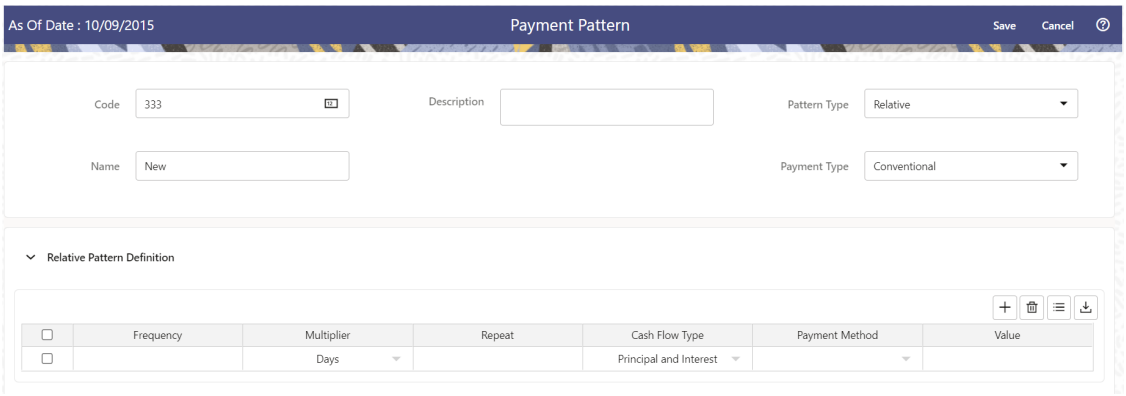
6.2.2.2.1.2 Define Relative Payment Patterns

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

Prerequisites

Selecting Relative as the pattern type.

Figure 6-34 Relative Payment Patterns



To define a relative payment pattern, follow these steps:

1. In the **Payment Patterns** page, select **Pattern Type** as **Relative**.
2. Select the Payment Type from the drop-down list: **Conventional**, **Level Principal**, or **Non-Amortizing**. The Payment Type determines the type of information required to successfully define the Payment Phase.
   The payment type determines the available characteristics for defining the payment amount.
3. Define the **Payment Phase**.
   The payment type determines the type of information required to successfully define the payment phase. For more details, see: Relation between Payment Phase Attributes and Payment Types.
   a. Enter the **Frequency** for each payment phase.
   b. Select the appropriate Multiplier for each payment phase from the following options:
      - Days
      - Months
      - Years
   c. Enter the number of times each Payment Phase should be repeated in the Repeat column.
   d. Select the **Cash Flow Type**. The available types depend on the Payment Type. This do not apply to the Non-Amortizing Payment Type.
      Table: Relationship between cash Flow Type and Payment Types

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	Level Principal	Non-Amortizing	Conventional
Principal and Interest	Yes		Yes
Principal Only	Yes		
Interest Only	Yes	Yes	

e. Select the **Payment Method**.
The available payment methods depend on the payment type. For more details, see Relation between Payment Method and Payment Types. Payment Methods do not apply to the Non-Amortizing Payment Type.

f. Type the Value for the Payment Method you selected in the previous step for applicable Payment Types.

4. Click the **Add** icon to add additional Payment Phases to the Pattern. Click Delete icon corresponding to the rows you want to delete.
5. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
6. The **Download Excel** icon helps you to export payment information, modify and paste back in the UI.

> **Note**
>
> A Payment Pattern must have at least one valid Payment Phase to be successfully defined. The system raises a warning if you try to save a Payment Pattern with an incomplete Payment Phase.

7. Click **Apply** and **Save**.
The payment pattern is saved and the Payment Pattern home page is displayed.

> **Note**
>
> It is not necessary to set up relative payment patterns for the complete term of an instrument. The payment pattern automatically repeats until the maturity date. Suppose a payment pattern is created to make monthly payments for the first year and quarterly payments for the next three years. If you apply this pattern to an instrument record with an original term of five years, the payment pattern wraps around and the fifth year is scheduled for monthly payments.
>
> An easy way to set up payment patterns for instruments with varying original terms is to use the repeat value of 999 in the last row of the payment pattern. For example, a payment pattern that pays monthly for the first year and quarterly thereafter, can be set up with two rows. The first row shows 12 payments in one month. The second row shows 999 payments in three months. When this payment pattern is processed it repeats the three-month payment frequency until the maturity date is reached.

The following table describes the relationship between payment phase attributes and payment types.

Relationship between Payment Phases and Payment Types

Payment Phase Attributes	Payment Types: Level Principal	Payment Types: Non-Amortizing	Payment Types: Conventional
Frequency	Yes	Yes	Yes

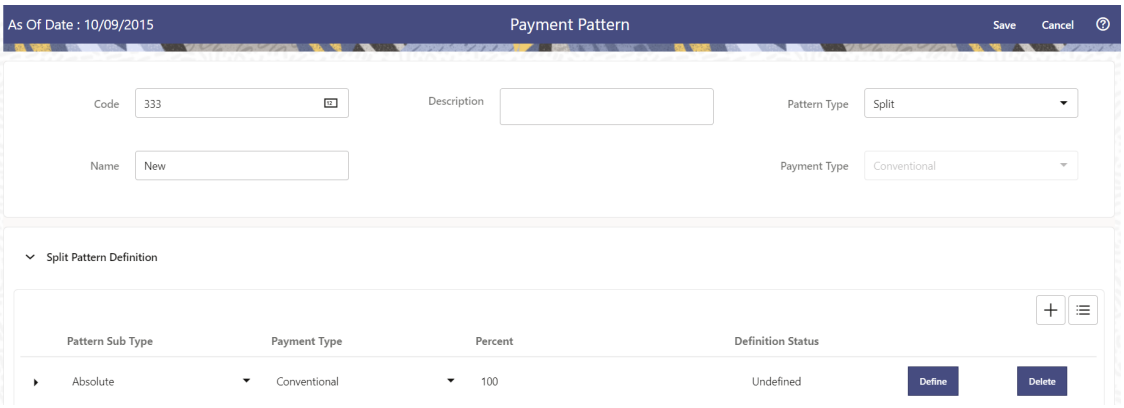
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Payment Phase Attributes	Payment Types: Level Principal	Payment Types: Non-Amortizing	Payment Types: Conventional
Multiplier	Yes	Yes	Yes
Repeat	Yes	Yes	Yes
Payment Method	Yes		Yes
Value	Yes		Yes

6.2.2.2.1.3 Define Split Payment Patterns

You can use a Split payment pattern for financial instruments that make principal payments along with two concurrent amortization schedules. Split patterns may be a combination of Absolute and Relative Payment Patterns for example, and contain multiple sets of payment phases under a single amortization code. These patterns could further use a combination of Conventional, Level Principal, and Non-Amortizing Payment Types.

Figure 6-35 Split Payment Patterns



To define a split payment pattern, follow these steps:

1. In the Payment Patterns page, select Pattern Type as Split.
2. Define Split Pattern definition.
   a. Select the required **Pattern Sub Type** for each leg.
      - Absolute
      - Relative
   b. Select the Payment Type for each Payment Phase or Split.
   c. Enter the Percent value to indicate the percentage weight of the timeline being defined for the individual payment phases (each row). The sum of the percentage weights must total 100%.

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> **Note**
>
> The payment pattern term specifications for different payment phases or splits vary depending on whether you select the Absolute or Relative Pattern Type. You can define the term specifications for the splits following the steps described previously for defining payment phases for these patterns. See:
>
> - Define Absolute Payment Patterns
> - Define Relative Payment Patterns

3. Select one of the legs and then select **Define** button to enter pattern details for the leg.
4. Select one of the legs and then select **Delete** button to delete pattern details for the leg.
5. Click the **Add** icon to add additional Payment Phases to the Pattern.
6. Click **Add Multiple Row** icon to enter the number of rows you want to add and click Go.
7. Click **Apply** and **Save**.

The Split payment pattern is saved and the Payment Pattern summary page is displayed.

6.2.2.3 Repricing Patterns

User Defined Repricing Patterns provide a mechanism to capture Instrument Repricing Patterns that are too complex to be accommodated through the use of the Standard Account Table Fields. You can utilize a Repricing Pattern to generating Cash Flows by entering the Adjustable Type Code as “Repricing Pattern” along with actual Repricing Pattern Code for the relevant Instrument Records.

The procedure for working with and managing Repricing Patterns is, similar to that of other Oracle Business Rules.

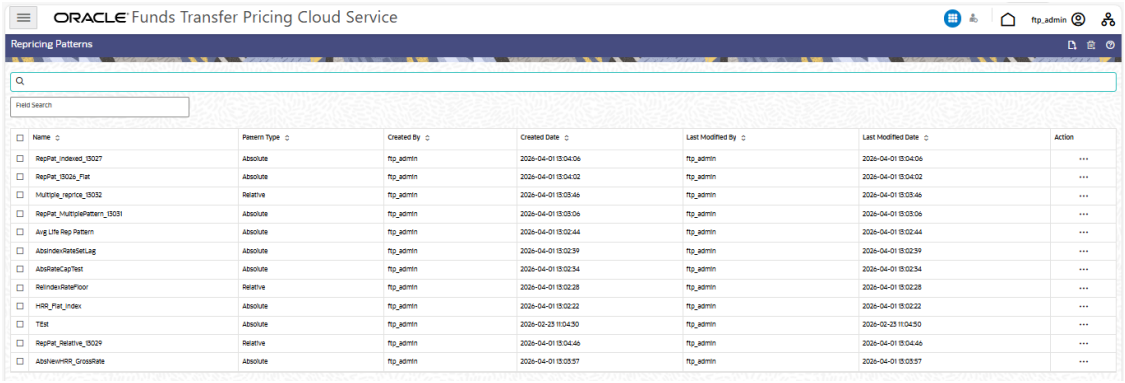
> **Note**
>
> After a Repricing Pattern is created, the corresponding Repricing Pattern Code must be populated in the account/instrument data for the pattern to take effect. Ensure that the relevant instrument records have the **Adjustable Type Code** set to **Repricing Pattern** and the actual Repricing Pattern Code populated accordingly. This is a mandatory prerequisite for using the Repricing Pattern in the **Cash Flow Method - Average Life**.

Repricing Pattern Summary

This page is the gateway to all Repricing Patterns and related functionality. You can navigate to other pages relating to Repricing Patterns from this point.

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Figure 6-36 Repricing Pattern Summary



Search Repricing Pattern

Prerequisites: Predefined Repricing Pattern

To search for a Repricing Pattern:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Repricing Patterns that meet the search criteria.

Or

An alternative method to search a Repricing Pattern is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Repricing Pattern Summary. You can enter the **Code, Name, Description** or **Pattern Type** of the Repricing Pattern and click **Search**.

The Repricing Pattern Summary displays the following information:

Add: Click the Add icon on the page header to build a new Repricing Pattern.

Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- **Name:** The Repricing Pattern's short name.
- **Pattern Type:** The Repricing Pattern Type, such as Absolute or Relative.
- **Created By:** The Name of the user who created the Repricing Pattern.
- **Created Date:** The Date and Time at which the Repricing Pattern was created.
- **Last Modified By:** The user who last modified the Repricing Pattern.
- **Last Modified Date:** The Date and Time when the Repricing Pattern was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Repricing Pattern.
  - View/Edit: Based on the user privilege assigned, you can either only view or edit existing Repricing Patterns. To edit a rule, you must have Read/Write privilege.
  - Save As: You can reuse a Repricing Pattern by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.

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- Delete: You can delete Repricing Patterns that you no longer require. Note that only Repricing Pattern owners and those with Read/Write privileges can delete Repricing Patterns. A Repricing Pattern that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
- Dependency Check: You can perform a dependency check to know where a particular Repricing Pattern has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Repricing Patterns that have dependencies. A report of all rules that utilize the selected Repricing Pattern is generated.

Also See:

- Create a Repricing Pattern
- Create Repricing Patterns
- Viewing or Editing a Repricing Pattern
- Deleting a Repricing Pattern

6.2.2.3.1 Create Repricing Patterns

You create Repricing patterns to capture the Repricing Behavior of instruments whose rates change according to complex schedules.

To create the Repricing Pattern, follow these steps:

1. Navigate to Repricing Pattern Summary Page.
2. Click the **Create** icon.
   The Add Repricing Pattern Page is displayed.
3. Enter a Numeric Code Value for the new Repricing Pattern. You can also click Generate Code Option in Code field to generate the code automatically.
4. Enter the name of the pattern.
5. Type a brief description for the pattern.
6. Select the Repricing Pattern Type: Absolute or Relative.
   The selection of the Repricing Pattern type determines the fields that are displayed in the Repricing Events Table and the information you must provide to successfully define that pattern type. See:
   - Defining Absolute Repricing Patterns
   - Defining Relative Repricing Patterns
7. Click **Save**.

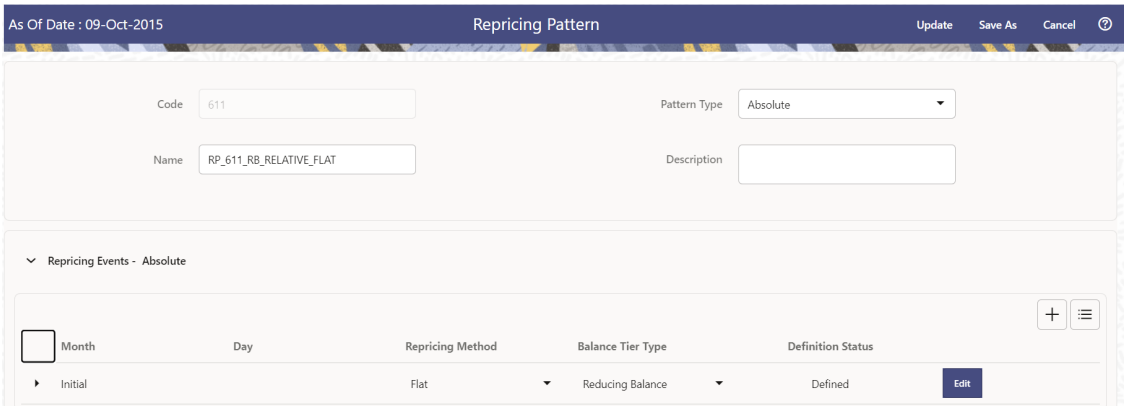
- Define Absolute Repricing Patterns
- Define Relative Repricing Patterns

6.2.2.3.1.1 Define Absolute Repricing Patterns

The Absolute Repricing Pattern is used for instruments that are date dependent. Each specific date is a separate event. You need to enter the month and day for each event, except for the initial event.

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Figure 6-37 Define Absolute Repricing Pattern



Prerequisites

Selecting Absolute as the pattern type.

Procedure

This table describes key terms used for this procedure.

Table 6-13 Key Terms used in Absolute Repricing Pattern

Key Terms	Description
Add Row	Allows you to add one or more Repricing Events.
Add Multiple Rows	Allows you to add more Repricing Events.
Define	Add detail for each Repricing Event.
Delete	Allows you to delete specific rows in the Repricing Events Table.
Month	In conjunction with the Day field, this drop-down menu, allows you to specify a unique month-day combination for a Repricing Event.
Day	In conjunction with the Month drop-down menu, this field allows you to specify a unique month-day combination for a Repricing Event.

To define Absolute Repricing Pattern, perform the following:

1. Select Pattern Type as **Absolute**.
2. Specify the required month-day combination for the event. You cannot specify a month-day combination for the first event as this row is reserved for the initial period.
3. Select the Repricing Type: **Flat** or **Indexed**.
   The default is flat. If you select Indexed, the system automatically changes the fields available for entry.

> **Note**
>
> You can change your selection of the Repricing Type at any point in this process. Sometimes it may cause a loss of data.

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For more information on Flat Repricing Type, see Repricing Event is Flat Repricing.

For more information on Index Repricing Type, see Repricing Event is Index Repricing.

- Select Balance Tier option:
  - **None**: If selected, the Balance Tiered Pricing is not applied.
  - **Current Balance**: Users can define balance tiers and associate different rates with the corresponding balance tier level. Balance tier in this case is decided using the principal balance of instrument on As of Date. Thus, even when actual balance goes down due to repayment, the instrument continues to be in original balance tier.
  - **Reducing Balance:** If the Balance Type is selected as Reducing Balance, then the repricing rate will be calculated using principal balance as on Repricing Date. Thus, the balance tier applicable to instrument range over its life due to repayment.

4. Click **Define**.

Repricing Event is Flat Repricing

Flat Rate: A Flat Rate is a specific rate—it is directly input.

To define a Flat Rate Event, follow these steps:

1. Select the Flat option from Repricing Method drop-down list for the event you are going to define. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events Page:
2. Enter the Net Rate.
3. Enter the Gross Rate.
4. Enter the Transfer Rate.

> **Note**
>
> The Transfer Rate functionality will be released in future.
>
> You must enter a valid value for at least one of these rate fields.

5. Click **Apply**.
   The Event Summary Page is displayed. At this point, you have the option of defining additional events or saving. To add an additional event, repeat Click Add Row. You can edit the details of Defined Event.

Repricing Event is Indexed Repricing

An Indexed Rate is a set of parameters used to calculate a rate.

To define an Indexed Rate Event, follow these steps:

1. Select the Indexed option from Repricing Method drop-down list for the event you are going to define. Notice the bottom half of the screen refreshes, displaying the required inputs. Complete the following steps on the Add Repricing Events Page:
2. Select the Interest Rate Curve.

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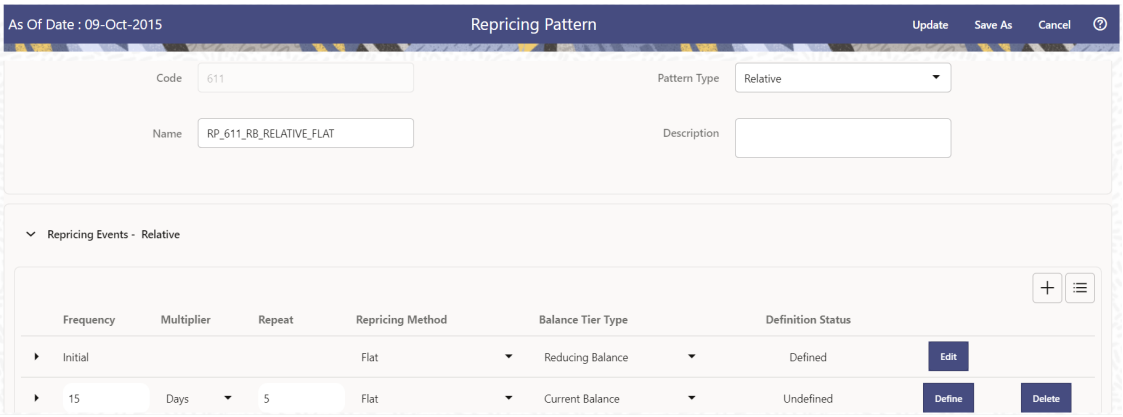
> **Note**
>
> For Funds Transfer Pricing, Average Life is calculated with reference to the account's origination date. Therefore, for all repricing events, the specified IRC is referenced using the account's origination date only. A different margin can be set for each repricing event or date.

3. Enter the Yield Curve Term and select the appropriate Multiplier.
4. Enter the Net Margin.
5. Enter the Gross Margin.
6. Enter the Transfer Price Margin.
7. Enter the Rate Cap Life.
8. Enter the Rate Floor Life.
9. Enter the Rate Set Lag and select the appropriate Multiplier.
10. Click **Apply**. The Event Summary Page is displayed.
11. At this point, you have the option of defining additional events or saving. To add an additional event, repeat Click **Add Row**.
12. Click **Save**.
    The Repricing Pattern is saved and the Repricing Pattern Summary Page is displayed.

6.2.2.3.1.2 Define Relative Repricing Patterns

The Relative Repricing Pattern is used for instruments where the repricing is determined by the elapsed time since origination. Defining a Relative Repricing Pattern involves the definition of a series of repricing events applicable to a specific Repricing Pattern Code. You need to specify the length of each Repricing Period and the number of times that event should occur before calculating the next event in the pattern.

Figure 6-38 Define Relative Repricing Pattern



Prerequisites

Selecting Relative as the pattern type.

Procedure:

This table describes key terms used for this procedure.

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Table: Key Terms used in Relative Repricing Pattern

Key Terms	Description
Add Row	This allows you to Add one or more Repricing Events.
Add Multiple Rows	Allows you to add more Repricing Events.
Delete	This allows you to delete specific rows in the Repricing Events Table. You need to specify the following parameters in the Repricing Events Table for a Relative Repricing Pattern:
Frequency	In conjunction with the Multiplier drop-down menu, this field allows you to specify how often Repricing occurs.
Multiplier	The unit of time applied to the frequency. The choices are: Days Months Years
Repeat	This allows you to specify the number of times a repricing event should be repeated.
Repricing Method	A drop-down list, it displays the Repricing Type, Flat Rate or Indexed Rate, associated with a particular event.

The steps to create relative Repricing Patterns are similar to Creating Absolute Repricing Patterns.

The only difference is that the fields in the Repricing Events Table are different.

Select Pattern Type as Relative and follow the steps mentioned in Creating Absolute Repricing Patterns section.

6.2.2.3.2 Viewing or Editing a Repricing Pattern

To view or edit a Repricing Pattern

1. Navigate to the **Repricing Pattern Summary Page**.
2. Locate the required Repricing Pattern record.
3. Click the **Action** (ellipsis) menu corresponding to the record.
4. Select **View/Edit**.

   The **Edit Repricing Pattern** page is displayed.
5. Modify the required fields as needed.
6. Click **Save** to save the updates.

6.2.2.3.3 Deleting a Repricing Pattern

To Delete a Repricing Pattern

1. Navigate to the **Repricing Pattern Summary Page**.
2. Locate the required Repricing Pattern record.
3. Click the **Action** (ellipsis) menu corresponding to the record.
4. Select **Delete**.

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5. Confirm the deletion when prompted.

6.2.3 Holiday Calendars

This section discusses the procedure to create a Holiday Calendar and generate a list of the weekend and holiday dates. Individual Cloud Service may consume the Holiday Calendar events in different ways.

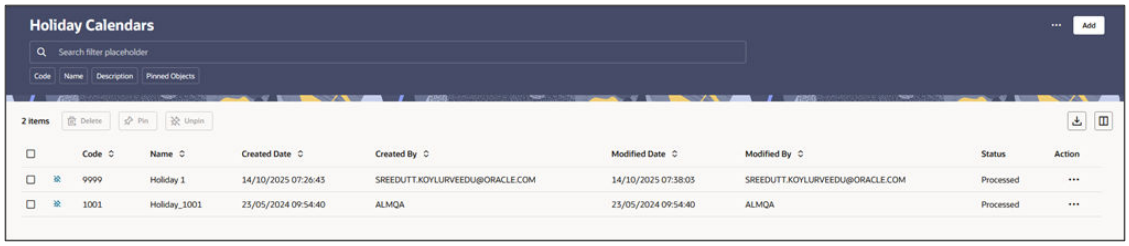
A Holiday is a day designated as having special significance for which individuals, a government, or some religious groups have deemed that observance is warranted and thus no business is carried on this day. The Holiday Calendar Code can range from 1 to 99999.

The **Generate Holiday Calendar** option on the **Holiday Calendar Definition** page allows you to generate the maximum 80 Holiday Calendar definitions at a time. Using the Scheduler Service, you can generate the Holiday Calendar definitions in bulk. For more information, see the Data Loader section.

Holiday Calendar Summary

This page is the gateway to all Holiday Calendars and related functionality. You can navigate to other pages relating to Holiday Calendars from this point.

Figure 6-39 Holiday Calendar Summary



Search Holiday Calendar Rule

Prerequisites: Predefined Holiday Calendar

To search for a Holiday Calendar:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Holiday Calendars that meet the search criteria.

Or

An alternative method to search a Holiday Calendar rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Holiday Calendar Summary. You can enter the **Code, Name,** and **Description** of the Holiday Calendar and click **Search** .

The Holiday Calendar rule Summary displays the following information:

Add: Click the **Add** icon on the page header to build a new Holiday Calendar rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.

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- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Holiday Calendar rule Summary table displays the following information:

- **Code:** The code of Holiday Calendar
- **Name:** The Holiday Calendar's short name.
- **Created Date:** The Date when Holiday Calendar was created.
- **Created By:** The Name of the user who created the Holiday Calendar
- **Last Modified By:** The user who last modified the Holiday Calendar rule.
- **Last Modified Date:** The Date and Time when the Holiday Calendar rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Holiday Calendar rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Holiday Calendar rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Holiday Calendar rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Holiday Calendar rules that you no longer require. Note that only Holiday Calendar rule owners and those with Read/Write privileges can delete Holiday Calendar rules. A Holiday Calendar rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Dependency Check:** You can perform a dependency check to know where a particular Holiday Calendar rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Holiday Calendar rules that have dependencies. . A report of all rules that utilize the selected Holiday Calendar rule is generated.

Also See:

- Create Holiday Calendar
- Create a Holiday Calendar
- Holiday Exceptions

6.2.3.1 Create a Holiday Calendar

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

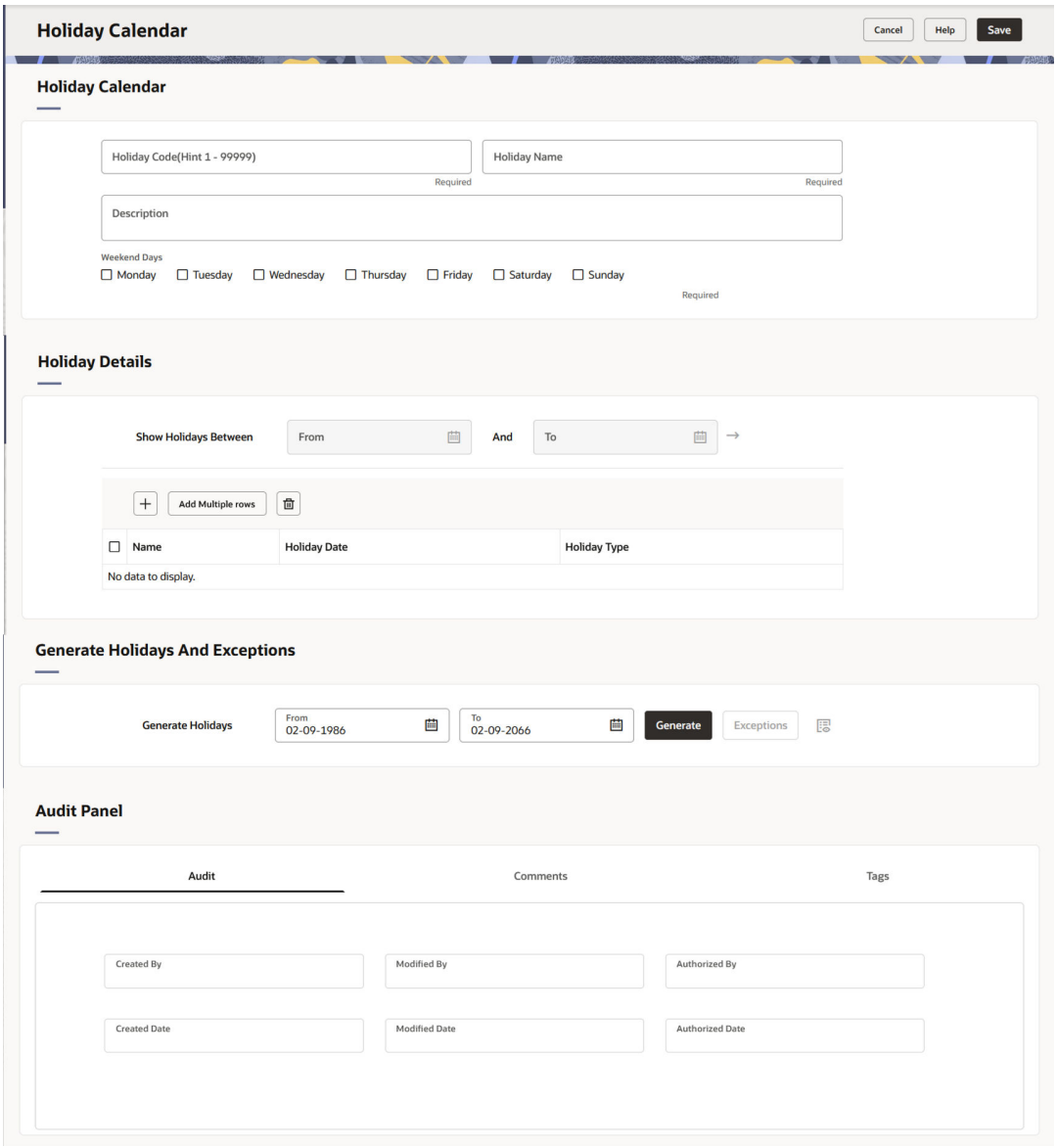
To create a new Holiday Calendar Rule, follow these steps:

1. Navigate to the Holiday Calendar Summary Page.

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2. Click **Add** icon. The Holiday Calendar Details Page is displayed. This page is divided into following sections:
   - Holiday Calendar
   - Holiday Details
   - Generate Holidays And Exceptions

Figure 6-40 Holiday Calendar Details Page



3. Enter details in above sections and Click **Save**.

Holiday Calendar section

1. Navigate to Holiday Calendar section.
2. Enter the following details:
   - **Holiday Code:** Enter a code value for the new Holiday Calendar. The code is a Numeric Identifier for the Holiday Calendar. The Code Value must be a number

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between 1 and 99999. The Code Value you assign to the new Holiday Calendar must be unique.

- **Name:** Enter the name and a brief description for the Holiday Calendar. The name you assign to the Holiday Calendar must be unique. The name can hold a maximum of 30 characters.
- **Description:** Enter the description of Holiday Calendar Rule.
- **Weekend Days:** In the Holiday Weekend Days checkboxes, select not more than two weekend days.

3. Click **Next** to navigate to **Holiday Details** section.

Holiday Details section

1. Enter the following details in Holiday Details Section:
2. Click **Add** icon. Define the Holiday details for any period within the Holiday range. Enter the following details in Holiday Calendar Grid:
   - **Name:** Name of Holiday
   - **Date:** The date of Holiday
   - **Holiday Type:** Type of Holiday. Two types of holidays can be defined: Fixed and Moving.
     A Fixed Holiday is deemed as a Holiday for every year in the Holiday Period, for that particular day.

     Example

     25th December – Christmas, is a fixed Holiday.

> **Note**
>
> To define a Fixed Holiday, input the Holiday Date for the first occurrence in the date range. For example, if your Date Range runs from 01-JAN-2000 to 31-DEC-2050, you should input the fixed holiday, Christmas, as 25-DEC-2000. The Holiday Calendar Procedure will populate all subsequent 25-DEC entries in the holiday list table (FSI_HOLIDAY_LIST). A HOLIDAY_TYPE code = 0 is a Fixed type holiday, code = 1 is a Moving type Holiday, and code = 2 is a weekend. The Holiday Calendar Procedure will also ensure that Holiday and Weekend entries are not duplicated. For example, if weekends are defined as Saturday/ Sunday and Christmas falls on a weekend day, there will be only one entry in the FSI_HOLIDAY_LIST table. The PREVIOUS_WORKINGDAY and NEXT_WORKINGDAY fields designate the valid prior and following working days, respectively.
>
> A Moving Holiday is deemed as a Holiday only for that particular date and year, and not for every year in the Holiday Period. All occurrences of a Moving Holiday must be input manually.
>
> Example
>
> 10th April 2020 is a Moving Holiday for Good Friday.

- You can add more Holiday Periods using **Add** icon. Add Multiple icon allows you to add multiple Holiday Periods.
- Click **Next** to navigate to **Generate Holidays And Exceptions** section.

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Generate Holidays And Exceptions Section

This section is used to execute a Holiday Calendar Definition to generate the Calendar Dates listing the various types of holidays for a given Holiday Period.

1. Enter the following details in Generate Holidays And Exceptions section:
    - **Generate Holidays:** Enter the Holiday Period in Generate Holidays Section. The Holiday Period can be defined for a range of up to 40 years less than the Current Date and 40 years greater than the Current Date, totally spanning a maximum of 80 years.
2. Holiday List for Holiday ID #1 generated successfully message appears (where #1 is the Holiday Calendar Code).
3. The status of a Holiday Calendar where Holiday Dates have been generated displays as Processed in the Status column in the Summary Page.
4. You can click **Holiday Calendar Report** icon to view all the holiday calendar rules in Calendar format.

In case you do not want to Generate Calendar Dates immediately, you can select that particular Holiday Calendar anytime later from the Summary Page with its status defined, and then click the Generate button to execute the selected Holiday Calendar.

The generated holiday list is no longer valid if:

- There is a change in the definition of the Holiday Calendar.
- There is any update or modification to the Holiday Exceptions defined for that Holiday Calendar.

In such a case, you will get a message “This Holiday Calendar has been modified, Please generate the holiday list again.” and the Holiday Calendar state will be changed to defined until the Holiday list is regenerated with the new definition.

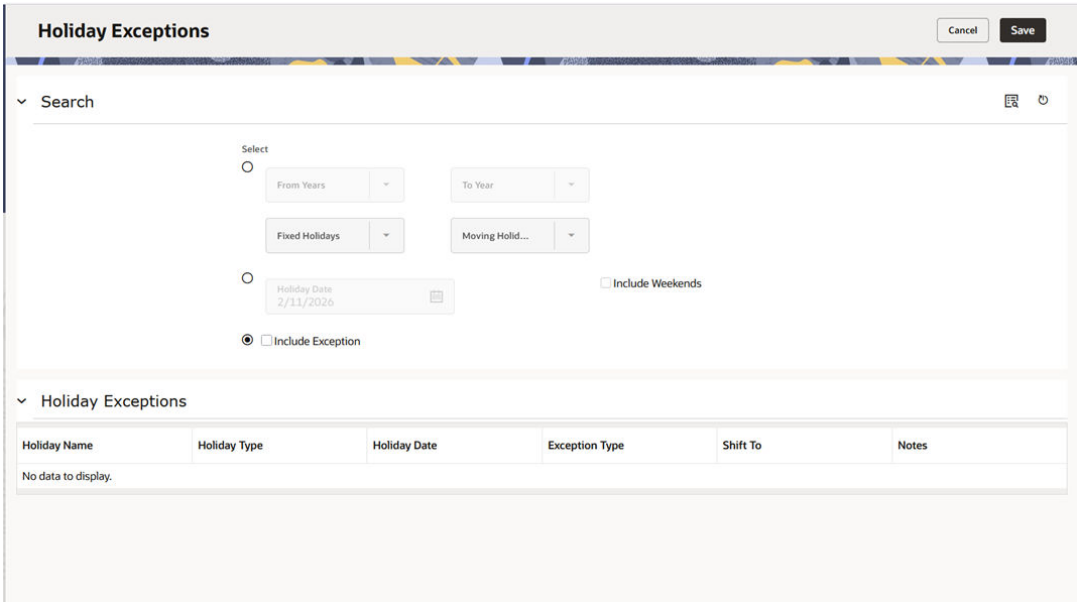
6.2.3.2 Holiday Exceptions

You can specify exceptions to Holidays. As a prerequisite, a Holiday Calendar should have been properly defined and the status of the Holiday Calendar on the Summary Page should be Processed. Generating the Holiday list will populate the Holidays (weekends, fixed, and moving) along with the working days. Then, the Exceptions button is enabled. Any changes in the Holiday Definition will disable the Exceptions Button. You must generate the Holiday List again to define or view the exceptions.

1. Click **Exceptions** in the **Generate Holidays And Exceptions** section. The **Holiday Exceptions** window opens.

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Figure 6-41 Holiday Exceptions Page



2. The search section in the **Holiday Exceptions** window has the following fields:
   - **From and To:** Denotes the range of years which is a subset out of the Holiday List generated, for which exceptions are required to be defined.
   - **Fixed Holidays:** You can filter the list of holidays by the type of Fixed Holidays.
   - **Moving Holidays:** You can filter the list of holidays by the type of Moving Holidays.
   - **Holiday Date:** For a particular known Holiday Date, exceptions can be defined.
   - **All Exceptions:** This check box when selected lists all the exceptions, if already defined, for the holidays within the From, To Date Range.
3. The search result gives the list of all holidays based on the selection of the above search criteria fields.
   - In the **Holiday Exceptions** section, there are two types of exceptions that can be defined: Not a Holiday and Shift to.
     - Any Holiday can be marked as not a Holiday, in which case that day is removed from the Holiday List. If you select **Not a Holiday** from the **Exception Type** drop-down, then the Shift to date field is disabled.
     - Spring earlier considered as a Holiday in the Holiday Calendar can be marked as Not a Holiday in the Holiday Exceptions Window. You can write your comments or remarks in the Notes next to the **Exception Type** drop-down list.
   - Any Holiday can be shifted to another day, in which case the earlier declared Holiday is removed from the Holiday List, while the shifted today is included as a Holiday.
   - Once the Holiday Calendar Definition is saved, its status in the Holiday Calendar Summary Page is marked as Defined.

6.2.4 Management Ledger Configuration

This screen enables you to define the Functional Currency and the Fiscal Year Start Month for each registered Management Ledger Table.

To configure the Management Ledger:

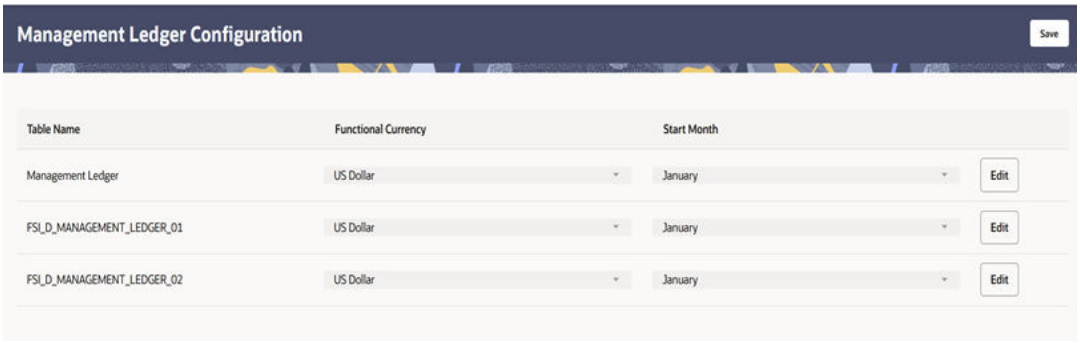
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1. From the LHS menu , select **Maintenance**, and then select **Management Ledger Configuration**.

   This UI displays the details for each registered Management Ledger. You can modify the Functional Currency and the Start Month Information for each registered Management Ledger Table, but cannot delete the details for an activated Management Leger Table.

   By default, the UI displays a single row corresponding to the OOTB Regular Management Ledger Table (FSI_D_MANAGEMENT_LEDGER). As and when any Placeholder Management Ledger Table is registered, the UI displays an additional row corresponding to the Registered Management Ledger. On registering and activating of all the Management Ledger Tables, the UI displays six rows pertaining to – one row for the OOTB Management Ledger Table and five rows for the registered five placeholder Management Ledger Tables.

Figure 6-42 Management Ledger Configuration



2. Select the following details:

   - **Functional Currency**: This field allows to select the functional currency that is applicable to the ledger table.
     Accounts and Instruments can be defined across various currencies, but to consolidate the accounts at multiple hierarchy Levels, across units, a common currency is required which you can set here. This currency can be the currency used in the primary economic environment where an entity operates, or in other words, the main currency used by a business unit.

     The default value of Functional Currency for any Management Ledger table is set as 'US Dollar'.
   - **Start Month**: The field is used to select the start month of the fiscal year. The default value of Start Month for any Management Ledger table is set as 'January'.
   - **Table Name**: This field displays the logical name of the Management Ledger table for which you want to input the details. The physical name of the Management Ledger table is displayed in a toolkit on mouse-hover over the logical name of the table.

3. Click **Save**.

6.2.5 Ledger Load History

Ledger Load History allows you to review the Runtime History of a Management ledger Load. You may see the order in which Ledger Loads are executed, and you may select any Ledger Load row and Undo the Ledger Load.

The screen presents a table that lists the Ledger Loads sorted by As-of-Date and by Load End Time. You may sort on any column you choose by clicking on the column header upward/

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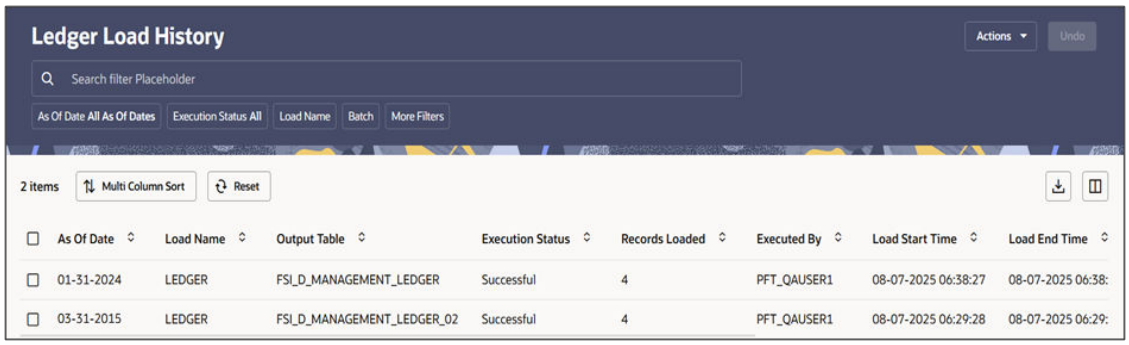
downward arrows, but the results are sorted first by As-of-Date and second by the Column, you have chosen.

Ledger Load History screen

To open this page, from the LHS menu, select **Operations And Processes**, and then select **Ledger Load History**.

A summary page is displayed showing a set of allocation rules executed on specific As Of Dates. Using search criteria, you can control the set of executed allocation rules that are displayed.

Figure 6-43 Ledger Load History screen



Navigation in Ledger Load History screen

When you first enter the Ledger Load History screen, your results are shown for all As-of-Date values for which a ledger load was executed, with the Executed As-of-Dates displaying value “All As of Dates”. You may select a different As-of-Date from a drop-down list as required.

With the ‘All As of Dates’ selected, the Ledger Load History Table will display the load names sorted in descending order based on the As of Date and the Load End Time.

The Execution Status filter comes with the default value as 'All'.

The title bar of the summary page provides several actions for the user. They are:

- **Actions**: This lists three buttons:
  - **Search**: Click Search to initiate the search action based on the search filters applied.
  - **Reset**: Click Reset to reset the search filters applied.
  - **Help**: Click Help to view the Help Page.
- **Undo**: Click UNDO to undo or reverse one or more ledger loads. For details, see the Ledger Load Undo Functionality section.to undo a single or multiple rule.

There is a grid bar at the top of the Summary grid that displays two buttons on the left and two buttons on the right. They are, starting from the left to the right:

- **Multi-Column Sorting**: This button is used to sort the Summary table basis of multiple column values. This is unlike the single column sorting functionality that exists in the Summary table header adjacent to each column name.
  Clicking on this button opens a shuttle box that the user can use to shuttle the table columns from the left hand side available columns list to the right hand side selected columns list. The Summary table will be sorted in the same order of the columns in which the columns are selected and brought into the right hand side list. Further the sorting order

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of either Ascending or Descending by clicking on the upward/downward arrow adjacent to each selected column. Upward arrow indicates sorted in Ascending order and Downward arrow indicates sorted in Descending order.

- **Reset**: Click Reset to reset the search criteria and also refresh the Ledger Load History table.
- **Export**: Click Export to download the displayed information in the Summary table in .xls format.
- **Column Selector**: This button is used to select the columns of the Summary table, that will be displayed in the Ledger Load History page.
  Clicking on this button opens a window with the list of all columns available to be displayed in the Ledger Load History page, and some columns within the list as marked denoting that the column is already displayed page. User can mark or unmark any column to display or hide the column from the Ledger Load History page.

Search

In addition to the **As Of Date** and the **Execution Status** search filters, you may search based on the following constraints as well:

- **Load Name**: Performs a wild card search on Ledger Load Name.
- **Batch**: Performs a wild card search on Batch Name.
- **Executed By**: Performs a wild card search on the logged-in username that has executed the Management Ledger Load.
- **Output Table**: Performs a wild card search on the output table.
- **Load End Time**: Restricts the number of rules displayed on the Ledger Load History screen based on a user's specification of a Single Load Date, and a no earlier than Load End Time – Time From and a no later than Load End Time – Time To. You can execute the search when you select the Search button.
- Navigation in Ledger Load History
- Ledger Load UNDO Functionality

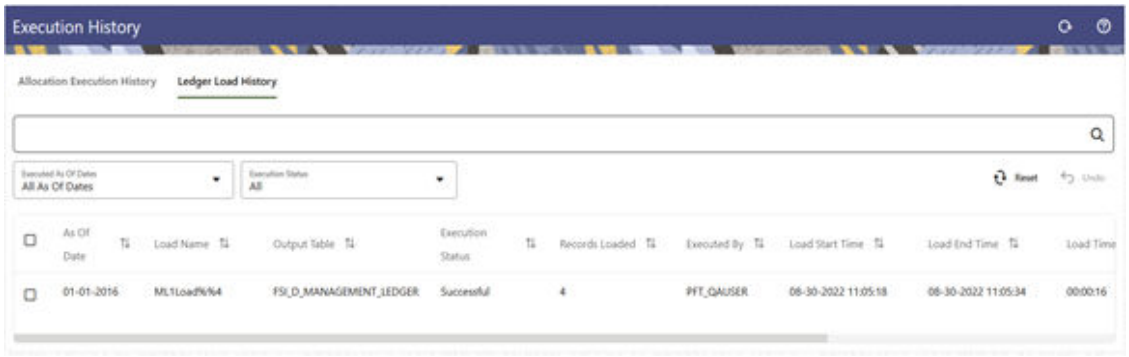
6.2.5.1 Navigation in Ledger Load History

When you first enter the Ledger Load History screen, your results are shown for all As-of-Date values for which a ledger load was executed, with the Executed As-of-Dates displaying value “All As of Dates”. You may select a different As-of-Date from a drop-down list as required.

With the ‘All As of Dates’ selected, the Ledger Load History Table will display the load names sorted in descending order based on the As of Date and the Load End Time.

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Figure 6-44 Ledger Load History Screen



The title bar of the Screen displays several actions for the user. They are:

- **Refresh**: Click Refresh to refresh the Ledger Load History Page.
- **Help**: Click Help to view the Ledger Load History Help Page.

The Ledger Load History screen can be divided under three sections – the Search section, the Inline section and the Table section.

- Search Section
  The Search pane is used to specify the search criteria that will reduce the number of rule executions that gets displayed in the Allocation Execution History table.
- Inline Section
  The Inline section contains two additional filters as follows:
- Allocation Execution Summary Grid

6.2.5.1.1 Search Section

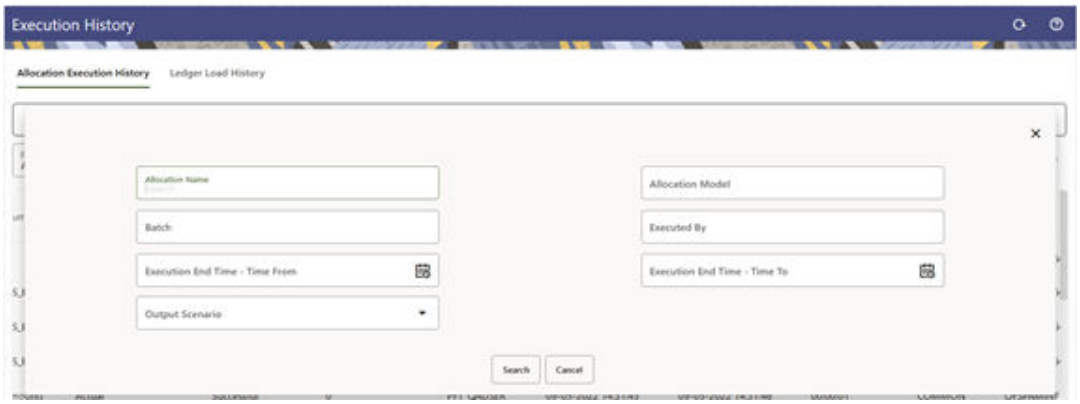
The Search pane is used to specify the search criteria that will reduce the number of rule executions that gets displayed in the Allocation Execution History table.

To search the Allocation Rules, perform the following steps:

1. Click the **Search** icon on the Search Pane to display the Criteria Window.
2. Enter the **Allocation Rule Name**, **Allocation Model Name**, **Batch**, **Executed By**, **Execution End Time**, or the **Output Scenario** and click **Search** to display the Allocation Rules that match the criteria.
3. Click **Cancel** to remove the filter criteria on the Search Window and refresh the Window.
4. Click **Search** after entering the Search Criteria.

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Figure 6-45 Allocation Execution History – Criteria Window



The screen displays the search results that meet the Search Criteria in a table containing all the Allocation Rules.

You may search based on the following parameters:

- **Allocation Name**: Performs a wild card search on Allocation Rule Name. You can execute the search when you select the Search button.
- **Allocation Model**: Performs a wild card search on Allocation Model Name under which different Allocation Rules are grouped together. You can execute the search when you select the Search button.
- **Batch**: Performs a wild card search on Batch Name. You can execute the search when you select the Search button.
- **Executed By**: Performs a wild card search on the logged-in username that has executed the rule when rule execution happened through Allocation Summary. While it performs a wild card search on the username that has been passed as a parameter in the batch when rule execution happened through batch method.
- **Execution End Time**: Restricts the number of rules displayed on the Allocation Execution History summary screen based on a user's specification of a single execution date and a no earlier than Execution End Time – Time From and a no later than Execution End Time – Time To. You can execute the search when you select the Search button.
- **Output Scenario**: Performs a wild card search on the Output scenario for any Allocation Rule. You can execute the search when you select the Search button.

6.2.5.1.2 Inline Section

The Inline section contains two additional filters as follows:

- Executed As-of-Dates with default value as 'All As of Dates'.
- Execution Status with default value as 'All'.

The following statuses occur when an Allocation Execution is initiated:

- **Processing**: Allocation Engine updates this status when rule execution is started.
- **Successful**: Allocation Engine updates this status when rule execution is successful.
- **Failed**: Allocation Engine updates this status when rule execution is failed.

An Undo operation on any Allocation Execution can lead to one of the following statuses:

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- **Undo in Progress**: Undo engine updates this status when it picks up a record for Undo so that another process does not pick up the same record.
- **Undo Failed**: Undo engine updates this status when the Undo is failed.
- **Undo Rolled Back**: When one of the rules as part of a Batch or an Allocation Model, is processed for Undo and fails, the status of the rule is marked as 'Undo Failed'.

All the previous rules in the Batch/Model that were successfully processed for Undo before the point of failure, will be rolled back, and the status of those records will be updated as 'Undo Rolled Back'.

User can apply these two filters to select the execution rows he wants to see in the Allocation Execution History Table.

This section also offers several controls that allow the user to perform different functions when an Allocation Rule is selected. You can select multiple Allocation Rules at a time, but this may disable some of the icons.

The following are the controls in the Inline section:

- **Reset**: Resets the search criteria and also refreshes the Allocation Execution History table. 'Reset' applies to all fields under the Criteria Window but not to the Inline filters.
- **View**: On choosing a single row of the Allocation Execution History table, select View to drill into an audit trail for the currently selected rule. The View icon is disabled if no rows have been selected or if multiple rows have been selected.
  See the Allocation Execution Audit Functionality section for details.
- **Undo**: You can use this icon to UNDO or reverse one or more allocation runs.
  For details, see the UNDO Functionality section.

6.2.5.1.3 Allocation Execution Summary Grid

The Summary grid comes with a default set of columns that are displayed for this screen. You can select your preferred list of columns from the Column Selector (Columns) explained above. You can sort any of these columns by clicking on the text in the column header. The following columns categorize each Allocation Execution row in the table.

- **As of Date**: Displays the As-of-Date when the Allocation Rule was executed.
- **Allocation Name**: Displays the Allocation Rule's short name. A “mouse over” on the Rule's name displays the Rule's long description as well as the Identity Code generated or used by that allocation. You can use Identity Codes in queries against the database to identify rows generated by the rule.
- **Output Table**: This denotes the target table name in the database where the Allocation is either posted or updated records. For example, Management Ledger, Assets, and so on.
- **Output Column**: This denotes the target column name in the database where the Allocation is either posted or updated records.
- **Output Scenario**: This denotes the scenario value configured in the Output Configuration of the executed Allocation Rule.
- **Execution Status**: Denotes the status of each allocation execution. See the Inline section for more details.
- **Record Processed**: Displays the record count of the Allocation Execution, meaning the count of inserts or updates that has taken place.
- **Executed By**: Displays the username that has executed the Allocation Rule.

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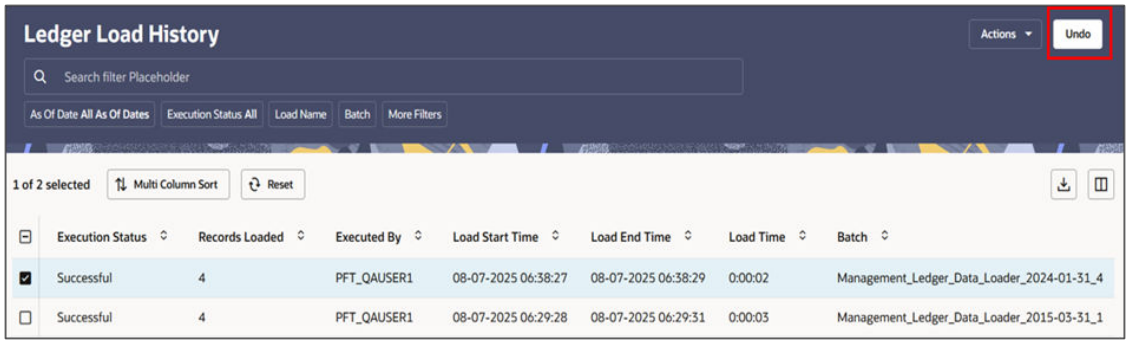
- **Execution Start Time**: Displays the date and time at which each Allocation Rule has been started.
- **Execution End Time**: Displays the date and time at which each Allocation Rule is completed.
- **Execution Time**: Displays the elapsed time required for each Allocation Rule to complete, shown in hours, minutes & seconds.
- **Folder**: Displays the name of the Folder to which the Allocation Rule belongs.
- **Batch**: Displays the Batch name under which each Allocation Rule was executed. For rules executed directly from the Allocation Specification user interface, the system automatically generates synthetic batch names.
- **Allocation Model Name**: Displays the allocation model name under which the Allocation Rule is grouped. The Allocation Model consists of a list of individual Allocation Rules that can be executed as a single unit.

> **Note**
>
> Allocation Model Name column remains blank for any Allocation Rule that was not executed from within an Allocation Model.

6.2.5.2 Ledger Load UNDO Functionality

A Ledger Load Undo operation reverses the effect of the Ledger Load process meaning it deletes the rows that were inserted into a Management Ledger as part of the Ledger Load process.

Figure 6-46 Ledger Load History - Undo



The Undo icon is enabled whenever you select one or more rows from the table.

For details on restricting action to Undo functionality, see User Preferences section. This functionality works only if the **Enable Undo for Ledger Load** option in the User Preferences is set to **Yes**.

6.2.6 Filters

Filters allow you to view and select data using the defined expressions.

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- Filter Definition Types
  Filter definitions are created based on the different object types.
- Filter Summary
  The **Filters Summary Page** shows the list of available filters.
- Creating Filter Definitions
  To create a Filter definition, complete the following steps:
- Managing Filter Definitions

6.2.6.1 Filter Definition Types

Filter definitions are created based on the different object types.

The following filter definition types are supported:

- Attribute Filter - filters based on one or more Dimension Type Attributes. For each attribute, you can select one or more values.
- Data element filter -filters the columns based on specific data constraint. These filters are used within other rule types such as Allocation Rules, Transfer Pricing Rules, Asset and Liability Management Rules.
- Group filter - combined filter containing multiple Data element filters logically connected using the **AND** operator.
- Hierarchy filter - filters using Rollup Nodes within a Hierarchy and exclude or include data within an Rule.

6.2.6.2 Filter Summary

The **Filters Summary Page** shows the list of available filters.

- To access the Filter Summary page, click **Maintenance** and select **Filter**.

  The Filter Summary Page provides the list of already created Filter definitions with the following details.

  - **Name** - The unique Filter Name. You can mouse-over the filter name to view more details such as the description of the filter.
  - **Folder** - The folder in which the Filter Definition is stored.
  - **Type** - One of the following Filter Types associated with the Filter Definition. The filter type is selected based on the type of the object that needs to filtered.
    - Attribute Filter
    - Data element filter
    - Group filter
    - Hierarchy filter
  - **Created By** - The login name of the User who created the Filter Definition.
  - **Created Date** - The date of creation.
  - **Action** - Using **Action** (**three dots**), you can perform the following tasks on a selected filter definition.
    - View - View the details of selected filter definition.
    - Edit - Edit a filter definition.
    - Copy - Copy a filter definition.

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- Delete - Delete a filter definition.
- View SQL - View the SQL statement for a filter definition.
- Check Dependency - Check the dependent objects associated with the filter definition.

To filter the summary based on specific search criteria, select and add the required search criteria to the **Search** field and enter/select the specific values.

- Searching Summary
- Sorting a Summary Page
  Sorting helps to view/group the filter definitions sequentially based on the selected criteria

6.2.6.2.1 Searching Summary

You can search for a specific Definition based on the following criteria. Select/Enter one or more unique values/tag associated with the definition and click **Search**.

- **Name** - Enter unique filter name, to search for a specific definition based on the entered name,
- **Folder** - Select a specific folder to view the definitions stored in that folder.
- **Filter Type** - Select the Filter type, to view all the definitions associated with it.
- **Description** - Enter one or more keywords, to view the definitions containing those keywords.

6.2.6.2.2 Sorting a Summary Page

Sorting helps to view/group the filter definitions sequentially based on the selected criteria

You can sort/group the Definitions based on the following parameters:

- Filter Type
- Folder
- Name

6.2.6.3 Creating Filter Definitions

To create a Filter definition, complete the following steps:

1. To create a Filter Definition, click the **Add** in the Filter Summary.

   The **Filter Details** Page with the following details is displayed.

   - **Name** - The unique Filter Definition Name.

     > **Note**
     >
     > You can enter up to 120 characters. All allowed characters are **blank space ( )** , **Underscore (_)**,**comma (,)**, **dot (.)** and " **hyphen (-)** .

   - **Folder** - Select the Folder, to save the Filter definition.
   - **Description** - A brief description about the Filter Definition.

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> **Note**
>
> You can enter up to 250 characters. All characters are allowed except **" & ", "+ ", "@" and "~"**.

- **Read-Only** - Select this option to give other users the access to only view the Filter Definition.
- **Filter Type** - Select one of the following filter types, based on the type of the object that needs to filtered. For more information about creating a filter based on the filter type refer, to the respective sections.
  - Attribute Filter
  - Data Element filter
  - Group filter
  - Hierarchy filter

2. After including all the filters, click **Apply**.

   The new Filter Definition is created successfully and added to the Filter Summary.

- Defining an Attribute Filter
  Attribute Filters are created using defined Attributes. Attribute filters facilitates you to filter on one or more Dimension Type Attributes.
- Defining a Data Element Filter
  Data Element Filter is a stored rule that expresses a set of constraints.
- Defining Group Filter
  Group Filters can be used to combine multiple Data Element Filters with a logical "AND".
- Defining Hierarchy Filter
  Hierarchy Filter allows you to utilize Rollup Nodes within a Hierarchy to help you exclude (filter out) or include data within an Rule.

6.2.6.3.1 Defining an Attribute Filter

Attribute Filters are created using defined Attributes. Attribute filters facilitates you to filter on one or more Dimension Type Attributes.

For each attribute, you can select one or more values.

1. Select the Filter Type as **Attribute**.
2. Select the required **Dimension** from the drop-down list.
3. Select the associated **Attribute** from the drop-down list.

   Only those attributes associated with the selected Dimension are displayed.
4. In the **Attributes Value** pane, click **Search**. The list of attribute values associated with the selected Attribute are displayed.
5. Click the **Action** adjacent to the attribute to be added and click **Copy**.

   The selected Attribute value is added the **Attribute Values** pane.
6. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

   The filter definition is added and a confirmation message is displayed.

   To Delete a Filter, highlight the filter and click **Delete**.

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To view the SQL Query for a filter, highlight the filter and click **View SQL**.

6.2.6.3.2 Defining a Data Element Filter

Data Element Filter is a stored rule that expresses a set of constraints.

Data Element Filters can access most instrument columns and most columns in the Management Ledger. Data Element Filters are used within other rule types such as Allocation Rules, Transfer Pricing Rules, Asset and Liability Management Rules.

Only columns that match the data type of your Data Element selection are displayed in the drop-down list. For example, Balances between 10,000 and 20,000 Accounts opened in the current month Loans with amortization terms greater than 20 years.

Refer to the following steps, to create a Data Element filter:

1. Select the required database table from the **Table Name** drop-down list.
2. Select one or more columns from the **Column Name** to be included in the filter for viewing specific values.

   The columns that are present in the selected Database table are only listed.
3. Select the **Data Element** from the drop-down list.

   The Data elements are listed as a combination of the selected Database table and the selected column
4. Select one of the following Filter Methods to be applied to each data element, add the filter conditions based on the selected method.
   - Specific Values Filter
   - Ranges Filter
   - Another Element Filter
   - Expressions Filter
5. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

   The filter definition is added and a confirmation message is displayed.

   To Delete a Filter, highlight the filter and click **Delete**.

   To view the SQL Query for a filter, highlight the filter and click **View SQL**.

- Specific Values Filter
  You can match a selected database column to a specified value or values, using the Specific Value filter.
- Ranges Filter
  You can match a selected database column to a specified range/ranges of values or to ranges of values.
- Creating Another Element Filter
  You can match a selected database column to another database column.
- Expressions Filter
  Expressions filters help to include calculated conditions in filters.

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6.2.6.3.2.1 Specific Values Filter

You can match a selected database column to a specified value or values, using the Specific Value filter.

You may either include or exclude Specific Values, to view the data.

To create a specific value filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Specific Values** in the Filter Methods.
2. Enter the required filter value in the **Values** column.
   - When comparing Specific Values for a date type column, select the date using the Calendar control.
   - When comparing Specific Values for a character type column, enter only Character strings.
3. To add another row click **Add** (Plus sign) on the right hand side corner of the **Specific Values** pane. Repeat the previous step, to enter multiple values.
4. To include or exclude the specific values, in the results:
   - To view the results containing the entered specific value, select the value and select **Include**. Click **Add** to add the expression to the filter condition.
   - To view the results without the entered specific value, select the value and select **Exclude**. Click **Add** to add the expression to the filter condition.
5. To delete a value, select the value by clicking the check-box adjacent to the value. Click **Delete**.
6. To view the SQL statement for the specific value, select the value and click **View SQL**.

6.2.6.3.2.2 Ranges Filter

You can match a selected database column to a specified range/ranges of values or to ranges of values.

You may either include or exclude Specific Values, to view the data.

To create a Ranges filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Ranges** in the Filter Methods.
2. Refer to the following steps, and create a range or multiple ranges, view require data.

   You can use Ranges for data types - Term, Frequency, Leaf, Code, Identity, Date, Numeric and Varchar.

   a. Select the **From Operator** (> or >=), to include the lower limit of the range.
   b. Enter the **Value From** which the Range begins.
   c. Select the **To Operator** (< or <=), to indicate whether to include the specified value in the higher limit of the range.
   d. Enter the **Value To** , to include the higher limit of that range.
3. To include or exclude the specific range, in the results:
   - To view the results containing the entered specific range, select the range and select **Include**. Click **Add** to add the range to the filter condition.

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- To view the results without the entered specific range, select the range and select **Exclude**. Click **Add** to add the range to the filter condition.

4. To delete a range, select the range by clicking the check-box adjacent to the value. Click **Delete**.
5. To view the SQL statement for the specific range, select the range and click **View SQL**.

6.2.6.3.2.3 Creating Another Element Filter

You can match a selected database column to another database column.

When creating an Another Data Element Filter Method, you may only compare a column to other columns that you have already selected (the Data Element drop-down list box will only contain columns that you have already selected).

.

To create an Another Element filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

1. Select **Another Element** in the Filter Methods.
2. Select a **Table Column**, that needs to be compared with the Data Element Column.
3. Select one of the following mathematical operators for comparison.
   - **=** - Equal to
   - **<>** = Not equal to
   - **<** - Lesser than
   - **>** - Greater than
   - **<=** - Lesser than or equal to
   - **>=** - Greater than or equal to
4. Select a **Data Element**, that needs to be compared with the Table Column.
5. Click **Add** to add the expression to the filter condition.

   To edit an existing Another Element Filter entry, select the entry listed in the **Filter Condition** pane. Modify the expression in the Another Element Pane and click **Update**.

6.2.6.3.2.4 Expressions Filter

Expressions filters help to include calculated conditions in filters.

To create an Expression filter, proceed with the following steps, after selecting the Database table name, column name and the Data element.

Refer to the following steps, to create a Expressions filter:

1. Select **Expressions** in the Filter Methods.
2. Refer to the following steps, to include an expression and filter the data based on the calculated output.
   a. Select one of the **Operator** (> or >=), to process the data in the specific column.
      - **=** - Equal to
      - **<>** - Not equal to
      - **<** - Lesser than
      - **>** - Greater than

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- **<=** - Lesser than or equal to
- **>=** - Greater than or equal to

b. Select the **Expression** for comparing the data in the selected table column.

3. Click **Add** to add the expression to the filter condition.

   To edit an existing Expression Filter entry, select the entry listed in the **Filter Condition** pane. Modify the expression in the Expressions pane and click **Update**.

4. To delete a range, select the range by clicking the check-box adjacent to the value. Click **Delete**.

5. To view the SQL statement for the specific range, select the range and click **View SQL**.

6.2.6.3.3 Defining Group Filter

Group Filters can be used to combine multiple Data Element Filters with a logical "AND".

For each attribute, you can select one or more values.

1. Select the Filter Type as **Group**.
2. Select the checkbox(s) adjacent to the required Data Element Filters in the **Data Element Filter Selection** pane, and click **Add Selected Filters**, to move them to **Selected Filters** pane.

   To select all the filters, click **Select All**.

   To search for a specific filter, enter the few letters from the filter name, and click the **Search**
3. To view the SQL statement of a filter, select the filter and click the eye icon.
4. To remove a filter from the **Selected Filters** pane, select the filter and click the delete icon.
5. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

   The filter definition is added and a confirmation message is displayed.

6.2.6.3.4 Defining Hierarchy Filter

Hierarchy Filter allows you to utilize Rollup Nodes within a Hierarchy to help you exclude (filter out) or include data within an Rule.

For each attribute, you can select one or more values.

1. Select the Filter Type as **Hierarchy**.
2. Select the required **Dimension** from the drop-down list.
3. Select the required **Folder** from which you want to select the Hierarchy.
4. Select the **Hierarchy** from the list of Hierarchies displayed based on the selected Folder.
5. On the Hierarchy view tab, select/unselect the Child/Sibling Members to be included in the Filter.

   For more information about Hierarchy tree, refer Hierarchy Tree .
6. After adding the required filters, click **Save**, to add the Filter definition to the Filter Summary page.

   The filter definition is added and a confirmation message is displayed.

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- Hierarchy Tree
  The Hierarchy Tree contains a list of available Members associated with the selected Hierarchy.

6.2.6.3.4.1 Hierarchy Tree

The Hierarchy Tree contains a list of available Members associated with the selected Hierarchy.

You can view the list of available members and the child nodes associated with the members, in the **Hierarchy View** tab.

- To select a Member, click the check-box adjacent to the member.

> **Note**
>
> When a Member is selected, all the associated child members are also included in the Hierarchy filter. To include only a specific child member, expand the node and selected the required child member.

- To search for a specific member, click **Search**. Enter the keyword in the **Search Value** and click **Search** adjacent to the Search box.
  The searched members are displayed in the **Search Results** tab.
- You can view a selected tree member in a flat list, in the **Show Members** tab.
- To navigate through the list of available members.
  - Click **Expand/Collapse** to expand/collapse all the nodes. You can also click **Node** next to a member, to expand or collapse a Member node.
  - Click **Sort Ascending/Descending**, to view the list Members in alphabetical order.
  - In Search Results tab, click **Focus/Unfocus**, to select/deselect any specific node.

6.2.6.4 Managing Filter Definitions

You can view, edit, copy, delete and view SQL for the existing Filter Definitions from the Filter Summary.

In the Filter Summary Page, highlight a specific Filter Definition and click the **Action** (three dots). The following Options are displayed.

- View - View the details of selected filter definition.
- Edit - Edit a filter definition.
- Copy - Copy a filter definition
- Delete - Delete a filter definition.
- View SQL - View the SQL statement for a filter definition.
- Check Dependency - Check the dependent objects associated with the filter definition.
- Viewing Filter Definition Details
  You can view the details of an individual Filter Definition, using the following procedure:
- Editing Filter Definition Details
  You can edit individual Filter Definition details at any given point. To edit the existing Filter Definition details:

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- Copying Filter Definition Details
  You can copy individual Filter Definition Details, to recreate another new Filter Definition.
- Deleting Filter Details
  To delete a Filter Definition:
- Checking Dependencies
  To check the dependencies of a Filter Definition from the Filters Summary:
- View SQL
  To view SQL of a Filter Definition, perform the following steps:

6.2.6.4.1 Viewing Filter Definition Details

You can view the details of an individual Filter Definition, using the following procedure:

- Click **Action** (three dots) corresponding to the filter definition you want to view and select **View**.

  The Filter Details page is displayed with the details such as Name, Description, Folder, Filter Type, Filter Conditions and Audit Info.

6.2.6.4.2 Editing Filter Definition Details

You can edit individual Filter Definition details at any given point. To edit the existing Filter Definition details:

1. Click **Action** (three dots) corresponding to the filter definition you want to edit and select **Edit**.

   The Filter Details page is displayed with the details: Name, Description, Folder, Filter Type, Filter Conditions and Audit Info. .
2. Edit the required information and click **Save**.

6.2.6.4.3 Copying Filter Definition Details

You can copy individual Filter Definition Details, to recreate another new Filter Definition.

To copy a Filter Definition:

1. Click **Action** (three dots) corresponding to the filter definition you want to copy and select **Copy**.

   The Filter Details page is displayed with the details Name, Description, Folder, Filter Type and Filter Conditions.
2. Edit the unique information such as Name, Description, Folder, Filter Type and Filter Conditions, and click **Save**..

6.2.6.4.4 Deleting Filter Details

To delete a Filter Definition:

- Click **Action** (three dots) corresponding to the Filter Definition you want to delete and select **Delete**.

  The Filter Definition is deleted after confirmation.

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> **Note**
>
> You cannot delete a definition if any dependency like Attribute, Hierarchy or Filter is attached to it. Detach the dependency before deleting the definition.

6.2.6.4.5 Checking Dependencies

To check the dependencies of a Filter Definition from the Filters Summary:

- Click **Action** (three dots) corresponding to the to the filter definition and select **Check Dependency**

  The list of Dependent Objects is displayed with Object ID, Name, and ID Type of the dependent Objects.

6.2.6.4.6 View SQL

To view SQL of a Filter Definition, perform the following steps:

- Click **Action** corresponding to the Filter Definition and select **View SQL**.

  The SQL statement of Filter Definition is displayed.

6.3 Application Specific Rules

This section explains about the Cash Flow Engine Cloud Service specific modules. This section covers the following topics:

1. Behavioral Assumptions: This section contains details about behavioral assumptions of Cash Flow Engine Cloud Service, for example, Prepayment rules, Prepayment models, etc.
2. Forecast Rates: Forecast Rate scenario assumptions allow you to define future interest rates, future economic indicators, and future currency exchange rates. Use interest rate forecasts to project cash flows, including pricing new business, re-pricing existing business, calculating prepayments, and determining discount methods. Use Economic Indicator forecasts to include in behavioral modeling and scenario/stress analysis. Use currency exchange rate forecasts to account for the effects of currency fluctuations on income.
3. Process Definitions: This module discusses the procedure for creating and executing the Cash Flow Process.

- Behavioral Assumptions
  This section covers the following topics:
- Forecast Rates
- Process Definitions
  This section covers the following topics:

6.3.1 Behavioral Assumptions

This section covers the following topics:

1. Prepayment Rules: A Prepayment Rule contains methodologies to model the prepayment behavior of various amortizing instruments and quantify the associated Prepayment Risk.

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2. Prepayment Models: Prepayment Models can be referenced by a Prepayment Rule to Model Prepayment Behavior of instruments based on a range of instrument level attributes.
3. Behavior Pattern Rules: The Behavior Pattern Rule UI allows you to group Behavior Pattern codes (behavioral assumptions) together in a set at the Product/Currency level which then can be rotated to select a value on a combination.
4. Discount Methods: This module describes the procedure for working with and managing Discount Method Rules. Discount Method Rules allow users to define the method for discounting projected Cash Flows for market value and duration calculation purposes.

- Prepayment Rules
- Prepayment Models
- Behavior Pattern Rules
- Discount Methods

6.3.1.1 Prepayment Rules

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

Search Prepayment Rule

Prerequisites: Predefined Prepayment Rule

To search for a Prepayment Rule:

On the Prepayment Summary, enter your search criteria in the search box and click **Search**. The Prepayment Rules meeting your search criteria are displayed. If you select **Dimension** filter and search for the rules, the search results will be displayed for the selected Dimension. When you try to create any rule, by default the selected Dimension will be displayed instead of the Dimension defined in the Preferences.

Or

An alternative method to search a Prepayment Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Prepayment rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Prepayment Rule, partially or fully, and click **Search**.

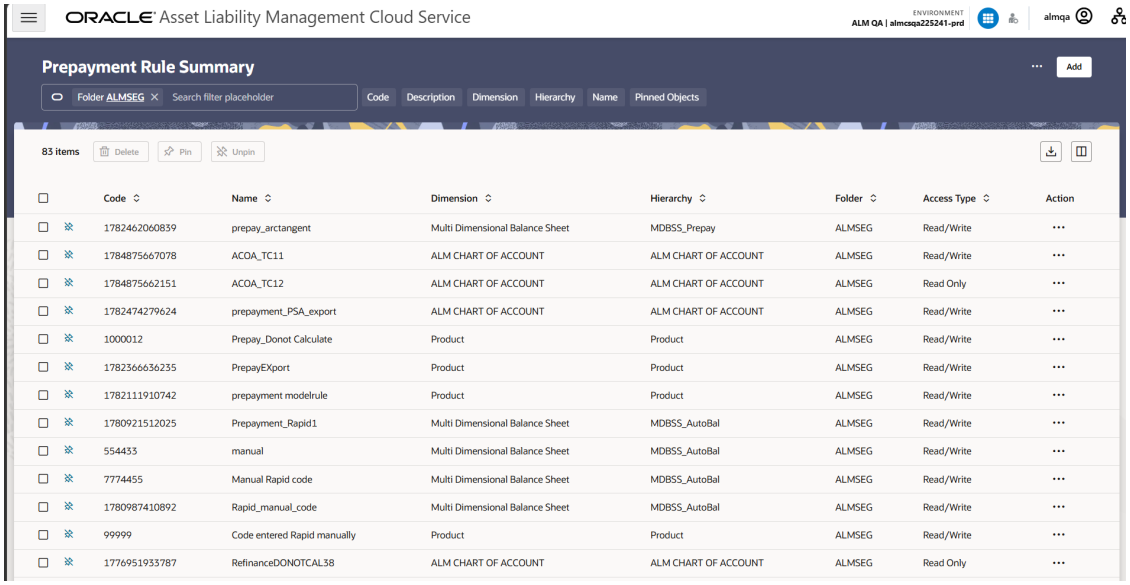
Prepayment Rule Summary

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

For more information, see Defining Prepayment Methodologies section.

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Figure 6-47 Prepayment Rule Summary



The Prepayment Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new prepayment rule.

Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

- **Code:**Numeric ID associated with a Prepayment Rule .
- **Name**: The Prepayment Rule's short name.
- **Dimension**: The Dimension to which the Prepayment Rule belongs.
- **Hierarchy**: Name of the hierarchy that is used to define the prepayment rule.
- Folder: The folder where the prepayment rule is saved.
- **Last Modified By:** The user who last modified the prepayment rule.
- **Last Modified Date:** The Date and Time when the prepayment rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the prepayment rule.
  - View/Edit: Based on the user privilege assigned, you can either only view or edit existing prepayment rules. To edit a rule, you must have Read/Write privilege.
  - Save As: You can reuse a prepayment rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - Delete: You can delete prepayment rules that you no longer require. Note that only prepayment rule owners and those with Read/Write privileges can delete prepayment rules. A Prepayment Rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - Dependency Check: You can perform a dependency check to know where a particular prepayment rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting prepayment rules that have

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dependencies. A report of all rules that utilize the selected prepayment rule is generated.

You can totally or selectively copy product assumptions within a prepayment rule from one currency to another currency or a set of currencies, or from one product to another product or a set of products.

Also See:

- Create Prepayment Rules
- Defining Prepayment Methodologies
  - Defining the Constant Prepayment Method
  - Defining the Prepayment Model Method
  - Defining the PSA Prepayment Method
  - Defining the Arctangent Calculation Method
- Create Prepayment Rules
- Defining Prepayment Methodologies
- Associating Conditional Assumptions with Prepayment Rules

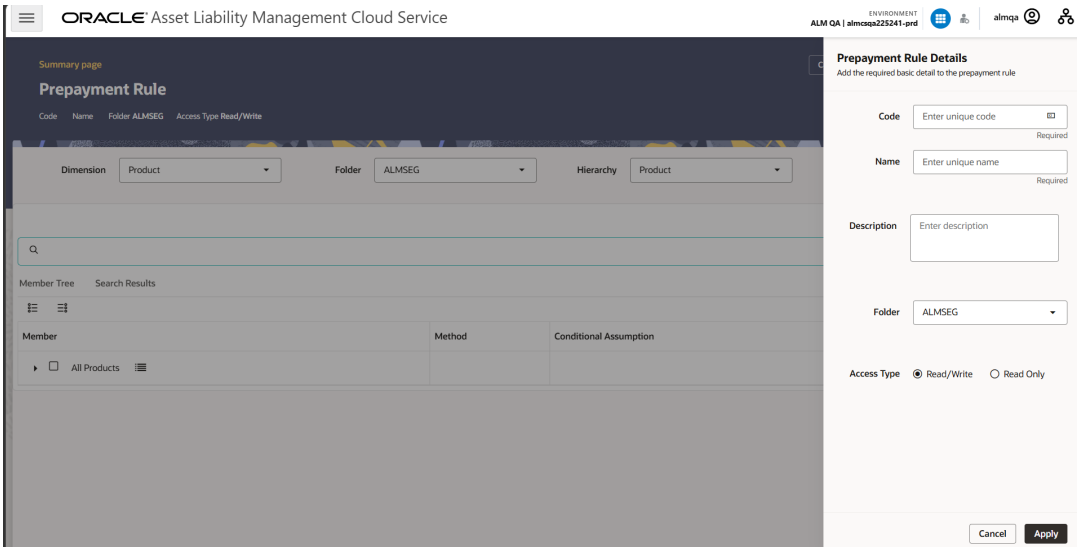
6.3.1.1.1 Create Prepayment Rules

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

To create a new Prepayment Rule, follow these steps:

- Click **Add** icon from the top of the **Prepayment Rule Summary** page.

Figure 6-48 Add Prepayment Rule



- Enter the following Details.
  - **Name:** Enter the name of the Prepayment Rule.
  - **Code:** Enter the code manually, or click Autogenerate to generate it automatically
  - **Description (optional):** Enter the description of the Prepayment Rule.

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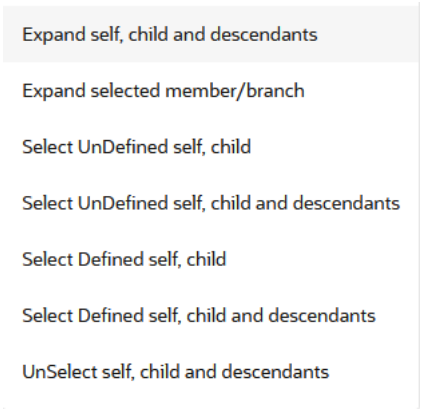
- **Folder:** Select the Folder where the Prepayment Rule needs to be saved.
- **Access Type:** Select the Access Type as Read-Only or Read/Write.

- Select the **Dimension** as Common Chart of Accounts, Product, General Ledger Account, or MDBSS.

> **Note**
>
> MDBSS is enabled only in ALM Cloud Service.
> If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.
>
> You can search the rule on any of the product dimension, searched dimension will be auto-populated while defining the rule; if you like, you can change the default product dimension.

- Select a **Currency**.
- Select **Folder** and **Hierarchy**.
- Select **Member Node(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
  - **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 6-49 Member Tree



Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

* **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
* **Expand selected member/branch:** Allows to expand the selected node
* **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
* **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

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* **Select Defined self, child:** Allows to select the selected node itself along with its child.
* **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
* **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

* Add
* Edit
* View
* Delete
* Copy

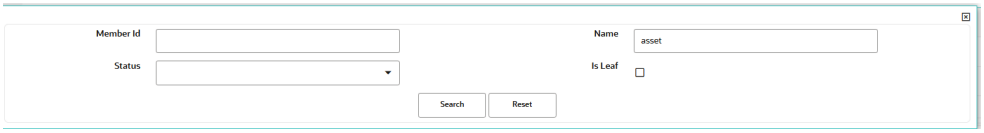
– **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

1. Navigate to **Assumption Browser** section of the Rule Definition page.

> **Note**
>
> Before using the Member Search in Assumption Browser, you must execute the batch **Member_Browser_Refresh**. For more information, see note in Create MDBSS section.

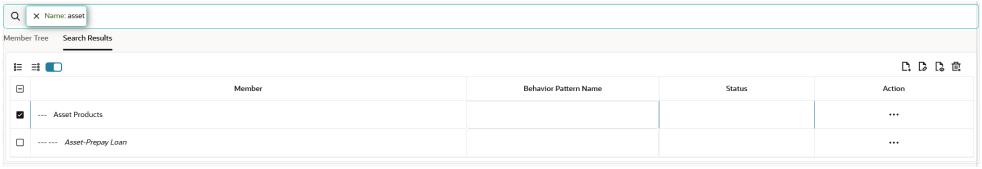
2. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 6-50 Search Criteria



3. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 6-51 Searching Members



.

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Here, you can perform the following tasks on the searched node(s):

* Add
* Edit
* View
* Delete
* Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

- Click **Add** from **Assumption Browser** Section. For more information, see the Defining Prepayment Methodologies.
- Click Save.

Exporting and Importing a Prepayment Rule

The export and import functions support bulk maintenance of prepayment-rule configurations through an Excel workbook.

Export the prepayment rule

1. Open the required Prepayment Rule.
2. Confirm that the correct Dimension, Folder, Hierarchy, and Currency are selected.
3. Select Export Excel.
4. Save the generated .xlsx file.
5. Open the exported workbook in Microsoft Excel.
   The exported Excel workbook contains the following worksheets:
   - **Help** — Refer this sheet for template instructions, accepted values, and validation rules.
   - **Filters List** — Valid conditional-assumption filters and their identifiers.
   - **Interest Rate Curves** — Valid interest-rate curves available for market-rate definitions.
   - **Prepayment Models** — Valid prepayment models and their identifiers.
   - **Currency worksheet, such as USD** — The actual prepayment-rule configuration. The workbook uses a currency worksheet named USD. It contains the rule name, hierarchy information, active currency, and one configuration row for each exported hierarchy member.

Update the exported workbook

Update the currency worksheet by adding or modifying prepayment-rule values for the required hierarchy members.

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> **Note**
>
> To add configuration for multiple currencies, make copy of existing worksheet, rename to required three-letter currency code and modify configuration.

Upload the workbook

1. Return to the **Prepayment Rule** page.
2. Select **Import.**
3. In the Import Excel dialog, drag the updated workbook into the upload area or browse to select it.
4. Confirm that the selected file has the .xlsx extension. Select **Validate**.

> **Note**
>
> The system validates the workbook before enabling the import. Validation checks include the workbook structure, worksheet names, currencies, hierarchy codes, field values, date ranges, required method parameters, and referenced objects.

Resolve validation errors

If validation fails:

1. The import dialog displays an error message indicating that the uploaded file contains errors.
2. The system generates and downloads an error report.
3. Open the error report and review each reported issue.
4. Use the reported cell or range to locate the incorrect value in the exported workbook.
5. Apply the suggested resolution. Save the corrected workbook.
6. Upload the workbook again. Select **Validate** again.

> **Note**
>
> Do not select Import until validation completes successfully.

Import the validated rule

After successful validation:

1. Confirm that the Import button is enabled.
2. Select **Import**.
3. Wait for the import-completion confirmation.
4. Close the import dialog.
5. Review the member tree and prepayment-method details on the rule page.
6. Confirm that the imported hierarchy members, methods, filters, dates, and method parameters match the workbook.
7. Select **Save**.

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6.3.1.1.2 Defining Prepayment Methodologies

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

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

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

- Defining Prepayments Using Node Level Assumptions

6.3.1.1.2.1 Defining Prepayments Using Node Level Assumptions

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

Prerequisites

Performing basic steps for creating or editing a Prepayment Rule.

Procedure

This table describes key terms used for this procedure.

Table 6-14 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.

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Table 6-14 (Cont.) Key Terms used for Prepayment Rules

Terms	Description
Prepayment Date	You can select when to calculate prepayment, either on normal payment dates or user-defined tenor.
Payment Event Type	When prepayment is calculated on payment dates then this option allows you to specify type of event when prepayment occurs. By default, “Principal and Interest” is selected.
Market Rate	The market rate is defined as the sum of the Index (the Yield Curve Rate as described by the Interest Rate Code) and the Spread (the difference between the customer rate and market rate).
Associated Term	Allows you to define the term for the point on the yield curve selected in the Market Rate Definition that will be used in obtaining the market rate. • **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.

1. Navigate to the Prepayment Assumption Details Page after selecting a Currency and one or more products from the hierarchy.
2. Select a **Cash Flow Treatment type**, **Refinance** or **Curtailment**.
3. Refinance is the most used method.

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4. Select a **Calculation Method** as Constant, Prepayment Model, PSA, or Arctangent.

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

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

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

6. Click **Apply**.
   The **Assumption Browser Definition** Page is displayed.

   At this point you can:

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

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

- Defining Assumptions with Default Currency
  For cases where you have the same assumption (method and IRC) which is applicable to all currencies or multiple currencies, you can define rules for the combination of Product and Default Currency.
- Defining Constant Prepayment Method
- Defining Prepayment Model Method
- Defining PSA Prepayment Method
- Defining the Arctangent Calculation Method

6.3.1.1.2.1.1 Defining Assumptions with Default Currency

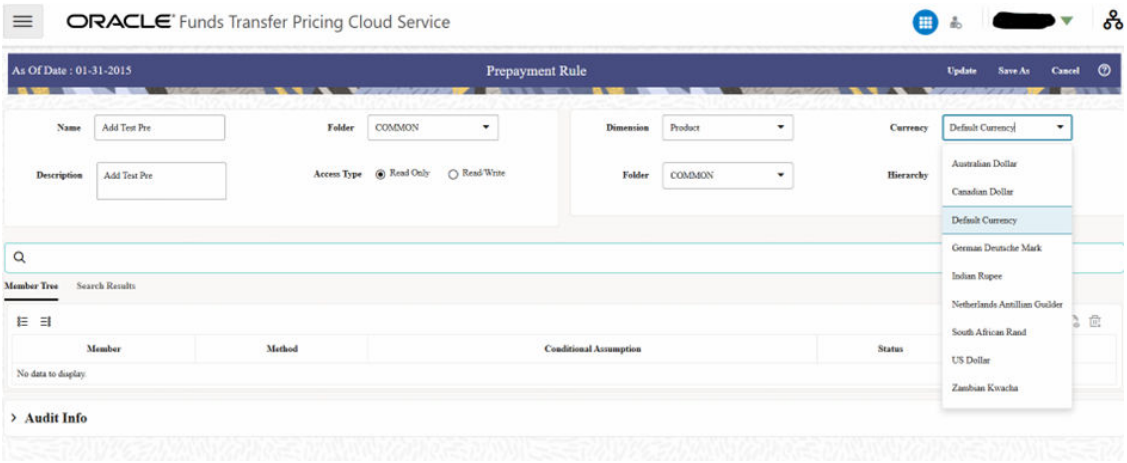
For cases where you have the same assumption (method and IRC) which is applicable to all currencies or multiple currencies, you can define rules for the combination of Product and Default Currency.

To define assumptions for the Default Currency, select a Product from the Hierarchy and Default Currency from the currency list and proceed with the assumption definition as described above. When processing data, the TP engine will first look for an assumption that

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exactly matches the product or currency of the instrument record. If not found, the engine will then look for the combination of the product and the Default Currency. This is a useful option to utilize during setup when the same product exists across multiple currencies and shares the same TP assumption and Interest Rate Code.

Figure 6-52 Prepayment Rule - Definition



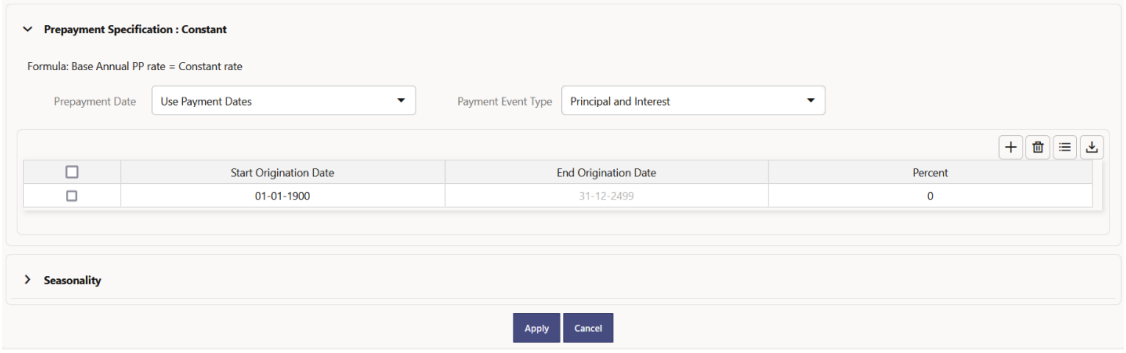
Default Currency setup example: If you have two Instrument Records of the same Product, each with a different currency, for example, 1 is 'USD' and the other is 'AUD', you have two configuration choices. You can either:

- Define the assumptions individually for each product-currency combination using direct input or copy across.
- You can create one assumption for the combination of Product and “Default Currency”. When you use “Default Currency”, the TP Engine will apply this assumption to ALL currencies (unless a direct assumption is available for the product + currency processed). In the case where users have many individual currencies that utilize the same TP Method and reference IRC rates, this is a useful option because you only have to define the assumption 1 time and it applies to many different Product + Currency combinations.

6.3.1.1.2.1.2 Defining Constant Prepayment Method

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

Figure 6-53 Constant Prepayment Method



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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

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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.

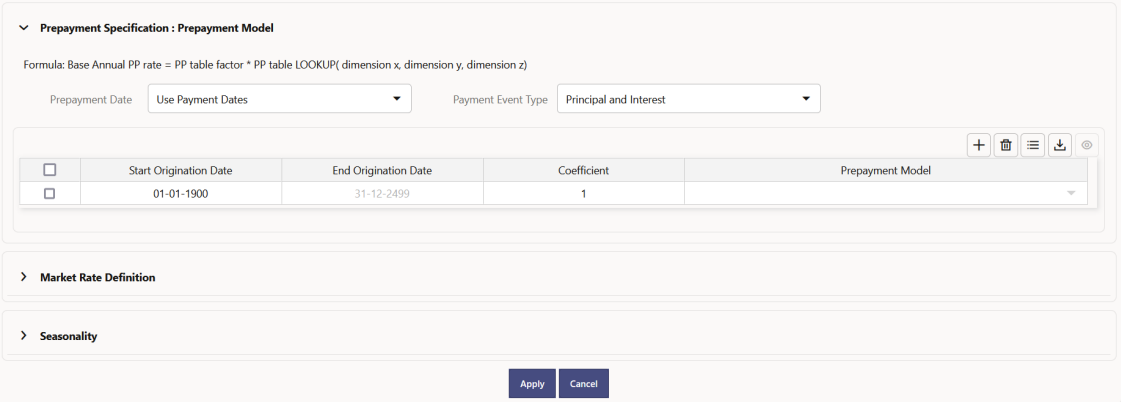
   In the other case, the rate entered in the screen is de-annualized before calculating the prepayment amount.
5. Enter the **Start Origination Date** and **End Origination Date** ranges, add additional ranges as required using the Add Row button.
6. Enter the term to Runoff Tenor and Multiplier for each 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.

6.3.1.1.2.1.3 Defining Prepayment Model Method

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

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Figure 6-54 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.

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4. Enter the Coefficient (if needed) by which the Prepayment Rate should be multiplied and select a predefined prepayment model that you want to apply to the instruments having origination dates in a particular Start Origination-End Origination Date range
5. Click **Add Row** to add additional rows and click the corresponding **Delete** Button to delete a row.
6. You can add as many rows as possible in this table using **Add Multiple Row** Option. However, you need to enter relevant parameters for each new row.
7. You can also use the **Download Excel** feature to export the Prepayment rate information that is displayed on screen, modify, and copy-paste it back in the grid.
8. Define Market Rate Definition.
9. Define the source for the Market Rate by Selecting an Index (Interest Rate Code) from the list of values.
10. Enter the Spread. The spread is added to the rate from the underlying interest rate curve to determine the market rate.
11. Select an **Associated Term** as Remaining Term, Reprice Frequency, or Original Term.
12. Define Seasonality assumptions if required to model date-specific adjustments to the annual prepayment rate. Inputs act as a multiplier, For Example, an input of 2 will double the prepayment rate in the indicated month.

User Defined Prepayment Tenors

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

   In the other case, the rate entered in the screen is de-annualized before calculating the Prepayment Amount.
5. Specify the Prepayment Model Parameters.
6. Select the Start Origination Date using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
7. Enter the Coefficient (if needed) by which the Prepayment Rate should be multiplied. This multiple is applied to the instruments for which the Origination Date lies in the range defined in the Start Origination Date-End Origination Date fields.
8. Select a predefined prepayment model from the Prepayment model Rule list of values. Click the V**iew Prepayment Model** icon to preview the selected Prepayment Model.

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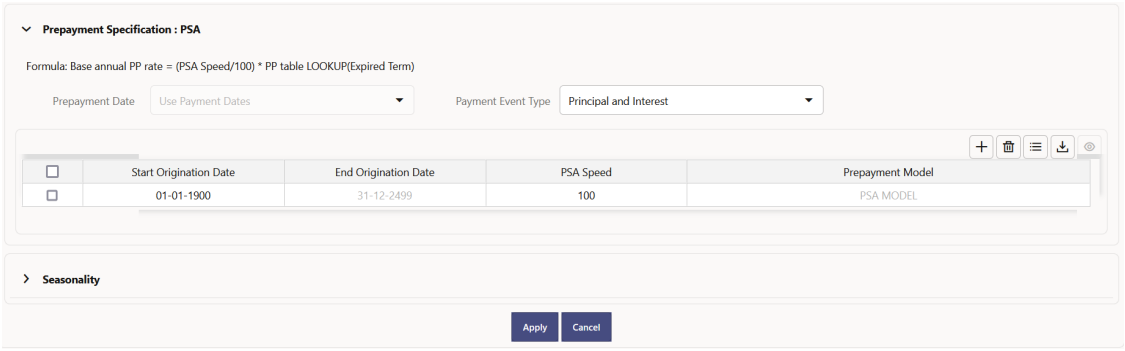
The system uses the Prepayment Model assumptions to calculate the Prepayment Amounts for each period. You need to associate a prepayment model for every Start Origination-End Origination Date range.

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.

6.3.1.1.2.1.4 Defining PSA Prepayment Method

Use this procedure to define Prepayment Assumptions using the PSA Prepayment Method. The PSA Prepayment method (Public Securities Association Standard Prepayment Model) is a Standardized Prepayment Model that is built on a single dimension, expired term. The PSA Curve is a schedule of prepayments which assumes that prepayments will occur at a rate of 0.2 percent CPR in the first month and will increase an additional 0.2 percent CPR each month until the 30th month and will prepay at a rate of 6 percent CPR thereafter ("100 percent PSA"). PSA Prepayment Speeds are expressed as a multiple of this base scenario. For example, 200 percent PSA assumes Annual Prepayment Rates will be twice as fast in each of these periods - 0.4 percent in the first month, 0.8 percent in the second month, reaching 12 percent in month 30 and remaining at 12 percent after that. A zero percent PSA assumes no prepayments. You can create your own Origination Date ranges and assign a particular PSA Speed to all the instruments with origination dates within a particular Origination Date range. PSA Speed inputs can be between 0 and 1667.

Figure 6-55 PSA Prepayment Method



Prerequisites

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Performing basic steps for creating or updating a Prepayment Rule.

Procedure

Prepayment under this method occurs on Payment Dates only.

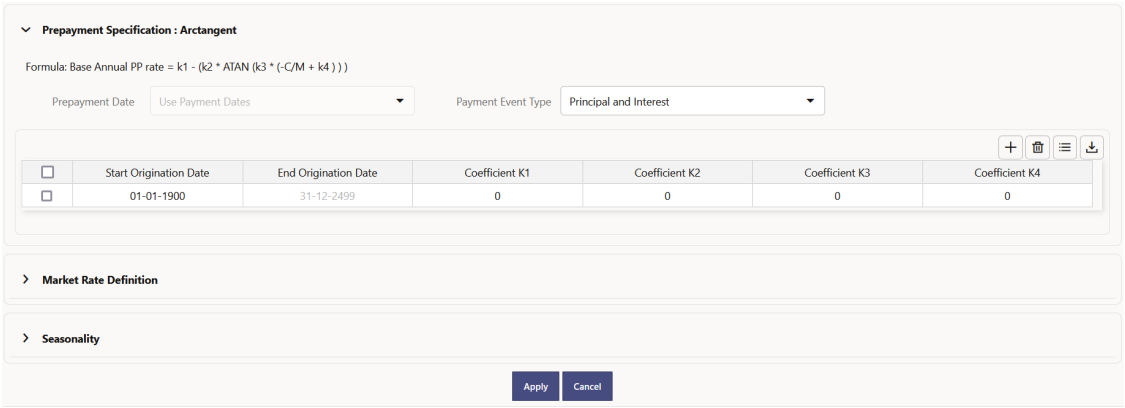
1. Select the **Payment Event Type** option.
2. Select the **Start Origination Date** using the date picker. Alternatively, you can enter the Start Origination Date in the space provided.
   The first cell in the **Start Origination Date** Column and all the cells in the **End Origination Date** Column 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.

6.3.1.1.2.1.5 Defining the Arctangent Calculation Method

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

Figure 6-56 Arctangent Calculation Method



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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.

6.3.1.1.3 Associating Conditional Assumptions with Prepayment Rules

The Prepayment Rule UI provides the setup and maintenance of assumptions by integrating the 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 logic is defined through use of Data Filters. 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 section.

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

The Conditional Assumption section allows users to select explicit conditions (from Data Filters) 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 section. As soon as a condition is satisfied, the related assumption is applied.

If an instrument record does not meet any of the conditions, then the rule logic reverts to the standard assumption that is directly assigned to the Product/Currency combination.

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> **Note**
>
> For Cash Flow Engine Cloud Service, this is applicable only for Product/Currency combination.

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

To define conditional assumption, follow these steps:

1. Navigate to Conditional Assumptions section.

Figure 6-57 Conditional Assumption

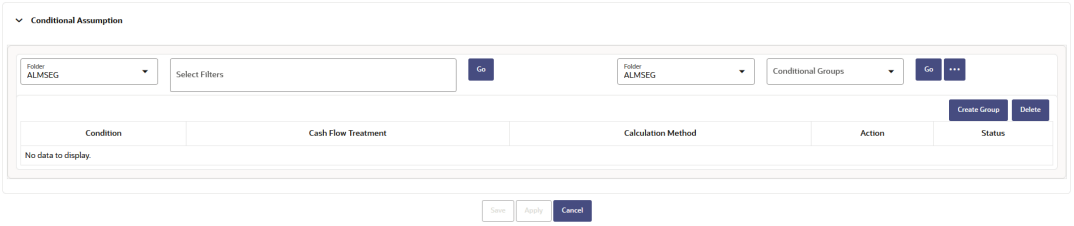
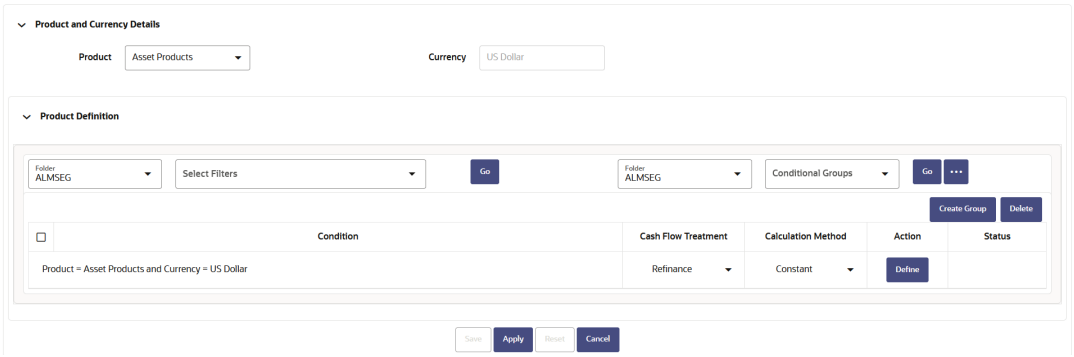


Figure 6-58 Conditional Assumption



2. Select the Filter Folder and Filter, then click **Go**. The condition is displayed based on selected filter.
3. Here, you can select either group of conditions using **Conditional Group** or Individual condition using the filter section.
   - You can select the conditional groups from the **Conditional Group** drop-down. You can create a new condition group using the **Create Group** button. To create a new condition group, follow these steps:
     a. Select filters using the **Filter** drop-down list.

     > **Note**
     >
     > You must select more than 2 filters to define a condition group.

     b. Select the conditions (filters) using the corresponding check-boxes.

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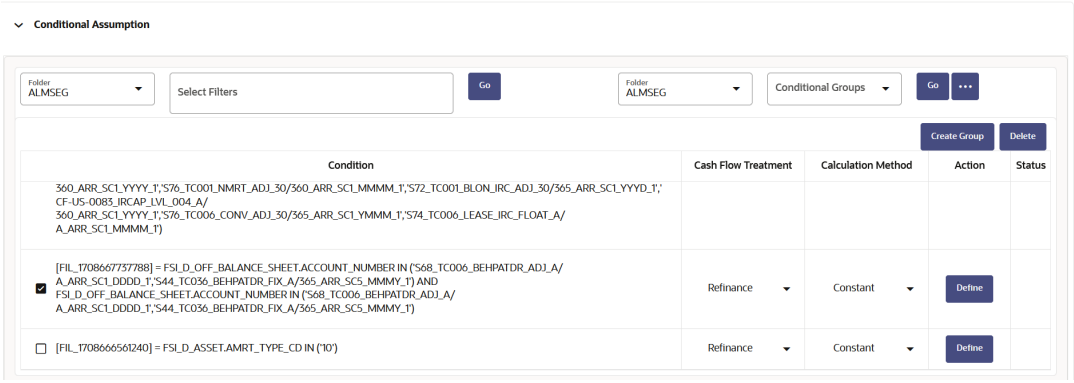
c. Click **Create Group** .

d. The **Save Condition Group** window is displayed. Provide the **Group Name** and select the **Folder** where you want to save the condition group. Click **Save** in **Save Condition Group** window. You can use this saved group from **Condition Group** down-down.

- Else, select Individual condition using the corresponding check-box.

4. Select **Cash Flow Treatment** as Curtailment or Refinance.
5. Select **Calculation Method** as Constant, Prepayment Model, PSA, or Arctangent..
6. Click **Define**.

Figure 6-59 Conditional Assumption



Use **Delete** button to delete the defined condition(s)

7. Define Prepayment rule and Seasonality, and then click **Apply**. The status of condition assumption is updated as **Defined**.

> **Note**
>
> You can edit the condition using **Edit**.

8. Click **Save**. The status of conditional assumption is also updated in Assumption Browser.

Figure 6-60 Status of Conditional Assumption



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6.3.1.2 Prepayment Models

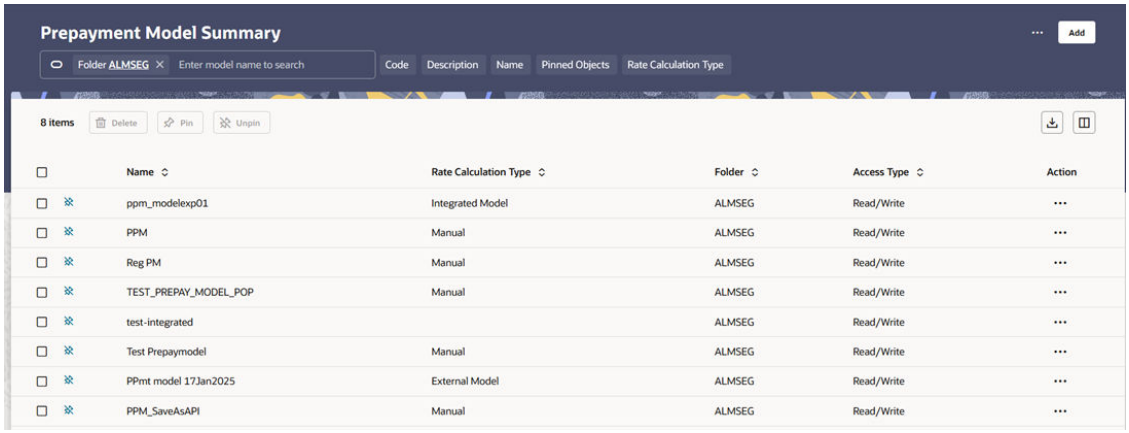
This module describes the procedure to build Prepayment Models. These Prepayment Models can be referenced by a Prepayment Model rule to Model Prepayment Behavior of instruments based on a range of instrument level attributes.

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

Prepayment Model Rule Summary

This page is the gateway to all Prepayment Model Rules and related functionality. You can navigate to other pages relating to Prepayment Model Rules from this point.

Figure 6-61 Prepayment Model Summary



Search Prepayment Model Rule

Prerequisites: Predefined Prepayment Model Rule

To search for a Prepayment Model Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Prepayment Model Rules that meet the search criteria.

Or

An alternative method to search a Prepayment Model Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Prepayment Model rule Summary. Enter the **Code, Name, Description,** , and **currency** of the Prepayment Model Rule and click **Search**.

The Prepayment Model rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Prepayment Model rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.

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- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Prepayment Model rule Summary table displays the following information:

- **Code:** Process ID associated with a Prepayment Model Rule.
- **Name:** The Prepayment Model Rule's short name.
- **Rate Calculation Type:** The Prepayment Model type, such as Manual .
- **Folder:** The Folder where the Prepayment Model Rule is saved.
- **Last Modified By:** The user who last modified the Prepayment Model rule.
- **Last Modified Date:** The Date and Time when the Prepayment Model rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Prepayment Model rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Prepayment Model rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Prepayment Model rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Prepayment Model rules that you no longer require. Note that only Prepayment Model rule owners and those with Read/Write privileges can delete Prepayment Model rules. A Prepayment Model rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Dependency Check:** You can perform a dependency check to know where a particular Prepayment Model rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Prepayment Model rules that have dependencies. A report of all rules that utilize the selected Prepayment Model rule is generated.

Also See:

- Create Prepayment Models
- Create Prepayment Models

6.3.1.2.1 Create Prepayment Models

Creating a Prepayment Model comprises the following sub procedures:

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

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

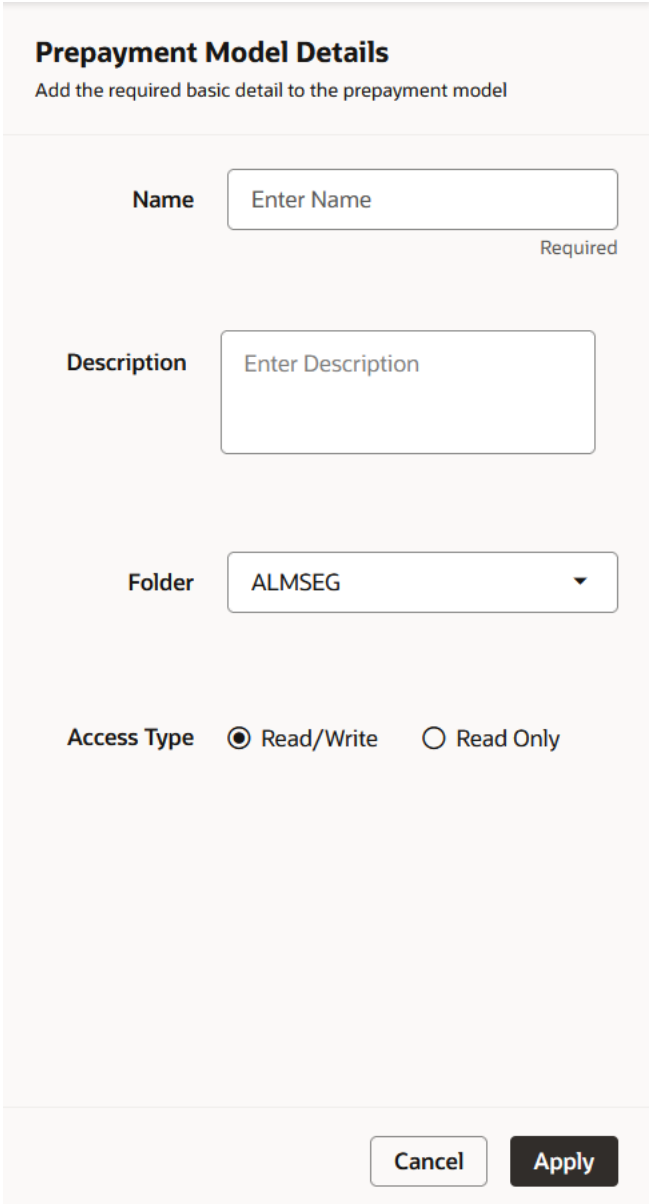
6.3.1.2.1.1 Creating Prepayment Model with Rate Calculation as Manual

To create a Prepayment Model Rule, follow these steps:

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

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Figure 6-62 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.
   - **Folder:** Select the Folder
   - **Description:** Enter the description of Prepayment Model Rule.
   - Select **Access Type**.
4. Click **Apply**.
5. From Prepayment Model details page, 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.
6. Follow below steps:

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Defining the Structure of the Prepayment Model Using Dimensions section

Modifying the Table Structure Using Bucket Definition section

Prepayment Rates Using Matrix Definition

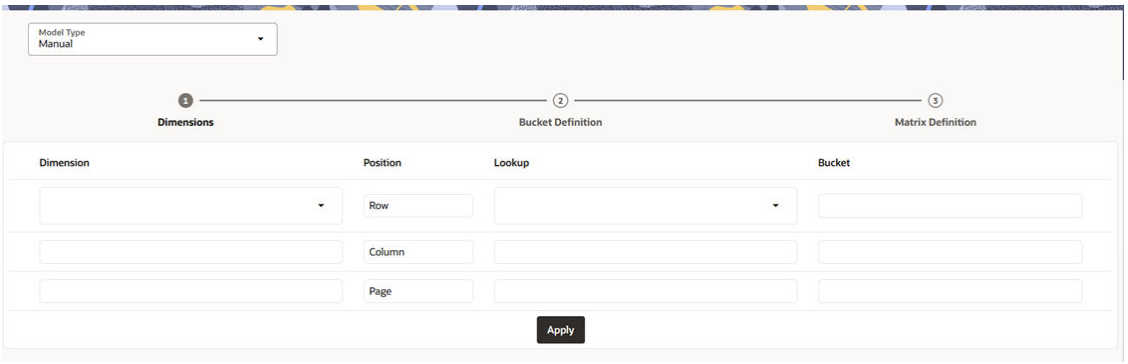
- Defining the Structure of the Prepayment Model Using Dimensions section
- Modifying the Table Structure Using Bucket Definition section
- Prepayment Rates Using Matrix Definition

6.3.1.2.1.1.1 Defining the Structure of the Prepayment Model Using Dimensions section

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

> **Note**
>
> You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).
>
> The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 6-63 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:

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- 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.

6.3.1.2.1.1.2 Modifying the Table Structure Using Bucket Definition section

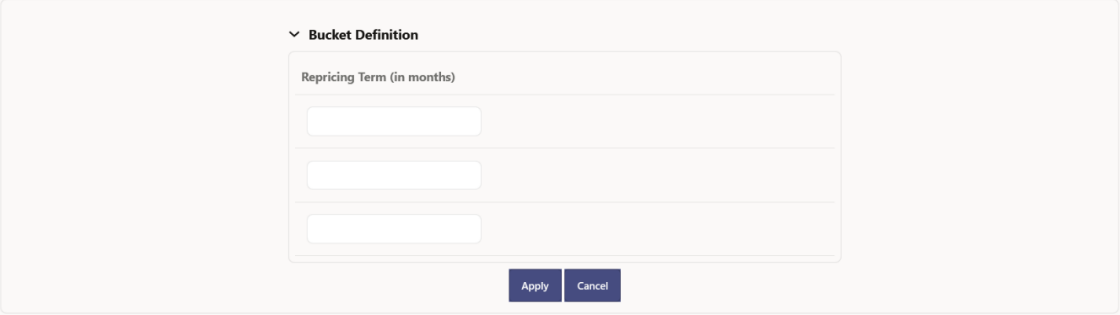
The Bucket Definition section is used to perform following tasks:

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- 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 6-64 Bucket Definition Section



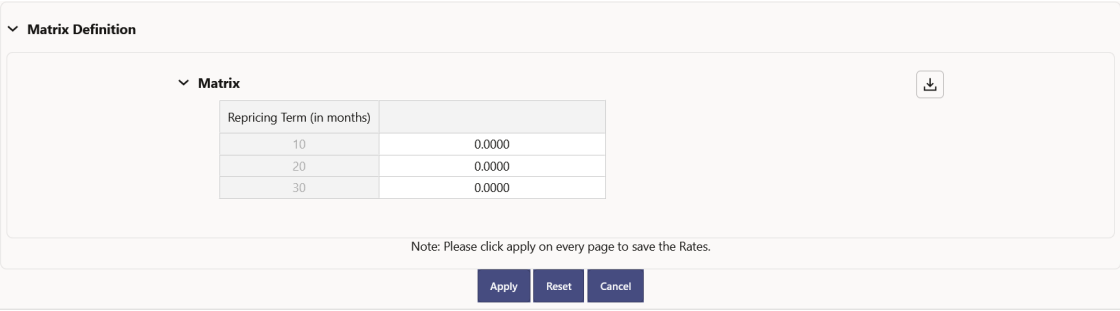
1. Assign values for each of the buckets.
2. Click **Apply**. The Prepayment Model, Prepayment Dimensions, and Buckets are saved.

6.3.1.2.1.1.3 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

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

Figure 6-65 Matrix Definition Section



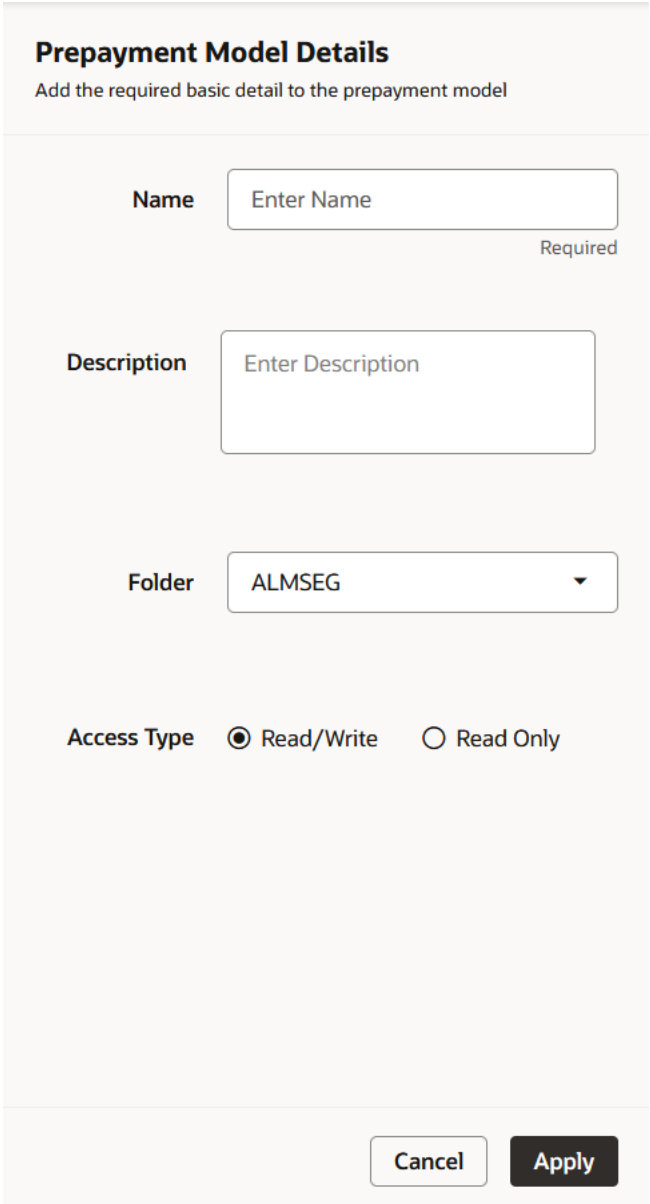
6.3.1.2.1.2 Creating Prepayment Model with Rate Calculation as External Model

To create a Prepayment Model Rule, follow these steps:

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

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Figure 6-66 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.
   - **Folder:** Select the Folder
   - **Description:** Enter the description of Prepayment Model Rule.
   - Select **Access Type**.
4. Click **Apply**.
5. From Prepayment Model details page, select the Prepayment Model Rate Calculation Method as External Model. When you select External Model, Define Equation button will get activated to use External Prepayment Model. This is useful, when you want to do Prepayment Modeling outside PBSM and use the model equation to calculate Prepayment Rates.

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6. Follow below steps:
   Defining the Structure of the Prepayment Model Using Dimensions section

   Defining Equation using Define Equation section

   Modifying the Table Structure Using Bucket Definition section

   Prepayment Rates Using Matrix Definition

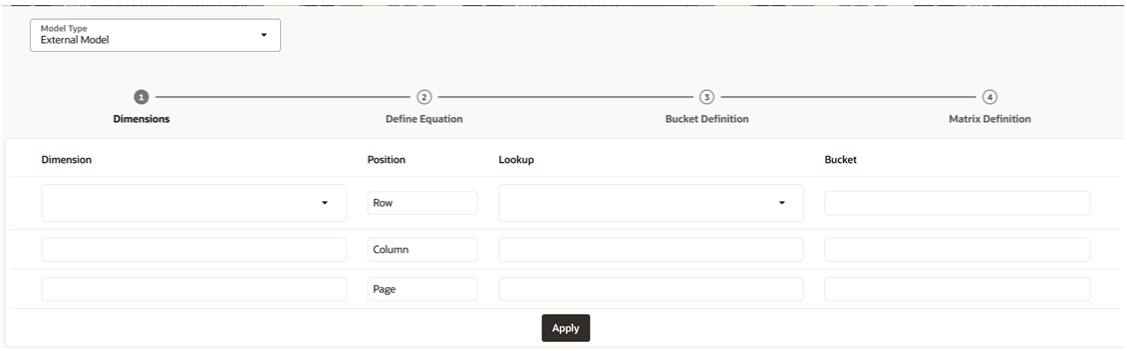
- Defining the Structure of the Prepayment Model Using Dimensions section
- Defining Equation using Define Equation section
- Modifying the Table Structure Using Bucket Definition section
- Prepayment Rates Using Matrix Definition

6.3.1.2.1.2.1 Defining the Structure of the Prepayment Model Using Dimensions section

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

> **Note**
>
> You can use the analogy of a three-dimensional table to understand how to deal with the Prepayment Dimensions. The first dimension you select would resemble the row (X-axis).
>
> The second dimension would act as the column (Y-axis). The final third dimension will be the page (Z-axis).

Figure 6-67 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.

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- 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.

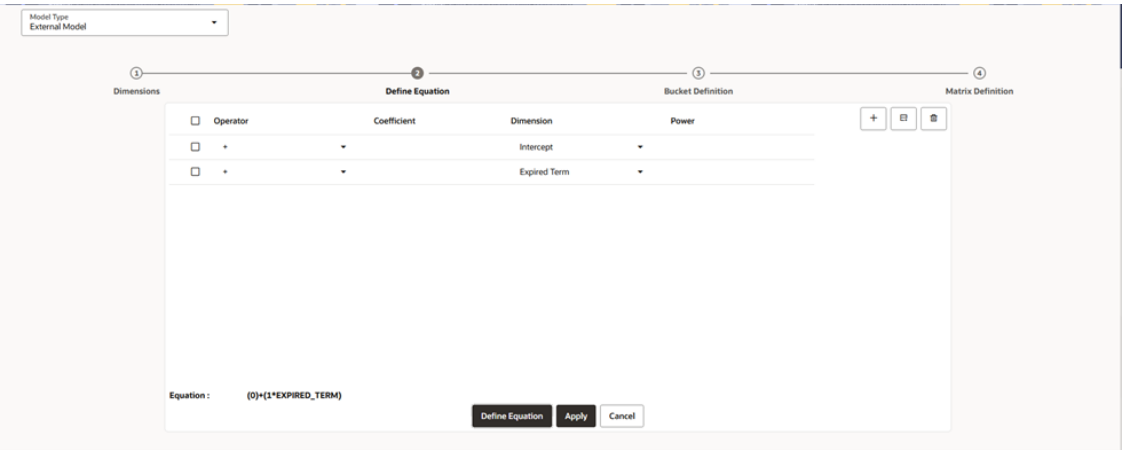
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> **Note**
>
> There are certain restrictions while defining Dimensions:
>
> - You must select the Dimension type for a row and define the values for that dimension.
> - You cannot define the second (row) dimension until you have defined the first (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.

6.3.1.2.1.2.2 Defining Equation using Define Equation section

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

Figure 6-68 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

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

After defining all coefficients, Power, operators, click Equation to get the model equation.

A confirmation message is displayed.

2. Click **Ok** to use the same for Prepayment Rate Calculations.
3. You can add new row for each term using **Add Row**. Multiple rows can be added using **Add Multiple Rows**.
4. Click **Apply**.

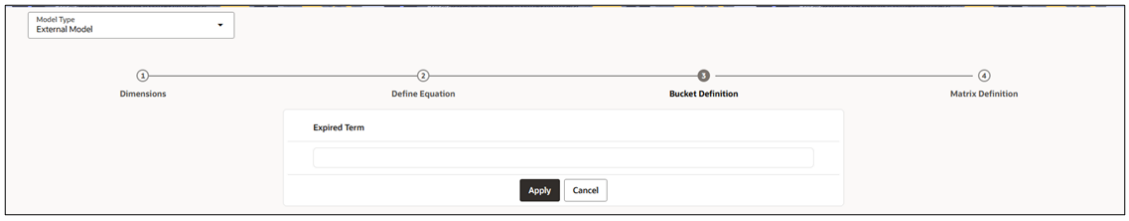
6.3.1.2.1.2.3 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition section is used to perform following tasks:

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

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

Figure 6-69 Bucket Definition Section



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

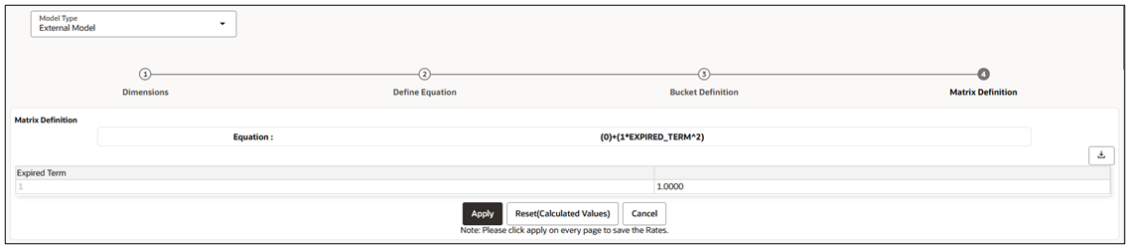
6.3.1.2.1.2.4 Prepayment Rates Using Matrix Definition

1. Enter the Prepayment Rates in the Prepayment Model.

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

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Figure 6-70 Matrix Definition Section



6.3.1.2.1.3 Creating Prepayment Model with Rate Calculation as Integrated Model

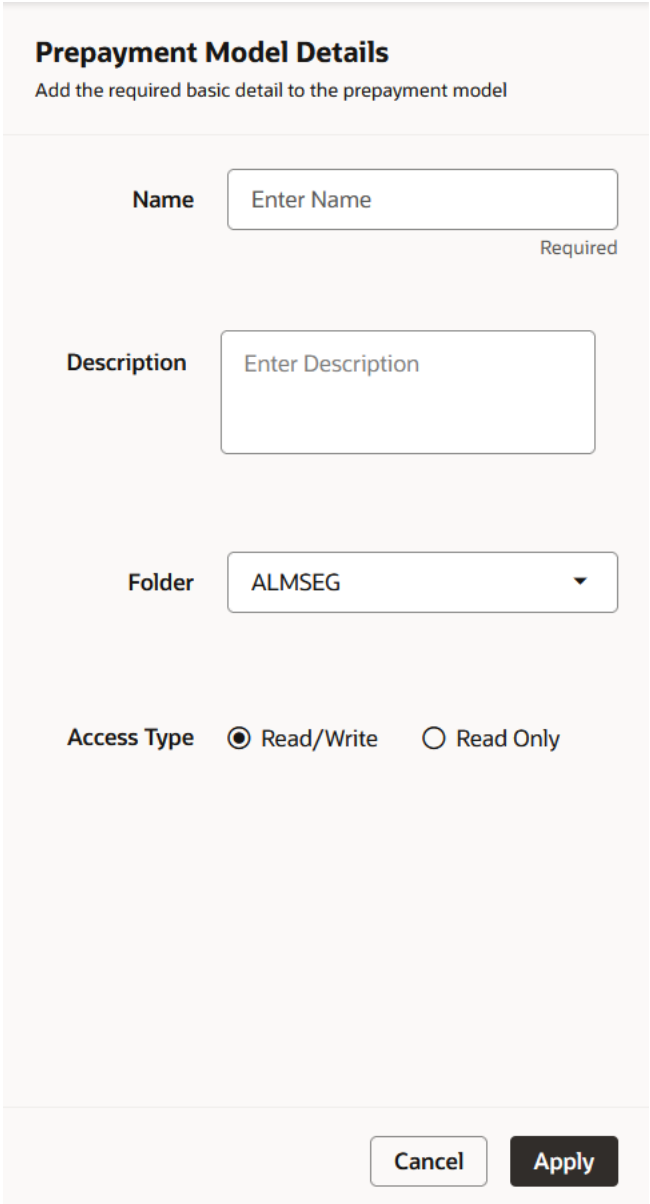
In Integrated Model option, you have the option to select one of the already saved/confirmed Models.

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.

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Figure 6-71 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.
   - **Folder:** Select the Folder
   - **Description:** Enter the description of Prepayment Model Rule.
   - Select **Access Type**.
4. Click **Apply**.
5. From Prepayment Model details page, select the Prepayment Model Rate Calculation Method as Integrated.
6. Follow below steps:
   Selecting the Model for Prepayment Model Using Select Model section

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Defining the Structure of the Prepayment Model Using Dimensions section

Modifying the Table Structure Using Bucket Definition section

Prepayment Rates Using Matrix Definition

- Selecting Model Section
- Defining the Structure of the Prepayment Model Using Dimensions section
- Modifying the Table Structure Using Bucket Definition section
- Prepayment Rates Using Matrix Definition

6.3.1.2.1.3.1 Selecting Model Section

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

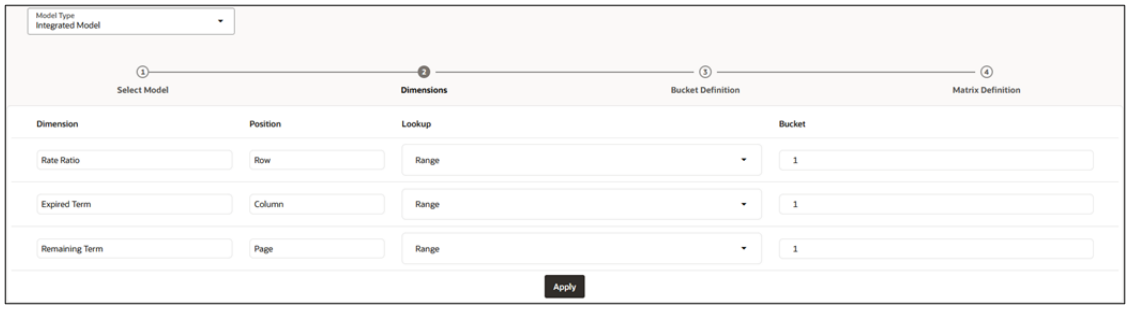
Select Integrated Model name from Model drop-down list. You can click on Model Search to search an Integrated Model based on certain product and currency combination.

6.3.1.2.1.3.2 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 6-72 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.

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- 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.

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> **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.

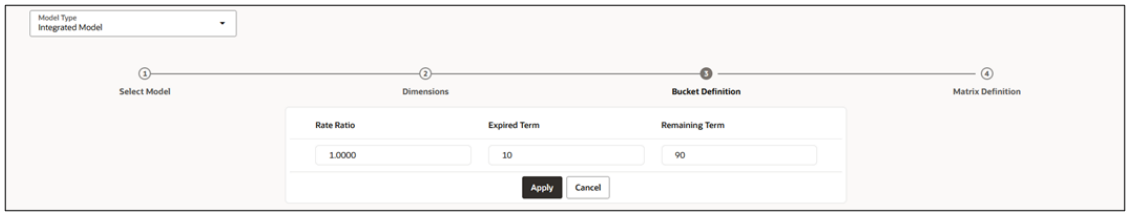
6.3.1.2.1.3.3 Modifying the Table Structure Using Bucket Definition section

The Bucket Definition section is used to perform following tasks:

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

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

Figure 6-73 Bucket Definition Section



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

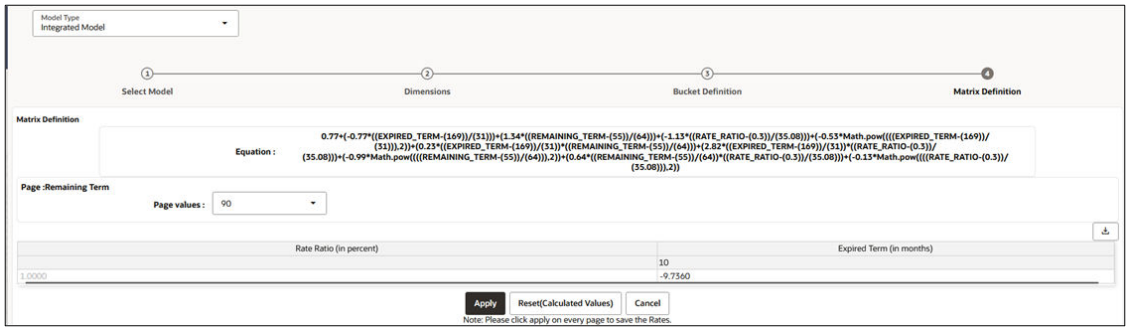
6.3.1.2.1.3.4 Prepayment Rates Using Matrix Definition

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.

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Figure 6-74 Matrix Definition Section



6.3.1.3 Behavior Pattern Rules

The Behavior Pattern (BP) functionality works similarly to amortization types. The Behavior Pattern code is assigned at the detail instrument level, and these designations are evaluated by the cash flow engine (CFE) for calculations. However, Behavior Patterns are portfolio level property rather than instrument level. Generally, a bank processes aggregated data for non-maturing products. In this case, the Behavior Pattern is assigned effectively at the portfolio level. If you are using CFE with any other service, then data is required at the instrument level and BP is also assigned accordingly.

In this case, you must track the changes to Behavior Patterns and assign appropriate codes to affected instruments. Due to this, only one BP can be used by the CFE in the CFE processes for current business. If you want to model multiple types of BP under varying scenarios, then you can use a Behavior Pattern Rule.

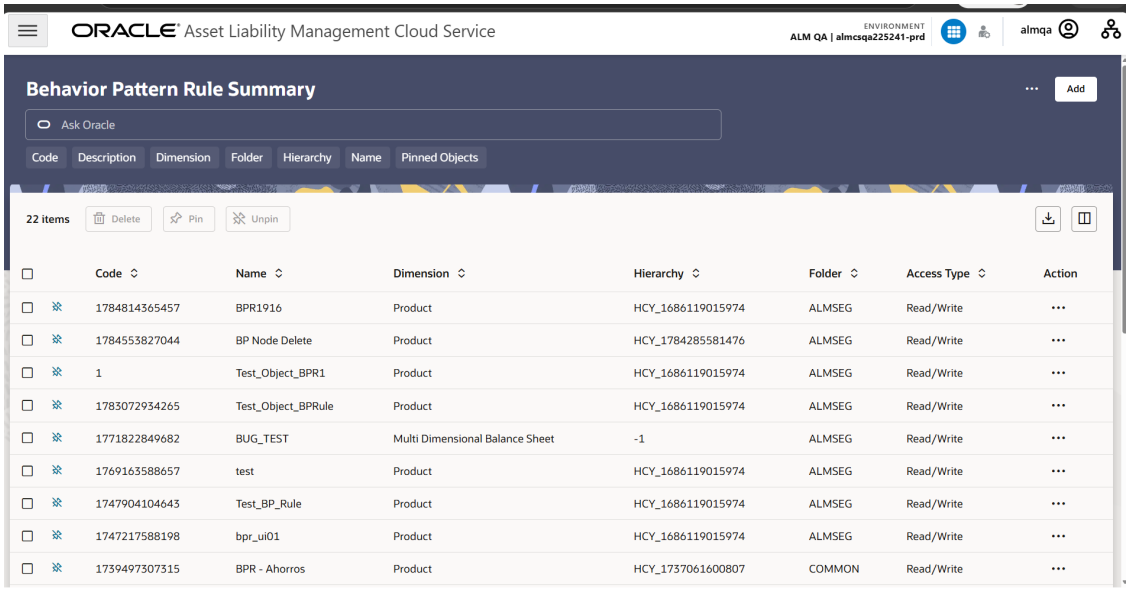
The Behavior Pattern Rule UI allows you to group Behavior Pattern codes (behavioral assumptions) together in a set at the Product/Currency level which then can be rotated to select a value on a combination. You can select which behavior assumption pattern to use and the underlying Behavior Pattern in that set will affect the data on processing

Behavior Pattern Rule Summary

This page is the gateway to all Behavior Pattern Rules and related functionality. You can navigate to other pages relating to Behavior Pattern Rules from this point.

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Figure 6-75 Behavior Pattern Rule Summary



Search Behavior Pattern Rule

Prerequisites: Predefined Behavior Pattern Rule

To search for a Behavior Pattern Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Behavior Pattern Rules that meet the search criteria.

Or

An alternative method to search a Behavior Pattern rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Behavior Pattern rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Behavior Pattern Rule and click **Search**.

The Behavior Pattern rule Summary displays the following information:

Add: Click the Add on the page header to build a new Behavior Pattern rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Behavior Pattern rule table displays the following information:

- **Code:**Numeric ID associated with a Behavior Pattern Rule.

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- **Name:** Displays the Behavior Pattern Rule's short name.
- **Dimension:** Displays the Dimension the Behavior Pattern Rule belongs to.
- **Hierarchy:** Name of Hierarchy that is used to define Behavior Pattern Rule.
- **Folder:** Displays the Folder name where the Behavior Pattern Rule is saved.
- **Last Modified By:** Displays the Name of the user who last modified the Behavior Pattern Rule.
- **Last Modified Date:** Displays the Date and Time when Behavior Pattern Rule was modified last.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Behavior Pattern rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Behavior Pattern rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Behavior Pattern rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Behavior Pattern rules that you no longer require. Note that only Behavior Pattern rule owners and those with Read/Write privileges can delete Behavior Pattern rules. A Behavior Pattern rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Dependency Check:** You can perform a dependency check to know where a particular Behavior Pattern rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Behavior Pattern rules that have dependencies. A report of all rules that utilize the selected Behavior Pattern rule is generated.

Also See:

- Create Behavior Pattern Rule
- Defining Behavior Pattern Rule
- Create Behavior Pattern Rules
- Defining Behavior Pattern Rule
- Associating Conditional Assumptions with Behavior Pattern Rules

6.3.1.3.1 Create Behavior Pattern Rules

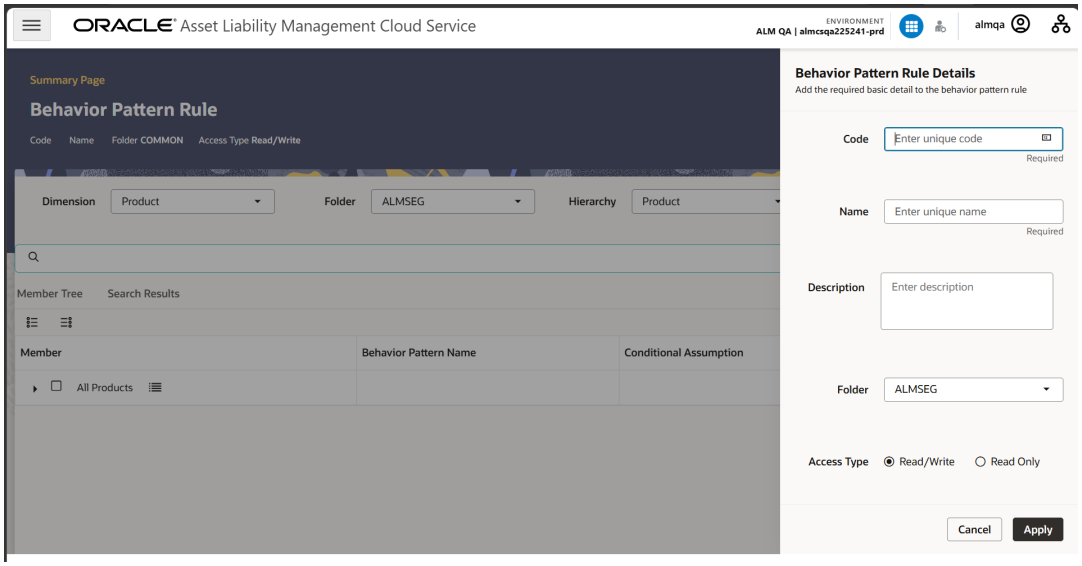
You create behavior pattern rules to capture the principal run-off behavior of product types that do not have contractual maturities.

To create a Behavior Pattern rule, follow these steps:

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

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Figure 6-76 Create Behavior Pattern Rule



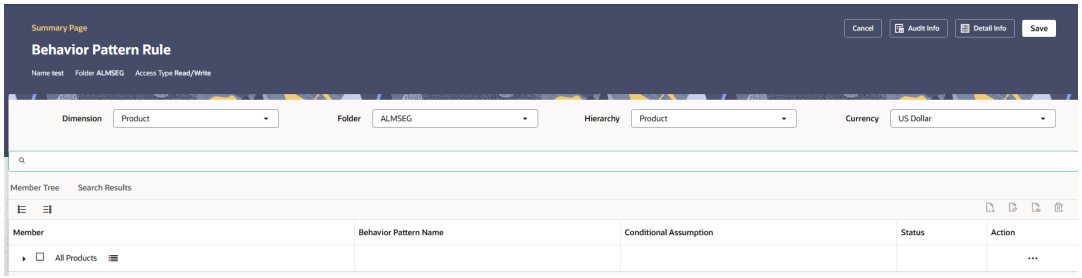
2. Enter the following Details.

Table 6-15 Create Behavior Pattern Rule

Fields	Description
Code	Enter the code manually, or click Autogenerate to generate it automatically.
Name	Enter the name of the Behavior Pattern Rule.
Description	Enter the description of the Behavior Pattern Rule. This is an optional field.
Folder	Select the Folder where the Behavior Pattern Rule needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/ Write.

3. Click **Apply**. The Behavior Pattern Rule page is displayed:

Figure 6-77 Behavior Pattern Rule Page



Click **Save** button to save the draft of Behavior Pattern Rule.

The **Detail Info** shows the basic details of rule, such as, Behavior Pattern Rule Name. Description, Folder Name, and Access Type.

The **Audit Info** shows the audit details of rule.

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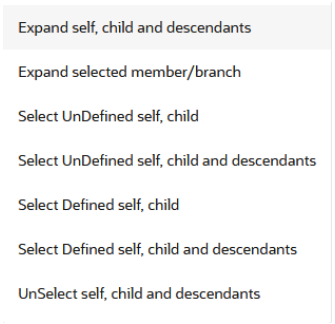
4. Select the **Dimension** as Common Chart of Accounts, Product, General Ledger Account, or MDBSS.

> **Note**
>
> MDBSS is enabled only in ALM Cloud Service.
> If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.
>
> You can search the rule on any of the product dimension, searched dimension will be auto-populated while defining the rule; if you like, you can change the default product dimension.

5. Select a **Currency**.
6. Select **Folder** and **Hierarchy**.
7. Select **Member Node(s**) from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results

- **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 6-78 Member Tree



Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- **Expand selected member/branch:** Allows to expand the selected node
- **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- **Select Defined self, child:** Allows to select the selected node itself along with its child.
- **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.

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- **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- Add
- Edit
- View
- Delete
- Copy

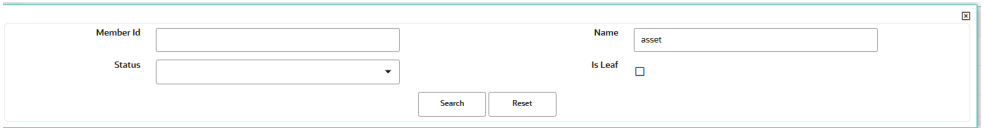
- **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

a. Navigate to **Assumption Browser** section of the Rule Definition page.

> **Note**
>
> Before using the Member Search in Assumption Browser, you must execute the batch **Member Browser Refresh**. For more information, see note in Create MDBSS section.

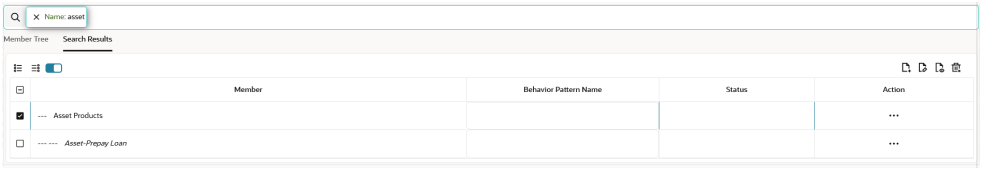
b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 6-79 Search Criteria



c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 6-80 Searching Members



.

Here, you can perform the following tasks on the searched node(s):

- Add
- Edit

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- View
- Delete
- Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

8. Click **Add** from Assumption Browser section.
9. Click **Save**.

6.3.1.3.2 Defining Behavior Pattern Rule

The definition of a Behavior Pattern rule is part of the Create or Edit Behavior Pattern rule process. When you click **Save** in the Create Behavior Pattern Rule process, the rule is saved and the **Behavior Pattern Rule Summary** page is displayed.

However, Behavior Pattern assumptions have not yet been defined for any of your products at this point. Typically, you would start defining your Behavior Pattern assumptions for product-currency combinations before clicking Save.

- Defining Behavior Pattern Rule Using Node Level Assumptions

6.3.1.3.2.1 Defining Behavior Pattern Rule Using Node Level Assumptions

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

> **Note**
>
> Using the default currency to setup assumptions can save data input time. At run time, the calculation engine uses assumptions explicitly defined for a product currency combination. If assumptions are not defined for a currency, the engine uses the assumptions defined for the product and the default currency. If the assumptions are the same across some or all currencies for a specific product, you can input assumptions for the default currency. Be careful using this option on screens where an Interest Rate.

Prerequisites

Performing basic steps for creating or editing a Behavior Pattern rule.

Procedure

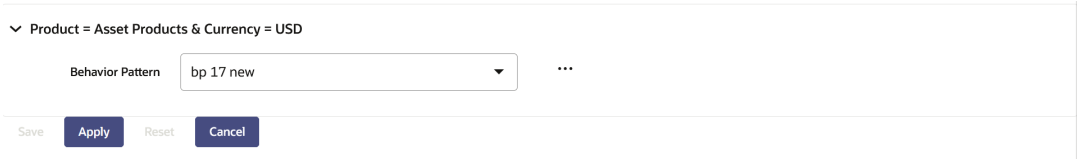
To define Behavior Pattern Rule using Node Level Assumptions, follow these steps:

1. Navigate to the Behavior Pattern Rule Assumption Details Page.
2. Define the Conditions. For more information see Conditional Assumptions section.

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3. After defining the conditions, select the Behavior Pattern from Behavior Pattern drop-down list. Here, the Behavior Pattern drop-down list shows the list of existing Behavior Patterns.

Figure 6-81 Defining Behavior Pattern Rule



Click **Action** icon to Add a new Behavior Pattern Rule, Edit an existing Behavior Pattern Rule, or view the details of Behavior Pattern Rule.

You can select only one Behavior Pattern at a time.

4. Click **Apply**.

When you click Save, the Behavior Pattern Rule assumptions are saved and the Behavior Pattern Rule Summary Page is displayed.

6.3.1.3.3 Associating Conditional Assumptions with Behavior Pattern Rules

The Behavior Pattern Rule UI provides the setup and maintenance of assumptions by integrating the conditional logic (optional) into the setup of Behavior Pattern Rules. You can define Behavior Pattern Rule logies using IF-THEN-ELSE logic based on the underlying characteristics of your financial instruments, such as dates, rates, balances, and code values.

The conditional logic is defined through use of Data Filters. These existing objects provide the building blocks for defining Conditional logic. This type of Data Filter can be selected within the Conditional Assumption section.

The logic included in a Conditional Assumption determines the specific Behavior Pattern Rule assumption that the system will assign to each individual instrument record at run time.

The Conditional Assumption section allows users to select explicit conditions (from Data Filters) 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 section. As soon as a condition is satisfied, the related assumption is applied.

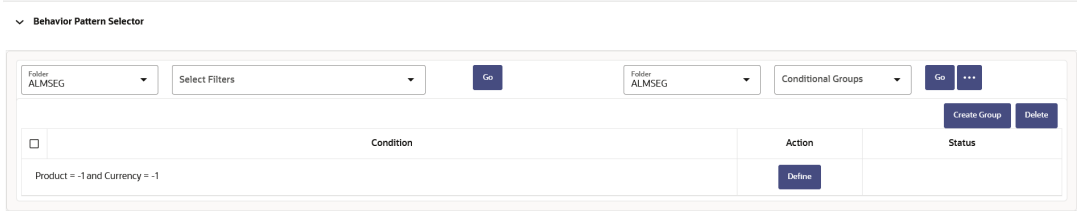
If an instrument record does not meet any of the conditions, then the rule logic reverts to the standard assumption that is directly assigned to the Product/Currency combination.

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

To define conditional assumption, follow these steps:

1. Navigate to **Conditional Assumptions** section.

Figure 6-82 Conditional Assumption



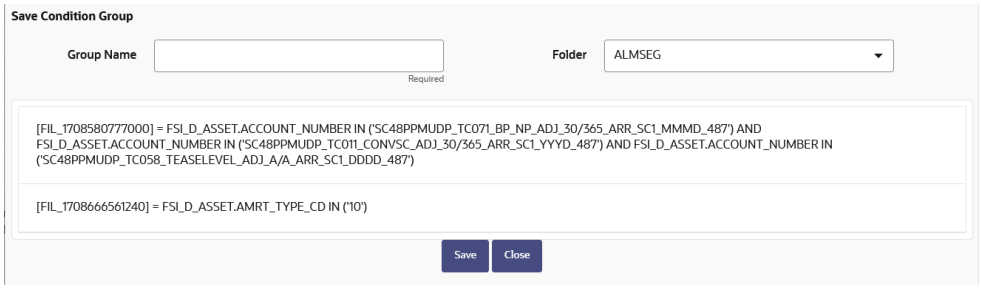
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2. Select the Filter Folder and Filter, then click **Go**. The condition is displayed based on selected filter.
3. Here, you can select either group of conditions using **Conditional Group** or Individual condition using the filter section.
   - You can select the conditional groups from the **Conditional Group** drop-down. You can create a new condition group using the **Create Group** button. To create a new condition group, follow these steps:
     a. Select filters using the **Filter** drop-down list.

     > **Note**
     >
     > You must select minimum 2 filters to define a condition group.

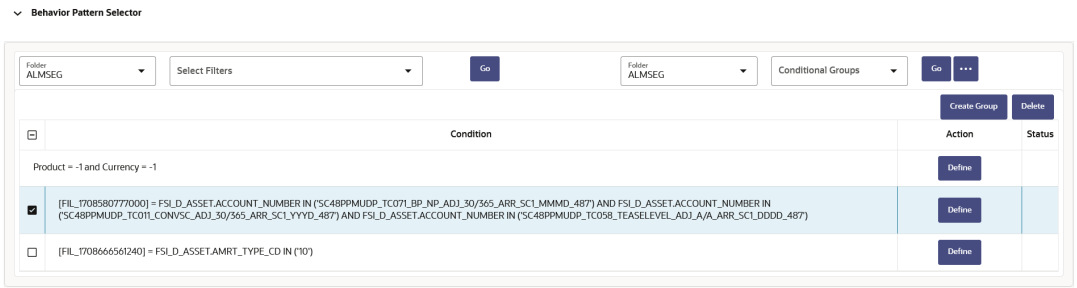
     b. Select the conditions (filters) using the corresponding check-boxes.
     c. Click **Create Group** .
     d. The **Save Condition Group** window is displayed. Provide the **Group Name** and select the **Folder** where you want to save the condition group. Click **Save** in **Save Condition Group** window. You can use this saved group from **Condition Group** down-down.

Figure 6-83 Condition Group



   - Else, select Individual condition using the corresponding check-box.
4. Click **Define**.

Figure 6-84 Conditional Assumption



Use **Delete** button to delete the defined condition(s)

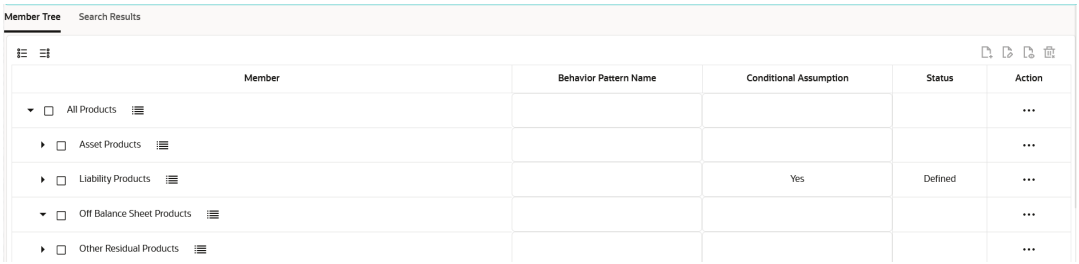
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5. Define Behavior Pattern Rule, and then click **Apply**. The status of condition assumption is updated as **Defined**.

> **Note**
>
> You can edit the condition using **Edit**.

6. Define Behavior Pattern rule. For more information, see the Defining Behavior Pattern Rule Using Node Level Assumptions
7. Click **Save**. The status of conditional assumption is also updated in Assumption Browser.

Figure 6-85 Status of Conditional Assumption



6.3.1.4 Discount Methods

This module describes the procedure for working with and managing Discount Method Rules. Discount Method Rules allow users to define the method for discounting projected Cash Flows for market value and duration calculation purposes. For each combination of product and currency, you can choose one of the following discount methods:

- Spot Input
- Spot Interest Rate Code
- Forecast (Original Term)
- Forecast (Remaining Term)

The following table describes the methods and rate choices:

Table 6-16 List of Discount Methods

Method	Single Rate	Yield Curve
Spot Input	Discounts all cash flows by the Input Rate	Not applicable
Spot Interest Rate Code	Not applicable	Discounts each Cash Flow period by the equivalent term rate on the base Yield Curve chosen (the Yield Curve as of the start date). The term is defined by the remaining term of the cash flow. Refer Note

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Table 6-16 (Cont.) List of Discount Methods

Method	Single Rate	Yield Curve
Forecast (Original Term)	Not applicable	Discounts each Cash Flow period by the Forecasted Value of the point on the yield curve corresponding to each transaction record's original term (fixed rate instrument) or repricing term (variable rate instrument). Refer Note
Forecast (Remaining Term)	Not applicable	Discounts each Cash Flow period by the Forecasted Value of the point on the Yield Curve corresponding to the remaining term until each cash flow. Refer Note
Effective Interest Rate	Effective Interest Rate (EIR) of account is used as discount rate.	Not applicable

Note

In the case of Spot Interest Rate Code, if term point is not available, engine will use linear interpolation to determine the interest rate to discount cashflows.

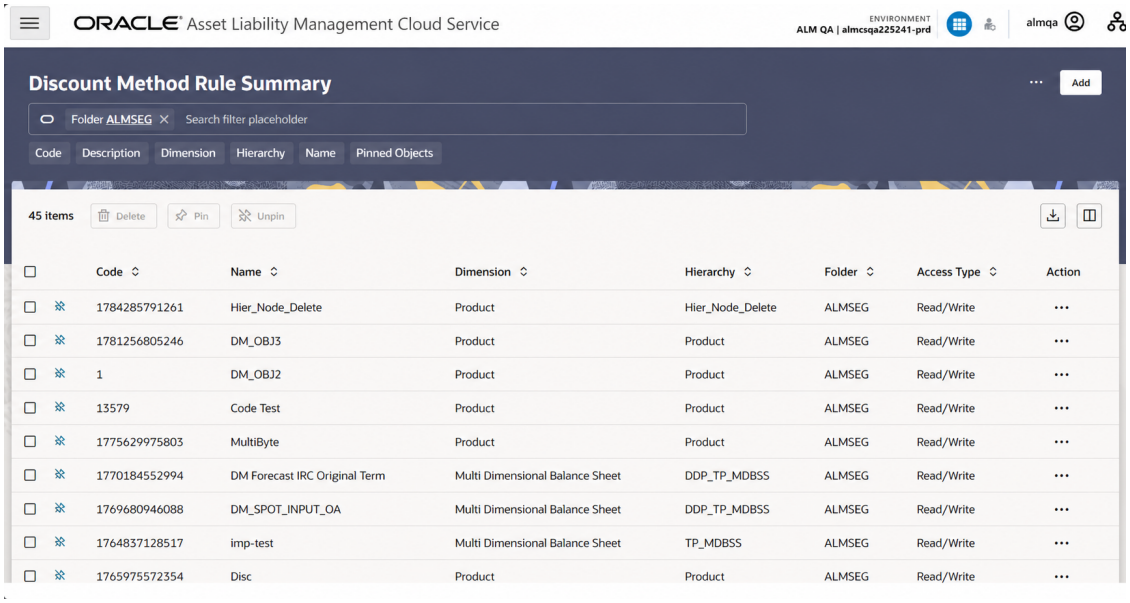
When Discounting method of Forecast (Original Term) and Forecast (Remaining Term) is used, if term point is not available, engine will use Interpolation method defined for Interest rate code within Forecast Rate Rule. If Interpolation method defined in Forecast rate rule is Linear, engine will use Linear Interpolation. If Interpolation Method is cubic, engine will use Cubic Interpolation to determine interest rate to discount Cash Flows.

Discount Method Rule Summary

This page is the gateway to all Discount Method Rules and related functionality. You can navigate to other pages relating to Discount Method Rules from this point.

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Figure 6-86 Discount Method Rule Summary



Search Discount Method Rule

Prerequisites: Predefined Discount Method Rule

To search for a Discount Method Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Discount Method Rules that meet the search criteria.

Or

An alternative method to search a Discount Method rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Discount Method Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Discount Method Rule and click **Search** .

The Discount Method rule Summary page displays the following information:

Add: Click the **Add** icon on the page header to build a new Discount Method rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Discount Method rule Summary table displays the following information:

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- **Code:**Numeric ID associated with a Discount Method Rule.
- **Name:** The Discount Method Rule's short name. You can move-over the Name to view the code and description of rule.
- **Dimension:** The Dimension the Discount Method Rule belongs to.
- **Hierarchy:** Name of Hierarchy that is used to define Discount Method Rule.
- **Folder:** The Folder where the Discount Method Rule is saved.
- **Last Modified By:** The user who last modified the Discount Method Rule.
- **Last Modified Date:** The Date and Time when the Discount Method Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Discount Method rule.
  - **Multiple Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Discount Method rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Discount Method rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Discount Method rules that you no longer require. Note that only Discount Method rule owners and those with Read/Write privileges can delete Discount Method rules. A Discount Method rule that has a dependency cannot be deleted.
  - **Dependency Check:** You can perform a dependency check to know where a particular Discount Method rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Discount Method rules that have dependencies. . A report of all rules that utilize the selected Discount Method rule is generated.

> **Note**
>
> This is functionality will intended for a future release.

You can copy, in total or selectively, the product assumptions contained within the Discount Method Rules from one currency to another currency or a set of currencies or from one product to another product or a set of products.

- Create Discount Method Rule
- Discount Method Examples
- Associating Conditional Assumptions with Discount Methods

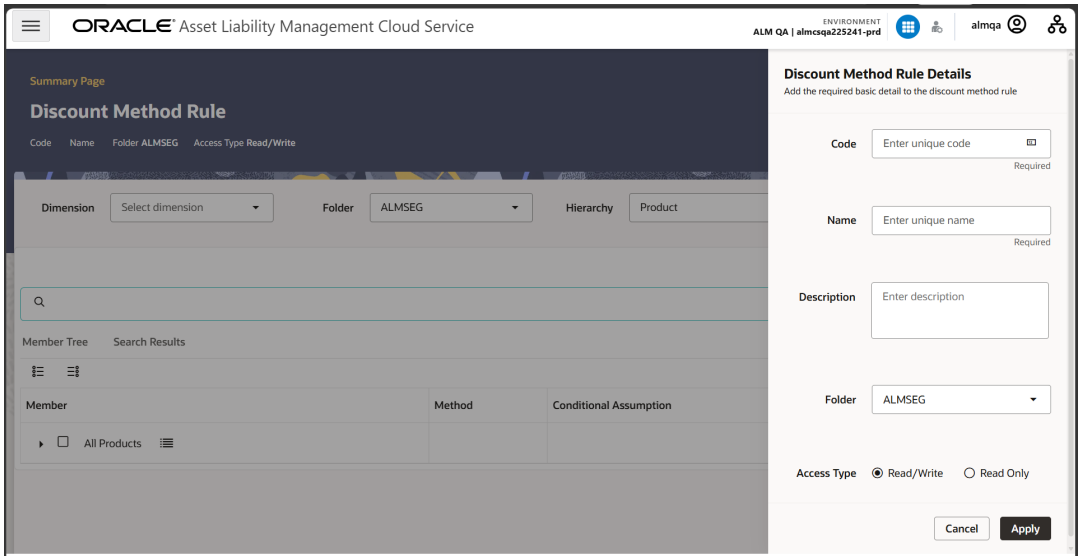
6.3.1.4.1 Create Discount Method Rule

You create a Discount Methods rule to assign Discounting Methods to your products. To create a Discount Method Rule, follow these steps:

1. Navigate to the **Discount Methods Rule** Summary page.

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Figure 6-87 Discount Methods Rule



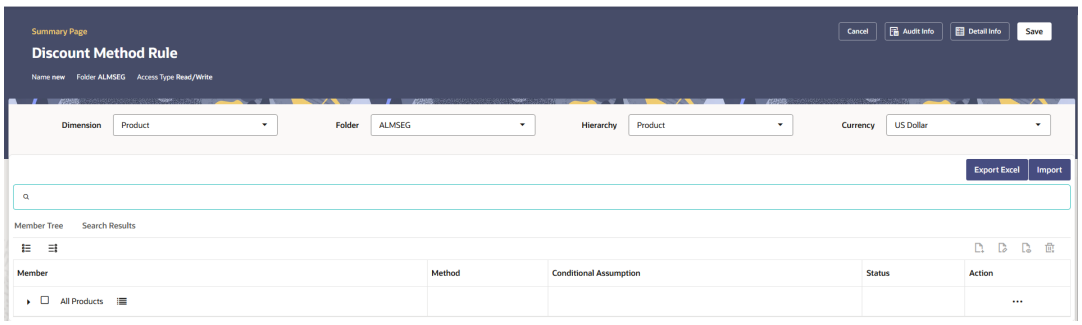
2. Click **Add**. The **Discount Method Rule** page is displayed.
3. Enter the following details:

Table 6-17 Discount Method Details

Fields	Description
Code	Enter the code manually, or click Autogenerate to generate it automatically.
Name	Enter the name of the Discount Method Rule.
Description	Enter the description of the Discount Method Rule. This is an optional field.
Folder	Select the Folder where the Discount Method Rule needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/ Write.

The Discount Method Rule definition window is displayed.

Figure 6-88 Discount Method Rule



Click **Save** button to save the draft of Discount Method rule.

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The **Detail Info** shows the basic details of rule, such as, Discount Method rule Name. Description, Folder Name, and Access Type.

The **Audit Info** shows the audit details of rule.

4. Select a **Product Hierarchy**. You can define methodologies at any level of the hierarchical product dimension. The hierarchical relationship between the nodes allows inheritance of methodologies from Parent Nodes to Child Nodes. Enter the following details for **Product Hierarchy** selection:

Table 6-18 Product Hierarchy Details section

Fields	Description
Folder	Select the Folder where Product Hierarchy is previously created
Hierarchy	Select the Hierarchy of the product
Currency	Select the Currency.

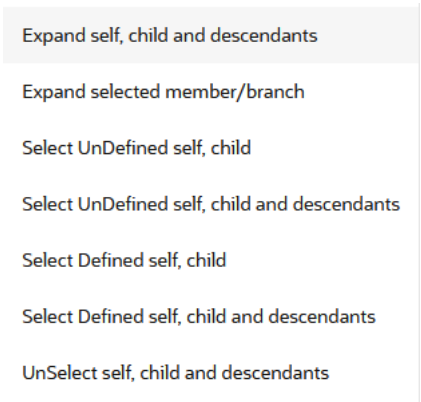
5. Select the **Dimension** as Common Chart of Accounts, Product, General Ledger Account, or MDBSS.

> **Note**
>
> MDBSS is enabled only in ALM Cloud Service.
> If any member is a currency in the MDBSS hierarchy (for example, INR) and selected currency is different (for example USD), then the member and its children nodes cannot be defined.
>
> You can search the rule on any of the product dimension, searched dimension will be auto-populated while defining the rule; if you like, you can change the default product dimension.

6. Select **Member Node(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results

- **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 6-89 Member Tree



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Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

- **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- **Expand selected member/branch:** Allows to expand the selected node
- **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- **Select Defined self, child:** Allows to select the selected node itself along with its child.
- **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

- Add
- Edit
- View
- Delete
- Copy

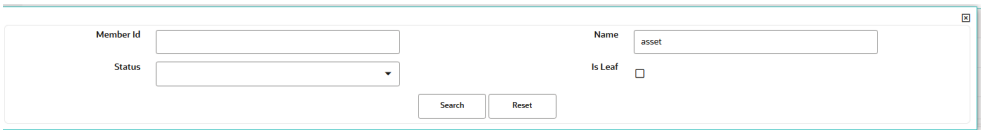
- **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

  a. Navigate to **Assumption Browser** section of the Rule Definition page.

  > **Note**
  >
  > Before using the Member Search in Assumption Browser, you must execute the batch **Member Browser Refresh**. For more information, see note in Create MDBSS section.

  b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

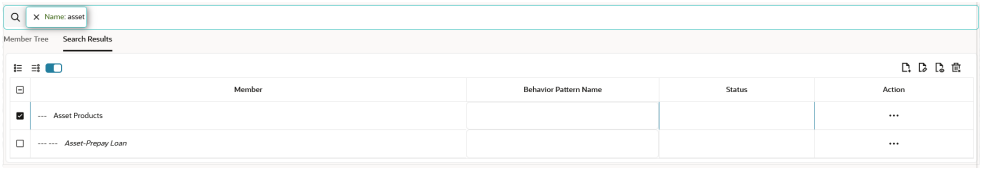
  Figure 6-90 Search Criteria

  c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**.

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Figure 6-91 Searching Members



Here, you can perform the following tasks on the searched node(s):

- Add
- Edit
- View
- Delete
- Copy

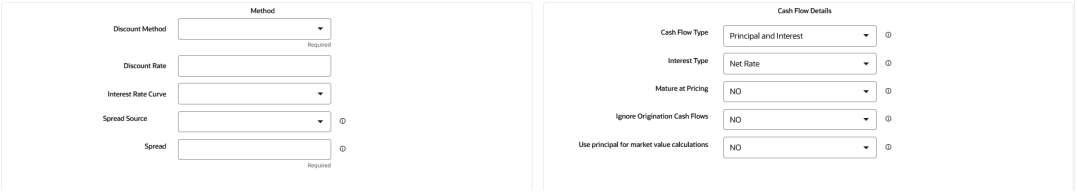
Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

7. Click **Add** from Assumption Browser section.
8. Define Conditions for Product Definitions. For more information see Conditional Assumptions section.
9. After defining the conditions, navigate to **Discount Method** section.

Figure 6-92 Discount Method section



10. Enter the following details:

Table 6-19 Discount Method Section

Fields	Description
Discount Method	Select the Discount Method from Discount Method List.
Discount Rate	Enter Discount Rate if Spot Input Method is selected.

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Table 6-19 (Cont.) Discount Method Section

Fields	Description
Interest Rate Curve	From Interest Rate Code List, select an appropriate Interest Rate Code. The list of Interest Rate Codes depends on the selected currency. If the selected currency is the default currency, all Interest Rate Codes appear. For other currency selections, the list of interest rate codes includes only interest rate codes whose reference currency is the same as the selected currency.
Spread Source	You can optionally choose to add a spread of margin over the Interest Rate derived from IRC. Spread can be defined in the Discount Method Rule or it can be given along with Instrument record. You can select source of the spread as Discount Rule or Account Data is method is Spot IRC, Forecast (Original Term) and Forecast (Remaining Term).
Spread	When Discount Rule is selected as Spread Source then you can specify the amount of spread/margin here. Spread field is enabled when spread Source is given as Account Data. Type the percentage difference (+ or -) between the selected rate index and the value you want to use for the discount rate(s) within market value calculations. Input a Rate Spread, type 1.0000. A spread of 1% returns a discount rate of 1.00% above the reference interest rate. Type a negative number for a spread below the reference interest rate.

> **Note**
>
> You can use negative product IDs when defining the Discount Method Rule.

11. Navigate to **Cash Flow Details** section. The **Cash Flow Definition Details** section is used in unique instances to specify the portion of the Cash Flow that is used to calculate a Market Value.
12. Enter the following details:

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Table 6-20 Cash Flow Details Section

Fields	Description
Cash Flow Type	a. **Interest Only** : ignores all principal runoff for market value purposes. Use this option for Off-balance sheet items where principal is equal to Notional Principal and is therefore not a true Cash Flow. b. **Principal & Interest** : calculates principal and interest both for Market Value purposes. c. **Principal Only** : ignores all interest rate Runoff for market value purposes.
Interest Type	The Cash Flow Interest Type determines which interest component is included in the cash flow definition. The Cash Flow Interest Type can be one of three values: • Net Rate • Gross Rate For typical processing, you will use the Net Rate for the interest component of the cash flow. Special processing objectives, such as valuation of the funding center, may require you to use the other cash flow interest types.
Mature at Repricing	Calculates a market value and YTM for a given transaction up to the repricing date. For market value and YTM purposes the transaction is assumed to mature on the repricing date. Duration is always calculated to the next reprice date, not to maturity, regardless of the mature at repricing selection.
Ignore Origination Cash Flows for Forward-Starting Instruments	This feature allows the cash flow engine to ignore the origination Principal Cash Flows of any forward-starting instrument. The corresponding market value, duration, convexity and yield calculations will not reflect the Origination Amount. Origination principal Cash Flow will still be reported.
Use Principal in Market Value Calculations (Off-Balance Sheet Only)	This feature allows the Cash Flow Engine to consider principal in the calculation of market value, duration, convexity and yield calculations, even if principal is not actually exchanged.

13. Click **Apply**.
14. Click **Save**.

Export Excel

Export Excel functionality allows you to download the members. This is an optional step. To export the data, follow these steps:

1. Select the member(s).
2. Click **Export Excel** button.
3. The **Select Currency** window is displayed. Select the currency.

The member data will be exported in **.xlsx** format.

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Import Excel

Import Excel functionality allows you to import the member list from your local system. This is an optional step. To import the data, follow these steps:

1. Click **Import** button.
2. The **Import Excel** window is displayed. Click **Drag and Drop**, and select the excel file (.xlsx) to upload.

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

3. Click **Validate** to verify the template.

> **Note**
>
> The Downloaded Forecast rules and assumptions can be viewed, added, removed, or modified, then re-uploaded back into the Application.

4. Click **Import**.
   The excel file is uploaded and a confirmation box is displayed

6.3.1.4.2 Discount Method Examples

The following examples assume the Interest Rate has a format of zero-coupon yield with annual compounding. The instrument used in each example is an annual-pay, 2-year instrument originated on the As_of_Date. See the Oracle Financial Services Cash Flow Engine Reference Guide for details on discount factor derivation used in Cash Flow Calculations.

- Spot Input
- Spot Interest Rate Code
- Forecast Remaining Term
- Forecast Original Term
- Spot Input
- Spot Interest Rate Code
  (Required) <Enter a short description here.>
- Forecast Original Term
- Forecast Remaining Term

6.3.1.4.2.1 Spot Input

In the Spot Input Method, the discount factor does not vary with Forecast Rate - interest rate scenarios. The discount factor calculations assume the input interest rate to reflect a format of zero coupon yield, annual compounding, and actual/actual accrual basis.

Spot Input Rate = 6.00%

The formula for the market value of the account, for any rate scenario, is:

Market Value = Cash Flow1/ (1 + 0.06) + Cash Flow 2 / ((1 + 0.06)^2)

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Cash Flow1 is the cash flow at the end of year 1. Cash Flow2 is the Cash Flow at the end of year 2.

6.3.1.4.2.2 Spot Interest Rate Code

(Required) <Enter a short description here.>

In the Spot Interest Rate Code Method, the discount factor depends on the term of the Cash Flow, but does not vary with interest rate scenario.

Interest Rate Code = Treasury Yield Curve

The formula for the Market Value of the account, for any rate scenario, is:

Market Value = Cash Flow1/ (1 + 1 Year Treasury) + Cash Flow2/ ((1 + 2 Year Treasury)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the Cash Flow at the end of year 2. The values for 1 Year Treasury and 2 Year Treasury reflect the values from the Historical Interest Rate Data, beginning with the As_of_Date.

6.3.1.4.2.3 Forecast Original Term

The Forecast Original Term Method uses the forecasted Interest Rate Data to determine the discount factor.

Interest Rate Code = Treasury Yield Curve

The formula for the market value of the account is:

Market Value = Cash Flow1/ (1+ 2 Year Treasury Rate at the 1 year point in the forecast) + Cash Flow2/ ((1+ 2 Year Treasury Rate at the 2 year point in the forecast)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the cash flow at the end of year 2. Note that Cash Flow1 is discounted at the 2 year Treasury rate. The 2 Year rate is used with this method, because the Forecast Original Term method always uses the term equivalent to the original term of the instrument.

6.3.1.4.2.4 Forecast Remaining Term

The Forecast Remaining Term Method uses forecasted Interest Rate Data to determine the discount factor.

Interest Rate Code = Treasury Yield Curve

The formula for the market value of this account is:

Market Value = Cash Flow1/ (1+ 1Year Treasury Rate at the 1 year point in the forecast) + Cash Flow2/ ((1+ 2 Year Treasury Rate at the 2 year point in the forecast)^2)

Cash Flow1 is the Cash Flow at the end of year 1. Cash Flow2 is the cash flow at the end of year 2. The values for 1 Year Treasury and 2 Year Treasury reflect the scenario specific values from the forecast rates - interest rate data. Cash Flow1 is discounted at the 1 year Treasury rate, from the 1 year point of the forecast and Cash Flow2 is discounted at the 2 year Treasury rate, from the 2 year point of the forecast.

6.3.1.4.3 Associating Conditional Assumptions with Discount Methods

The Discount Method UI provides the setup and maintenance of assumptions by integrating the conditional logic (optional) into the setup of discount methods. You can define discount methodologies using IF-THEN-ELSE logic based on the underlying characteristics of your financial instruments, such as dates, rates, balances, and code values.

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The conditional logic is defined through use of Data Filters. These existing objects provide the building blocks for defining Conditional logic. This type of Data Filter can be selected within the Conditional Assumption section.

The logic included in a Conditional Assumption determines the specific discount method assumption that the system will assign to each individual instrument record at run time.

The Conditional Assumption section allows users to select explicit conditions (from Data Filters) 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 section. As soon as a condition is satisfied, the related assumption is applied.

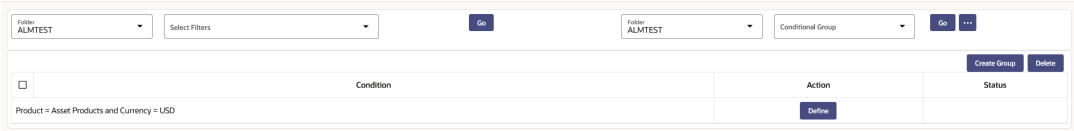
If an instrument record does not meet any of the conditions, then the rule logic reverts to the standard assumption that is directly assigned to the Product/Currency combination.

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

To define conditional assumption, follow these steps:

1. Navigate to Conditional Assumptions section.

Figure 6-93 Conditional Assumption



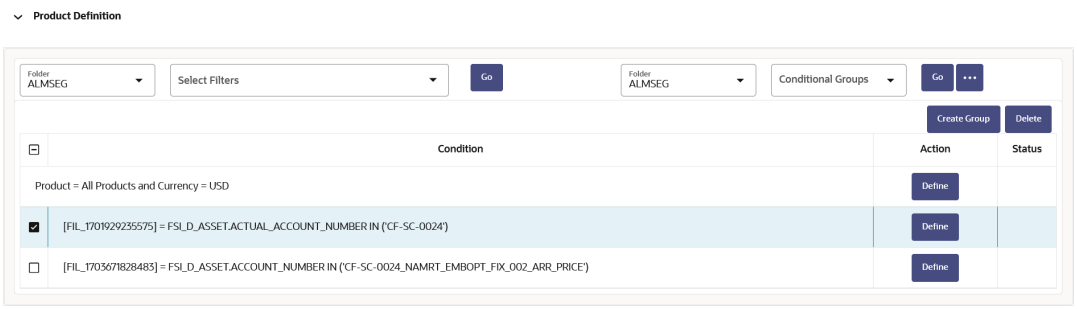
2. Select the Filter Folder and Filter, then click **Go**. The condition is displayed based on selected filter.
3. Here, you can select either group of conditions using **Conditional Group** or Individual condition using the filter section.
   - You can select the conditional groups from the **Conditional Group** drop-down. You can create a new condition group using the **Create Group** button. To create a new condition group, follow these steps:
     a. Select filters using the **Filter** drop-down list.

     > **Note**
     >
     > You must select more than 2 filters to define a condition group.

     b. Select the conditions (filters) using the corresponding check-boxes.
     c. Click **Create Group** .
     d. The **Save Condition Group** window is displayed. Provide the **Group Name** and select the **Folder** where you want to save the condition group. Click **Save** in **Save Condition Group** window. You can use this saved group from **Condition Group** down-down.
   - Else, select Individual condition using the corresponding check-box.
4. Click **Define**.

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Figure 6-94 Conditional Assumption



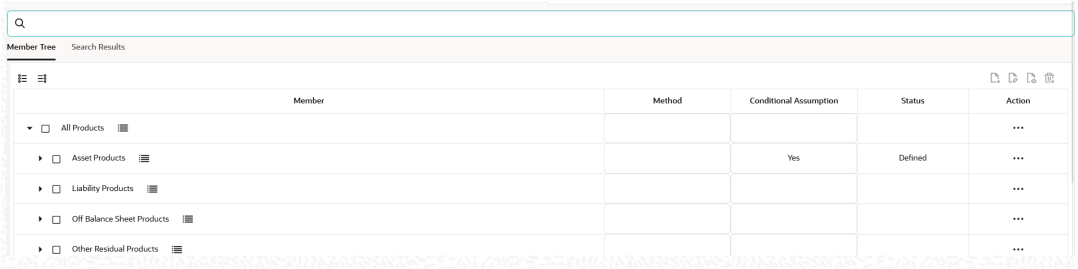
Use **Delete** button to delete the defined condition(s)

5. Define Discount Method, and then click **Apply**. The status of condition assumption is updated as **Defined**.

> **Note**
>
> You can edit the condition using **Edit**.

6. Click **Save**. The status of conditional assumption is also updated in Assumption Browser.

Figure 6-95 Status of Conditional Assumption



6.3.2 Forecast Rates

Forecast Rate Scenario Assumptions allow you to define future interest rates, future economic indicators, future currency exchange rates, future interest rate volatility, and select Forecast Rate rule for cash flow calculation. Interest rate forecasts are used to project cash flows, including pricing new business, repricing existing business, calculating prepayments, and determining discount methods. Interest rate volatility forecast are used for option valuation. Economic Indicator forecasts are used to calculate cash flow for inflation-indexed instruments, included in Behavioral Modeling and scenario or stress analysis. Currency Exchange Rate Forecasts are used to account for the effects of currency fluctuations on income.

The Forecast Rate Assumptions use interest rate curve, volatility surface, economic indicator, active and reporting currencies, and Forecast Rate rule.

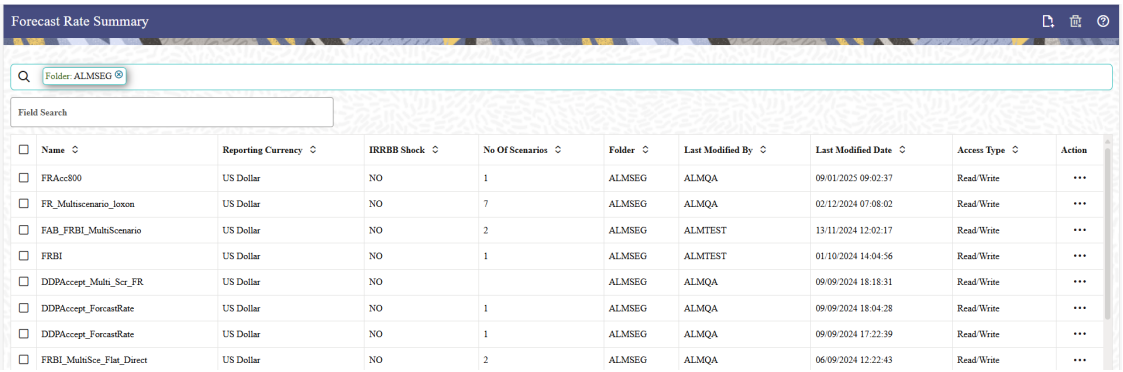
This module describes how to create a Forecast Rates Assumption Rule to forecast Cash Flows and, if you work with multiple currencies, to model relationships between Interest Rates and Exchange Rates.

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Forecast Rate Rule Summary

This page is the gateway to all Forecast Rate Rules and related functionality. You can navigate to other pages relating to Forecast Rate Rules from this point.

Figure 6-96 Forecast Rate Summary



Search Forecast Rate Rule

Prerequisites: Predefined Forecast Rate Rule

To search for a Forecast Rate Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Forecast Rate Rules that meet the search criteria.

Or

An alternative method to search a Forecast Rate Rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for are fetched and displayed in the Forecast Rate Rule Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Forecast Rate Rule and click **Search** .

The Forecast Rate Rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Forecast Rate Rule.

- **Name:** The Forecast Rate Rule's short name.
- **Reporting Currency:** The Reporting Currency selected in the Forecast Rates Rule.
- **IRRBB Shock:** Displays Yes if IRRBB (Interest Rate Risk in Banking Book) scenario type is defined in the Forecast Rates Rule, Otherwise No is displayed.
- **No. of Scenarios:** The number of scenarios defined in the Forecast Rates Rule
- **Folder:** The Folder name where the Forecast Rate Rule is saved.
- **Last Modified By:** The user who last modified the Forecast Rate Rule.
- **Last Modified Date:** The Date and Time when the Forecast Rate Rule was last modified.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Action:** Click this icon to view a list of actions that you can perform on the Forecast Rate Rule.

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- Multiple Delete: Enables you to select and delete one or multiple rules in the table simultaneously.
- View/Edit: Based on the user privilege assigned, you can either only view or edit existing Forecast Rate Rules. To edit a rule, you must have Read/Write privilege.
- Save As: You can reuse a Forecast Rate Rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
- Delete: You can delete Forecast Rate Rules that you no longer require. Note that only Forecast Rate Rule owners and those with Read/Write privileges can delete Forecast Rate Rules. A Forecast Rate Rule that has a dependency cannot be deleted.
- Dependency Check: You can perform a dependency check to know where a particular Forecast Rate Rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Forecast Rate Rules that have dependencies. . A report of all rules that utilize the selected Forecast Rate Rule is generated.

> **Note**
>
> This is functionality will intended for a future release.

Also See:

- Create Forecast Rate Rule
- Create Forecast Rate Rule

6.3.2.1 Create Forecast Rate Rule

To create a new Forecast Rate Rule, follow these steps:

1. Navigate to **Forecast Rates Summary** Page.
2. Click **Add** icon. The **Forecast Rates Details** Page is displayed.
3. Enter the following Details

Table 6-21 Forecast Rate Rule – Fields and Descriptions

Field	Description
Name	Enter the name of the Forecast Rate Rule.
Description	Enter the description of the Forecast Rate Rule. This is an optional field.
Folder	Select the Folder where the Forecast Rate Rule needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/ Write.
IRRBB Shock	Select this checkbox if you want to define IRRBB Scenario. This option is available only in Asset Liability Management Cloud Service. If selected, IRRBB standardized and enhanced approach scenario types can be created.

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Table 6-21 (Cont.) Forecast Rate Rule – Fields and Descriptions

Field	Description
Reporting Currency	Currencies that were marked as 'Reporting Currency' in Rate Management appear for selection here. Select one Reporting Currency.

.

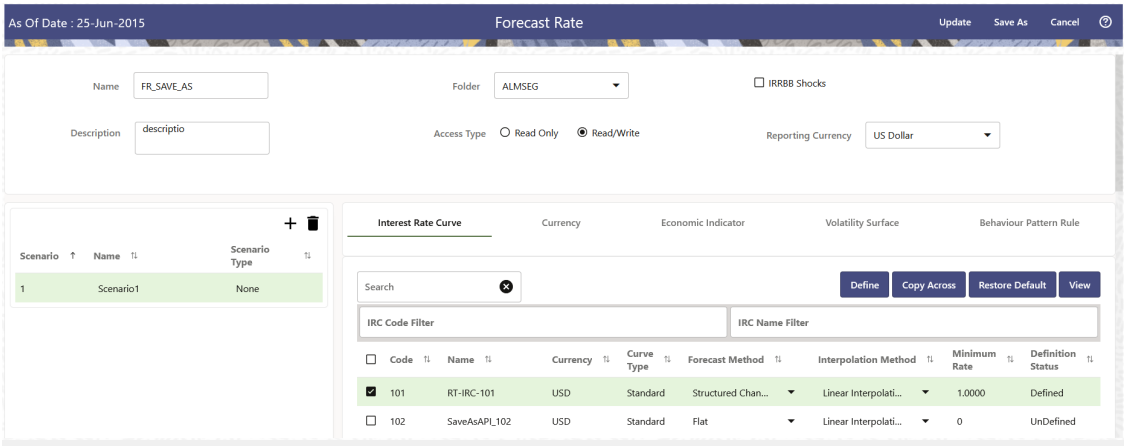
4. Scenario 1 is selected by default. You can change the name of scenario. Click + to add more scenario, if needed. More than one scenario can be created only in Asset Liability Management Cloud Service.
5. Scenario Type is 'None' by default. When IRRBB Shock is enabled then you can select one of the available values from second scenario onwards.
6. Click **Save**, if you want to save the Forecast Rate Rule and update it later.

- Interest Rate Forecast Methods
- Define Currency Forecast Methods
- Define Economic Indicator Forecast Rule
- Define Volatility Surface Forecast Methods
- Map Behavior Pattern Rule

6.3.2.1.1 Interest Rate Forecast Methods

The IRCs for all active currencies are listed under Interest Rate Curve section. The options under Interest Rate Curve Forecast Method provide multiple ways to model the effects on portfolio Cash Flows due to Interest Rate changes.

Figure 6-97 Interest Rate Curve Forecast Rates



You can define Interest Rate Forecast for the following methods:

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Table 6-22 Forecast Rate rule – Methods and Descriptions

Method	Description
Flat	Forecast no change in the Interest Rate for all dates beginning with the As-of Date.
Direct Input	Type Interest Rates directly for any modeling period or Interest Rate term.
Structured Change	Forecast exchange rates as an incremental change from the previous period. Forecast rate changes in terms of absolute or percent change, for any modeling period or interest rate term, such as: +100 basis points on Day 1 -200 basis points over the first 6 months Yield curve rotation (short point decreasing, long point increasing). This option is available only in Asset Liability Management Cloud Service.
Implied Forward	Forecast interest rates based on the yield-curve interest rates in effect at the as-of date and consistent with the modeling bucket definitions. This option is available only in Asset Liability Management Cloud Service.
Yield Curve Twist	Flatten or steepen the yield curve around a specific point on the curve. This option is available only in Asset Liability Management Cloud Service.
Change from Base	Make incremental changes to an existing forecast scenario. This option is available only in Asset Liability Management Cloud Service.
IRRBB Standardized Approach Shocks	Forecast an interest rate shock according to one of the BCBS IRRBB Standardized Approach shock specifications (Scenario-level specification). This option is available only in Asset Liability Management Cloud Service
IRRBB Enhanced Approach Shocks	Forecast an interest rate shock according to user specifications that will flow into IRRBB Table B reporting. This option is available only in Asset Liability Management Cloud Service.
Formula	Hybrid and Managed Rate IRC can be forecasted using the formula defined in Managed Rate/ Hybrid section of IRC.

> **Note**
>
> Formula method is applicable to Hybrid and Managed Rates IRC.

For more information, see the Cash Flow Engine Reference Guide.

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The following Interpolation Methods are available.

Table 6-23 Forecast Rate Rule – Interpolation Methods and Descriptions

Method	Description
Linear Interpolation	Linear interpolation uses Linear Yield Curve smoothing. Linear Yield Curves are continuous but not smooth; at each knot point, there is a kink in the yield curve. You may not want to use a Linear Yield Curve with a model that assumes the existence of a continuous Forward Rate Curve, due to the nonlinear and discontinuous knot points of a Linear Yield Curve.
Cubic Spline of Yields	A cubic spline is a series of third-degree polynomials that have the form: $y = a + bx + cx^2 + dx^3$ 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. Two more constraints make the Cubic Spline Curve unique. The first restricts the zero-maturity yield to equal the 1-day interest rate. The second restricts the yield curve at the longest maturity to be either straight (y"=0) or flat (y'=0).
Quartic Spline	Quartic interpolation requires a minimum of 4 knot points. The quartic interpolation equation can be represented as: $Y = a + bX + cX^2 + dX^3 + eX^4$ The end knot points satisfy equations for one curve and all intermediate points satisfy two curves. Therefore, in a scenario with a minimum number of knot points, there are 6 equations. For n number of knot points, the number of equations is 2n-2. If n is the number of points to be interpolated, the order of the matrix to be formed is 5*(n-1) x 5*(n-1). The matrix is formed according to the following logic: The second derivative at the endpoints and the first derivative of the last point is Zero. At the points other than the endpoints, the value of the first derivatives, second derivatives, and the third derivatives of the function are equal.

In looking up the Forecast Rates, the Cash Flow Engine (where necessary) performs an interpolation between yield curve term points. For example, in determining a three-month rate from a yield curve that contains only a one-month rate and a six-month rate, the Cash Flow Engine performs an interpolation to determine the implied three-month rate. The Interpolation method used is defined by the selected interpolation method for the Interest Rate Curve.

Forecast rates for 360 calendar months starting from As-of-Date are generated.

Following options are available for Interest Rate Curve Forecast Rule:

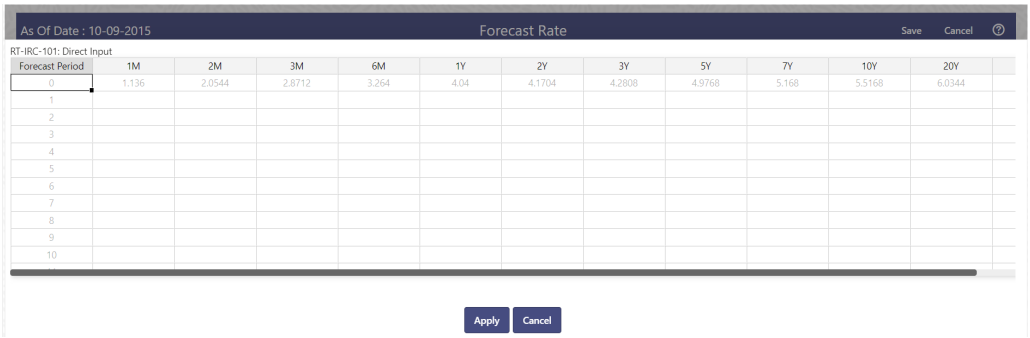
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- Define
- Copy Across
- Restore Default
- View

Define

- **Flat Method**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Select the Interpolation method.
  3. Input Minimum Rate, if required.
  4. Click **Define**.
     The status of the Interest Rate Curve is changed to **Defined**.
- **Direct Input**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input**.
  2. Select the **Interpolation Method**.
  3. Input Minimum Rate, if required.
  4. Click **Define**.
     The **Direct Input** window is displayed:

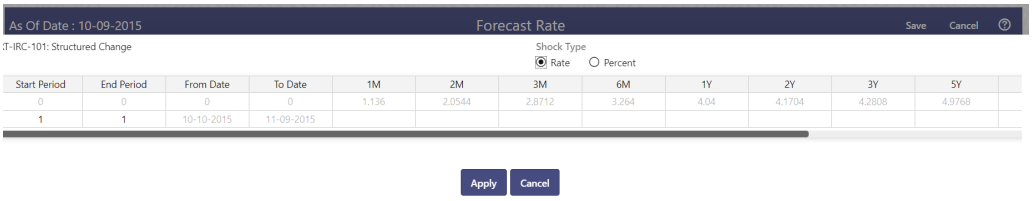
Figure 6-98 Direct Input



  5. Enter data and click **Apply**. Right click on data grid and select ‘Export to Excel’ to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid.
  6. The status of the Interest Rate Curve is changed to **Defined**.
- **Structured Change**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Structured Change** .
  2. Select the **Interpolation Method**.
  3. Input Minimum Rate, if required.
  4. Click **Define**.
     The **Structured Change** window is displayed:

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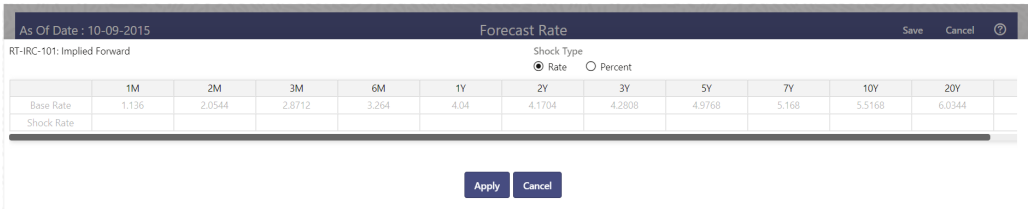
Figure 6-99 Structured Change



5. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
6. Enter a shock amount to apply to the IRC in absolute rate or percentage change. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the IRC. Right click on data grid to all more rows or delete rows. Use the Excel Import or Export feature to add the interest rate changes.
7. Click **Apply** to save.
8. The status of the Interest Rate Curve is changed to **Defined**.

- **Implied Forward**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Implied Forward.
  2. Select the **Interpolation** Method.
  3. Input Minimum Rate, if required.
  4. Click **Define**.
     The Implied Forward window is displayed:

Figure 6-100 Implied Forward

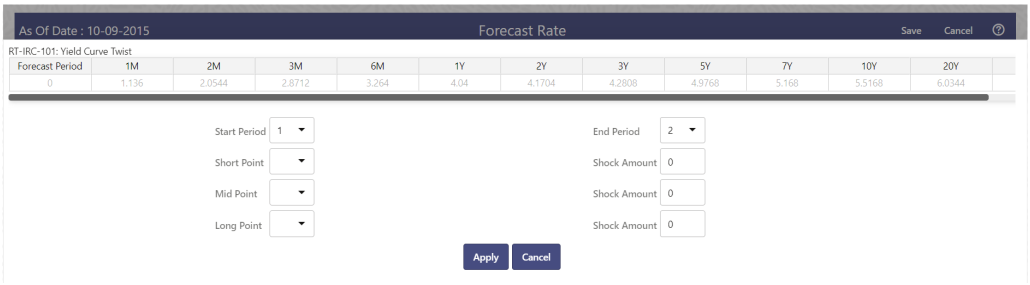


5. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
6. Enter a shock amount to apply to the IRC in absolute rate or percentage change. If no change is required to the base curve, leave at 0.0, and click **Apply**.
7. The status of the Interest Rate Curve is changed to Defined.

- **Yield Curve Twist**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Yield Curve Twist.
  2. Select the **Interpolation** Method.
  3. Input Minimum Rate, if required.
  4. Click **Define**.
     The Yield Curve Twist window is displayed:

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Figure 6-101 Yield Curve Twist



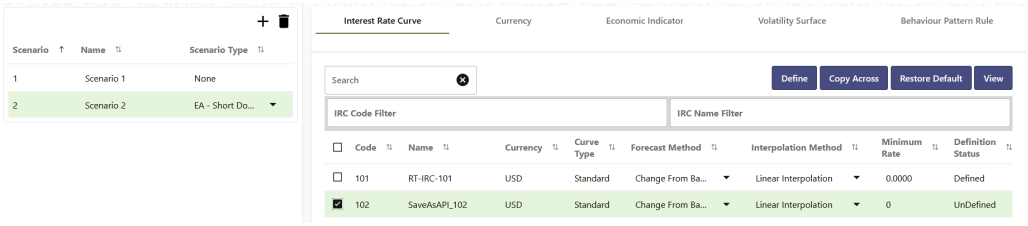
5. Select Start and End Period. Start Period must 1 or higher while highest End Period can be 360.
6. Select the tenors using the Short Point, Mid Point, and Long Point.
7. Add the required shock amounts for each tenor. At runtime and display time, the rate changes are added to the As-of-Date rates to create a future scenario.
8. Click **Apply**.
   The status of the Interest Rate Curve is changed to Defined.

- **Change From Base**

> **Note**
>
> This method is available from second scenario onwards.

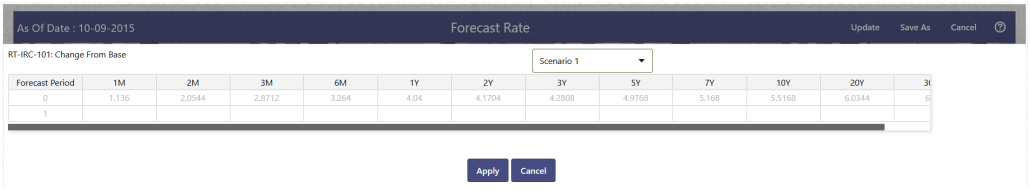
1. Select Scenario 2 or higher as Scenario.

Figure 6-102 Change From Base



2. Select Interest Rate Code using corresponding checkbox and select Forecast Method as Change from Base.
3. Select the Interpolation Method.
4. Input Minimum Rate, if required.
5. Click Define. The Change From Base window is displayed.

Figure 6-103 Change From Base



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6. Scenario 1 is used as base scenario.
7. Enter the Forecast Period from 1 to 360 months and the corresponding change amount to apply to the base forecasts IRC. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes.
8. The status of the Interest Rate Curve is changed to Defined.

- **Standardized Approach Shocks**
  Standardized Approach shocks are different than other Interest Rate Rules as these are applied at the scenario level instead of at the IRC level. When you create a new Forecast Rates rule, update the IRC Forecast Method for IRRBB Shocks Scenarios.

  1. In Forecast Rates window, select the IRRBB Shocks. This allows you to define either Standardized or Enhanced Approach Scenarios, or both for a single Forecast Rates Rule. Once a forecast rates rule is designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach scenario type.
  2. To apply a Standardized Approach scenario, click the Add Scenario.
  3. In the Add Forecast Rates Scenario section, select the Scenario Type to apply the scenario. The following are the shock scenarios:
     - Standardized Approach Shock - Parallel UP
     - Standardized Approach Shock - Parallel DOWN
     - Standardized Approach Shock - Short UP
     - Standardized Approach Shock - Short DOWN
     - Standardized Approach Shock - Flattener
     - Standardized Approach Shock - Steppener
  4. Only one Standardized Approach shock can be applied to a single scenario, and no two SA shocks of the same type may be applied to the same Forecast Rates rule. All qualifying IRCs will inherit this SA shock and cannot be changed except for their interpolation method and minimum rate.
  5. Click Apply to make scenario as Standardized Approach shock.

- **Enhanced Approach Shocks**
  Like Standardized Approach shocks, Enhanced Approach shocks are scenario-level rules. When you create a new Forecast Rates rule, update the IRC Forecast Method for IRRBB Shocks Scenarios. However, unlike Standardized Approach shocks, the Forecast method for each IRC is not pre-established. This means that users must define the Forecast method, interpolation method and minimum rate for all Interest Rates in each scenario. Once defined and processed, the results will flow through into the Table B reporting.

  1. In the Forecast Rates window, select the IRRBB Shocks. This allows you to define either Standardized or Enhanced Approach scenarios, or both for a single Forecast Rate rule. After a Forecast Rate rule is designated as IRRBB Shocks, this checkbox cannot be unselected unless there are no defined scenarios as either Standardized or Enhanced Approach Scenario Type.
  2. To apply an Enhanced Approach scenario, click the Add Scenario. The following are the shock scenarios:
     a. Enhanced Approach Shock - Parallel UP
     b. Enhanced Approach Shock - Parallel DOWN
     c. Enhanced Approach Shock - Short UP
     d. Enhanced Approach Shock - Short DOWN

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e. Enhanced Approach Shock - Flattener

f. Enhanced Approach Shock - Steppener

3. Only one Enhanced Approach shock can be applied to a single scenario, and no two EA shocks of the same type can be applied to the same Forecast Rates rule. All IRCs in this scenario remain fully editable for the Forecast method, Interpolation method, and Minimum Rate.
4. Click Apply to make the scenario as Enhanced Approach shock.

- **Formula**

> **Note**
>
> This method is applicable for Hybrid and Managed Rate IRC definitions. For Hybrid and Managed Rate IRC definitions, following methods are applicable: Flat, Formula, and Direct Method.

1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Formula**.
2. Select the **Interpolation Method**.
3. Input Minimum Rate, if required.
4. Click **Define**.
5. The status of the Interest Rate Curve is changed to **Defined**.

Copy Across

This allows you to copy Forecast Method and related details from one IRC to another.

For example, if you have 10 IRCs enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled IRCs, instead of having to input 10 full sets, thereby saving a significant amount of input time.

> **Note**
>
> You must select a defined IRC to Copy Across. For more information, see the Define section of Interest Rate Curve.

- **Flat Method**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
  1. Select Interest Rate Curve using the corresponding checkbox and select **Forecast Method** as **Structured Change.**.
  2. Click **Copy Across**.

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3. Click **Apply Copy Across**.
4. You can click **Cancel Copy Across** to cancel the Copy Across function.

- **Implied Forward**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Implied Forward.
  2. Click Copy Across.
  3. Click Apply Copy Across.
  4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Change From Base**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as Change From Base.
  2. Click Copy Across.
  3. Click Apply Copy Across.
  4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Formula**

> **Note**
>
> This method is applicable for Hybrid and Managed Rate IRC definitions. For Hybrid and Managed Rate IRC definitions, following methods are applicable: Flat, Formula, and Direct Method.

1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Formula**.
2. Click **Copy Across**.
3. Click **Apply Copy Across**.
4. You can click **Cancel Copy Across** to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to **Undefined**.
- **Direct Input**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to **Undefined**.
- **Structured Change**

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1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Structured Change**.
2. Click **Restore Default**.
3. The status of the Interest Rate Curve is changed to Undefined.

- **Implied Forward**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Implied Forward**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to Undefined.
- **Yield Curve Twist**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Yield Curve Twist**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to Undefined.
- **Change From Base**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Change From Base**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to Undefined.
- **Formula**

> **Note**
>
> This method is applicable for Hybrid and Managed Rate IRC definitions. For Hybrid and Managed Rate IRC definitions, following methods are applicable: Flat, Formula, and Direct Method.

  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Formula**.
  2. Click **Restore Default**.
  3. The status of the Interest Rate Curve is changed to **Undefined**.

View

After defining Forecast Method and other parameters for an IRC you can view the forecasted interest rates by clicking this button.

- **Flat Method**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Click **View** to see the output table.
- **Direct Input**
  1. Select Interest Rate Curve using corresponding checkbox and select **Forecast Method** as **Direct Input.**
  2. Click **View** to see the Output Table.

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- **Structured Change**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Structured Change**.
  2. Click **View** to see the Output Table.
- **Yield Curve Twist**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Yield Curve Twist**.
  2. Click **View** to see the Output Table.
- **Implied Forward**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Implied Forward**.
  2. Click **View** to see the Output Table.
- **Change From Base**
  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Change From Base**.
  2. Click **View** to see the Output Table.
- **Formula**

  > **Note**
  >
  > This method is applicable for Hybrid and Managed Rate IRC definitions. For Hybrid and Managed Rate IRC definitions, following methods are applicable: Flat, Formula, and Direct Method.

  1. Select Interest Rate Curve using corresponding checkbox and select Forecast Method as **Formula**.
  2. Click **View** to see the Output Table.

6.3.2.1.2 Define Currency Forecast Methods

The following Currency Forecast methods are available when you select a currency (other than the reporting currency) from the **Currency Codes** list. Currency forecast methods is available in Asset Liability Management Cloud Service only.

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Figure 6-104 Currency Forecast Methods

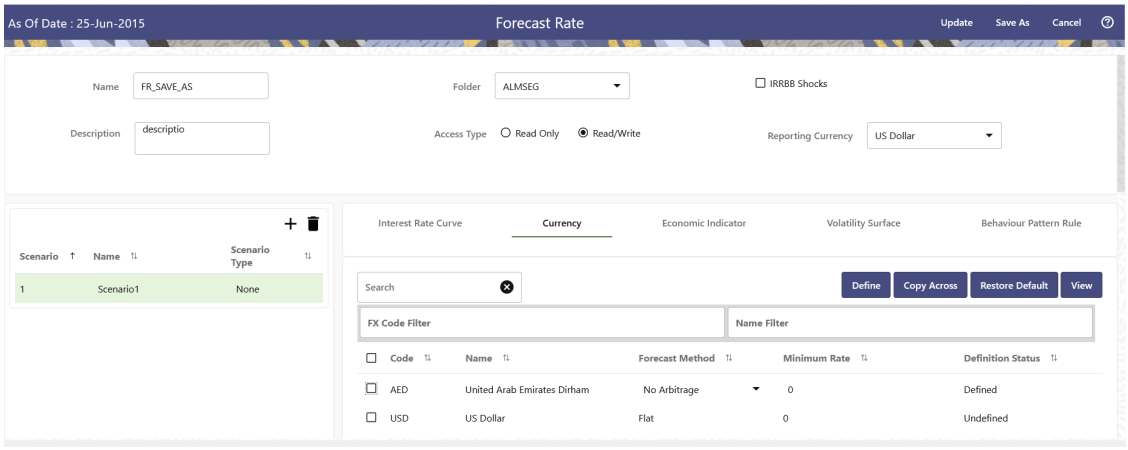


Table 6-24 Currency Forecast Methods

Method	Description
Flat	Forecast no change in the exchange rate for all dates beginning with the as-of date.
Structured Change	Forecast exchange rates as an incremental change from the previous period.
Direct Input	Type exchange rates to use in forecasting.
Parity	Forecast the exchange rate between two currencies based on forecasted interest rate associated with the currencies. The parity method can be used only if both the reporting currency and the selected currency have a Reference IRC. If reference IRC is not available for both or any one currency then flat method is used.
No Arbitrage	Forecast the exchange rate required to maintain a no-arbitrage condition between two currencies. The No Arbitrage method can be used only if both the reporting currency and the selected currency have a Reference IRC. If reference IRC is not available for both or any one currency then flat method is used.

Following options are available for Currency Forecast Rule:

- Define
- Copy Across
- Restore Default
- View

Define

- **Flat Method**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
  2. Input Minimum Rate, if required.

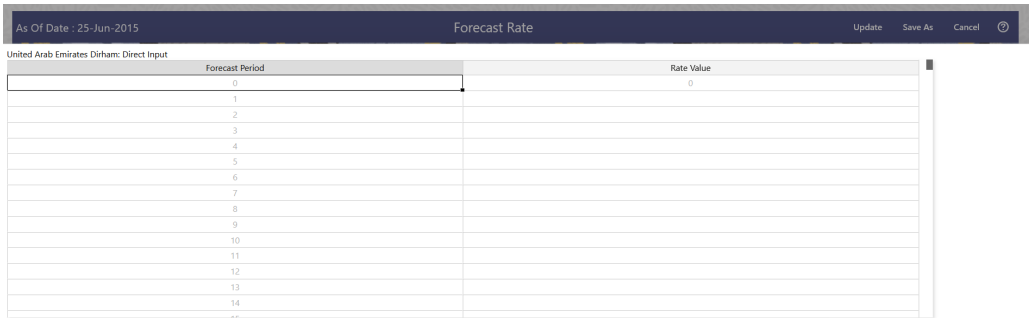
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3. Click **Define**.
4. The status of the Currency Code is changed to **Defined**.

- **Direct Input**

1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
2. Input Minimum Rate, if required.
3. Click **Define**. The **Direct Input** window is displayed:

Figure 6-105 Direct Input window

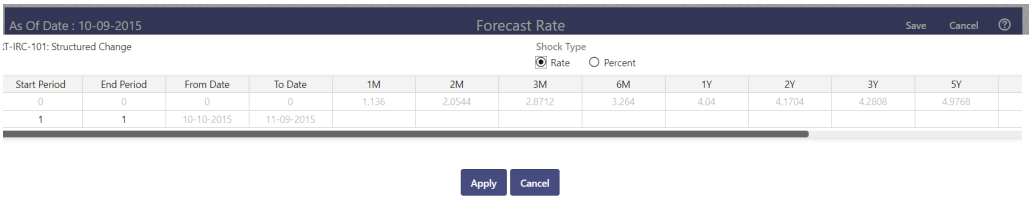


4. Right click on data grid and select 'Export to excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click **Apply**.
5. The status of the Currency Code is changed to **Defined**.

- **Structured Change**

1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
2. Input Minimum Rate, if required.
3. Click **Define**. The **Structured Change** window is displayed:

Figure 6-106 Structured Change window



4. Select the Shock Type as Rate or Percent. Shock Type as Rate designates to absolute rate change and Shock Type as Percent designates to percent rate change.
5. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the Currency. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes. Click **Apply**.
6. The status of the Currency Code is changed to **Defined**.

- **Parity**

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1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
2. Input Minimum Rate, if required.
3. Click **Define**.
4. The status of the Currency Code is changed to **Defined**.

- **No Arbitrage**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
  2. Input Minimum Rate, if required.
  3. Click **Define**.
  4. The status of the Currency Code is changed to **Defined**.

Copy Across

This allows you to copy Forecast Method and related details from one Currency to another.

For example, if you have 10 Currency codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Currency codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

You must select a defined Currency to use Copy Across. For more information, see the Define section of Currency.

- **Flat Method**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Parity**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **No Arbitrage**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
  2. Click **Copy Across**.

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3. Click **Apply Copy Across**.
4. You can click **Cancel Copy Across** to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
  2. Click **Restore Default**.
  3. The status of the Currency Code is changed to **Undefined**.
- **Direct Input**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
  2. Click **Restore Default**.
  3. The status of the Currency Code is changed to **Undefined**.
- **Structured Change**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
  2. Click **Restore Default**.
  3. The status of the Currency Code is changed to **Undefined**.
- **Parity**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
  2. Click **Restore Default**.
  3. The status of the Currency Code is changed to **Undefined**.
- **No Arbitrage**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
  2. Click **Restore Default**.
  3. The status of the Currency Code is changed to **Undefined**.

View

After defining Forecast Method and other parameters for a Currency you can view the forecasted Currency by clicking this button.

- **Flat Method**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Flat**.
  2. Click **View** to see the output table.
- **Direct Input**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Direct Input**.
  2. Click **View** to see the Output Table.

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- **Structured Change**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Structured Change**.
  2. Click **View** to see the Output Table.
- **Parity**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **Parity**.
  2. Click **View** to see the Output Table.
- **No Arbitrage**
  1. Select Currency Code using corresponding checkbox and select Forecast Method as **No Arbitrage**.
  2. Click **View** to see the Output Table.

6.3.2.1.3 Define Economic Indicator Forecast Rule

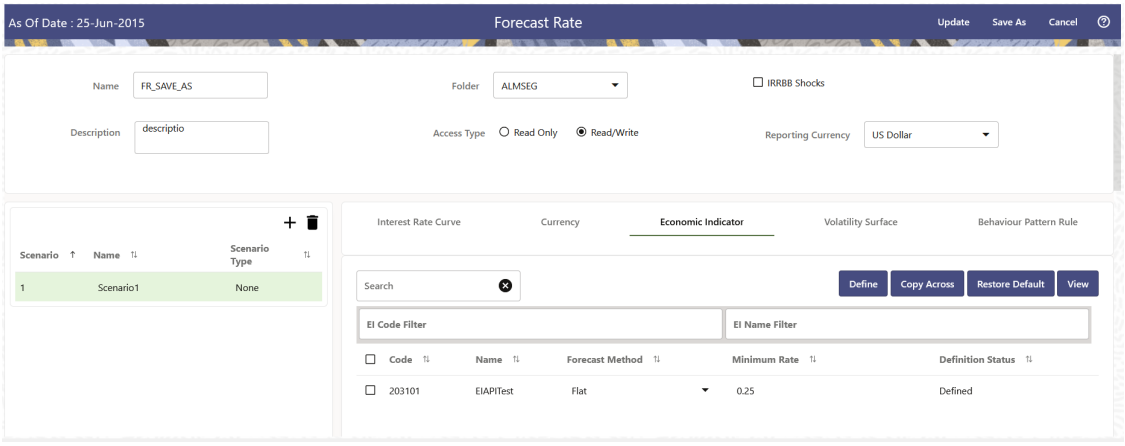
The Economic Indicators (EI) defined previously are listed under EI Section. The options under EI Forecast Method provide multiple ways to model the effects on Portfolio Cash Flows due to changes in inflation index and other micro or macro-economic parameters.

The following Economic Indicator Methods are available.

Table 6-25 Forecast Rate Rule – Economic Indicator Methods and Descriptions

Method	Description
Flat	Forecast no change in the EI rate for all dates beginning with the As-of Date.
Direct Input	Type-specific Economic Index Rates to use in forecasting.
Structured Change	Forecast the economic index as an incremental change from the previous period. This option is available only in Asset Liability Management Cloud Service.

Figure 6-107 Economic Indicator Forecast Rates



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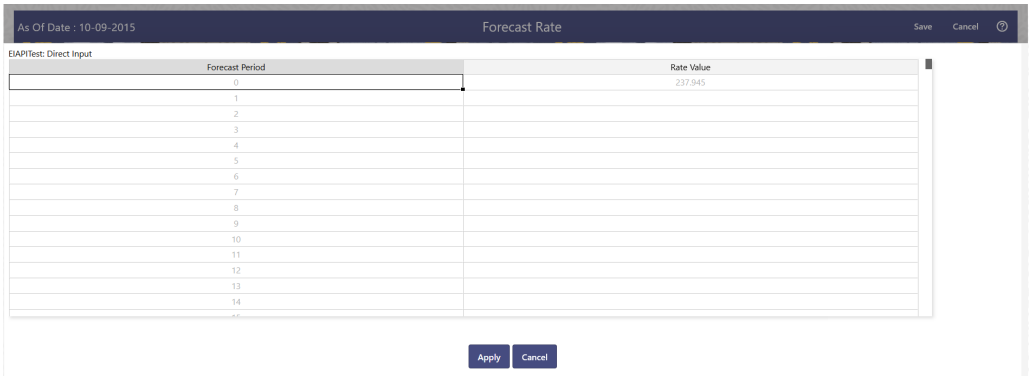
Following options are available for Economic Indicator Forecast Rule:

- Define
- Copy Across
- Restore Default
- View

Define

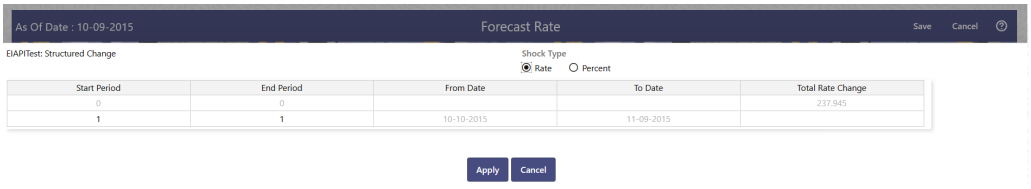
- **Flat Method**
  1. Select Economic Indicator Code using corresponding checkbox, select **Forecast Method** as **Flat** and enter minimum rate.
  2. Click **Define**. The status of Economic Indicator Code is changed to **Defined**.
- **Direct Input**
  1. Select Economic Indicator Code using corresponding checkbox, select Forecast Method as **Direct Input** and enter minimum rate.
  2. Click **Define**. The **Direct Input** window is displayed:

Figure 6-108 Direct Input window



  3. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click **Apply**.
  4. The status of Economic Indicator Code is changed to **Defined**.
- **Structured Change**
  1.
  2. Select Economic Indicator Code using corresponding checkbox, select Forecast Method as **Structured Change** and enter minimum rate.
  3. Click **Define**. The **Structured Change** window is displayed:

Figure 6-109 Structured Change window



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4. Enter Start and End period from 1 to 360 months and corresponding shock amount to apply to the Currency. Right click on data grid to all more rows or delete rows. Use the **Excel Import or Export** feature to add the interest rate changes. Enter data and click Apply.
5. The status of Economic Indicator Code is changed to Defined.

Copy Across

This allows you to copy Forecast Method and related details from one Economic Indicator Code to another.

For example, if you have 10 Economic Indicator Codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Economic Indicator Codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

> **Note**
>
> You must select a defined Economic Indicator Code to use Copy Across. For more information, see the Define section of Economic Indicator.

- **Flat Method**
  1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as Flat.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Direct Input**
  1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as Direct Input.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.
- **Structured Change**
  1. Select Economic Indicator Code using corresponding checkbox and select Forecast Method as **Structured Change**.
  2. Click **Copy Across**.
  3. Click **Apply Copy Across**.
  4. You can click **Cancel Copy Across** to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
  1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Click **Restore Default**.

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3. The status of the Economic Indicator Code is changed to **Undefined**.

- **Direct Input**
  1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Direct Input**.
  2. Click **Restore Default**.
  3. The status of the Economic Indicator Code is changed to **Undefined.**
- **Structured Change**
  1. Select Economic Indicator Code using the corresponding checkbox and select **Forecast Method** as **Structured Change**.
  2. Click **Restore Default**.
  3. The status of the Economic Indicator Code is changed to **Undefined.**

View

After defining forecast method and other parameters for an Economic Indicator Code you can view the forecasted interest rates by clicking this button.

- **Flat Method**
  1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Flat**.
  2. Click **View** to see the output table.
- **Direct Input**
  1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Direct Input**.
  2. Click **View** to see the output table.
- **Structured Change**
  1. Select Economic Indicator Code using corresponding checkbox and select **Forecast Method** as **Structured Change**.
  2. Click **View** to see the output table.

6.3.2.1.4 Define Volatility Surface Forecast Methods

The following Volatility Surface Forecast methods are available when you select a Volatility Surface from the **Volatility Surface Codes** list. Volatility Surface forecast method is available in Asset Liability Management Cloud Service only.

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Figure 6-110 Volatility Surface Forecast Methods

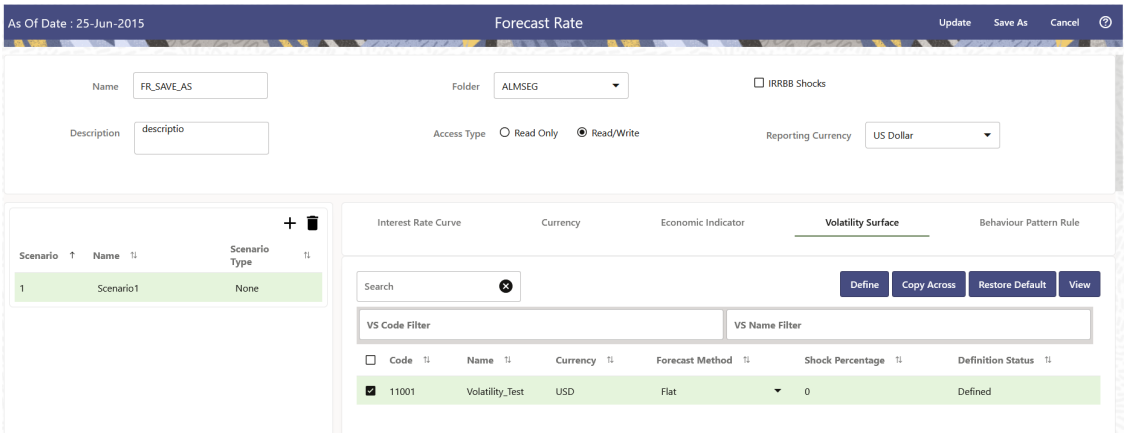


Table 6-26 Volatility Surface Forecast Methods

Method	Description
Flat	Forecast no change in the exchange rate for all dates beginning with the as-of date.
Global Shock	Single shock rate is defined and applied to base volatility matrix
Detail Shock	Shock rate is defined for every intersection of Strike & Expiry Date
Direct Input	Implied volatility is given as input for every intersection of Strike & Expiry Date

Following options are available for Volatility Surface Forecast Rule:

- Define
- Copy Across
- Restore Default
- View

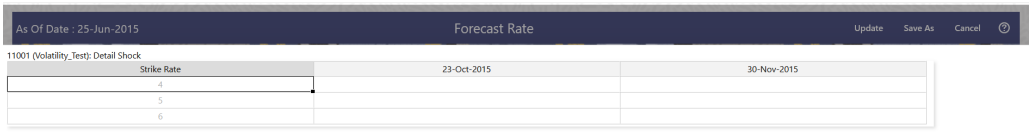
Define

- **Flat Method**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
  2. Click Define.
  3. The status of the Volatility Surface Code is changed to Defined.
- **Global Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
  2. Input Shock Percentage, if required.
  3. Click Define.
  4. The status of the Volatility Surface Code is changed to Defined.
- **Detail Shock**

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1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
2. Click Define. The Detail Shock window is displayed:

Figure 6-111 Detail Shock window

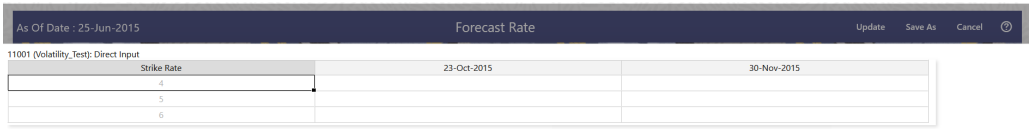


3. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid. Enter data and click Apply.
4. The status of the Volatility Surface Code is changed to Defined.

- **Direct Input**

1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
2. Click Define. The Direct Input window is displayed:

Figure 6-112 Direct Input window



3. Enter a shock amount to apply to the Volatility Surface. Right click on data grid and select 'Export to Excel' to save visible data to excel file. You can also copy directly from the grid and paste data from an excel file to the grid.
4. Click Apply.
5. The status of the Volatility Surface Code is changed to Defined.

Copy Across

This allows you to copy Forecast Method and related details from one Volatility Surface to another.

For example, if you have 10 Volatility Surface codes enabled in the application and you must input only one set of assumptions, then copy those assumptions across all enabled Volatility Surface codes, instead of having to input 10 full sets, thereby saving a significant amount of input time.

You must select a defined Volatility Surface to use Copy Across. For more information, see the Define section of Volatility Surface.

- **Flat Method**

1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
2. Click Copy Across.

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3. Click Apply Copy Across.
4. You can click Cancel Copy Across to cancel the Copy Across function.

- **Global Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
  2. Click Copy Across.
  3. Click Apply Copy Across.
  4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Detail Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
  2. Click Copy Across.
  3. Click Apply Copy Across.
  4. You can click Cancel Copy Across to cancel the Copy Across function.
- **Direct Input**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
  2. Click Copy Across.
  3. Click Apply Copy Across.
  4. You can click Cancel Copy Across to cancel the Copy Across function.

Restore Default

Use this action to reset previously entered details to Undefined status.

- **Flat Method**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
  2. Click Restore Default.
  3. The status of the Volatility Surface Code is changed to Undefined.
- **Global Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
  2. Click Restore Default.
  3. The status of the Volatility Surface Code is changed to Undefined.
- **Detail Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
  2. Click Restore Default.
  3. The status of the Volatility Surface Code is changed to Undefined.
- **Direct Input**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.

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2. Click Restore Default.
3. The status of the Volatility Surface Code is changed to Undefined.

View

After defining Forecast Method and other parameters for a Volatility Surface you can view the forecasted Volatility Surface by clicking this button.

- **Flat Method**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Flat.
  2. Click View to see the output table.
- **Global Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Global Shock.
  2. Click View to see the Output Table.
- **Detail Shock**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Detail Shock.
  2. Click View to see the Output Table.
- **Direct Input**
  1. Select Volatility Surface Code using corresponding checkbox and select Forecast Method as Direct Input.
  2. Click View to see the Output Table.

6.3.2.1.5 Map Behavior Pattern Rule

The Behavior Pattern Rule section allows you to map an existing Behavior Pattern Rule to current forecast scenario.

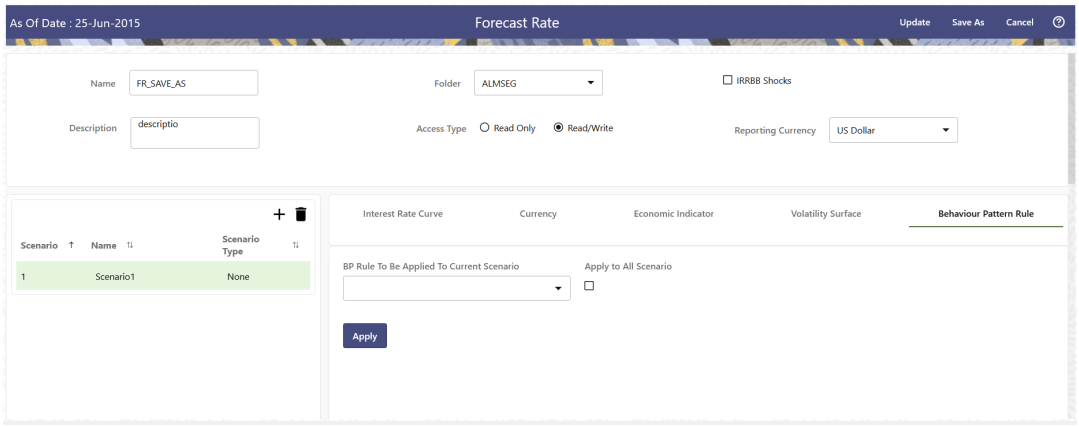
The BP Rule drop-down list shows the list of existing Behavior Pattern Rule. Select any behavior pattern rule to map with the current forecast scenario. To map a Behavior pattern to all the forecast scenarios, use the Apply to All Scenarios check box (applicable only to Asset Liability Management Cloud Service). For more information about the Behavior Pattern Rule, see the Behavior Pattern Rule section.

To map Behavior Pattern Rule with Forecast Scenario, follow these steps:

1. Navigate to **Forecast Rate Summary** Page.
2. Navigate to the Behavior Pattern Rule section.
3. Select Behavior Pattern Rule from **BP Rule To Be Applied To Current Scenario** drop-down list. Enable **Apply to All Scenarios** check box if you want to apply the selected Behavior Pattern Rule to all scenarios.

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Figure 6-113 Map Behavior Pattern Rule



4. Click **Apply**.

6.3.3 Process Definitions

This section covers the following topics:

1. Cash Flow Process: This module discusses the procedure for creating and executing the Cash Flow Process. When all the required assumptions are defined, CFE Processing performs the calculation and generates a result set.

- Cash Flow Process

6.3.3.1 Cash Flow Process

This module discusses the procedure for creating and executing the Cash Flow Process. When all the required assumptions are defined, CFE Processing performs the calculation and generates a result set. The Cash Flow Process allows you to perform the following tasks:

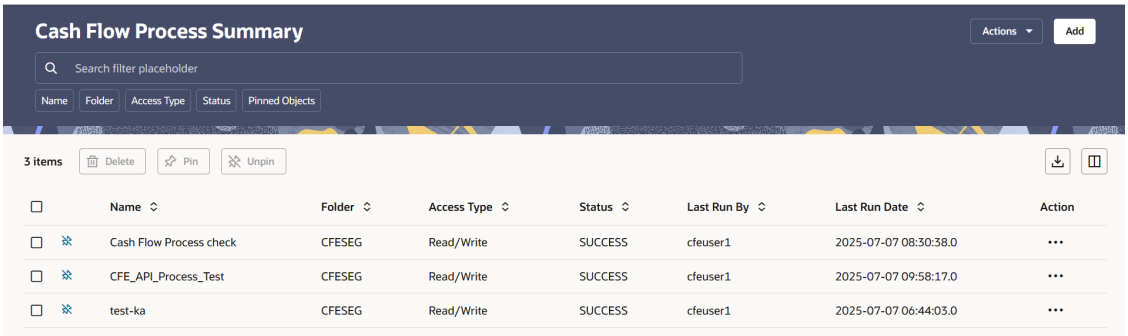
- Determine the data that you want to process.
- Submit to the CFE processing engine the modeling horizon for which you want to calculate cash flows.
- Specify the prepayment , forecast rate, and other assumptions to be used in the process.
- Define the output preferences.
- Execute the Cash Flow process and generate results.

Cash Flow Process Summary

This page is the gateway to all Cash Flow Process Rules and related functionality. You can navigate to other pages relating to Cash Flow Process Rules from this point.

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Figure 6-114 Cash Flow Process Summary Page



Search Cash Flow Process

Prerequisites: Predefined Cash Flow Process

To search for a Cash Flow Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Cash Flow Process Rules that meet the search criteria.

Or

The other method to search a Cash Flow Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Id, Name, Group, Condition Column,** or **Is User Defined** status of the Cash Flow Process and click **Search** .

The Cash Flow Process summary displays the following information:

Add: Click **Add** icon at the top right of the summary page to build a new Cash Flow Process.

Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:**Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple processes in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected process.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Cash Flow Process summary table displays the following columns:

- **Name:** Displays the Cash Flow Process's short name.
- **Calculation Date Range:** Displays the calculation date range for which process is defined.
- **Folder:** Displays the Folder name where the Cash Flow Process is saved.
- **Access Type:** Displays the access type of Rule. It can be Read-Only or Read/Write.
- **Last Run By:** Displays the Name of the user who last runs the Cash Flow Process .
- **Last Run Date:** Displays the Date and Time when Cash Flow Process was run last.

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- **Status:** Displays the status of the Cash Flow Process.
- **Action:** Displays the following list of actions that can be performed on the selected Cash Flow Process.
  - **Multiple Delete:** Select one or more Rules in the table and then click the **Multiple Delete** icon at the top right of the Summary Page to delete more than one Rule at the same time.
  - **View/Edit:** You can view existing Cash Flow Process, and you can edit existing Cash Flow Process Rules, provided you have read/write privileges. View/Edit to view or edit the contents of a Cash Flow Process in Read/Write format. Depending on user privileges the Rule will open in either View or Edit mode.
  - **Save As:** You can copy Cash Flow Process Rules to avoid having to enter data multiple times. This saves time and effort and reduces mistakes. Click on the **Action** icon against the Cash Flow Process Name and select **Save As** to create a copy of an existing Cash Flow Process.
  - **Delete:** You can delete Cash Flow Process Rules that are no longer required. Click on the **Action** icon against the Cash Flow Process Name and select **Delete** to delete an existing Cash Flow Process.

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

  - **Dependency Check:** You can check dependencies for rules to know where a particular Cash Flow Process has been used. This also prevents accidental deletion of rules having dependencies. Click on the **Action** icon against the Cash Flow Process Name and select Dependency Check to generate a report on all Rules that utilize your selected Cash Flow Process.
  - **Execute:** Select Execute to execute an existing Cash Flow Process . After clicking Execute, the Run Parameter Execution window is displayed. Select As of Date (Execution Date) and Legal Entity, and then click Run.
  - **Execute Details:** Select Execute Details to view execution details of the Cash Flow Process .

Also See:

- Create Cash Flow Process
- Execute Cash Flow Process
- View Cash Flow Process log
- Create Cash Flow Process
- Executing Cash Flow Process
- View Cash Flow Process Log

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6.3.3.1.1 Create Cash Flow Process

To create a new Cash Flow process, perform the following steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Click **Add**. The Create Cash Flow Process page is displayed.
3. Enter the details in the **Process Details** section.

Figure 6-115 Process Details

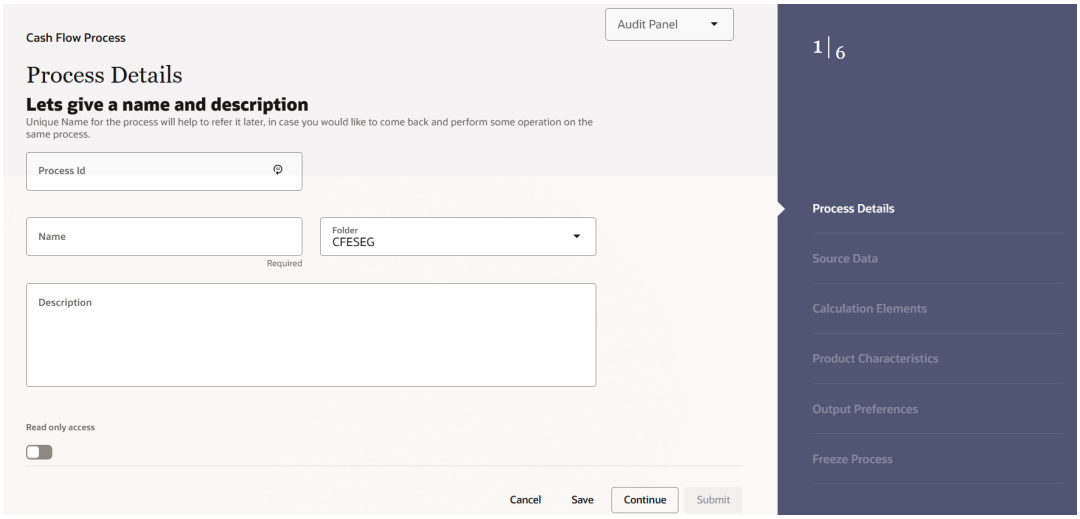


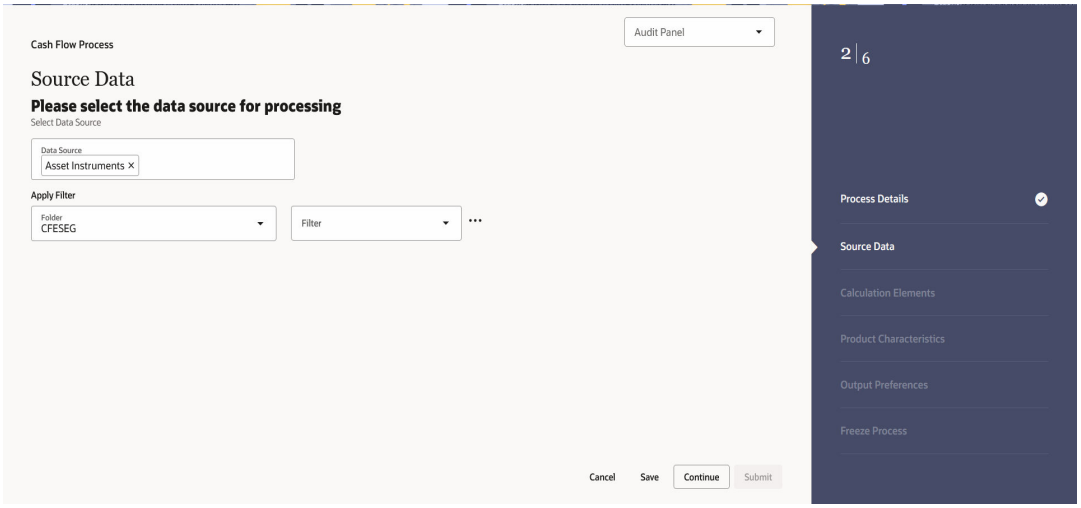
Table 6-27 List of process details used for Creating Cash Flow Process

Parameter	Description
Process ID	Enter the Process ID manually, or click Autogenerate to generate it automatically.
Name	Enter the name of the Cash Flow Process .
Description	Enter the description of the Cash Flow Process .
Folder	Select the Folder where the Cash Flow Process needs to be saved.
Access Type	Select the Access Type as Read-Only or Read/ Write.

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

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Figure 6-116 Source Data



5. Enter the Source Data details shown in the following table:

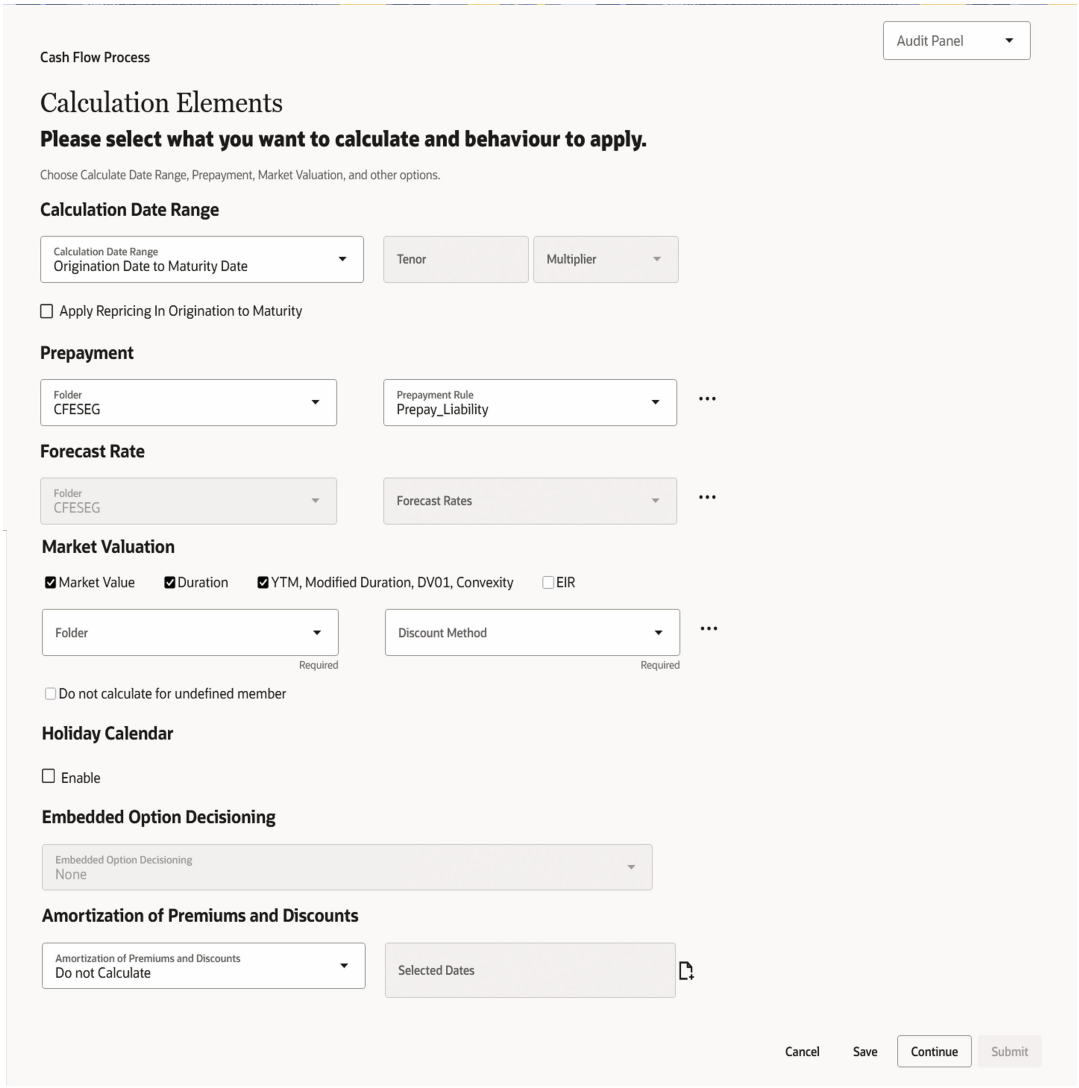
Table 6-28 List of Source Data details used for Creating Cash Flow Process

Parameter	Description
Data Source	Select the instrument tables or supported database views to include in the Cash Flow Process. Include all columns from the instrument table in each view that you use as a process data source. For view configuration and classification, see Database Views and Table UDP Mapping for View Classification.
Data Filter Folder	Select the Folder from which you want to apply Data Filter.
Data Filter	This field allows you to select a subset of data for processing by selecting a filter that was previously created.

6. Click **Apply** to navigate to the **Calculation Elements** section.

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Figure 6-117 Calculation Elements



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

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Table 6-29 List of Calculation Elements details used for Creating Cash Flow Process

Parameter	Description
Calculation Date Range	Select the time horizon for which you want to perform the cash flow calculation. This has the following options: • **As of Date to Maturity Date:** Calculation is performed between As of Date and Maturity Date of the instrument. • **As of Date to Next Reprice Date:** Calculation is performed between As of Date and Next Repricing Date of the instrument. • **Origination Date to Maturity Date:** Calculation is performed between Origination Date to Maturity Date of the instrument. • **Last Reprice Date to Next Reprice Date:** Calculation is performed between Last Reprice Date to Next Reprice Date of the instrument. • **As of Date to Future Specified Date:** Calculation is performed for the specified tenor starting from As of Date.
Apply Repricing In Origination to Maturity	This check-box is enabled when Calculation Date Range is Origination to Maturity. When this parameter is selected and Forecast Rates is defined, repricing events will be generated as per Adjustable Type of instrument and Interest Rate will be re-calculated. Repricing events between Origination and As of Date using historical IRC while those after As of Date use forecasted IRCs.
Prepayment	Select the Folder and Prepayment you want to be applied during cash flow calculation. See Prepayment, to set up prepayment methods. This is an optional step.
Forecast Rate Scenario	Select the Folder and Forecast Rates you want to be applied to the process. See Forecast Rate Scenarios to set up rate scenarios. This is an optional step and enabled only when the calculation data range is ‘As of Date to Maturity Date’ and ‘Origination Date to Maturity Date’.
Market Valuation	Select the measures you want to calculate: **Market Value:** Select this to calculate Present Value of principal and interest cash flows. **Duration:** Select this to calculate Macaulay Duration of cash flows **YTM, Modified Duration, DV01, Convexity:** Select this option if you want to measure the price sensitivity for small changes in the underlying interest rate curves (DV01/PV01). **EIR:** Select this option to calculate Effective Interest Rate of instrument

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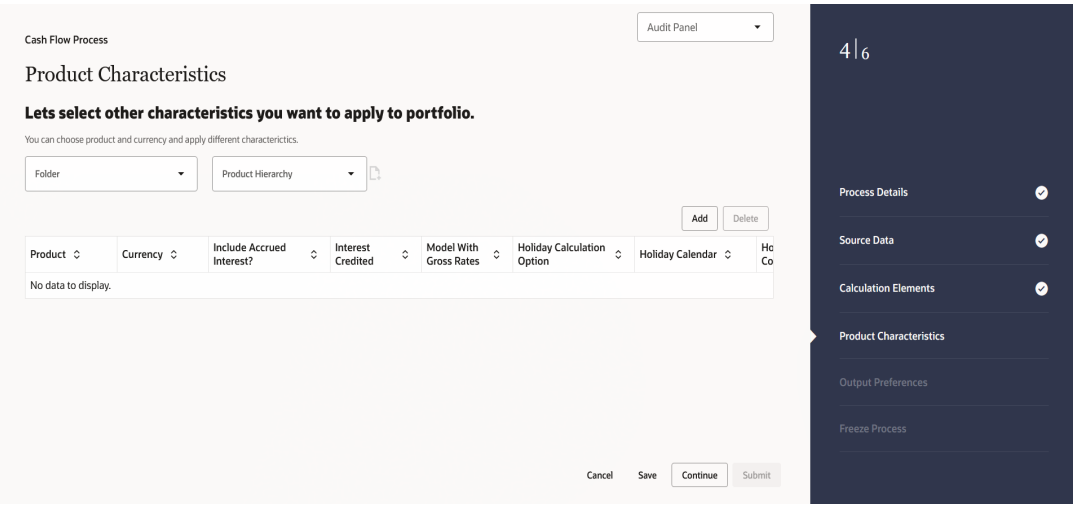
Table 6-29 (Cont.) List of Calculation Elements details used for Creating Cash Flow Process

Parameter	Description
Do not calculate for undefined member	This check-box is enabled when Market Valuation is selected. During the CFE processing if this parameter is not selected, then discount factor 1 is used for market value calculations if no definition is found in Discount Method rule. If this parameter is selected, then market value of undefined members in Discount Method is not calculated.
Discount Method	Select the Folder and Discount Method you want to be applied to the process. See Discount Method to set up Discount Methods. This is an optional step.
Holiday Calendar	Select check-box to apply Holiday Calendar during cash flow calculation. If selected ash flow dates falling on a holiday get adjusted as per defined conventions. You can also select the holiday calculation option, calendar, and business day convention at the product-currency level.
Embedded Option Decisioning	This is enabled only when Calculation Date Range is selected as **As of Date to Maturity**, Market Value check-box is selected and Forecast Rates is selected. If your processed data contains fixed rate bonds with embedded options, you can select the behavior of the option to force it to maturity of the instrument, force it to first option expiry date, or let it be rate path dependent. This drop-down shows the list of embedded option decision types.
Amortization of Premiums and Discounts	Determines the method used for amortizing the premiums and discounts. This has the following options: • **Do not Calculate:** The default value for the Calculation Method drop-down list is Do not calculate. In this case, cash flow for premium/discount does not get calculated even when Deferred Balance is given with instrument data. • **Amortize on Payment Dates:** Select this option if you want to calculate premiums and discounts on Payment Dates. • **Amortize on User Defined Dates:** Select this option if you want to calculate premiums and discounts on user-defined dates instead of payment dates. After selecting this option, perform these steps: a. Click **Add** next to **Selected Dates** field. b. Add one or more dates on which you want to amortize premium/discount using Calendar and click Add to Selection.

8. Click **Apply** to navigate to the **Product Characteristics** section.

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Figure 6-118 Product Characteristics



9. Enter the Product Characteristics shown in the following table:

Table 6-30 List of Product Characteristics details used for Creating Cash Flow Process

Parameter	Description
Product Hierarchy Folder	You can specify some processing parameters at product-currency combination. Select the Folder from the **Product Hierarchy Folder** list.
Product Hierarchy	Select the Product Hierarchy on which you want to specify parameters. To add a Product Hierarchy, follow these steps: a. Click **Add** button next to the **Product Hierarchy** field. b. Select one or more products using the corresponding check-box and click Done. **Note** Hierarchy_code column in the files should not have the space. If there is any space, then remove the space and proceed.

10. After clicking Add, the list of product is displayed with the following details:

Table 6-31 Product Selection Details

Parameter	Description
Product	Shows the selected product details.
Currency	Shows the currency of the selected product.

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Table 6-31 (Cont.) Product Selection Details

Parameter	Description
Include Accrued Interest	Yes or No status of Include Accrued Interest. The basis on which the interest accrual on an account is calculated.
Interest Credited	Yes or No status of Interest Credited. This option shows the interest payments to be capitalized as principal on simple or non-amortizing instruments.
Model With Gross Rates	If the institution has outsourced loan serving rights for some of the assets (most typically mortgages), the rates paid by customers on those assets (gross rates) are greater than the rates received by the bank (net rates). For these instruments, both a net and gross rate is calculated within the cash flow engine and both gross and net rate financial elements are the output. The gross rate is used for prepayment and amortization calculations. The net rate is used for income simulation and the calculation of retained earnings in the auto-balancing process.
Holiday Calculation option	Shows the list of calculation options Shift dates Only and Recalculate Payment. **Note** This field is available only when you enable the Holiday Calendar from **Calculation Element** block.
Holiday Calendar	Shows the list of holiday calendar. You can select one. **Note** This field is available only when you enable the Holiday Calendar from **Calculation Element** block.

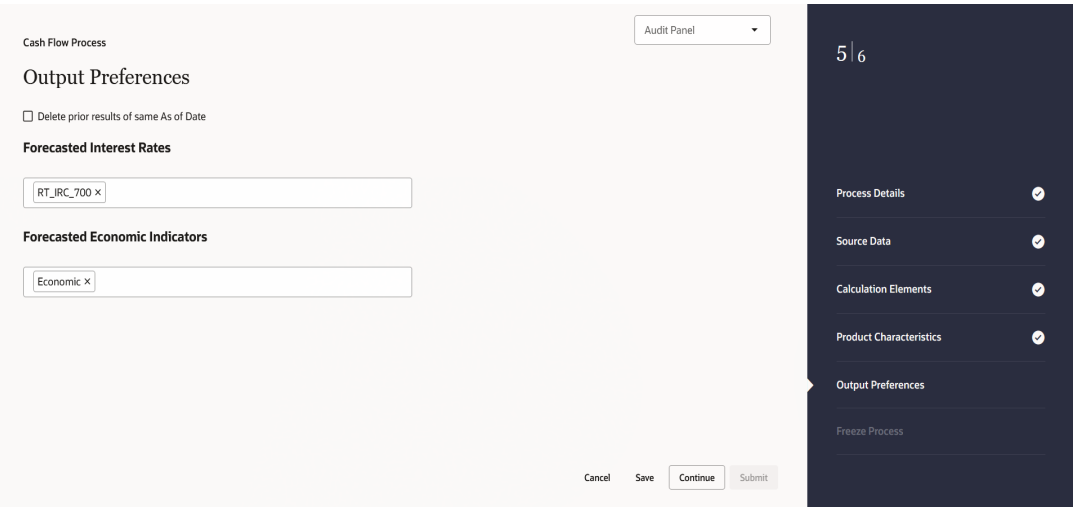
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Table 6-31 (Cont.) Product Selection Details

Parameter	Description
Holiday Rolling Convention	The default value is Unadjusted and is enabled, only when Holiday Calendar is selected. This can have the following values: • **Actual/Un-adjusted:** Payment on an actual day, even if it is a non-business day. • **Following Business Day:** The payment date is rolled to the next business day. • **Modified following business day*:** The payment date is rolled to the next business day unless doing so would cause the payment to be in the next calendar month, in which case the payment date is rolled to the previous business day. • **Previous business day:** The payment date is rolled to the previous business day. • **Modified previous business day*:** The payment date is rolled to the previous business day unless doing so would cause the payment to be in the previous calendar month, in which case the payment date is rolled to the next business day Many institutions have month-end accounting procedures to use this. **Note** This field is available only when you enable the Holiday Calendar from **Calculation Element** block.

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

Figure 6-119 Output Preferences



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

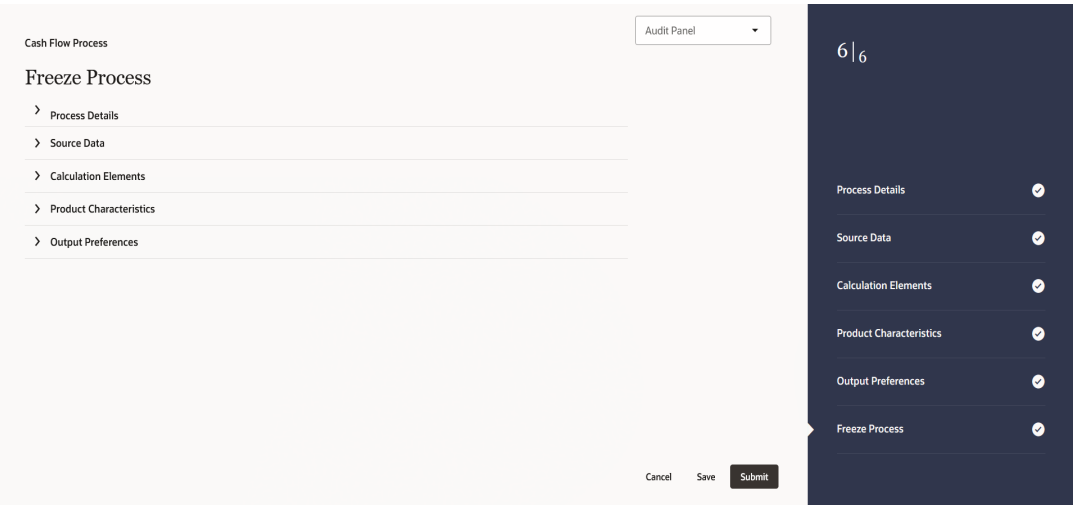
Table 6-32 List of Output Preferences details used for Creating Cash Flow Process

Parameter	Description
Delete Prior Results of Same As of Date	If this check-box is selected, then engine removes the results of previous process execution ID and As of Date. Engine fetches all the details of the same Process ID and As Of Date from the tables FSI_O_CFE_OUTPUT_HIST , FSI_O_FCAST_IRC_RATES_HIST , FSI_O_CFE_MESSAGE_HIST , and other tables if required. Process history tables keep track of execution id's whose data has been deleted.
Forecast Interest Rates	Select the Interest Rate Curves for which you want the engine to write forecasted interest rates in the database table
Forecast Economic Indicators	Select the Economic Indicators for which you want the engine to write forecasted interest rates in the database table

.

13. Click **Apply** to navigate to the **Freeze Process** section.

Figure 6-120 Freeze Process



14. Verify the changes and click **Submit**.

6.3.3.1.2 Executing Cash Flow Process

You can execute Cash Flow process using following methods:

- Cash Flow Process UI
- Scheduler Service
- Using Cash Flow Process UI
- Using Scheduler Service

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6.3.3.1.2.1 Using Cash Flow Process UI

To execute the cash flow process, follow these steps:

- Navigate to the **Cash Flow Process Summary** page.
- Search for a Cash Flow Process .
- Click the **Action** icon for the Cash Flow Process and select **Execute**. The **Run Execution Parameters** window opens.
- Select the **As of Date (Execution Date)** and **Legal Entity**.

> **Note**
>
> You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected then data of selected entity along with its child and descendants are processed.

- Select **Generate Cash Flow Generation Insights** to generate insights for this execution. For more information, see Cash Flow Generation Insights Summary.
- Click **Run**.
- The **Cash Flow Process Run Confirmation** page is displayed. The status of the process is displayed in the **Status** column. After completion of the process, you can navigate to the Execution Details page by selecting the **Execution Details** option under the Action column.

> **Note**
>
> You can view the results of running a Cash Flow Process before the system updates the underlying records in the Instrument tables, provided you selected Preview Mode while defining it. If the runs in Preview Mode, query the FSI_CFE_MESSAGES_MLS table for any generated errors.

6.3.3.1.2.2 Using Scheduler Service

To execute the cash flow process, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. Define a new batch.
3. Enter the **Batch Name** and **Description**, and then Save the batch.
4. To add a task, navigate to **Define Task.**
5. Select the Batch from Batch drop-down list on Define Task window.
6. Click the **Add** button.
7. Define the Task Code, Task Name, and Description.
8. Select Components as “Cash Flow Process”.
9. Input the following mandatory parameters:
    - Process Name

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- Legal Entity Hierarchy
- Legal Entity

10. Save and Execute the batch with Batch ID and MIS Date.

For more information, see the Scheduler Service.

6.3.3.1.3 View Cash Flow Process Log

To view the log for the latest execution of a Cash Flow Process, follow these steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Search for the Cash Flow Process.
3. Click the process status to open the log for the latest execution.

To view the log for an earlier execution or export the cash flow output, follow these steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Search for a Cash Flow Process .
3. Click on the **Action** icon against the Cash Flow Process Name and select **Execution Details** . The **Execution Details** window is displayed.
4. Click any **Execution ID** to view the log details. The **Log Viewer** window shows the complete details of process along with Batch Run ID information.
5. Click **Export** to download the cash flow output details in csv format. This will fetch the Cash Flow Process Output from the `fsi_o_cfe_output_hist` table and store it in Object Store. Navigate to Data Management Tools > Data File Administration > File Upload and Download UI to download the csv file(s). More than one file can get created if volume is high. Number of records in each file depends on the value set for property Export File Row Count in Maintenance > Preferences.

- Cash Flow Process Errors

6.3.3.1.3.1 Cash Flow Process Errors

> **Note**
>
> - Error: Engine does not process, however sometimes default value can get used for calculations.
> - Warning: Engine may use the default value or given wrong data for calculation, results may be incorrect.
> - Info: Does not impact any processing but results may not be as expected.

The following table stores the processing error messages generated by the engine:

Table 6-33 List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
300	Functionality Not Implemented	Error
301	Invalid Data	Error

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
302	Principal Cash Flow Not Handled for this Amortization Type	Warning
303	Invalid record: Account Number is mandatory	Error
304	Invalid value for Adjustable Type, Fixed Rate used	Warning
305	Invalid value for amortization term, Number of months between Origination and maturity date used	Warning
306	Invalid value for amortization term multiplier, Months (M) used	Warning
307	Invalid value for Instrument Type; Loan Contracts (180) used	Warning
308	Invalid value for original term; Number of months between Origination and maturity date used	Warning
309	Invalid value for original term multiplier; Months (M) used	Warning
310	Missing or invalid data version number. Default value 1 used	Warning
311	Invalid value for Model with Gross Rates, account processed with net interest rate	Warning
312	Invalid value for Interest Capitalization Indicator, account processed without interest capitalization	Warning
313	Invalid value for Include Accrued Interest in cash flow, account processed without using given accrued interest. Accrued Interest > 0 but not used	Warning
314	Invalid value for Amortization Type; processed as simple interest or non-amortizing	Warning
315	Invalid record: End of Period Principal Balance (CUR_PAR_BAL) is zero or missing; Account not processed	Error
316	Invalid record: Accrued Interest Net <> 0 and (Last_payment_date < As_of_date) for Behavior pattern record. Accrued interest may be overstated	Warning
317	Original Principal Balance is zero/ negative or missing; End of Period Principal Balance (CUR_PAR_BAL) used	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
318	Invalid record: Behavior Type Code is mandatory	Warning
319	Invalid record: Calculation date range is mandatory	Error
320	Invalid record: As of Date is mandatory	Warning
321	Invalid record: Origination date is mandatory	Error
322	Invalid record: Maturity date is mandatory; Account not processed;	Warning
323	Issue date cannot be greater than As-of-date; As-of-date used	Error
324	Issue date can not be greater than origination date; Origination date used	Error
325	Issue date not given; Origination date used	Warning
326	Remaining Number of Payments is 1 but Next Payment Date and Maturity Date are different. Payment processed on Maturity Date	Warning
327	Invalid value for accrual basis; Processed using 30/360	Warning
328	Invalid value of net interest rate; Processed using 0% interest rate	Warning
329	Invalid value for compounding basis; Processed as simple interest	Warning
330	Model with Gross Rates Indicator is GROSS but gross interest rate is not given; Processed using net interest rate	Warning
331	Current Payment cannot be less than 0; 0 used;	Warning
332	Invalid Last Interest Payment date; "Next Interest Payment Date minus Interest payment frequency" used.	Warning
333	Invalid next interest payment date; "Origination date + 1" or "As-of-date + 1" used.	Warning
334	Invalid original interest payment date; "Origination date + Interest Payment frequency" used.	Warning
335	Invalid value for interest payment frequency; Number of months between Origination and maturity date used;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
336	Invalid value for interest payment frequency multiplier; Months (M) used;	Warning
337	Invalid value for Remaining Number of Payments; Default value 1 used;	Warning
338	Invalid Last Interest Payment date; "Origination Date" used.	Warning
339	Invalid Last Principal Payment date; "Next Principal Payment Date minus Principal payment frequency" used	Warning
340	Invalid Last Principal Payment date; "Origination Date" used.	Warning
341	Invalid Last Principal Payment date; Last Interest Payment Date used for conventional amortization types	Warning
342	Invalid next principal payment date; "Origination date + 1" or "As-of-date + 1" used	Warning
343	Invalid Next Principal Payment date; Next Interest Payment Date used for conventional amortization types	Warning
344	Invalid original principal payment date; "Origination date + Interest Payment frequency" used.	Warning
345	Invalid Original Principal Payment date; Original Interest Payment Date used for conventional amortization types	Warning
346	Invalid value for principal payment frequency; Number of months between Origination and maturity date used;	Warning
347	Invalid value for principal payment frequency; Interest Payment Frequency used for conventional amortization types	Warning
348	Invalid value for interest payment frequency multiplier; Months (M) used;	Warning
349	Invalid value for interest payment frequency multiplier; Interest Payment Frequency Multiplier used for conventional amortization types	Warning
350	Invalid Account Type, Account type defaults to Earning Assets.	Warning
351	Invalid record: Payment type and/or amount is mandatory	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
352	Invalid record: Payment Date is mandatory	Warning
353	Invalid record: Payment type is Principal and Interest but Total Amount (TOT_AMOUNT) is missing	Error
354	Invalid record: Payment type is Principal Only but Principal Payment Amount (PRIN_AMOUNT) is missing	Error
355	Invalid record: Payment type is Interest Only but Interest Payment Amount (INT_AMOUNT) is missing.	Error
356	Invalid payment pattern: Payment Pattern Sub Type is not given	Error
357	Invalid payment pattern: Payment Pattern Payment Type is not given	Error
358	Invalid payment pattern: Payment event id is not given	Error
359	Invalid payment pattern: Pattern type or sub type is Relative but frequency multiplier is not given	Error
360	Invalid payment pattern: Pattern type is Absolute but event month is not given	Warning
361	Invalid payment pattern: Pattern payment method is not given	Error
362	Invalid payment pattern: Payment Pattern Type is not given	Error
363	Invalid payment type code in payment pattern: Payment Type 300 (interest only) used;	Error
364	Invalid payment pattern: Pattern type or sub type is Relative but frequency is not given	Error
365	Invalid payment pattern: Pattern type is Absolute but event day is not given	Error
366	Invalid payment pattern: Pattern type is Split but split id is not given	Warning
367	Invalid payment pattern: Pattern type is Split but percentage of split is not given	Error
368	Invalid payment pattern: Pattern type or sub type is Relative but payment event repeat is not given	Error
369	Invalid payment pattern: Pattern Events not given	Error

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
370	Invalid value for holiday calculation option; processed as Shift Dates.	Error
371	Holiday Calculation Option can only be Recalculate when accrual basis is B/252	Error
372	Invalid value for holiday calendar code; Holiday adjustment not applied or details from process level parameters used;	Error
373	Holiday Calendar Code is mandatory when accrual basis is B/252. Holiday details from process level parameters or A/A used.	Warning
374	Invalid value for holiday rolling convention; Holiday adjustment not applied;	Warning
375	Holiday Rolling Convention Code is mandatory when accrual basis is B/252. Following business day used.	Warning
376	Reprice frequency is > 0 and calculation date range is last reprice to next reprice date but balance on last reprice date is not available; Processed using End of Period Principal Balance;	Warning
377	Invalid value for margin type code; Default value RATE (0) used;	Warning
378	Invalid value for net margin code; Default value NRSG (0) used;	Warning
379	Invalid value for next reprice date; Default value Origination date + 1 or As-of-date + 1 used;	Warning
380	Invalid value for last reprice date; Default value Next Reprice Date minus Reprice Frequency used;	Warning
381	Warning: Negative Amortization Equalization Frequency cannot be negative; 0 used.	Warning
382	Warning: Invalid Negative Amortization Equalization Frequency Multiplier; Months used.	Warning
383	Warning: Negative Amortization Payment Change Frequency cannot be negative; 0 used.	Warning
384	Warning: Invalid Negative Amortization Payment Change Frequency Multiplier; Months used.	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
385	Warning: Negative Amortization Limit value does not fall in a valid range 0-200; 0 used.	Warning
386	Warning: Negative Amortization Equalization date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used.	Warning
387	Warning: Negative Amortization Equalization date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used.	Warning
388	Warning: Negative Amortization Payment Adjustment date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used.	Warning
389	Warning: Negative Amortization Payment Adjustment date is less than origination date (future origination) or less than the as-of-date (past origination); Next Reprice Date used.	Warning
390	Warning: Negative Amortization payment change limit cannot be negative; Limit not applied.	Warning
391	Maturity date of account is different from highest payment date in schedule; Dates from schedule used;	Warning
392	Remaining Number of Payments given with account is different from count of payment dates after as of date in schedule; Dates from schedule used;	Warning
393	Invalid value for next reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency;	Warning
394	Invalid record: Maturity date is prior to As of date; Account not processed;	Warning
395	Invalid record: Maturity date is prior to Origination date; Account not processed;	Warning
396	Invalid record: Payment dates in schedule are prior to As of date; Account not processed;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
397	Principal balance is not zero but maturity date is prior to as of date; Maturity date defaulted to As of date + 1	Warning
398	Principal balance is not zero but maturity date is prior to origination date; Maturity date defaulted to As of date + 1	Warning
399	Next reprice date is after maturity date; Defaulted to maturity date;	Warning
400	Invalid value for last reprice date; Default value Origination Date used;	Warning
401	Invalid value for Adjustable Type; Calculation date range is AOD to NRD or LRD to NRD but adjustable Type of account is Fixed. Account not processed.	Warning
402	Adjustable Type of account is Floating or Other Adjustable but repricing frequency multiplier is not given or is not valid; Months (M) used;	Warning
403	Adjustable Type of account is Floating or Other Adjustable but Interest Rate Code is not given or is not valid; Processed with Interest Rate Code 0.	Warning
404	Adjustable Type of account is Floating or Other Adjustable but repricing frequency is not given or is not valid; Processed with fixed interest rate.	Warning
405	Adjustable Type of account is repricing pattern but repricing pattern code is not given or is not valid; Processed with fixed interest rate.	Warning
406	Interest timing type not given; Interest In Arrears used;	Warning
407	Interest timing type cannot be advance when amortization is conventional type; Interest In Arrears used;	Warning
408	Amortization Type of account is payment pattern but pattern code is not given or is not valid; Processed as non-amortizing instrument.	Warning
409	Accrual basis is B/252 but holiday adjustment is not enabled. A/A used.	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
410	Amortization Type of account is payment schedule but schedule data is not given; Processed as non-amortizing account.	Warning
411	Invalid value for next reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency;	Warning
412	Invalid value for last reprice date for a teaser instrument; Value derived by rolling forward Teaser End Date with Repricing Frequency;	Warning
413	Teaser End Date is after Maturity Date; Value defaulted to Maturity Date;	Warning
414	Teaser End Date is before Origination Date; Value defaulted to Origination Date;	Warning
415	Invalid Mortgage Offset Account Expected Balance as Expected Balance (MOA_EXPECTED_BAL) is empty or <= 0, Processed as normal instrument.	Warning
416	Invalid Mortgage Offset Account Expected Balance Growth Percentage (MOA_EXPECTED_BAL_GROWTH_PCT), Processed with default value of 0.	Warning
417	Invalid Mortgage Offset Account Expected Balance on last reprice date (MOA_LRD_OFFSET_BAL), Processed using default value as MOA_EXPECTED_BAL	Warning
418	Invalid Mortgage Offset Account Minimum Balance (MOA_MIN_BAL), Processed with default value of 0.	Warning
419	Invalid Mortgage Offset Percent (MOA_OFFSET_PERCENT), Processed with default value of 100	Warning
420	Invalid Mortgage Offset Account Original Expected Balance (MOA_ORG_OFFSET_BAL),but since calculation date range is Origination to Maturity, Processed as normal instrument.	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
421	Invalid Mortgage Offset Account Original Expected Balance (MOA_ORG_OFFSET_BAL). but since calculation date range is other than Origination to Maturity, Process account with considering the mortgage offset account as Original Expected Balance doesnt impact on MOA calculations.	Warning
422	One or more required inputs are missing for factors calculation using arc tangent method	Warning
423	Cannot generate prepayment factors dates if PaymentDates are not provided	Warning
424	Cannot generate early redemption dates if PaymentDates are not provided	Warning
425	user tenor rules are not defined in prepayment meta data	Warning
426	conditions are not satisfied to apply early redemption on user defined tenors	Warning
427	Cannot generate prepayment factors dates if PaymentDates are not provided;	Warning
428	Behavior pattern is not applicable when calculation data range is Origination to Maturity. Generated cash flows from As of date to maturity	Warning
429	Behavior pattern is not applicable when calculation data range is Last Reprice to Next Reprice Date. Generated cash flows from As of date to Next Reprice Date	Warning
430	Maturity Date < Max Date of Pattern, Maturity Date set to Max Tenor of behavior pattern	Warning
431	Invalid value for Behavior Sub Type of account having devolvement & recovery or non-performing behavior type; Account not processed;	Error
432	Invalid value for devolvement status of account; Account not processed;	Error
433	Devolvement amount cannot be negative when devolvement status of account is devolved; Default value of 0 used;	Error

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
434	Invalid value for Behavior Type of account; Processed using behavior type from pattern definition.	Warning
435	Invalid behavior pattern: Behavior Type is not given or is incorrect; Behavior pattern not used; Processed as non-amortizing instrument;	Warning
436	Invalid behavior pattern: Behavior Sub Type is not given or is incorrect; Behavior pattern not used; Processed as non-amortizing instrument;	Warning
437	Invalid behavior pattern: Tenor multiplier is not given; Processed account as non-amortizing instrument;	Error
438	Invalid behavior pattern: Tenor is not given; Processed account as non-amortizing instrument;	Error
439	Invalid behavior pattern: Percentage is not given; Processed account as non-amortizing instrument;	Error
440	Invalid behavior pattern: Sequence is not given; Processed account as non-amortizing instrument;	Error
441	Behavior Type definition is inconsistent between the Behavior Pattern and BEHAVIOR_TYPE_CD of account. Defaulted to the Behavior Type specified in the Behavior Pattern.	Warning
442	Interest in advance is not supported for behavior patterns, defaulting to Interest in Arrears	Warning
443	No prepayment parameter is found for payment date	Warning
444	Cannot generate early redemption prepayment rates if payment dates are not provided or calculation method is not Constant	Warning
445	Invalid value for Exchange of Principal flag for Off-balance sheet product; Processed with No Exchange of Principal	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
446	Invalid value for Exchange of Principal flag for Off-balance sheet product; Processed with Leg Type 0	Warning
447	Invalid value for Minimum Balance for Amortizing Swap; Processed with value 0	Warning
448	Invalid value for purchase sale logic of Off-balance sheet product; Processed as sold contract (1)	Warning
449	Invalid value for swap classification code; Processed as generic swap (0)	Warning
450	Invalid Last Reprice Date for Forward Rate Agreement; Processed using Origination Date	Warning
451	Invalid Repricing Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier	Warning
452	Invalid Next Reprice Date for Forward Rate Agreement; Processed using Origination Date;	Warning
453	Invalid Repricing Frequency for Forward Rate Agreement; Processed using Original Term;	Warning
454	Invalid Exchange of Principal flag for Forward Rate Agreement; Processed using No Exchange of Principal	Warning
455	Invalid Interest Timing Type for Forward Rate Agreement; Processed as Interest in advance	Warning
456	Invalid Adjustable Type for Forward Rate Agreement; Processed as Other Adjustable (250);	Warning
457	Invalid Origination Date for Forward Rate Agreement; Processed with value As of Date + 1;	Warning
458	Invalid Maturity Date for Forward Rate Agreement; Processed using Origination Date + Original Term;	Warning
459	Invalid Remaining Number of Payments for Forward Rate Agreement; Processed using 1	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
460	Invalid Next Interest Payment Date for Forward Rate Agreement; Processed using Origination Date	Warning
461	Invalid Next Principal Payment Date for Forward Rate Agreement; Processed using Origination Date	Warning
462	Invalid Original Interest Payment Date for Forward Rate Agreement; Processed using Origination Date	Warning
463	Invalid Original Principal Payment Date for Forward Rate Agreement; Processed using Origination Date	Warning
464	Invalid Last Interest Payment Date for Forward Rate Agreement; Processed using Origination Date;	Warning
465	Invalid Interest Payment Frequency for Forward Rate Agreement; Processed using Original Term	Warning
466	Invalid Interest Payment Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier	Warning
467	Invalid Principal Payment Frequency for Forward Rate Agreement; Processed using Original Term	Warning
468	Invalid Principal Payment Frequency Multiplier for Forward Rate Agreement; Processed using Original Term Multiplier	Warning
469	Invalid Amortization Type for Forward Rate Agreement; Processed as non-amortizing (700) instrument;	Warning
470	Invalid value for Exchange of Principal flag for Foreign Exchange instrument; Processed with Exchange of Principal;	Warning
471	Invalid Amortization Type for Foreign Exchange instrument; Processed as non-amortizing (700) instrument;	Warning
472	Invalid Adjustable Type for Foreign Exchange instrument; Processed as Fixed;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
473	Invalid Interest Timing Type for Foreign Exchange instrument; Processed as Interest in arrears;	Warning
474	Invalid current gross interest rate for Foreign Exchange instrument; Processed with no interest;	Warning
475	Invalid current net interest rate for Foreign Exchange instrument; Processed with no interest;	Warning
476	Invalid remaining number of payments for Foreign Exchange Contract; Processed with 1 remaining payment;	Warning
477	Invalid Next Interest Payment Date for Foreign exchange contract; Processed using Maturity Date;	Warning
478	Invalid Next Principal Payment Date for Foreign exchange contract; Processed using Maturity Date;	Warning
479	Invalid Original Interest Payment Date for Foreign exchange contract; Processed using Maturity Date;	Warning
480	Invalid Original Principal Payment Date for Foreign exchange contract; Processed using Maturity Date;	Warning
481	Invalid Next Reprice Date for Foreign exchange contract; Processed using Maturity Date;	Warning
482	Invalid Repricing Frequency for Foreign Exchange Contract; Processed using Original Term;	Warning
483	Invalid Repricing Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier;	Warning
484	Invalid Interest Payment Frequency for Foreign Exchange Contract; Processed using Original Term;	Warning
485	Invalid Interest Payment Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier;	Warning
486	Invalid Principal Payment Frequency for Foreign Exchange Contract; Processed using Original Term;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
487	Invalid Principal Payment Frequency Multiplier for Foreign Exchange Contract; Processed using Original Term Multiplier;	Warning
488	Invalid Last Interest Payment Date for Foreign Exchange Contract; Processed using Origination Date;	Warning
489	Invalid Last Reprice Date for Foreign Exchange Contract; Processed using Origination Date;	Warning
490	Invalid End of Period Principal Balance for Foreign Exchange Swap; Processed using no balance;	Warning
491	Invalid Original Principal Balance for Foreign Exchange Swap; Processed using no balance;	Warning
492	Invalid value for next reprice date for a teaser instrument; Defaulted to Teaser End Date;	Warning
493	Repricing pattern can not be used for teaser instrument;	Warning
494	Interest timing type cannot be advance when conventional payment pattern is used, Interest In Arrears used as default;	Warning
495	Interest timing type cannot be advance when Account Type is Other Asset or Other Liabilities or Non-Interest Income or Non-Interest Expense or Interest Income or Interest Expense, Interest In Arrears used as default;	Warning
496	Last interest payment date cannot be before Origination Date; Default value Origination Date used;	Warning
497	Last principal payment date cannot be before Origination Date; Default value Origination Date used;	Warning
498	Invalid amortization type for Other Asset-Liability; Processed as Non-amortizing instrument;	Warning
499	Invalid current net interest rate for Other Asset-Liability; Processed without interest and default as 0;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
500	Invalid current gross interest rate for Other Asset-Liability; Processed without interest and default as 0;	Warning
501	Invalid adjustable type for Other Asset-Liability; Processed as fixed rate;	Warning
502	Interest timing type cannot be advance when adjustable type is floating rate, Interest In Arrears used as default;	Warning
503	Repricing pattern code is empty;	Warning
504	Adjustable Type of account is Repricing Pattern but Repricing Pattern definition not given. Processed as Other Adjustable (250);	Warning
505	Repricing Pattern Type Code is invalid in repricing pattern definition. Account not processed;	Error
506	Repricing Pattern Events UDS is empty	Error
507	Event Sequence number is invalid in repricing pattern definition. Account not processed;	Error
508	Repricing Method Code is invalid in repricing pattern definition. Account not processed;	Error
509	Balance Tier Type Code is invalid in repricing pattern definition. Account not processed;	Error
510	Event Day is invalid in absolute repricing pattern definition. Account not processed;	Error
511	Event Month is invalid in absolute repricing pattern definition. Account not processed;	Error
512	Repricing Pattern EventsDetail UDS is empty	Error
513	Event Detail Sequence number is invalid in repricing pattern definition. Account not processed;	Error
514	Repricing method is Indexed but Interest Rate Code is not given in repricing pattern definition. Account not processed;	Warning
515	Event Frequency is invalid in relative repricing pattern definition. Value assumed to be 1 Month;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
516	Event Frequency Multiplier is invalid in relative repricing pattern definition. Value assumed to be 1 Month;	Warning
517	Event Repeat Times is invalid in relative repricing pattern definition. Value assumed to be 1;	Warning
518	Adjustable type code of account is 300 but corresponding data of balance tiers and rate is not available; Processed with fixed interest rate;	Warning
519	Invalid amortization type for an account with Balance Tier Interest Rate; Processed as non-amortization instrument;	Warning
520	Adjustable type of tier cannot be Floating Rate if Interest Timing Type of account is Advance; Processed as Interest in Arrears;	Warning
521	Adjustable type code of account is 300 but corresponding adjustable type of balance tiers is invalid; Processed tier with fixed interest rate;	Warning
522	Adjustable type code of balance tier is 250 but next reprice date, last reprice date or reprice frequency are missing; Processed tier with fixed interest rate;	Warning
523	Sum of current balances of all tiers of account is different from current par balance of account;	Warning
524	Current balance of tiers of account is not given; Account not processed;	Error
525	Sum of original par balances of all tiers of account is different from original par balance of account;	Warning
526	Original par balance of tier not given; End of Period Principal Balance used;	Warning
527	Invalid Contract Currency Pay for Foreign Exchange Swap;	Warning
528	Invalid Original Payment Amount Pay for Foreign Exchange Swap;	Warning
529	Invalid Contract Currency Receive for Foreign Exchange Swap;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
530	Invalid Original Payment Amount Receive for Foreign Exchange Swap;	Warning
531	Invalid Exchange Rate Start for Foreign Exchange Swap;	Warning
532	Invalid Receive CCY for Foreign Exchange Swap;	Warning
533	Invalid Receive Leg Amount for Foreign Exchange Swap;	Warning
534	Invalid Pay CCY for Foreign Exchange Swap;	Warning
535	Invalid Pay Leg Amount for Foreign Exchange Swap;	Warning
536	Invalid Exchange Rate End for Foreign Exchange Swap;	Warning
537	Interest timing type cannot be advance when interest is capitalized; Interest In Arrears used;	Warning
538	Amortization type of Interest Rate Option can only be Non amortizing (700) or Level principal (820); Processed as Non amortizing instrument;	Warning
539	Binary Rate of Interest Rate Option cannot be less than zero; Processed without binary rate;	Warning
540	Invalid Interest Calculation Type for Interest Rate Option; Processed with default calculation type;	Warning
541	Functionality not implemented for Interest Calculation Types Numeric Average, Geometric Average, Range Calculation and Binary Range; Processed with default calculation type;	Warning
542	Adjustable Type of Interest Rate Option can only be Other Adjustable (250);	Warning
543	Next Reprice Date of Interest Rate Option must be same as Next Interest Payment Date;	Warning
544	Last Reprice Date of Interest Rate Option must be same as Last Interest Payment Date;	Warning
545	Reprice frequency of Interest Rate Option must be same as Interest Payment Frequency;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
546	Reprice Frequency Multiplier of Interest Rate Option must be same as Interest Payment Frequency Multiplier;	Warning
547	Adjustable type code for of 78s instrument can only be fixed rate;	Warning
548	Interest Timing Type of of 78s instrument can only Interest in Arrears;	Warning
549	Interest payment frequency of of 78s instrument must be 1 month;	Warning
550	Interest payment frequency multiplier of of 78s instrument must be in Months;	Warning
551	Principal payment frequency of of 78s instrument must be 1 month;	Warning
552	Principal payment frequency multiplier of of 78s instrument must be in Months;	Warning
553	Last Interest and Principal payment date of of 78s instrument must be same; Set Last Principal Payment Date = Last Interest Payment Date	Warning
554	Next Interest and Principal payment date of of 78s instrument must be same; Set Next Principal Payment Date = Next Interest Payment Date	Warning
555	Original Interest and Principal payment date of of 78s instrument must be same; Set Original Principal Payment Date = Original Interest Payment Date	Warning
556	Original Principal Balance of of 78s instrument must be higher than End of Period Principal Balance;	Warning
557	Original Term Multiplier of of 78s instrument must be in months;	Warning
558	Original Term of of 78s instrument must be in months; Number of months between Origination and maturity date used;	Warning
559	Current Payment Amount of of 78s instrument must not be zero;	Warning
560	Original Payment Amount of of 78s instrument must not be zero;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
561	Remaining Number of Payments is different from number of months between Last Interest Payment Date and Maturity Date; Cash flows may have error;	Warning
562	Interest timing type can be Set in Arrears only when calculation date range is As of date to Maturity; Interest In Arrears used;	Warning
563	Amortization type of instrument can only be Simple Interest when embedded option is applied; Processed as non-amortizing instrument with embedded option;	Warning
564	Invalid Option Exercise Type; Processed as instrument without embedded option;	Warning
565	Option start date is required for American options, As of date used;	Warning
566	Invalid Option Type; Processed as instrument without embedded option;	Warning
567	Invalid Option Strike Type Code; Processed as instrument without embedded option;	Warning
568	Invalid Option Rate Lookup Code, Remaining Term used;	Warning
569	Rate lookup code for fixed rate instrument cannot be reprice frequency, Remaining Term used;	Warning
570	Invalid Option Strike Interest Rate Code; Processed as instrument without embedded option;	Warning
571	Option expiry date must be between As-of-date and Maturity date, Processed using Maturity Date as Expiry Date;	Warning
572	Option Strike Value not given for embedded option, Strike price 100 used;	Warning
573	Option Strike Value not given for embedded option, Strike rate set same as current net interest rate;	Warning
574	Embedded options schedule not given for Bermudan option, Processed as instrument without embedded option;	Warning
575	Option expiry date not given for Bermudan option in schedule; Processed as instrument without embedded option;	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
576	Option expiry date must not be after Maturity date, Processed using Maturity Date as Expiry Date;	Warning
577	Option Strike Value not given for embedded option, Strike price 100 used;	Warning
578	Option Strike Value not given for embedded option, Strike rate set same as current net interest rate;	Warning
579	Either Embedded Option Flag is Not Y or Invalid Option decision type, where instrument is Earning Asset or Interest Bearing Liabilities;	Warning
580	Invalid Index Adjustment Type. Processed without inflation-adjustment;	Warning
581	Account Index History not been given for inflation adjusted instrument. Processed without inflation-adjustment;	Error
582	Base Index Value not been given for inflation adjusted instrument. Processed without inflation-adjustment;	Error
583	Invalid Capital Protection Category for inflation indexed instrument. Processed with floor of 1;	Warning
584	Capital Protection Category for inflation indexed instrument is Max during life but Max Index Value is invalid; Processed with Capital Protection Category as Floor or 1;	Warning
585	Invalid Option decision type, where Embedded Option Flag is enabled, Processed as instrument without embedded option;	Warning
586	Invalid Account Type, for embedded option, Processed as instrument without embedded option	Warning
587	Invalid DiscountMethod Sys Id, for embedded option, Processed as instrument without embedded option;	Warning
588	Invalid value for Amortization Method for Premiums and Discounts; Level Yield method used	Warning

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Table 6-33 (Cont.) List of Error Codes for Cash Flow Process

Error Code	Error Type	Error Message
589	Batch size is empty	Warning
590	Request ID is empty	Warning
591	Invalid Interest rate code	Warning

6.4 Modelling

This section explains about the Modelling specific modules. This section covers the following topics:

1. Non Maturity Products Model Analysis: Non-Maturity Products Modeling helps you to understand the relation between market and bank rate, how much is core out of total available balance for the portfolio, and how long core will remain with the bank based on Decay Rate Profile.
2. Non-Maturity Products Data Creation Process: Non-Maturity Modeling is comprised of three type of models: Core/Volatile Balance segregation, Decay Rate and corresponding weighted average life Calculation, and Beta Factor or Pass-through Rate Calculations

- Prepayment
  This section covers the following topics:
- Non Maturity
  This section covers the following topics:

6.4.1 Prepayment

This section covers the following topics:

1. Prepayment Data Creation Process: This module discusses on defining the product for which prepayments behavior need to be learn.
2. Prepayment Model Analysis: This module allows you to develop a model for prepayment rate calculations as per the chosen risk factors.

- Prepayment Data Creation Process
- Prepayment Model Analysis

6.4.1.1 Prepayment Data Creation Process

The Prepayment Rate Calculation Process helps you to create data for the subsequent step prepayment modelling by performing following tasks:

Define the product for which prepayments behavior need to be learnt (Product Selection block).

Specify the parameters to calculate various risk factors which can influence prepayments. E.g. as of dates reference term, threshold prepaid amount, Market rate calculation parameters.

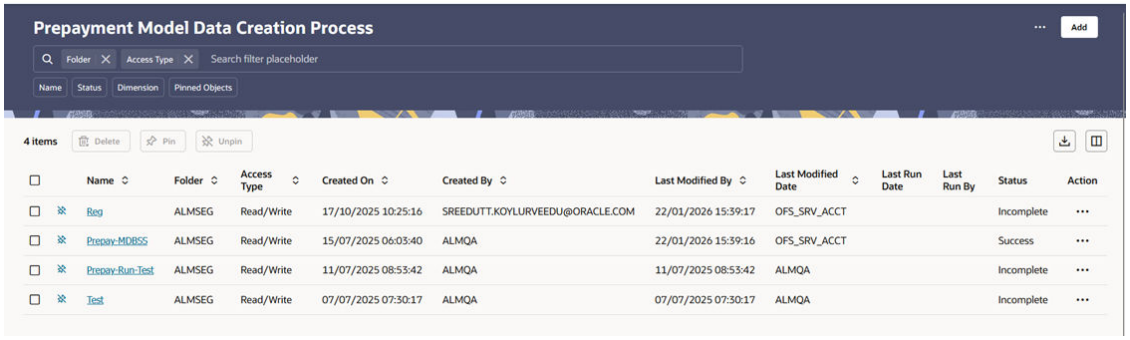
Execute or run the Prepayment Rate Calculation process and generate results through Prepayment Rate Calculation Process Summary Page.

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Prepayment Model Data Creation Process Summary

This page is the gateway to all Data Creation processes and related functionality. You can navigate to other pages relating to Data Creation processes from this point.

Figure 6-121 Prepayment Model Data Creation Process Summary



Search Data Creation Process

Prerequisites: Predefined Prepayment Model Data Creation Process

To search for a Prepayment Model Data Creation Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Prepayment Model Data Creation Processes that meet the search criteria.

Or

The other method to search a Prepayment Model Data Creation Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Name, Status, Folder,** or **Access Type** status of the Prepayment Model Data Creation Process and click **Search**.

The Prepayment Model Data Creation Process summary page has following information:

Add: Click the **Add** icon on the page header to build a new Prepayment Model Data Creation process.

More Actions: Enables you to perform following tasks.

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:**Clears the selected filters and refreshes the summary page.
- **Help:**Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Prepayment Model Data Creation Process summary table displays the following columns:

- **Prepayment Model Data Creation Process Name:** Name of the Prepayment Model Data Creation Process's short name.

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- **Status:** Status of the Prepayment Model Data Creation Process.
- **Folder:** The folder where the Prepayment Model Data Creation process is saved.
- **Access Type:** The access type of the process. It can be Read-Only or Read/Write.
- **Created On:** The Date and Time when the Prepayment Model Data Creation process was created.
- **Created By:** The user who created the Prepayment Model Data Creation process.
- **Last Run By:** The user who last run the Prepayment Model Data Creation process.
- **Last Run Date:** The Date and Time when the Prepayment Model Data Creation process was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Prepayment Model Data Creation process.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Prepayment Model Data Creation processes. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Prepayment Model Data Creation process by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Prepayment Model Data Creation processes that you no longer require. Note that only Prepayment Model Data Creation process owners and those with Read/Write privileges can delete Data Creation processes. A Prepayment Model Data Creation process that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Execute:** Select Execute to execute an existing Prepayment Model Data Creation process. After clicking Execute, the **Execute window** is displayed. Select **As of Date (Execution Date)**, and then click **Submit**.
  - **View Execute Details:** Select Execute Details to view execution details of the Prepayment Model Data Creation process. Click **Execution ID** link to view detailed information of process execution.

Also See:

- Creating Prepayment Model Data Creation process
- Executing Prepayment Model Data Creation process
- Creating a Prepayment Data Creation Process
- Executing Prepayment Data Creation Process

6.4.1.1.1 Creating a Prepayment Data Creation Process

To create a new Prepayment Model Data Creation Process, perform the following steps:

1. Navigate to the Prepayment Model Data Creation Process Summary page.
2. Click **Add**. The **Create Data Creation Process** page is displayed.
3. Follow the steps mentioned in below sections:
   a. Process Details
   b. Portfolio Selection
   c. Market Rate and Process Parameter Definition

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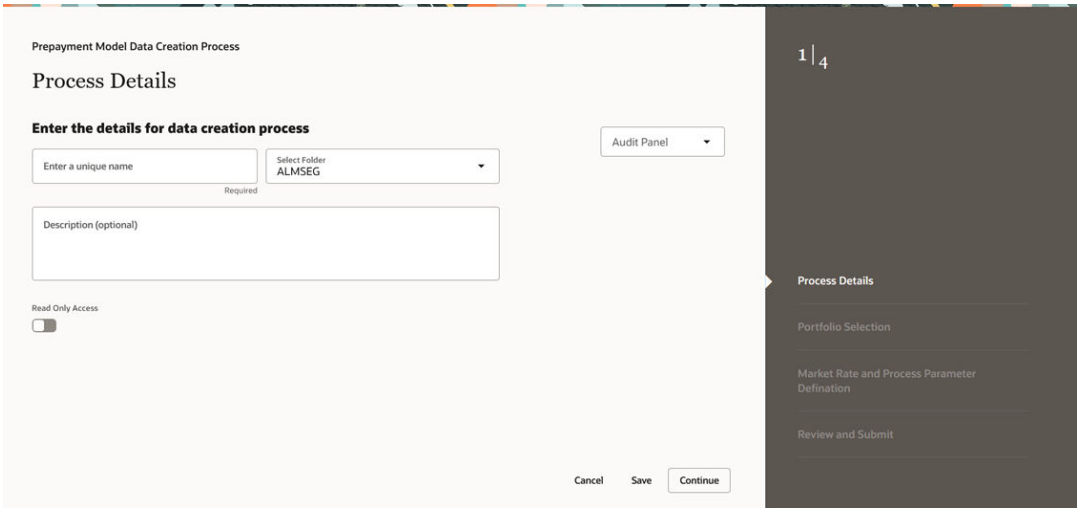
d. Review and Submit

4. Click **Submit/Save** after entering all details in above sections.

Step 1: Process Details

1. From **Prepayment Model Data Creation Process** tab, click **Start**. The **Process Details** page is displayed.

Figure 6-122 Process Details



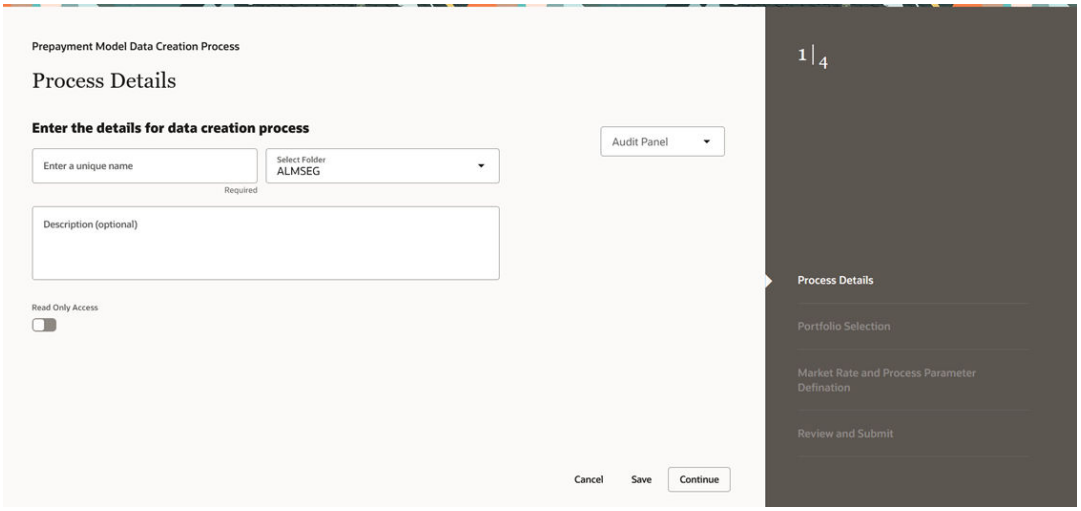
2. Enter the following details:
   - **Process Name:** Name of Process. The Data Creation Process Name should be unique. Any special characters are not applicable.
   - **Folder:** Folder Name where you want to save the process.
   - **Description:** Description of Process. The maximum limit of this field is 300 characters. You can enter special characters in this field.
   - **Read only Access:** Select this option, if you want to make the process Readonly.
3. Click **Continue**.

Step 2: Portfolio Selection

1. Navigate to the **Portfolio Selection** section. The **Portfolio Selection** window is displayed to set Portfolio.

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Figure 6-123 Portfolio Selection



2. Enter the following details:
   - **Dimension:**Select the Dimension.
   - **Currency:** Select the Currency. The Currency drop-down displays the list of active currencies.
   - **Folder:** Select the Folder from which you want to pick the Hierarchy.
   - **Filter:** Select the Filter.
   - **Hierarchy:** You can specify some processing parameters at product-currency combination. Hierarchies in selected Folder will be listed and you can select one from the available list of hierarchies.
   - Select **Product(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
     - **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.
       Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:
       * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
       * **Expand selected member/branch:** Allows to expand the selected node
       * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
       * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
       * **Select Defined self, child:** Allows to select the selected node itself along with its child.
       * **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
       * **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

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Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

* Add
* Edit
* View
* Delete
* Copy

– **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

a. Navigate to **Assumption Browser** section of the Rule Definition page.

b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser** .
Here, you can perform the following tasks on the searched node(s):

* Add
* Edit
* View
* Delete
* Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

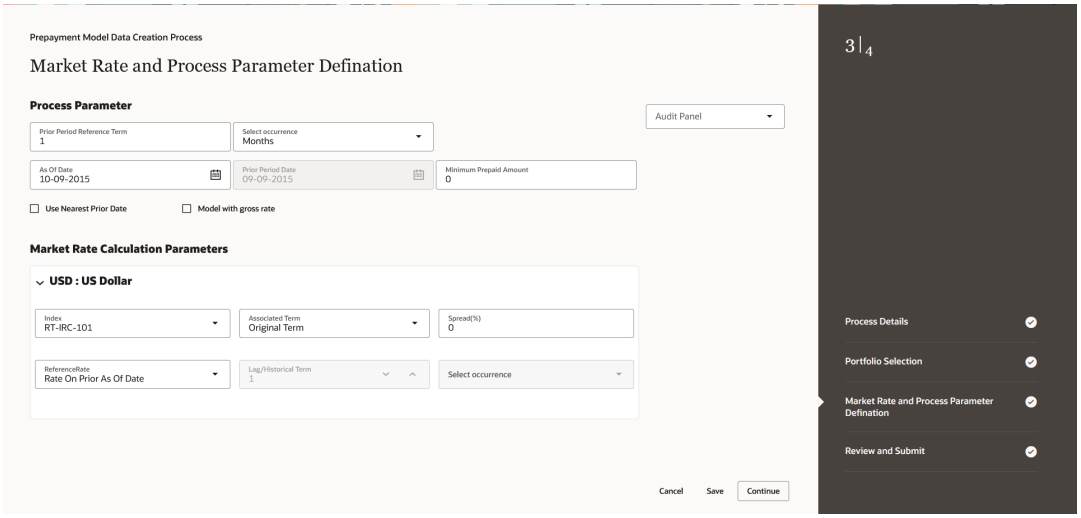
Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Step 3: Market Rate and Process Parameter Definition

1. Navigate to the **Market Rate and Process Parameter Definition** section. The **Market Rate and Process Parameter Definition** window is displayed to define Market Rates and Process Parameter.

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Figure 6-124 Market Rate and Process Parameter Definition



2. Enter the following details:

- **Prior Period Reference Term:**Enter Prior Period Reference Term and based on the current As-of-Date set in application preferences, the Prior Period Date will be calculated,
- **Select Occurrance:**Select the occurrence of Prior Period Reference Terms day, month, or year.
- **As of Date:** Enter the As of Date
- **Prior Period Date:** The value of this field is calculated based on Prior Period Reference Term and As of Date. This field is not editable.
- **Minimum Prepaid Amount (-x to x):**Enter the Minimum Prepaid Amount as a positive value. The engine applies the absolute value of the amount input ranging from - input amount to + input amount. For example, if the input is 100, then prepaid amounts between -100 and +100 is excluded. This input allows you to filter very small / insignificant prepaid amounts, reducing the amount of data copied into risk factor table for further modelling process.
- **Use Nearest Prior Date**: If you select the **Use Nearest Prior Date** option, then the engine looks back at the historical data to determine the nearest prior As-of-Date and uses this as Prior Period Date.
- **Model with gross rate:** If **Model with Gross Rate** check-box is selected, then CUR_GROSS_RATE is picked from the instrument record.
- **Index:**Select the per-defined IRC. The selected IRC (Index in Parameter screen) provides the base value for the market rate.
- **Associated Term:**Specify the associated term you want to use for IRCs that are yield curves.
  - **Original Term:** The calculation retrieves the interest rate from the term point equaling the original term on the instrument.
  - **Reprice Frequency:** The calculation retrieves the interest rate from 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 interest rate associated with the term point equaling the original term on the instrument.

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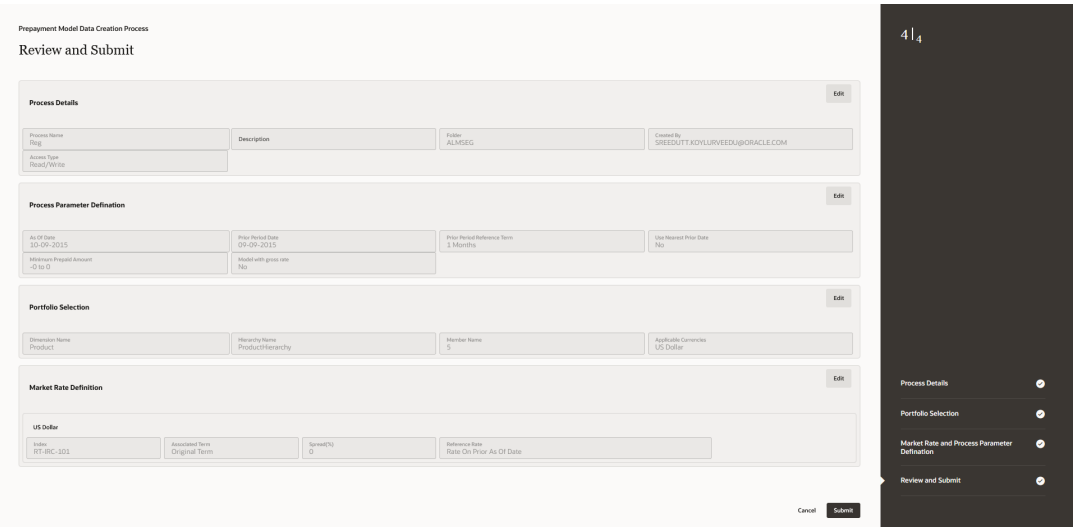
  - **Remaining Term:** The calculation retrieves the interest rate from the term point equaling the remaining term of the instrument.

- **Spread%:** Spread can be positive as well as negative values and both are to be added to base market rate. Therefore, if the base market rate is 5 and spread given is 1.2, the final rate is be 5+(1.2) = 6.2. Similarly, if spread is -1.2, then final market rate is 5+(-1.2) = 3.8
- **Reference Rate:** Select the Reference Date. Following options are available:
  - **Rate on Prior As of Date:** Select the reference rate as per the given curve for prior As-of-Date
  - **Rate on Prior As of Date-Lag Term:** Select the market rate with some lag say 15 days, 30 days. Lag Term can be defined with a drop-down containing days, months and years.
  - **Rate on Prior As of Date-Historical Term:** The market rate can be defined as arithmetic average over historical range of 1 month, 6 months starting prior As-of-Date. Historical term is also given with a drop-down containing days, months and years.
- **Lag/Historical Term:**This option is available if the Reference Rate is selected as **Rate on Prior As of Date-Lag Term** or **Rate on Prior As of Date-Historical Term** .
- **Select Occurrence:** Select the occurrence of Lag or Historical Term.

Step 4: Review and Submit

1. Navigate to **Preview and Submit** section. Review the process details.

Figure 6-125 Review and Submit



2. Click **Submit** to create the Data Creation process. The created process will be displayed on **Prepayment Model Data Creation Process Summary** page.

6.4.1.1.2 Executing Prepayment Data Creation Process

You can execute the Prepayment Data Creation Process using the following methods:

- Prepayment Data Creation Process UI

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- Scheduler Service
- Using Scheduler Service
- Using Prepayment Data Creation Process UI

6.4.1.1.2.1 Using Scheduler Service

To execute the Prepayment Data Creation Process, follow these steps:

1. Navigate to **Operations and Processes** menu, and select **Scheduler**.
2. To define a new batch, navigate to **Define Batch**.
3. Enter the Batch Name and Description, and then save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from Batch drop-down list on **Define Task** window.
6. Click the **Add** button.
7. Define the task with below details:
   - **Task Code:** This can be same as the Process ID of Prepayment Data Creation Process or something else.
   - **Task Name:** This can be same as name of the Prepayment Data Creation Process or something else.
   - **Task Description:** This can be same a name of the Prepayment Data Creation Process or something else.
   - **Task Type:** REST
   - **Component:** Prepayment Data Creation Process
   - **Process Name:** Select one value from the list.
   - **Legal Entity Hierarchy:** Select one value from the list.
   - **Legal Entity:** Select one value from the list.
8. Save and Execute the batch with Batch ID and MIS Date.

For more information, see the Scheduler Service.

6.4.1.1.2.2 Using Prepayment Data Creation Process UI

To execute the Prepayment Data Creation Process, follow these steps:

1. Navigate to the Prepayment Data Creation Process Summary page.
2. Search for a Prepayment Data Creation Process.
3. Click on the **Action** icon against the Process Name and select **Run** to execute an existing Prepayment Data Creation process. The **Run Parameter Execution** window is displayed.
4. Select the **As of Date** (Execution Date) and **Legal Entity**, and then click **Ok**.

> **Note**
>
> You can select multiple Legal Entities in list view of hierarchy browser at a time for execution. In hierarchy mode you can select one Legal Entity at leaf or parent level. When parent Legal Entity is selected then data of selected entity along with its child and descendants are processed.

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5. The Prepayment Data Creation Run Confirmation page is displayed. The status of the process is displayed in the **Status** column. After completion of the process, you can navigate to the **Execution Details** page by selecting the **Execution Details** option under the **Action** column.

6.4.1.2 Prepayment Model Analysis

The Prepayment Model Analysis module allows you to develop a model for prepayment rate calculations as per the chosen risk factors. Model building could be a time consuming process given huge data sets and limited IT infrastructure.

User Roles and Privileges

Purpose	Role Code	Role Name	Function Code	Function Name
Prepayment Data Generation	RLPPMTADMIN	Prepayment Model Data Generation Admin Role	PPMTDATAADD	Add Prepayment Model Data Creation Process
			PPMTDATARUN	Run Prepayment Model Data Creation Process
			PPMTDATADEL	Delete Prepayment Model Data Creation Process
			PPMTDATAEDIT	Edit Prepayment Model Data Creation Process
			PPMTDATACOPY	Copy Prepayment Model Data Creation Process
			PPMTDATAVIEW	View Prepayment Model Data Creation Process
	RLPPMTANALYST	Prepayment Model Data Generation Analyst Role	PPMTDATAADD	Add Prepayment Model Data Creation Process
			PPMTDATARUN	Run Prepayment Model Data Creation Process

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Purpose	Role Code	Role Name	Function Code	Function Name
			PPMTDATADEL	Delete Prepayment Model Data Creation Process
			PPMTDATAEDIT	Edit Prepayment Model Data Creation Process
			PPMTDATACOPY	Copy Prepayment Model Data Creation Process
			PPMTDATAVIEW	View Prepayment Model Data Creation Process
	RLPPMTAUDIT	Prepayment Model Data Generation Auditor Role	PPMTDATAVIEW	View Prepayment Model Data Creation Process
Prepayment Model Analysis	RL_PPMT_ANALYSIS_ADMIN	Prepayment Model Analysis Admin Role	PPMT_ANALYSIS_ADD	Add Prepayment Model Analysis
			PPMT_ANALYSIS_DEL	Delete Prepayment Model Analysis
			PPMT_ANALYSIS_EDIT	Edit Prepayment Model Analysis
			PPMT_ANALYSIS_COPY	Copy Prepayment Model Analysis
			PPMT_ANALYSIS_VIEW	View Prepayment Model Analysis
	RL_PPMT_ANALYSIS_ANALYST	Prepayment Model Analysis Analyst Role	PPMT_ANALYSIS_ADD	Add Prepayment Model Analysis
			PPMT_ANALYSIS_DEL	Delete Prepayment Model Analysis

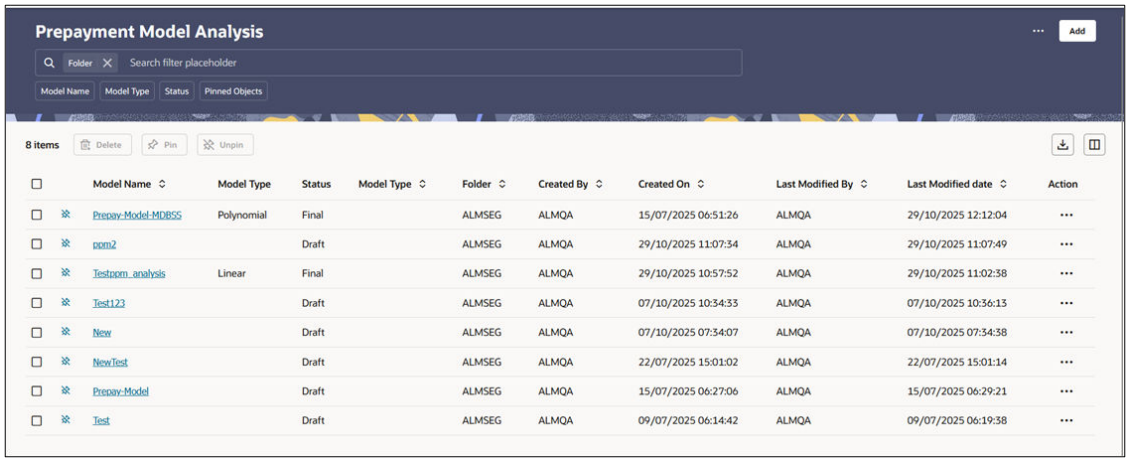
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Purpose	Role Code	Role Name	Function Code	Function Name
			PPMT_ANALYSIS_EDIT	Edit Prepayment Model Analysis
			PPMT_ANALYSIS_COPY	Copy Prepayment Model Analysis
			PPMT_ANALYSIS_VIEW	View Prepayment Model Analysis
	RL_PPMT_ANALYSIS_AUDIT	Prepayment Model Analysis Auditor Role	PPMT_ANALYSIS_VIEW	View Prepayment Model Analysis

Prepayment Model Analysis Rule Summary

This page is the gateway to all Prepayment Model Analysis Rules and related functionality. You can navigate to other pages relating to Prepayment Model Analysis Rules from this point.

Figure 6-126 Prepayment Model Analysis Rule Summary



Search Prepayment Model Analysis Rule

Prerequisites: Predefined Prepayment Model Analysis Rule

To search for a Prepayment Model Analysis Rule:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Prepayment Model Analysis Rules that meet the search criteria.

Or

An alternative method to search a Prepayment Model Analysis rule is through the **Field Search** option. This is an inline wildcard UI search that allows you to enter a search value (such as code, name, etc.) partially or fully. Rows that contain the string you are searching for

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are fetched and displayed in the Prepayment Model Analysis Summary. You can enter the **Code, Name, Description, Dimension, Hierarchy**, and **Folder** of the Prepayment Model Analysis Rule and click **Search** .

The Prepayment Model Analysis rule Summary displays the following information:

Add: Click the Add icon on the page header to build a new Prepayment Model Analysis rule.

More Actions: Enables you to perform following tasks.

- **Refresh:** Refreshes the summary page with latest model status.
- **Reset:**Clears all fields back to default.
- **Help:**Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin/unpin the selected rule.

Export: Enables you to download the summary page details in .CSV format.

Columns: Allows you to view the summary page data using a customized list of columns.

The Prepayment Model Analysis summary table displays the following columns:

- **Model Name:** The Prepayment Model Analysis Rule's short name.
- **Model Type:** Shows the type of Prepayment Model Analysis rule as Linear or Polynomial
- **Status:** Displays the status as Draft or Completed.
- **Folder:** The Folder where the Prepayment Model Analysis Rule is saved.
- **Created By:** The user who created the Prepayment Model Analysis Rule.
- **Created On:** The Date and Time when the Prepayment Model Analysis Rule was created first.
- **Last Modified By:** The user who last modified the Prepayment Model Analysis Rule.
- **Last Modified Date:** The Date and Time when the Prepayment Model Analysis Rule was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Prepayment Model Analysis rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Prepayment Model Analysis rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Prepayment Model Analysis rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Prepayment Model Analysis rules that you no longer require. Note that only Prepayment Model Analysis rule owners and those with Read/Write privileges can delete Prepayment Model Analysis rules. A Prepayment Model Analysis rule that has a dependency cannot be deleted.
  - **Dependency Check:** You can perform a dependency check to know where a particular Prepayment Model Analysis rule has been used. Before deleting a rule, it is always a good practice to do a dependency check to ensure you are not deleting Prepayment Model Analysis rules that have dependencies. . A report of all rules that utilize the selected Prepayment Model Analysis rule is generated.

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Also See:

- Creating a Model
- Creating a Model

6.4.1.2.1 Creating a Model

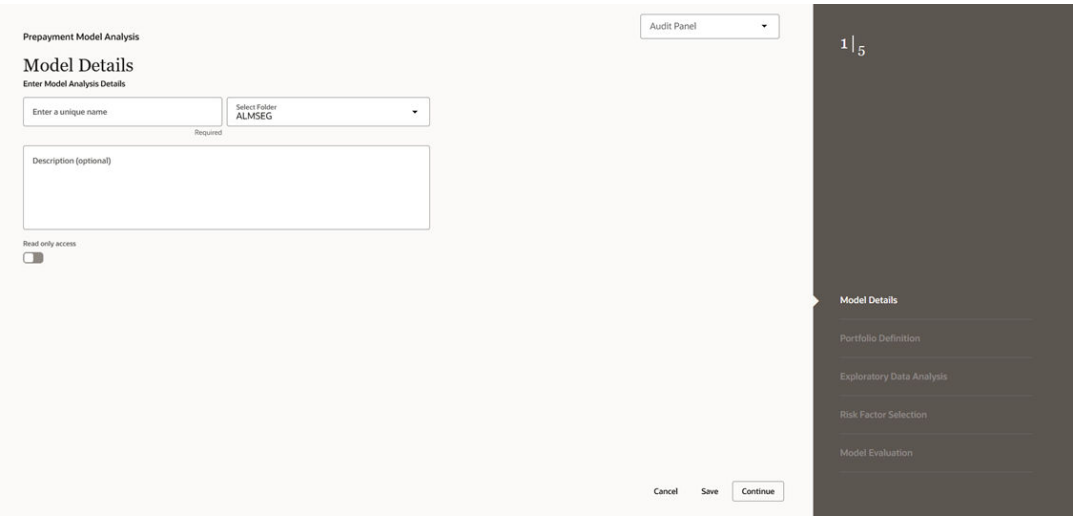
To create a model, follow these steps:

1. Navigate to the Prepayment Model Data Analysis Summary page.
2. Click **Add**. The **Create Prepayment Model Analysis** page is displayed.
3. Follow the steps mentioned in below sections:
   a. Model Details
   b. Portfolio Definition
   c. Exploratory Data Analysis
   d. Risk Factor Selection
   e. Model Evaluation
4. Click **Submit/Save** after entering all details in above sections.

Step 1: Model Details

1. From **Prepayment Model Analysis** tab, click **Start**. The **Model Details** page is displayed.

Figure 6-127 Model Details



2. Enter the following details:
   - **Model Name:** Name of Process. The Data Creation Process Name should be unique. Any special characters are not applicable.
   - **Folder:** Folder Name where you want to save the process.
   - **Description:** Description of Process. The maximum limit of this field is 300 characters. You can enter special characters in this field.
   - **Read only Access:** Select this option, if you want to make the process Readonly.

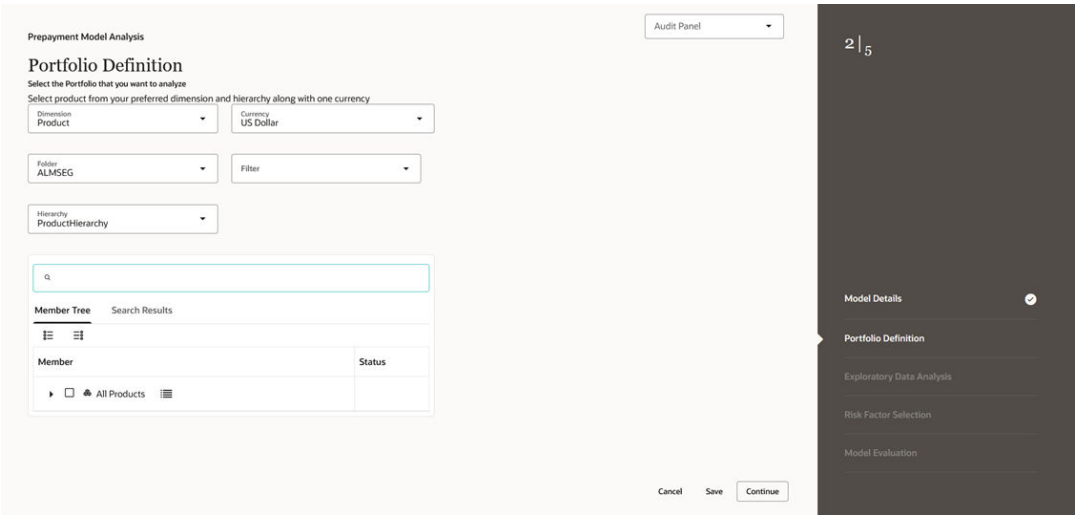
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3. Click **Continue**.

Step 2: Portfolio Definition

1. Navigate to the **Portfolio Definition** section. The **Portfolio Definition** window is displayed to set Portfolio.

Figure 6-128 Portfolio Definition



2. Enter the following details:
   - **Dimension:**Select the Dimension.
   - **Currency:** Select the Currency. The Currency drop-down displays the list of active currencies.
   - **Folder:** Select the Folder from which you want to pick the Hierarchy.
   - **Filter:** Select the Filter.
   - **Hierarchy:** You can specify some processing parameters at product-currency combination. Hierarchies in selected Folder will be listed and you can select one from the available list of hierarchies.
   - Select **Product(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
     - **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.
       Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:
       * **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
       * **Expand selected member/branch:** Allows to expand the selected node
       * **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
       * **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
       * **Select Defined self, child:** Allows to select the selected node itself along with its child.

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* **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
* **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

* Add
* Edit
* View
* Delete
* Copy

– **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

a. Navigate to **Assumption Browser** section of the Rule Definition page.

b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser** .
Here, you can perform the following tasks on the searched node(s):

* Add
* Edit
* View
* Delete
* Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

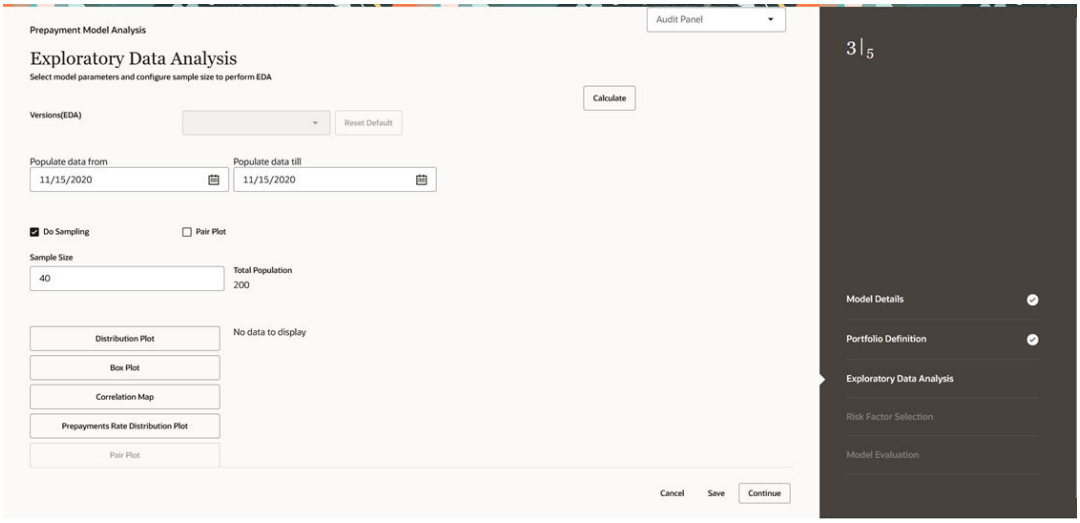
Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Step 3: Exploratory Data Analysis

1. Navigate to the **Exploratory Data Analysis** section. The **Exploratory Data Analysis** window is displayed to define Exploratory Data Analysis Parameter. This window is used to perform EDA calculations.

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Figure 6-129 Exploratory Data Analysis



2. Enter the following details:

   - **Sample Size Model Population (As of Date Range):**Sample size of dataset for EDA You can define a date range within which one wants to use data for model creation as model population. By Default, Date range would be populated as below: End Date: Max (As of Date) available in Model input Table Start Date: Max [min (As of Date), End Date – 10 Years]
   - **Do Sampling Sample Size (Multiplier) :**Select this option to create model based on a data Sample rather than the whole population. By default, Do Sampling is enabled. This would enhance performance due to lesser number of records considered for modelling, without degrading model quality. After selecting sample size for EDA, you can select multiplier value. This indicates sample size required for model creation. For example, if 1000, records are selected as sample size for EDA, and multiplier is 6, then a minimum of 1000*6 = 6000 records would be required for model creation. Note: This checkbox is enabled only if Do Sampling checkbox is selected.
     This window gives complete information about all the risk factors along with prepayment rates. It helps you do decide what all factors could influence the customer's prepayment behavior and would be best for model building. You can hover over any graph and zoom in to enhance the visibility of the graph. Click **Model Summary** to navigate back to the Model Summary window after saving all inputs/EDA graphs defined/generated till this point. Click **Re-Calculate** if you want to change the sample size and redo the EDA again. Change the sample size and click **Re-Calculate**. If you have performed EDA multiple times (for example, three versions V1, V2, V3.), then use Versions (EDA) to view them. For example, when you are on the EDA screen and performing the EDA 3rd time, but still want to go with the 2nd EDA version, then select that version and subsequent processing would be based on V2. If you have run the EDA only once, then this drop-down will not be available. When you hover over Sample size for EDA, it displays Default value (callout) as Default Value is 5000.

     Click **Pair Plot** to generate Pair Plot/Grid along with other EDA graphs. Pair Plot/Grid is a detailed graph, that can further slow down the processing. So you can explicitly select the pair plot checkbox and click on calculate to perform the EDA.

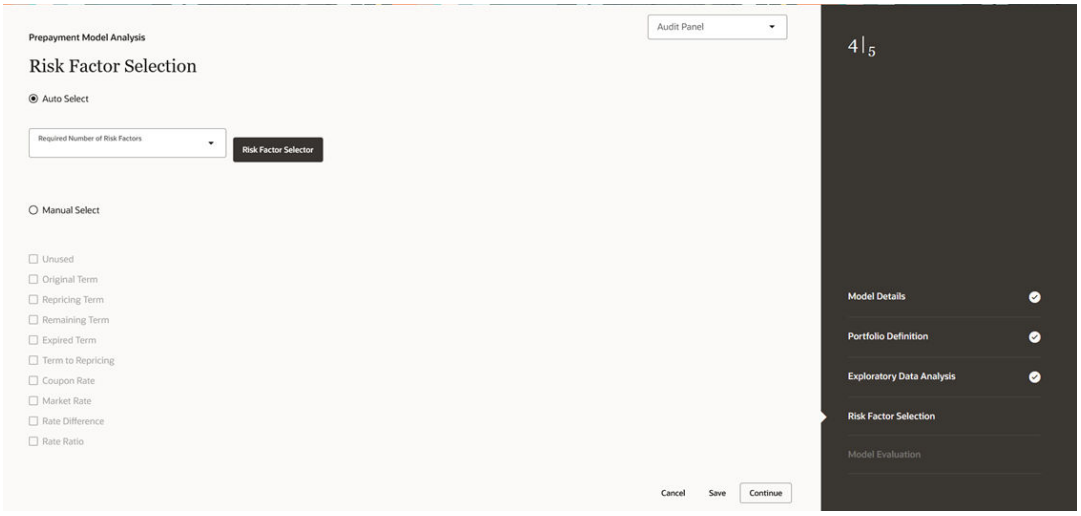
3. Click **Continue**.

Step 4: Risk Factor Selection

1. Navigate to **Risk Factor Selection** section. By default, all the risk factors will be disabled.

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Figure 6-130 Risk Factor Selection

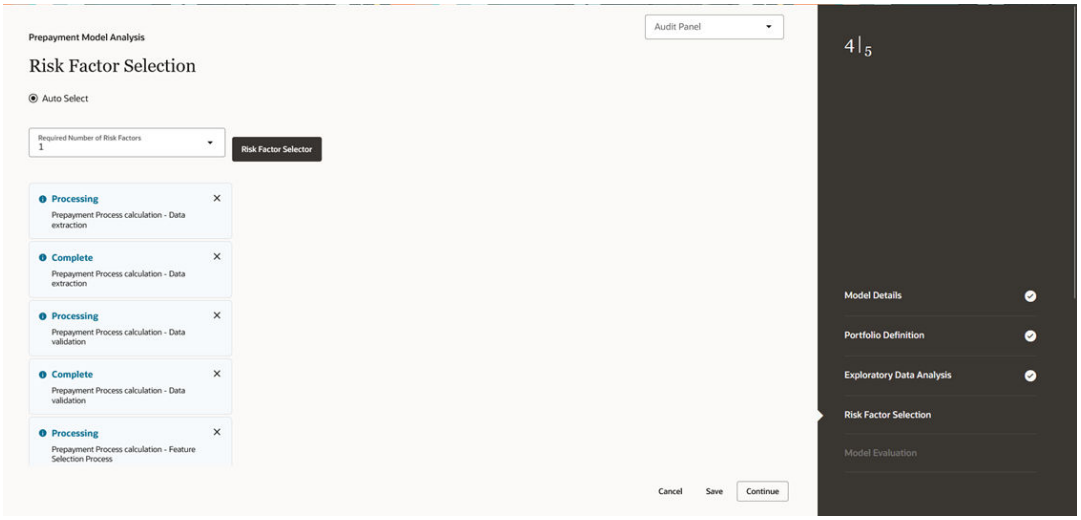


2. Select the Risk Factor as **Manual** or **Auto**.
Manual Select: When you change the risk factor selection mode to ‘Manual Select’, then all the risk factors would be available for selection; maximum 3 factors can be selected after that all the risk factors would be disabled again.

Auto Select: When you are in 'Auto Select' mode, System would perform required calculations, corelation/collinearity analysis in the backend based on the required number of risk factors (Maximum 3), System would auto-select the best representative set of risk factors as per the input data.

Click **Risk Factor Selector** button.

Figure 6-131 Risk Factor Selector



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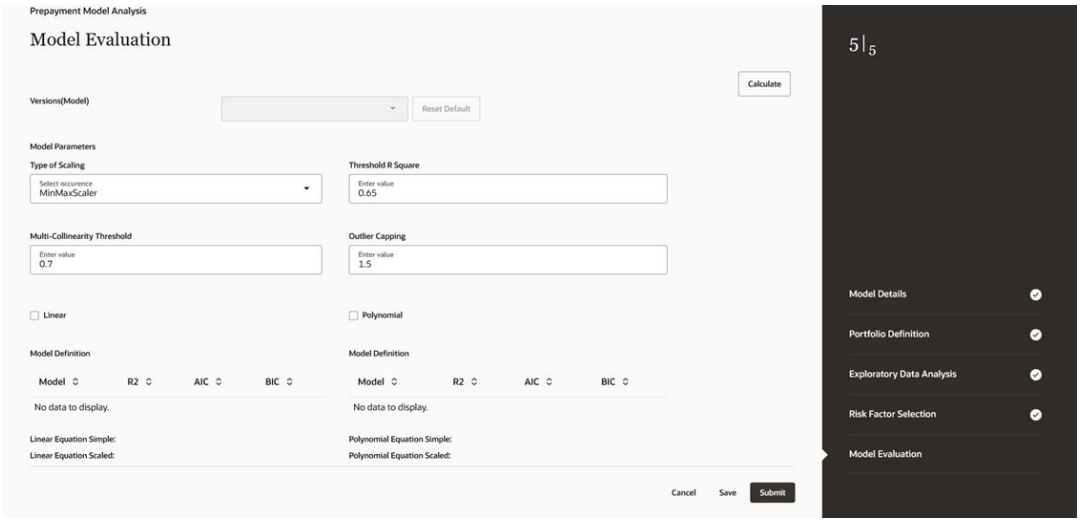
> **Note**
>
> If you want to change sample size and re-calculate EDA again, click **Exploratory Data Analysis** step and perform EDA with updated sample size. Again, the process starts from that step onwards, and updated EDA plots/graphs would be saved for the model.

3. Click **Continue**.

Step 5: Model Evaluation Section

1. Navigate to **Model Evaluation** section.

Figure 6-132 Model Evaluation Section



Click **Calculate** to view all the evaluation parameters and quality plots.

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Figure 6-133 Calculating Model Evaluation

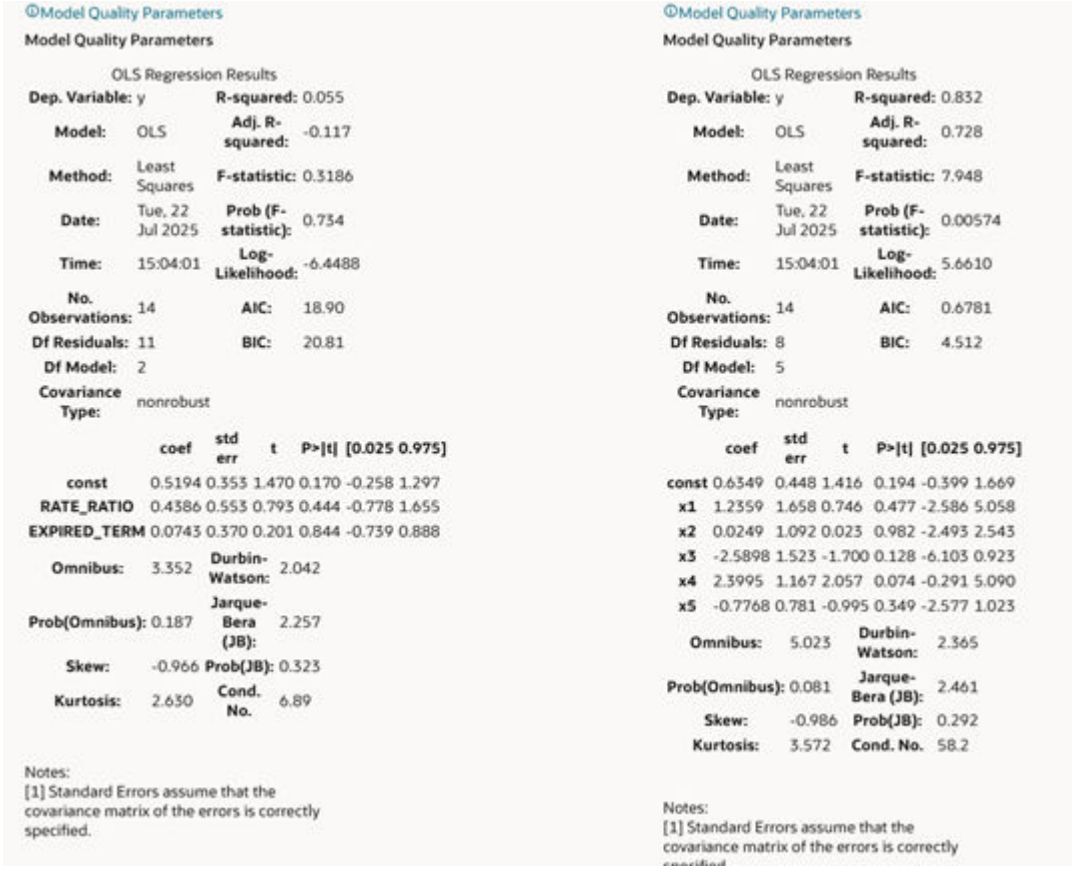


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Click **Calculate** again if you are not satisfied with the model quality to change the model parameters and revise the model definition. You can zoom the graph to enhance visibility. If you are changing parameters and generating different versions of the model, then you can see all the versions, generated with different set of model parameters in the **Versions (EDA)** drop-down. If you have run “model evaluation’ only once, then this drop-down would not be available. As per the selected version, the model details window is also updated. The Model Details window helps you to evaluate the model fit. It has the following comparisons: Predicted Values Vs Risk Factor 1,2,3, as per the number of risk factors considered for model building. This will dynamically adjust as per the number of risk factors selected. Predicted Values Vs Test Sample. Sample prepayment matrix as per both the models (Linear and Polynomial).

Click **Model Quality Parameter** link to view Model Summary window, after saving all details. To verify the model quality, all the model statistics are given on a different screen, which would be available with **Model Quality Parameter** link like R2, F value, P – Value, and so on.

Figure 6-134 Model Quality Parameter



Add row using Add +. You can add multiple rows or delete multiple rows using buttons in panel 1. Default sample matrix is10*10, but once you re-define sample, matrix can be truncated to any dimensions. The redefined matrix will be saved along with model. Model summary parameters like R2 , AIC and BIC. Both (Linear/Polynomial) models are produced when the system compares model generated R2 against the R2 threshold defined by the user. The final option is given to you to choose any one of these models. Based on infrastructure availability and model complexity, you can choose any one of linear/polynomial model.

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Click Save Model to save the model. Same model could be referred to populate prepayment rate matrix. Click **Calculate** again to re-evaluate model based on changed model parameters.

> **Note**
>
> If you want to change sample size and re-calculate EDA again, click **Exploratory Data Analysis** step and perform EDA with updated sample size. Again, process would start from that step onwards and updated EDA plots/graphs would be saved for the model. If you want to update selected risk factors, click **Risk Factor Selection** step and change risk factors. Again, process would start from that step onwards and updated risk factors would be saved for the model.

The **Reset Default** button on every step would help to delete all the calculations done in subsequent steps. That is, if you have done EDA and selected particular EDA version to do further calculations like 'Risk factor Selection' or 'Model Evaluation'. In case you are not satisfied with model, you can go back to EDA, click **Reset Default** to clear out the details/ calculations performed in subsequent stages and do recalculate with a different set of parameters. Following are the default values/usage of Parameters:

Table 6-34 Parameter Details

Parameter Details	Default Value
EDA Sample Size	This would allow you to define a sample size for exploratory data analysis. A bigger sample would increase CPU and memory usage, but it would better represent the model population. You have the option not to use sampling by setting Do_Sampling parameter to false. Procedure for the same is given in next section.
Type of scaling	Many a times, risk factors are not in consistent range, e.g. one of the risk factor's values could be in 1-500 range but another risk factor could be just in 2-3 range. So, risk factor 1 would influence the model more and you would get a biased model. So, to make all the risk factors consistent, scaling is used. There are two types of scaling: Min-Max Scaling = (X – min)/(max – min) Standard = (X – Mean)/Std. Deviations
Threshold R2	R-squared values range from 0 to 1 and are commonly stated as percentages from 0% to 100%. An Rsquared of 100% means that all movements of prepayment rate (dependent variable) are completely explained by movements in the chosen risk factors (independent variable(s).
Multi collinearity Threshold	For model creation if two risk factors/variables are highly correlated or correlation > 0.7, they would make model unstable. So based on this value, if variables are highly correlated or above defined threshold, one of them would be dropped while model creation.

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Table 6-34 (Cont.) Parameter Details

Parameter Details	Default Value
Outlier Capping	This would allow user to reject values beyond certain percentile. Sometimes, input data has few extreme values which could distort the model. So you could reject those values and get a stable model.

Exploratory Data Analysis:

Sample Size (EDA): 5000

Model Population Range - It would be auto-populated based on the data in risk factor table. Maximum would be 10 years older from latest available date. In case you think, older data is not relevant, as of date range can be updated.

Model Evaluation:

Type of scaling – min Max Scaler Threshold R2 – 0.65 Outlier capping – 1.5 Percentile Multi-collinearity Threshold – 0.7

2. Click **Submit** to create the Data Creation process. The created process will be displayed on **Prepayment Model Data Creation Process Summary** page.

6.4.2 Non Maturity

This section covers the following topics:

1. Non Maturity Data Creation Process: Non-Maturity Modeling is comprised of three type of models.
2. Non Maturity Model Analysis: Non-Maturity Products Modeling helps you to understand the relation between market and bank rate, how much is core out of total available balance for the portfolio, and how long core will remain with the bank based on Decay Rate Profile.

- Non-Maturity Products Data Creation Process
- Non Maturity Products Model Analysis

6.4.2.1 Non-Maturity Products Data Creation Process

Non-Maturity Modeling is comprised of three type of models:

- Core/Volatile Balance segregation
- Decay Rate and corresponding weighted average life Calculation
- Beta Factor or Pass-through Rate Calculations

For these calculations, the following portfolio Level Attributes are required:

- Instruments in Scope are: CASA, Credit Cards, or any other product for which contractual Maturity is not defined.
- Account Origination Date (To Calculate Vintage/account age)
- Deposit Rate or Bank Rate – CUR_NET_RATE
- Underlying Index (Market Rate) or Reference Rate
- Number of Accounts per Origination Date Bucket

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- Portfolio Balance snapped at regular intervals for a given historical period. (CUR_PAR_BAL from each account)

The Data Creation Process allows you to perform the following tasks:

- Defining the portfolio and corresponding historical period over which data needs to be generated. Select any number of products from the selected hierarchy and one or multiple currencies to define a portfolio.
- Hierarchy can be defined on any of the product dimensions like Chart of Account, General Ledger accounts or Product IDs. System is built in such a way that it can display hierarchies based on selected product dimension in Application Preferences
- Process Train is given at each page, so you can keep track of how many stages are defined and how many are yet to be defined.
- Specify the Market Rate Definition and other Process Parameters Like yield curve term and interest rate curve effective date
- Review the entered details and all the process parameters.
- Execute the Data Creation process and generate results.
  - Data Generated by Batch UI using following tables:
    `FSI_AUDIT_NM_LOAD_BATCH`

    `FSI_O_HIST_NM_MODEL_DETAILS`

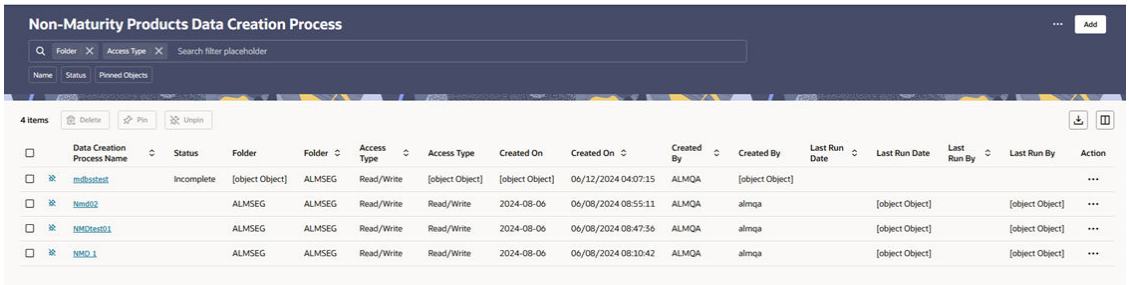
    `FSI_O_IRC_RATE_NM_MODEL`
  - Metadata tables used for NMD Model UI
    `FSI_M_NM_BATCH_LOAD_DEF`

    `FSI_M_NM_BATCH_PROCESS_PARAM`

Data Creation Process Summary

This page is the gateway to all Data Creation processes and related functionality. You can navigate to other pages relating to Data Creation processes from this point.

Figure 6-135 Data Creation Process Summary Page



Search Data Creation Process

Prerequisites: Predefined Data Creation Process

To search for a Data Creation Process, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Data Creation Processes that meet the search criteria.

Or

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The other method to search a Data Creation Process is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Name, Status, Folder,** or **Access Type** status of the Data Creation Process and click **Search**.

The Data Creation Process summary page displays the following:

Add: Click the Add on the page header to build a new Data Creation process.

More Actions: Enables you to perform following tasks:

- **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
- **Reset:** Clears the selected filters and refreshes the summary page.
- **Help:** Redirects you to latest documentation.

Delete: Enables you to select and delete one or multiple rules in the table simultaneously.

Pin/Unpin: Enables you to pin or unpin the selected rule

Export: Allows you to download the summary page details in .cs format.

Columns: Enables you to customize the list of columns.

The Data Creation Process summary table displays the following columns:

- **Data Creation Process Name:** Name of the Data Creation Process's short name.
- **Status:** Status of the Data Creation Process.
- **Folder:** The folder where the Data Creation process is saved.
- **Access Type:** The access type of the rule. It can be Read-Only or Read/Write.
- **Created On:** The Date and Time when the Data Creation process was created.
- **Created By:** The user who created the Data Creation process.
- **Last Run By:** The user who last run the Data Creation process.
- **Last Run Date:** The Date and Time when the Data Creation process was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Data Creation process.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Data Creation processes. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Data Creation process by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Data Creation processes that you no longer require. Note that only Data Creation process owners and those with Read/Write privileges can delete Data Creation processes. A Data Creation process that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.
  - **Execute:** Select Execute to execute an existing Data Creation process. After clicking Execute, the **Execute window** is displayed. Select **As of Date (Execution Date)**, and then click **Submit**.
  - **View Execute Details:** Select Execute Details to view execution details of the Data Creation process. Click **Execution ID** link to view detailed information of process execution.

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Also See:

- Create Data Creation process
- Execute Data Creation process
- Creating Data Creation Process
- Executing Data Creation Process

6.4.2.1.1 Creating Data Creation Process

To create a new Data Creation process, perform the following steps:

1. Navigate to the Data Creation Process Summary page.
2. Click **Add**. The **Create Data Creation Process** page is displayed.

Figure 6-136 Create Data Creation Process



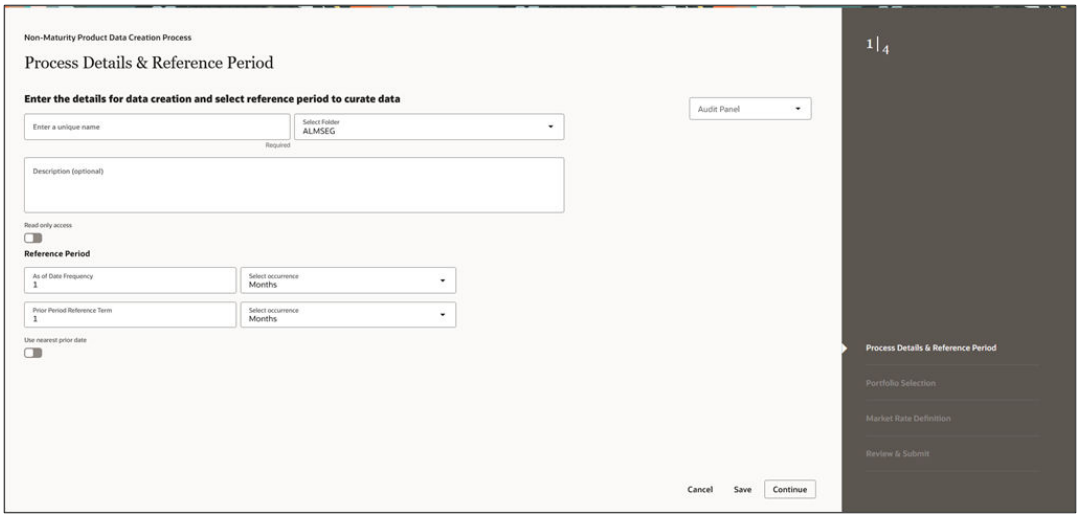
3. Follow the steps mentioned in below sections:
   a. Process Details and Reference Period
   b. Portfolio Selection
   c. Market Rate Definition
   d. Review and Submit
4. Click **Submit/Save** after entering all details in above sections.

Step 1: Process Details and Reference Period

1. From **Non Maturity Data Creation Process** tab, click **Start**. The **Process Details and Reference Period** page is displayed.

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Figure 6-137 Process Details and Reference Period



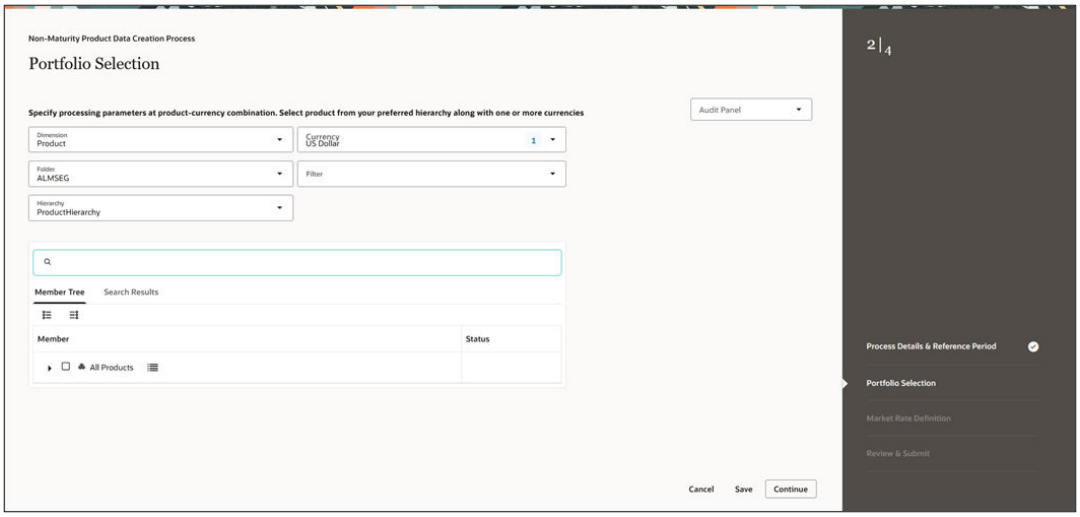
2. Enter the following details:
   - **Name:** Name of Process. The Data Creation Process Name should be unique. Any special characters are not applicable.
   - **Folder:** Folder Name where you want to save the process.
   - **Description:** Description of Process. The maximum limit of this field is 300 characters. You can enter special characters in this field.
   - **As of Date Frequency:** The Default value of this field is 1 month. **As of Date Frequency** is provided to select any value in days, months, or years. Starting from Prior Period date, the data snaps will be taken at defined snap frequency till As of Date. For each date, EOD balance (CUR_PAR_BAL) for the account on Data Snap Date, Account Origination Date (which will be required to calculate account age/ vintage at each Data Snap Date), and Deposit Rate (CUR_NET_RATE) will be captured, along with market rate as per the index selected.
   - **Prior Period Reference Term:** The Default value of this field is 1 year. As per the prior period reference term, the prior period date is auto calculated.
3. Click **Continue**.

Step 2: Portfolio Selection

1. Navigate to the **Portfolio Selection** section. The **Portfolio Selection** window is displayed to set Portfolio.

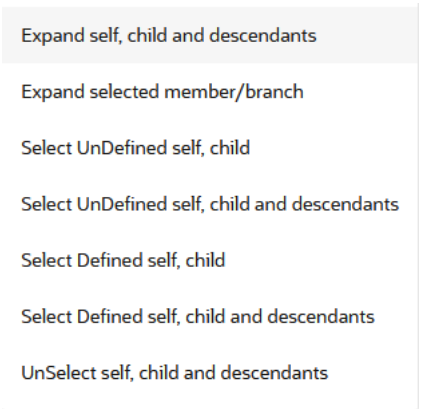
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Figure 6-138 Portfolio Selection



2. Enter the following details:
   - **Dimension:**Select the Dimension.
   - **Currency:** Select the Currency. The Currency drop-down displays the list of active currencies.
   - **Folder:** Select the Folder from which you want to pick the Hierarchy.
   - **Filter:** Select the Filter.
   - **Hierarchy:** You can specify some processing parameters at product-currency combination. Hierarchies in selected Folder will be listed and you can select one from the available list of hierarchies.
   - Select **Product(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
     - **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

Figure 6-139 Member Tree



Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

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- **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
- **Expand selected member/branch:** Allows to expand the selected node
- **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
- **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
- **Select Defined self, child:** Allows to select the selected node itself along with its child.
- **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
- **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

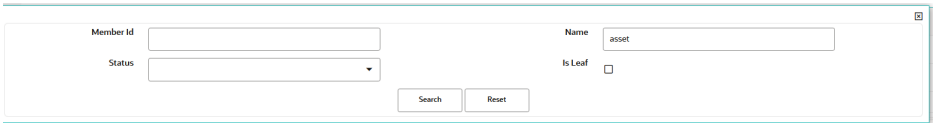
- Add
- Edit
- View
- Delete
- Copy

– **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

a. Navigate to **Assumption Browser** section of the Rule Definition page.

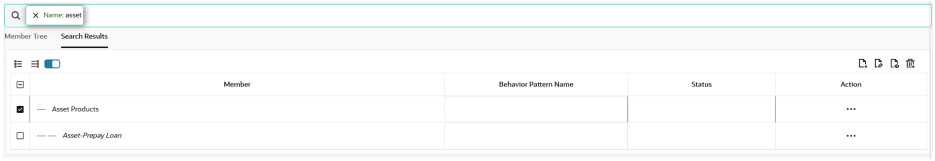
b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

Figure 6-140 Search Criteria



c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**

Figure 6-141 Searching Members



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Here, you can perform the following tasks on the searched node(s):

* Add
* Edit
* View
* Delete
* Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

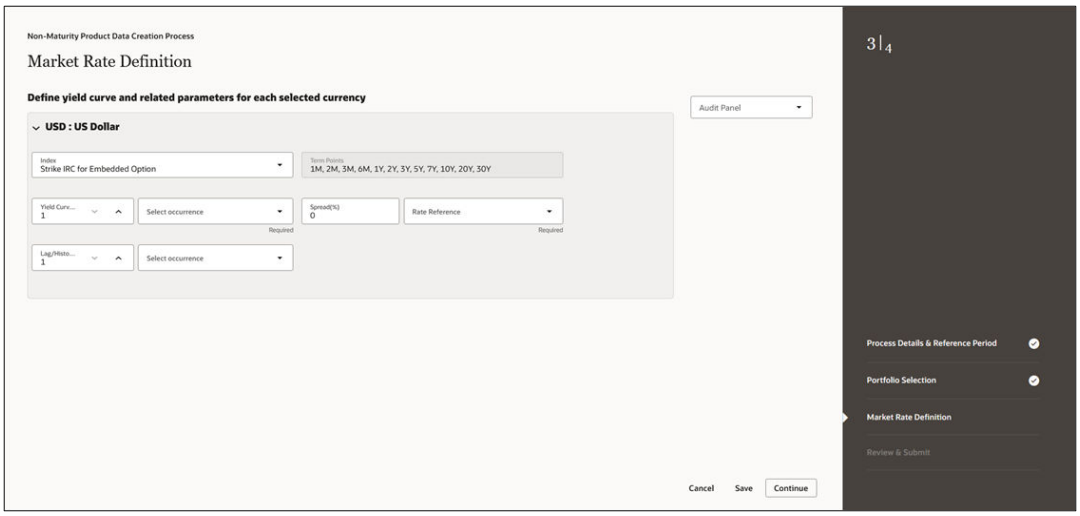
Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Step 3: Market Rate Definition

1. Navigate to the **Market Rate Definition** section. The **Market Rate Definition** window is displayed to define Market Rates.

Figure 6-142 Market Rate Definition



2. Enter the following details:
   - **Index:** As per the selected currency from the drop-down, all the interest rate curves defined will be given for selection.
   - **Term Points:** Shows the term points.
   - **Yield Curve Term:** As per the selected interest rate curve, you can select one term point. Rate corresponding to the selected term point will be picked. For intermediate term points, interpolation is done.
   - **Spread:** Default value is 0. This field accepts all positive, negative integers/decimals (in the range of -100% to +100%). You can enter the spread in percentage format. Enter the spread in percentage on top of rate picked from selected IRC and term point.
   - **Rate Reference**: Rates will be picked based on the following options:
     - **As of Date:** Effective Date is same as As of Date

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- **As of Date with Lag:** Effective date is As of Date minus some lag. If you select Rate on (As of Date- Lag), then Lag Term field will be enabled to enter term and tenor.
- **Average of Historical Term :** The effective date is not a single date but a period starting from the As of Date, during which an arithmetic average is calculated to smooth out any interest rate fluctuations. If you select **Average of Historical Term** (As of Date), the Historical Term field will be enabled for you to input the term and tenor.

- **Lag/Historical Term:** Refers to the period used for calculating averages or trends in data.

Step 4: Review and Submit

1. Navigate to **Preview and Submit** section. Review the process details.
2. Click **Submit** to create the Data Creation process. The created process will be displayed on **Non Maturity Data Creation Process Summary** page.

6.4.2.1.2 Executing Data Creation Process

The **Execute** option allows you to run the Data Creation Request and create data as for the selected portfolio.

Prerequisites

Predefined Data Creation Process

Procedure

Following two approaches are available to execute the process:

- UI Based Procedure
- Batch Based Procedure
- UI Based Procedure
- Batch Based Procedure

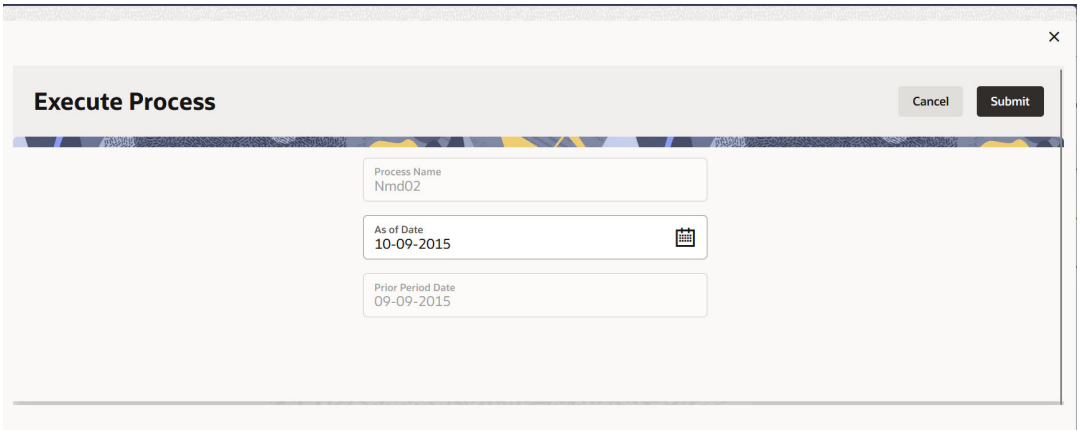
6.4.2.1.2.1 UI Based Procedure

To execute the Data Creation Process, follow these steps:

1. Navigate to the **Data Creation Process** Summary Page.
2. Search for a Data Creation process Rule.
3. Click the **Action** column and select **Execute** to execute an existing Data Creation Process.

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Figure 6-143 Execute Data Creation Process



4. Select **As of Date** and click **Submit**.
5. The Data Creation Process Run Confirmation Page is displayed. The status of the process is displayed in the Status column.
   After completion of the process, you can navigate to the **Execution Details** Page by selecting the view log option. From the Execution Details, you can access a report that provides details of any processing errors that were encountered while running the data creation process.

6.4.2.1.2.2 Batch Based Procedure

To execute the batch with Scheduler, follow these steps:

1. From the LHS menu, select **Operations and Processes**, select **Scheduler**, and then select **Define Batch**.
2. Define a new batch.
3. Enter the Batch Name and Description, and then save the batch.
4. To add a task, navigate to **Define Task**.
5. Select the Batch from **Batch** drop-down list on **Define Task** window.
6. Click the **Add** button.
7. Define the task with below details:
   - **Components:** Non Maturity Model Data
   - **Process Name:** Select the Data Creation Process Name from drop-down.
8. Save the rule and **Execute**.

For more information, see the Scheduler Service.

6.4.2.2 Non Maturity Products Model Analysis

Non-Maturity Products Modeling helps you to understand the relation between market and bank rate, how much is core out of total available balance for the portfolio, and how long core will remain with the bank based on Decay Rate Profile.

Table 6-35 User Role and Privileges

Purpose	Role Code	Role Name	Function Code	Function Name

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Table 6-35 (Cont.) User Role and Privileges

NMP Data Generation	RLNMDADMIN	Non Maturity Model Data Generation Admin Role	NMDATAADD	Add Non Maturity Model Data Creation Process
			NMDATARUN	Run Non Maturity Model Data Creation Process
			NMDATADEL	Delete Non Maturity Model Data Creation Process
			NMDATAEDIT	Edit Non Maturity Model Data Creation Process
			NMDATACOPY	Copy Non Maturity Model Data Creation Process
			NMDATAVIEW	View Non Maturity Model Data Creation Process
	RLNMDANALYST	Non Maturity Model Data Generation Analyst Role	NMDATAADD	Add Non Maturity Model Data Creation Process
			NMDATARUN	Run Non Maturity Model Data Creation Process
			NMDATADEL	Delete Non Maturity Model Data Creation Process
			NMDATAEDIT	Edit Non Maturity Model Data Creation Process
			NMDATACOPY	Copy Non Maturity Model Data Creation Process
			NMDATAVIEW	View Non Maturity Model Data Creation Process
	RLNMDAUDIT	Non Maturity Model Data Generation Auditor Role	NMDATAVIEW	View Non Maturity Model Data Creation Process
NMP Model Analysis	RLNMDLADMIN	Non Maturity Model Analysis Admin Role	NMMODELADD	Add Non Maturity Model Analysis
			NMMODELDELETE	Delete Non Maturity Model Analysis
			NMMODELEDIT	Edit Non Maturity Model Analysis
			NMMODELCOPY	Copy Non Maturity Model Analysis
			NMMODELVIEW	View Non Maturity Model Analysis

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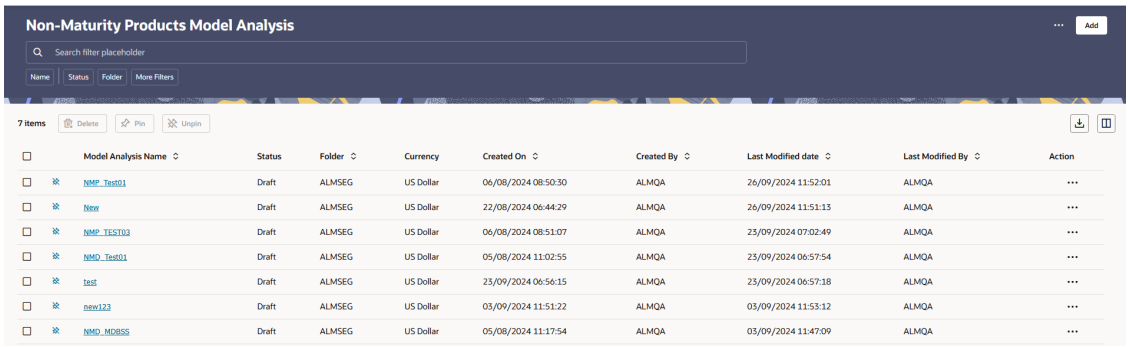
Table 6-35 (Cont.) User Role and Privileges

	RLNMDLANALYST	Non Maturity Model Analysis Analyst Role	NMMODELADD	Add Non Maturity Model Analysis
			NMMODELDELETE	Delete Non Maturity Model Analysis
			NMMODELEDIT	Edit Non Maturity Model Analysis
			NMMODELCOPY	Copy Non Maturity Model Analysis
			NMMODELVIEW	View Non Maturity Model Analysis
	RLNMDLAUDIT	Non Maturity Model Analysis Auditor Role	NMMODELVIEW	View Non Maturity Model Analysis

Non-Maturity Products Model Analysis Summary

This page is the gateway to all Non-Maturity Products Model Analysis rules and related functionality. You can navigate to other pages relating to Non-Maturity Products Model Analysis rules from this point.

Figure 6-144 Non-Maturity Products Model Analysis Summary Page



Search Non-Maturity Products Model Analysis Rule

Prerequisites: Predefined Non-Maturity Products Model Analysis rule

To search for a Non-Maturity Products Model Analysis rule, follow these steps:

Click **Search** after entering the search criteria. The search results are displayed in a table containing all the Non-Maturity Products Model Analysis rules that meet the search criteria.

Or

The other method to search a Non-Maturity Products Model Analysis rule is using the **Field Search** option. The Field Search is an inline wildcard UI search that allows you to enter value partially or fully and the rows that match the entered string in any of its column is fetched in the Summary table. Enter the **Name, Status, Folder,** or **Access Type** status of the Non-Maturity Products Model Analysis rule and click **Search**.

The Non-Maturity Products Model Analysis summary page displays the following:

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- **Add:** Click the **Add** icon on the page header to build a new Non-Maturity Products Model Analysis rule.
- **More Actions:** Enables you to perform following tasks:
  - **Refresh:** Retains the selected filters and refreshes the summary page with latest status.
  - **Reset:** Clears the selected filters and refreshes the summary page.
  - **Help:** Redirects you to latest documentation.
- **Delete:** Enables you to select and delete one or multiple rules in the table simultaneously.
- **Pin/Unpin**: Enables you to pin or unpin the selected rule
- **Export**: Allows you to download the summary page details in .cs format.
- **Columns**: Enables you to customize the list of columns.

The Non-Maturity Products Model Analysis summary table displays the following columns:

- **Model Analysis Name:** Name of the Non-Maturity Products Model Analysis rule's short name. Click **Model Analysis Name** link to view the details of Non-Maturity Products Model Analysis rule.
- **Status:** Status of the Non-Maturity Products Model Analysis rule.
- **Folder:** The folder where the Non-Maturity Products Model Analysis rule is saved.
- **Currency:** Displays the Currency for which Non-Maturity Products Model Analysis Rule is defined. One rule can be created only on one particular currency.
- **Created On:** The Date and Time when the Non-Maturity Products Model Analysis rule was created.
- **Created By:** The user who created the Non-Maturity Products Model Analysis rule.
- **Last Modified By:** The user who modified run the Non-Maturity Products Model Analysis rule.
- **Last Modified Date:** The Date and Time when the Non-Maturity Products Model Analysis rule was last modified.
- **Action:** Click this icon to view a list of actions that you can perform on the Non-Maturity Products Model Analysis rule.
  - **View/Edit:** Based on the user privilege assigned, you can either only view or edit existing Non-Maturity Products Model Analysis rules. To edit a rule, you must have Read/Write privilege.
  - **Save As:** You can reuse a Non-Maturity Products Model Analysis rule by saving it under a new name thus saving time and effort in entering data multiple times; it also leads to reduced data entry errors.
  - **Delete:** You can delete Non-Maturity Products Model Analysis rules that you no longer require. Note that only Non-Maturity Products Model Analysis rule owners and those with Read/Write privileges can delete Non-Maturity Products Model Analysis rules. A Non-Maturity Products Model Analysis rule that has a dependency cannot be deleted. A rule cannot be retrieved after deletion.

Also See:

- Create Non-Maturity Products Model Analysis
- Creating Non-Maturity Products Model

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6.4.2.2.1 Creating Non-Maturity Products Model

To create a new Non-Maturity Products Model Analysis Rule, perform the following steps:

1. Navigate to the Non-Maturity Products Model Analysis page.
2. Click **Add**. The **Create Non-Maturity Products Model Analysis** page is displayed.

Figure 6-145 Create Non-Maturity Products Model Analysis

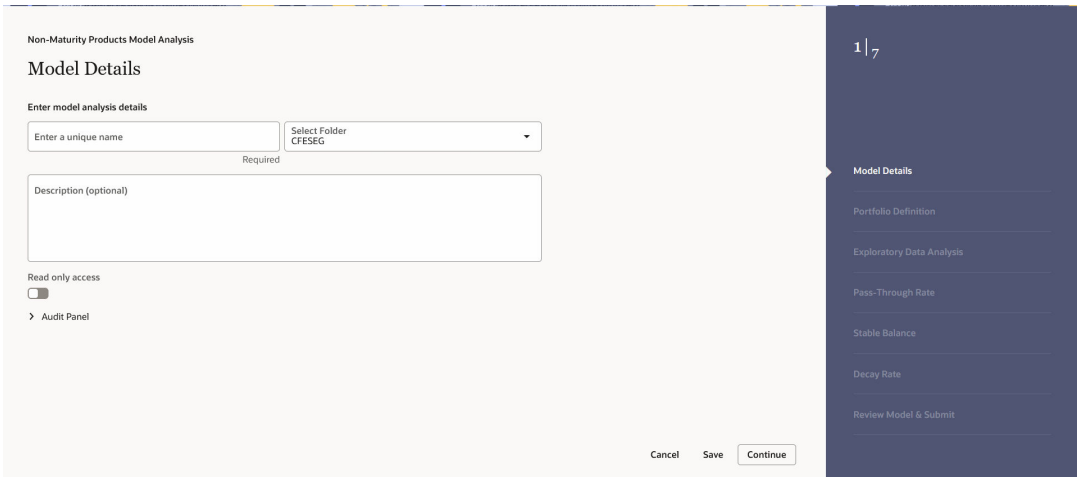


3. Follow the steps mentioned in below sections:
   a. Model Details
   b. Portfolio Definition
   c. Exploratory Data Analysis
   d. Pass-Through Rate
   e. Stable Balance
   f. Decay Rate
   g. Review and Submit
4. Click **Submit/Save** after entering all details in above sections.

Step 1: Model Details

1. From **Non-Maturity Products Model Analysis** , click **Start**. The **Model Details** page is displayed.

Figure 6-146 Model Details



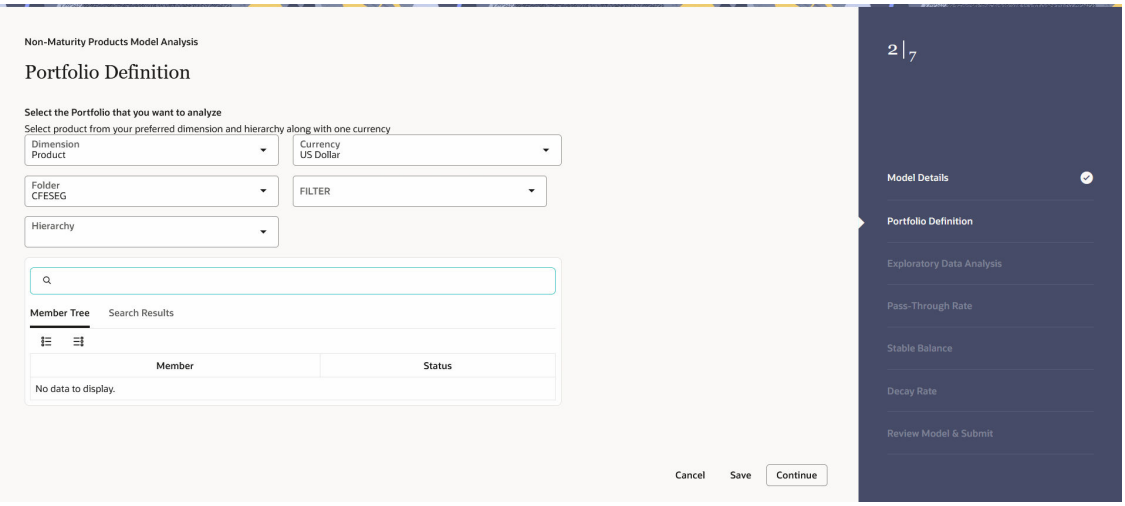
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2. Enter the following details:
   - **Name:** Name of model. The Non-Maturity Products Model name should be unique. Any special characters (*, &, new line, and double quotes) are not allowed. You can enter maximum 120 characters.
   - **Folder:** Folder Name where you want to save the model.
   - **Description:** Description of model. The maximum limit of this field is 300 characters. Any special characters (*, &, new line, and double quotes) are not allowed. You can enter maximum 255 characters.
3. Click **Continue**.

Step 2: Portfolio Selection

The **Portfolio Selection** window is displayed to set Portfolio.

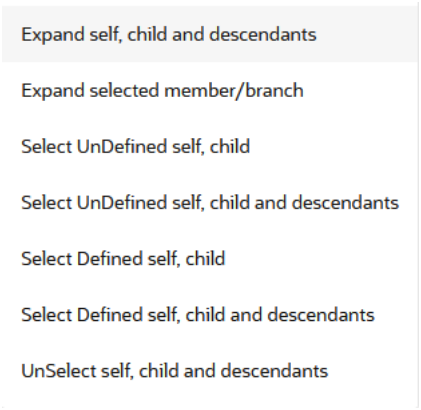
Figure 6-147 Portfolio Selection



1. Enter the following details in Portfolio Selection section:
   - **Dimension:** Select the dimension.
   - **Currency:** Select the currency. The **Currency** drop-down displays the list of active currencies.
   - **Folder:** Select the folder from which you want to pick the Hierarchy.
   - **Hierarchy:** You can specify some parameters at product-currency combination. Hierarchies of selected folder will be listed and you can select one from the available list of hierarchies.
   - **Filter:** Select the filter.
   - Select **Product(s)** from Member Tree of Assumption Browser. The Assumption Browser has following two tabs: Member Tree and Search Results
     - **Member Tree:** Member Tree tab shows the hierarchical structure and allows you to define rules by selecting the node members from the browser. Select Node and Click Menu icon next to it to view the available options.

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Figure 6-148 Member Tree



Status of node is also displayed in Member Tree section, for example Selected, and so on. To select member hierarchy, following options are available:

* **Expand self, child and descendants:** Allows to expand the selected node itself along with its child and descendants.
* **Expand selected member/branch:** Allows to expand the selected node
* **Select UnSelect self, child:** Allows to unselect the selected node itself along with its child
* **Select UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.
* **Select Defined self, child:** Allows to select the selected node itself along with its child.
* **Select Defined self, child and descendants:** Allows to select the selected node itself along with its child and descendants.
* **UnSelect self, child and descendants:** Allows to unselect the selected node itself along with its child and descendants.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

Here, you can perform the following tasks on the selected node(s):

* Add
* Edit
* View
* Delete
* Copy

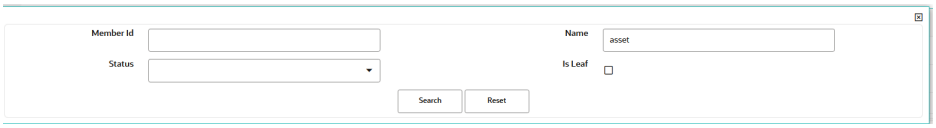
– **Search Results:** You can also search the members based on the filters. This section shows the searched node(s). To search a member, follow these steps:

a. Navigate to **Assumption Browser** section of the Rule Definition page.

b. Enter the Member ID, Name, Status, or Is Leaf in Search Criteria.

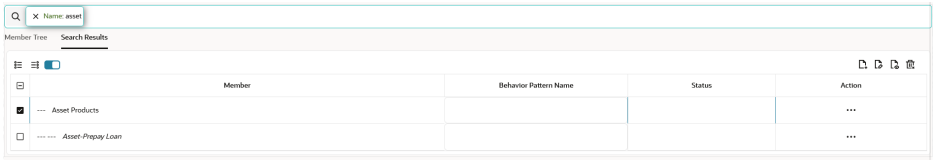
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Figure 6-149 Search Criteria



c. Click **Search**. The searched member(s) will be displayed in **Search Results** section of **Assumption Browser**.

Figure 6-150 Searching Members



Here, you can perform the following tasks on the searched node(s):

* Add
* Edit
* View
* Delete
* Copy

Click **Show Parentage icon** to view the Parent-child Node level hierarchy details of selected Node.

Use **Show Numeric Code Values (Left)** icon to view the code value left to the Node name.

Use **Show Numeric Code Values (Right)** icon to view the code value right to the Node name.

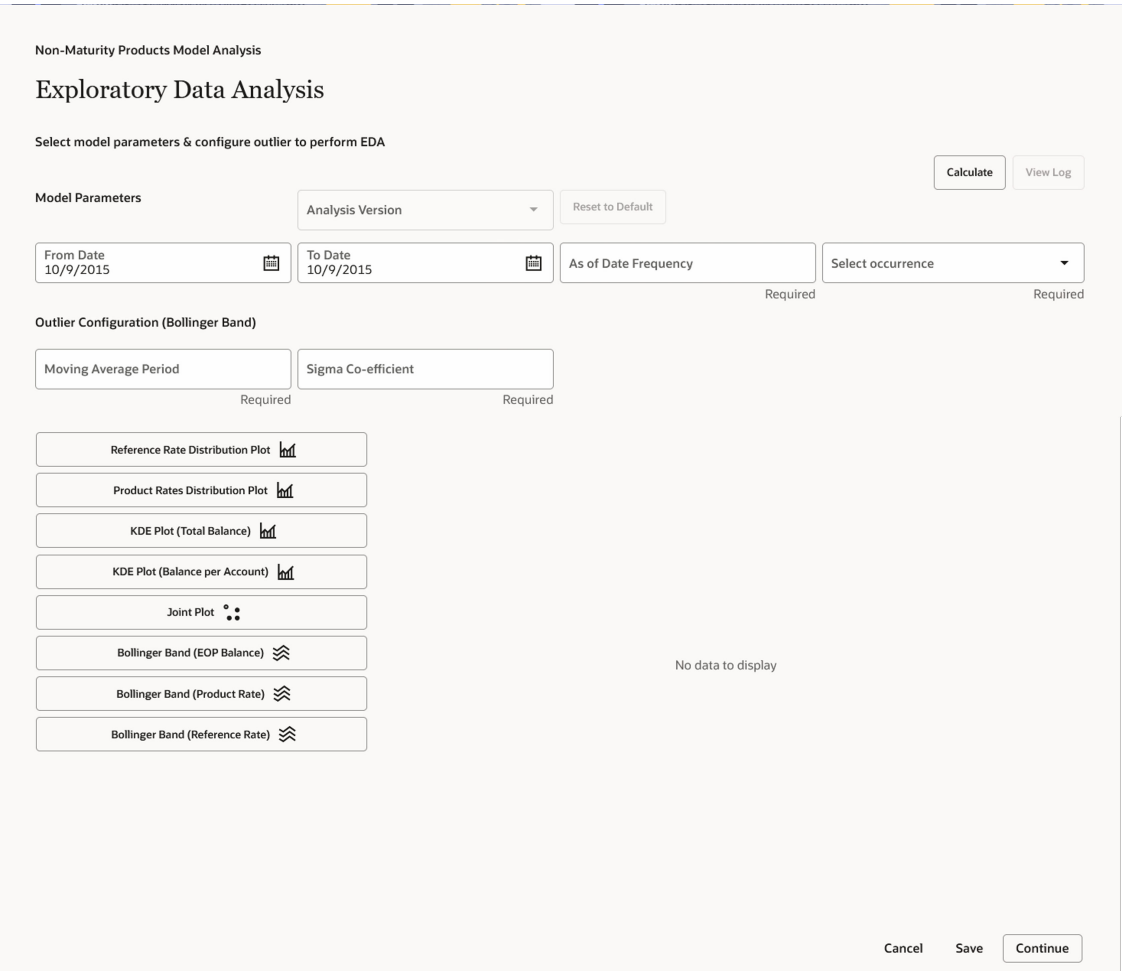
2. Click **Continue** to navigate to **Exploratory Data Analysis** section.

Step 3: Exploratory Data Analysis

The **Exploratory Data Analysis** window is displayed to define Market Rates. This window will help you to perform EDA calculations and get a glimpse of data being used for modelling.

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Figure 6-151 Exploratory Data Analysis



1. Enter the following details in the Exploratory Data Analysis section:
   - **Model Parameters (As of Date Range):**
     - **Analysis Versions:** Shows the analysis version.
     - **Model Parameters (As of Date Range):** You can select a date range which will define the historical period within which data needs to be picked for Model creation. By default, the Date range is populated as below:
       * From Date: Max (As of Date) available in Model input Table.
       * To Date: Max [min (As of Date), From Date – 10 Years].

       Default values are populated from `FSI_AUDIT_NM_LOAD_BATCH` table.
     - **As of Date Frequency:** The default value of this field is one month. The **As of Date Frequency** defines on what regular intervals, data needs to be picked from the input table. For example, you can have historical period as last three years, in those three years at what regular interval data needs to be picked up from history table that would be defined by **As of Date Frequency**.
   - **Outlier Configuration (Bollinger Band):**
     - **Moving average period:** The default value of this field is one month. The Moving Average period defines the historical term over which the moving average needs

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to be calculated for Bollinger band formation. This defines the period over which moving average gets calculated to create bollinger band.

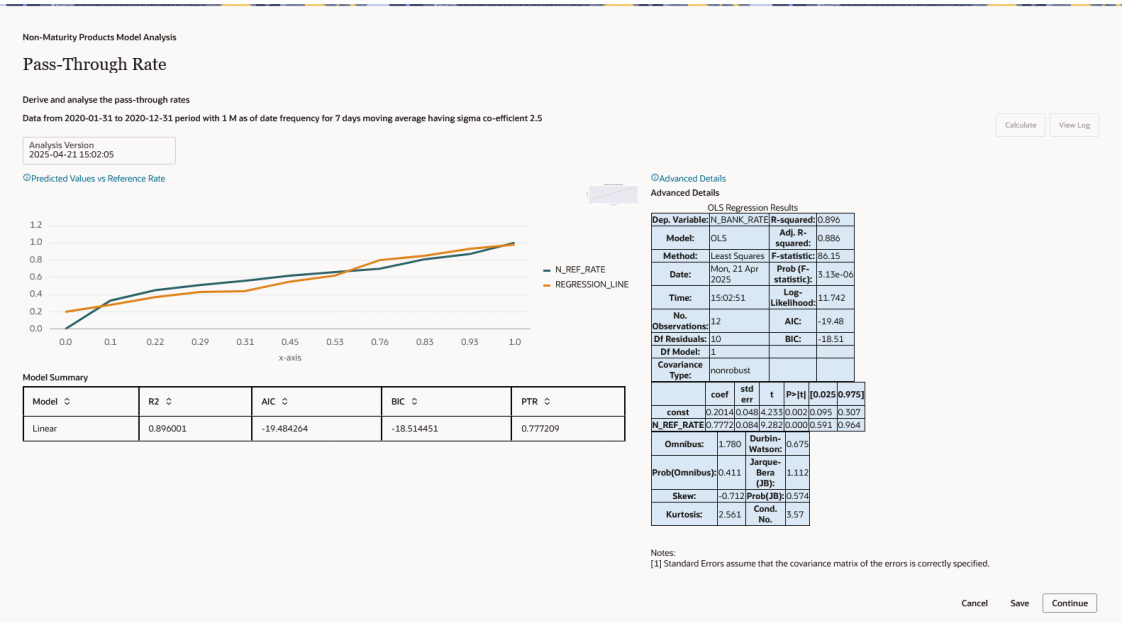
- **Sigma Co-efficient:** The default value of this field is 1. Sigma Co-efficient defines the outliers, any number which is (sigma coefficient * standard deviation) away from the mean, will not be considered for calculations. This field accepts Integer and Decimal values in the range 0 – 10. Sigma Co-efficients helps you to define the lower and upper bands for bollinger band graphs.

2. Click **Calculate** to perform Exploratory Data Analysis and get EDA plots. You can refresh the window using the **Reset to Default** button to check if the EDA is completed. When you open EDA window first time for a particular model, Version(EDA) field would not appear as there is no previous version to display. Subsequently, when first version is created and you go for second version, version (EDA) tab will start appearing with previous EDA versions. When EDA version is submitted, a message will appear with version number. A message is displayed in case last run version was failed. If run was successful and you again check this, the latest version would appear on the UI. The **Reset to Default** button resets the entered values to their default values.
3. Click **Continue** to navigate to **Pass-Through Rate** section.

Step 4: Pass-Through Rate

Pass Through Rate is based on linear regression between market and offered rate. For current accounts, the offered rate can be zero. In such cases, the pass-through rate will also be zero, as changes in the market rate do not affect the offered rate.

Figure 6-152 Pass-Through Rate



1. Click **Calculate** to view all the evaluation parameters and quality plots. Pass Through Rate calculations are submitted, a message is displayed with version number. This window shows all the model quality parameters and graphs. At this stage, Pass through rate or beta between market rate and deposit rate is calculated. You can zoom the graph to enhance visibility.
   The **Advanced Details** section helps you to evaluate the model fit.

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The **Model Summary** section shows the details of Model parameters like R2, AIC, BIC and regression co-efficient. That is, how much change in market rate is passed on to the deposit rate.

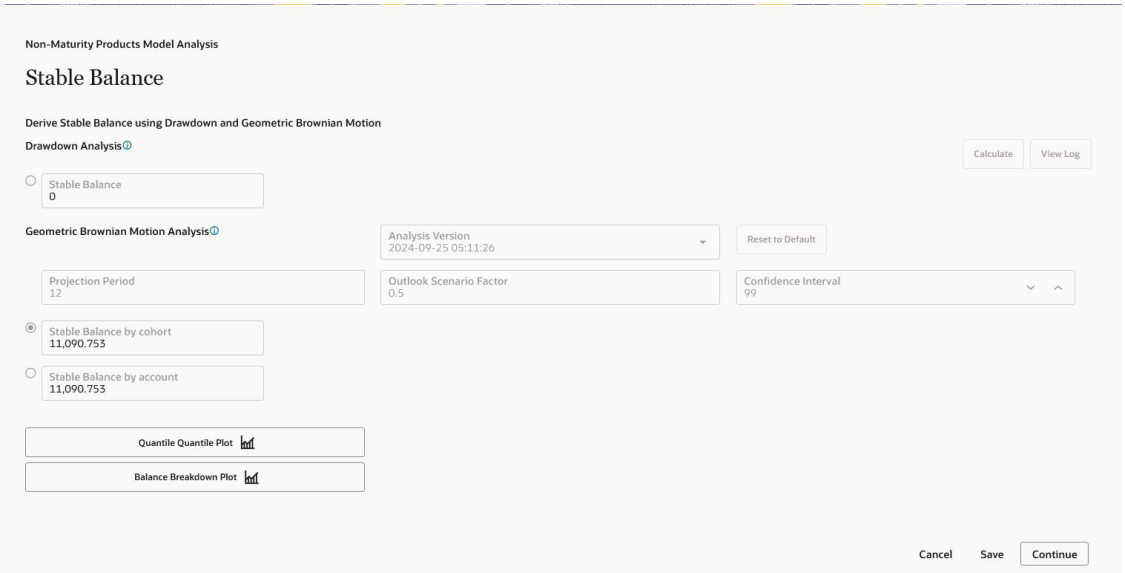
At any stage, if you want to come out of the model analysis module, click **Cancel** or **Save** button to go back to Non-Maturity products model summary screen.

2. Click **Continue** to navigate to **Stable Balance** section.

Step 5: Stable Balance

The Stable Balance section shows the Projection period.

Figure 6-153 Stable Balance



1. You can set the stable balance as required. Projection period can be only be positive integers which will act as multiplier to **As of Date Frequency**, for example, As of Date. To calculate Stable Balance, you can use following methods:

   - **DrawdownAnalysis:** TheDraw Down Analysis calculates each period's Run-offs in the historical period and subtracts the maximum Run-off from the most recent total balance to arrive at stable balance. This model performs calculations based on maximum Drawdown between two data points for given period.
     For example, analysis is done over past 5 years and monthly data points are given. If Balance is available for each data point, then system calculates balance reduction for each data point from previous data point. Finally, whatever will be the maximum balance reduction in two adjacent data points that is subtracted from point in time balance (Balance on latest As of Date) and remaining balance is the stable balance.
   - **Geometric Brownian Motion:** This approach will first calculate the past Run-offs volatility and assuming normal distribution of Run-offs, accept confidence interval as user input, projection period for time adjustment, and outlook scenario factor (volatility multiplier) as input from the user.
     This model works based on historical volatility and confidence interval selected in the UI. It assumes that the underlying data follows a normal distribution, and based on the confidence interval, X% of the balance lies within the specified range. This allows the system to determine the stable balance.

     95% Confidence Interval – (-1.96 to +1.96)

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90% Confidence Interval – (-1.645 to +1.645)

80% Confidence Interval – (-1.282 to +1.282)

Here, you can select the outlook scenario factor, which will be multiplied with historical volatility and subsequently used for **Geometric Brownian Motion** based stable balance calculations.

Geometric Brownian Motion outcome is based on both portfolio level balance volatility and account level balance volatility. You can select any of the stable balances, which are more suitable as per the given context.

The confidence interval slider field has a range of 0 – 100% and by default value as 95% and Outlook scenario factor (Volatility Multiplier) is set at 1 (Default Value). The range of outlook scenario factor is 0.01 to 1.99.

You can change any of the inputs and generate multiple versions.

2. After clicking **Calculate**, the stable balance would be shown at cohort/account level using both cohort level and account level volatility and saved against version.
Stable balance can be calculated with multiple methods, so before proceeding to next step, you must select **Stable Balance by Cohot** or **Stable Balance by account** method to confirm one stable balance on which rest of the subsequent processing will take place.

   When this section is displayed first time, after clicking the **Calculate**, the stable balance is calculated for both methods, **Drawdown analysis** and **Geometric Brownian Motion**.

   In subsequent runs, if any of projection period, confidence interval or Scenario factor is changed, then new version will be generated only for **Geometric Brownian Motion**. When you click **Calculate** button, then a message is displayed: *GBM version xyz is submitted*. If version is failed, a message is displayed: *GBM version xx is failed* and UI will revert back to last successful version.

3. Click **Continue** to navigate to **Decay Rate** section.

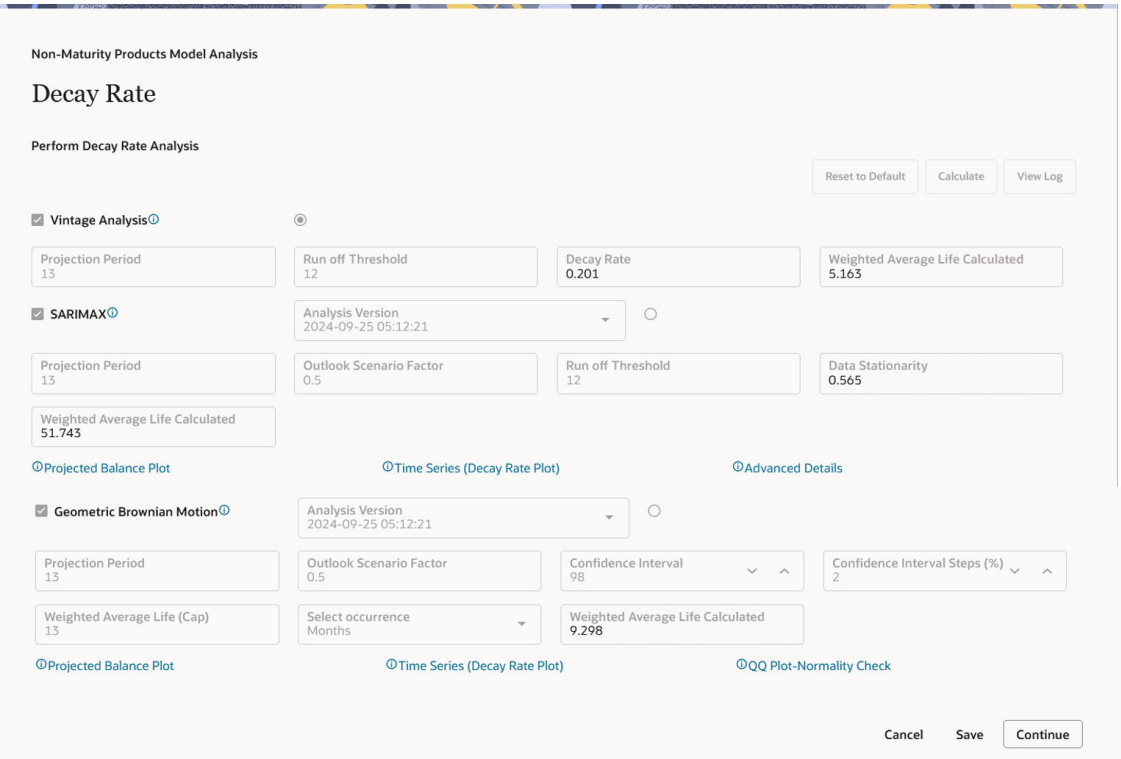
Step 6: Decay Rate

For Decay rate calculations, you can select any one of following three approaches:

- Vintage Analysis
- SARIMAX
- Geometric Brownian Motion

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Figure 6-154 Decay Rate



1. Select the Decay Rate method:

   - **Vintage Analysis:** This method calculates one decay rate value as per the various vintages and regular intervals over which data is being picked for the defined portfolio. The same decay rate is applicable to the whole projection period.
     The vintage run-off model aims to categorize deposit balances based on historical tranches, referred to as vintages. A vintage comprises all individual accounts for a non-maturing deposit account type that were opened within a specific time bucket, such as a month or week. Behavioral characteristics are applied to each vintage by calculating the monthly decay within each vintage. Run-off calculations are performed across data points and account origination buckets, with the final decay rate being the average of both dimensions for the selected portfolio.

     Select the **Vintage Analysis** check-box if you want to include it in the calculation, or leave it unchecked to exclude it. Vintage analysis requires account-level data for the entire historical period, which may not be available initially, so you can opt to bypass this method. Other methods use portfolio or cohort-level data, which is generally easier to obtain. By default, the check-box is unchecked, indicating that this model is not part of the processing. You can set the projection period according to your needs.

   - **SARIMAX:** This method creates a future balance profile based on historical balances, along with Run-off volatility multiplied by the Outlook scenario factor (default 1). Based on balance Run-offs, a decay profile is created.
     Among the various approaches, the SARIMAX model (Seasonal Autoregressive Integrated Moving Average with exogenous variables) is a powerful tool for modeling and forecasting trends and seasonal variations in time series data. It also incorporates external variables to enhance prediction accuracy. This model is part of the ARIMA family and is built on three key components: autoregression (AR), moving average (MA), and integration (I).

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- **Autoregression (AR)** uses past values of the time series to predict the current value.
- **Moving average (MA)** accounts for past prediction errors, applying a linear regression on the last "q" error values to forecast the present.
- **Integration (I)** makes the data stationary by accounting for differences between consecutive observations.

For data with seasonal variations, the SARIMA model is used, adding the "Seasonal" component to ARIMA, which captures patterns that repeat at regular intervals. Based on the decay rate in each period, the weighted average life is calculated by multiplying the run-off matrix with the time series.

- **Geometric Brownian Motion:** Based on balance Run-off volatility and your inputs like confidence interval and outlook scenario factor, the Decay Rates are calculated for each subsequent period in projection period and decay profile is created. Based on the Decay Rate Profile, Run-offs would be calculated and finally, a balance profile will be created which will in turn help to calculate WAL.
  Based on the Decay Rates profile, the model will do Weighted Average Life (WAL) calculations. If the WAL exceeds the specified regulatory cap, you can set a confidence interval range and steps (defaulting to 5%) for adjusting the confidence interval in each calculation. For example, if the range is 80-95%, the system will generate a Decay Rate Profile at 80%, 85%, 90%, and 95% intervals. Through an iterative process, it will attempt to calculate a Decay Rate Profile that brings the WAL within the regulatory cap set by the user.

  If in a given confidence interval range, WAL is still more than regulatory WAL (Cap), a simple linear Decay Rate Profile is created.

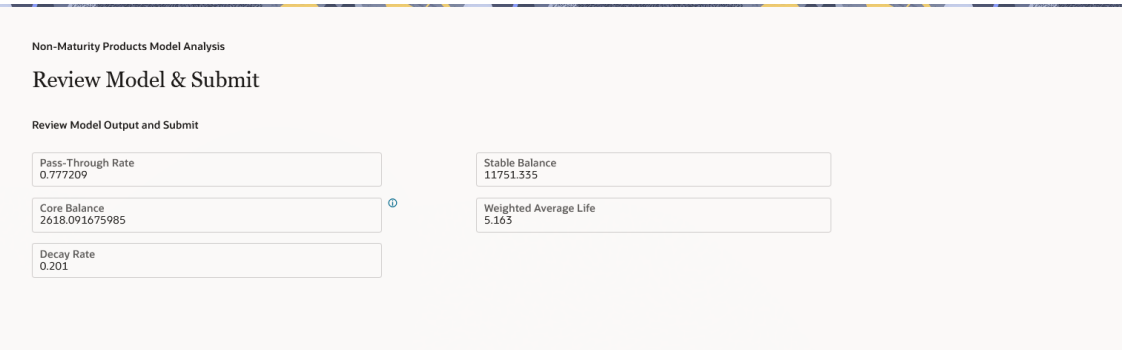
  The run-off threshold is a user-defined input that sets the minimum balance at which WAL calculations will stop, assuming the balance has reached zero at that point.

> **Note**
>
> When this section is launched first time and you click **Calculate**, Decay Rate is calculated for all three methods, Vintage Analysis, SARIMAX, and Geometric Brownian Motion.

2. Click **Continue** to navigate to **Review and Submit** section.

Step 7: Review and Submit

Figure 6-155 Review and Submit Model



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1. Navigate to **Preview and Submit** section. This section shows the Model details before confirming the model. Here, you cannot edit any details. If you want to update any details, click Model Summary to go back. When model is saved, it is always be in **Draft** status.
2. Click **Submit** to create the Non Maturity Products Model. The created process will be displayed on **Non Maturity Products Model Summary** page.

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7

Operations

This chapter covers the following topics:

1. Scheduler Services: The Scheduler Service is a service that automates behind-the-scenes work that is necessary to sustain various enterprise applications and functionalities. This automation helps the applications to control unattended background jobs program execution.
2. Object Migration: Object Migration is the process of defining, exporting and importing objects across environments (prod and non-prod)/instances. This feature also facilitates to migrate within the same setup or different setups.
3. View Logs: This module discusses the procedure to view the information about high-level processing steps from User Interface.

- Scheduler Services
  Scheduler Services automates behind-the-scenes work that is necessary to sustain various enterprise applications and their operations. Using Scheduler Services, applications can control unattended background jobs program execution.
- Object Migration
  Object Migration is the process to define, export and import objects across environments (prod and non-prod)/instances. This feature also facilitates to migrate within the same setup or different setups.
- Changing Object Ownership
  Access Type for most objects can be defined as ‘Read Only’ and ‘Read/Write’. When it is defined as ‘Read Only’ the user who created owns it i.e., another user will be able to only view it. For any reason if the owner of object is not available then no one else will be able to modify it.
- Viewing Logs

7.1 Scheduler Services

Scheduler Services automates behind-the-scenes work that is necessary to sustain various enterprise applications and their operations. Using Scheduler Services, applications can control unattended background jobs program execution.

The Scheduler Services screen provides a one-click navigation for each of the operations, at the bottom of the screen, allowing you to move seamlessly between each operation.

Scheduler Services Operations

- **Define Batch** - A Batch contains a group of background tasks that are executed together, on a specific date and time during which the resources are available for batch processing.
- **Define Task** - A batch job is a piece of a program meant to meet specific and business-critical functions. The program is a REST API used in a batch.
- **Schedule Batch** - Schedule batch jobs, to automate tasks that are processed on a regular basis but do not need to occur during the day or require human intervention. Jobs that happen on a regular basis are incorporated into batch schedules. You can also edit pre-conditions for batch group execution and pause scheduled executions.

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- **Monitor Batch** - Track and access the real-time feedback on the status of the current encoding job and lists the jobs pending in the batch. You can also **Cancel** or **Restart** the service when required.
- **Scheduler Service Dashboard** - The Scheduler Service Dashboard gives the complete status of the Executed Runs, Successful Runs, Failed Runs, Ongoing Runs, Interrupted Runs, and the Upcoming Runs.
- Accessing Scheduler Services
  Using the Scheduler Services, you can create and execute batches and schedules to run various tasks and also monitor them.
- User Roles and Functions
  You require specific user roles and functions, to use Scheduler Services, and to create and manage batches and tasks.
- Scheduler Service Dashboard
  View the task executions based on the execution status in the Scheduler Service Dashboard.
- Batches
  You can use batch and batch groups to group a set of background tasks to be executed together.
- Tasks
  The Tasks page lists tasks associated with a specific Batch Definition. You can create new tasks, and edit or delete existing tasks.
- Schedule Batch
  Schedule Batch enables users to manage batch/batch group executions.
- Monitor Batch/Batch Group
  Using Monitor Batch/Batch Group, you can view the status of executed batches/batch groups, along with the tasks details.
- Scheduler Configuration
- Appendix A: Understanding Batch Job Scheduling and Daylight Saving Time (DST)
  This documentation outlines how Daylight Saving Time (DST) may affect your scheduled batch jobs when using the Europe/London time zone.

7.1.1 Accessing Scheduler Services

Using the Scheduler Services, you can create and execute batches and schedules to run various tasks and also monitor them.

To access Scheduler Services:

- Log in to the Service Console and from the left navigation pane in the Service console, click **Operations and Processes > Scheduler**.

7.1.2 User Roles and Functions

You require specific user roles and functions, to use Scheduler Services, and to create and manage batches and tasks.

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Table 7-1 User Role Codes and Function Codes

Role Codes	Function Codes
BATCH_READ	BATCH_ADD
BATCH_WRITE	BATCH_DEL
BATCH_ADV	BATCH_MOD
BATCH_AUTH	BATCH_VIEW
BATCH_OPER	BATCH_SCH
BATCH_MAINT	BATCH_SUMM
	BATCH_AUTH
	BATCH_PURGE
	BATCH_MON
	BATCH_EXEC
	BATCH_COPY
	LOGVIEW

7.1.3 Scheduler Service Dashboard

View the task executions based on the execution status in the Scheduler Service Dashboard.

To access the **Scheduler Service Dashboard** page, from the left Navigation pane in the Service console, click **Operations and Processes** > **Scheduler** > **Dashboard**.

You can access the following details related to batch/batch group execution from the Dashboard:

- The batches/batch groups are categorized based on their execution status - **Executed Runs**, **Successful Runs**, **Failed Runs**, **Ongoing Runs**, **Interrupted Runs**, and **Upcoming Runs** tabs. Click the respective tab to view the details of the batches/batch groups based on their execution status. For example, click **Ongoing Runs** to view the details of the batches that are currently running.
- The run time, schedule name and the MISDATE associated with each batch/batch group.
- The batch execution summary for all the batches executed in the last 7, 30 and 120 days. The summary is displayed in the form of a color-coded bar graph with legend for the various execution statuses.
- To view the list of all task executions associated with a specific batch/batch group, select the required execution status tab, select Batch/Batch Group and select the required batch/batch group.
- To view the task executions within a specific date range, select the required execution status tab, select Batch/Batch Group and select the required batch/batch group. Specify both the start and end dates.
-

Click the green navigation icon for a batch or batch group to open the Monitor screen and proceed as needed. The execution details are pre-populated for the selected batch/batch group execution.

Previewing a Custom Schedule

Use the **Preview** option to know which batches are configured to run for a selected custom schedule on a specific date before the schedule is executed.

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To preview a schedule

1. On the **Scheduler Service Dashboard** page, select **Upcoming Runs**.
2. Click the **Preview** option (calendar icon) corresponding to the desired custom schedule.
3. On the **Preview** dialog, select the required date and click **Forecast**.
   The system displays the following details:
   - **Id**: Unique identifier of the schedule.
   - **Is Executable**: Indicates whether the batch is scheduled to run on the selected date.

7.1.4 Batches

You can use batch and batch groups to group a set of background tasks to be executed together.

A Batch contains a group of background tasks that are executed together, on a specific date and time during which the resources are available for batch processing.

Batch Groups consist of batches that need to be executed together. Batch groups help to process date and time-based background tasks based on a defined period when resources are available for batch processing.

To access the list of existing batches and batch groups click **Batch** or **Batch Group** tab respectively. You can also view following details related to each batch/batch group.

- **Batch ID** - The unique alphanumeric code assigned to a specific batch/batch group.
- **Name** - The unique batch/batch group name.
- **Description** - The brief description of the batch/batch group.
- **Last Modified** - The last modified By user, date and time details.

To search for a specific batch/batch group, enter the keywords in the **Search** field and click **Search**. You can search based on **Name**, **Code**, and **Description**. You can also sort the batch/batch group list based on **Code**, **Name**, **Created Date**, **Last Modified Date**, and **Pinned**.

On the **Batches** page, click the green navigation icon next to the batch or batch group for which you want to create a task or schedule batch execution, then select the required option. The relevant UI appears pre-populated with batch or batch group details. Proceed as needed.

Perform one of the following operations, to manage batch/batch group, from the **Scheduler Service (Batches)** page.

- Create New Batch/Batch Group
- Edit a Batch/Batch Group
- Copy a Batch/Batch Group
- Delete a Batch/Batch Group
- Pin/Unpin a Batch/Batch Group
- Creating a Batch/Batch Group
  Create a batch/batch group, to execute a group of background tasks together, on a specific date and time, when the resources are available for batch processing.
- Editing a Batch/Batch Group
  Edit the batch/batch group details such as **Description** and also add new **Batch Parameters** to a batch,along with adding new **batches** to the batch group.

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- Copying a Batch/Batch Group
  Copy a batch/batch group that you want to clone to create a new batch/batch group.
- Deleting a Batch/Batch Group
  Delete a batch/batch group that is no longer required in the system from the Batches page.
- Pinning/Unpinning a Batch/Batch Group
  Use the pinning option to pin a batch/batch group to keep it at the top of the list for quick access, on the **Scheduler Services (Batches)** page.

7.1.4.1 Creating a Batch/Batch Group

Create a batch/batch group, to execute a group of background tasks together, on a specific date and time, when the resources are available for batch processing.

To create a batch/batch group from the **Scheduler Service (Batches)** page:

1. In the **Create Batch** page, enter the following **Batch Details**:
   - **Code** - Enter a unique alphanumeric code for the new batch/batch group.
     The code must start with alphabets, should not contain any spaces, and must not exceed 60 characters. Special characters are not allowed except **underscore (_)**.
   - **Name** - Enter a unique name for the new batch/batch group.
     The name should start with alphabets, should not contain any spaces, and must not exceed 60 characters. Special characters are not allowed except **underscore (_)**.
   - **Description** - The description/details for the batch/batch group.
     The description should start with an alphabet and must not exceed 250 characters.
   - Select **Batch** to create a new batch or **Batch Group** to create a new batch group.
   - For new batch groups,select the **Batches** to be added to the batch group.
   - Select the **Service URL name** from the drop-down list, if it is available.
     To add a new service URL, enter a name to identify the new Service URL Name and enter the proper Service URL. You can give partial URL here and the complete URL in the Task Service URL.
   - Enter the complete **Cleanup URL** and enable the check box, to activate the cleanup URL, before you initiate a batch/batch group restart.
     The complete Cleanup URL : `http://fccm-utility-service:8080//fccm-utility-service/cleanupExecutionWatcher`
   - **Pin Batch/Pin Batch Group**: Use this option to pin the batch or batch group to keep it at the top of the list for quick access.
     For information, see Pinning/Unpinning a Batch/Batch Group.
   - Select one of the following options, to get an email notification, based on the selected batch execution status.
     Based on the selected option, an email is sent to the email ID of the logged in user, mentioned in the IAM console.
     - **Every Time** : An e-mail is triggered irrespective of the batch execution status.
     - **Never** : No e-mail will be triggered.
     - **On Error only** : (Default). An e-mail is triggered only when the batch execution has failed.
     - **On Interrupt only** : An e-mail is triggered if the batch execution is successfully interrupted.

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– The system automatically sends an email to all users assigned to the BATCH_NOTIFY_FUNT function and the BATCH_NOTIFY_ROLE role, except for users who have selected the "Never" notification option. If a batch is mapped to a user (and their email ID), the batch email notifications will be sent only to that configured batch user. If no batch user is configured, the system follows the default email notification process.

> **Note**
>
> You can perform the batch-to-user configuration on the Batch to User Configuration page.

2. For new batches, after entering the Batch Details, provide the following batch parameters.

   From the **Batch Parameters** pane, click **Add** to add a new batch parameter, in the following format.

   - **Parameter Name** - A valid parameter name for the new Batch parameter.
   - **Parameter Value** - A valid parameter value required for Batch execution.

   > **Note**
   >
   > Enclose the parameter Value for a Run time with $ symbol. For example, `$paramName$`.

   By default, **$FICMISDATE$** and **$BATCHRUNID$** are added as batch Parameters.

   By default, **$BATCHDATE$**, **$BATCHRUNID$** and **$RUNSKEY$** are added as batch Parameters.

   > **Note**
   >
   > **$RUNSKEY$** parameter is added only if you are creating a new batch or copying from an existing batch. It is not supported for existing batches.

   To delete a batch parameter, click **Delete** next to that parameter details.

3. Enter the following **Header Parameter** details:

   - **Parameter Name** - A valid parameter name for the new header parameter.
   - **Parameter Value** - A valid parameter value required for batch execution.

4. Click **Save**. The new batch/batch group is created and displayed in the **Scheduler Services (Batches)** page.

   To view the dependent tasks and their components, click the **Dependency Check** icon. Upon clicking this icon, the **Object Dependency** window appears and displays the following:

   - Higher Order Dependencies – Components/batch group that the selected batch depends on. Example: Batch in a batch group will have Batch group as the higher order dependency.
   - Lower Order Dependencies – Any task which is created under a batch and the dependency is established will be shown under this tab.

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7.1.4.2 Editing a Batch/Batch Group

Edit the batch/batch group details such as **Description** and also add new **Batch Parameters** to a batch,along with adding new **batches** to the batch group.

Seeded batches cannot be edited.

To modify a batch/batch group:

1. In the **Scheduler Services (Batches)** page, click the three-dot menu corresponding to the batch/batch group you want to modify and select **Edit Batch/Edit Batch Group**.
2. Modify the required details, in the **Edit Batch** page.
3. Click **Save** to save the edited batch/batch group.

   The edited batch will be updated in the **Scheduler Services (Batches)** page.

You can pin a particular batch/batch group by selecting the **Pin** option from the three-dot menu of each batch/batch group. For information, see Pinning/Unpinning a Batch/Batch Group.
To unpin a batch/batch group, click the three-dot menu corresponding to the pinned batch/batch group and select **Unpin Batch/Unpin Batch Group**.

7.1.4.3 Copying a Batch/Batch Group

Copy a batch/batch group that you want to clone to create a new batch/batch group.

To copy a batch/batch group:

1. In the **Scheduler Services (Batches)** page, click the three-dot menu corresponding to the batch/batch group that you want to copy and select **Copy Batch/Copy Batch Group**.
2. In the **Copy Batch** page, modify the required Batch details to create a new batch/batch group.
3. Click **Save** to add the copied batch to the **Scheduler Services (Batches)** page.

7.1.4.4 Deleting a Batch/Batch Group

Delete a batch/batch group that is no longer required in the system from the Batches page.

> **Note**
>
> You cannot delete seeded batches.

To delete a batch/batch group:

1. From the **Scheduler Services (Batches)** page, click the three-dot menu corresponding to the batch/batch group you want to delete and select **Delete Batch/Delete Batch Group**.
2. Click **OK** to confirm deletion.

> **Note**
>
> After confirmation, any active schedules associated with the batch will also be deleted.

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7.1.4.5 Pinning/Unpinning a Batch/Batch Group

Use the pinning option to pin a batch/batch group to keep it at the top of the list for quick access, on the **Scheduler Services (Batches)** page.

By default, the Batch and Batch Group drop-down lists are sorted such that:

- Pinned objects specific to the logged-in user appear first. Objects pinned by the logged in user appear at the top.
- These are followed by non-pinned objects.
- Within each group (pinned and non-pinned), objects are sorted in ascending alphabetic order.

To pin a batch/batch group:

1. To pin a record: In the **Scheduler Services (Batches)** page, click the three-dot menu corresponding to the batch/batch group you want to pin and select **Pin Batch**/**Pin Batch Group**.
2. To unpin a pinned record: In the **Scheduler Services (Batches)** page, click the three-dot menu corresponding to the batch/batch group you want to unpin and select **Unpin Batch**/**Unpin Batch Group**.

7.1.5 Tasks

The Tasks page lists tasks associated with a specific Batch Definition. You can create new tasks, and edit or delete existing tasks.

To access the **Tasks** page:

- Select Batch/Batch Group from the drop-down list and select the particular batch/batch group to access the list of tasks associated with it.

  You can view the following details related to each task:

  - **Task ID** - The unique identifier for the task.
  - **Name** - The name of the task..
  - **Parent Task** - The parent task associated with the task.
  - **Component** - The seeded/custom component associated with the task.
  - **Created Date** - The task creation date.
  - **Last Modified** - The last modification date.

  To search for a specific task, enter the keywords in the **Search** field and click **Search**. You can search based on the **Task Name**, **Code** and **Description**. You can also sort the Task list based on **Code**, **Name**, **Precedence**, **Component**, **Created Date**, and **Last Modified Date**.

Using the **Preview** option, you can view the complete task execution sequence for a specific batch/batch group.
On the **Tasks** page, select the required batch or batch group and proceed as needed. From the **Actions** menu, you can select **Schedule** to navigate to the **Schedule Batch** screen. The **Schedule Batch** screen appears with pre-populated data related to the selected batch/batch group.

Perform the following operations to manage a Task, from the **Scheduler Service (Tasks)** page.

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- Add a task
- Modify a task
- Define a task precedence
- Delete a task
- Adding a Task
  Add new tasks to a selected Batch Definition.
- Modifying a Task
  Modify details such as Task Description and Task Type in existing tasks.
- Define Task Precedence
  Task Precedence indicates the execution-flow of a batch. Task Precedence Value helps to determine the order in which the specific tasks of a batch are executed.
- Deleting a Task
  Remove any tasks that are no longer required in the system, from a Batch Definition.

7.1.5.1 Adding a Task

Add new tasks to a selected Batch Definition.

To add new task:

1. In the **Scheduler Service (Tasks)**, select the Batch for which you want to add a new task from the drop-down list.
2. Click **Actions** on the page and then click **Add** to access the **Add Task** page.
3. Enter the following details:
   - **Task Code** - Enter a unique alphanumeric code for the new task.
     The code must begin with letters, should not include spaces, and has a maximum limit of 60 characters. Special characters except **underscore (_)** are not allowed.
   - **Task Name** - Enter a unique name for the new task.
     The name should start with letters, not contain spaces, and have a maximum limit of 60 characters. Special characters except **underscore (_)** are not allowed.
   - **Task Description** - The description/details for the task.
     The description should begin with a letter and not exceed 250 characters. Avoid using phrases like "Select From" or "Delete From" in the description.
   - **Task Type** - Select the task type from the drop-down list.
   - **Component** - Select the custom or the seeded component associated with the task.
4. By default, all Batch Level Parameters are added and enabled as task parameters in the **Task Parameters** pane.

   > **Note**
   >
   > You can edit the parameters only for custom components.

   a. Enter the Parameter name in the **Param Name** field.
   b. Enter the Parameter value in the **Param Value** field.
   c. For FTP Propagation or Advanced FTP Propagation components, select the **Execution Mode** from the drop-down list:

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- **Single Query Approach**: Select this option to process small or medium-sized datasets (less than 500,000 records). This mode provides faster execution with minimal overhead and is suitable for manageable data volumes.
- **Sliced Queries Approach**: Select this option for very large datasets (500,000 records or more) that might cause memory or performance issues if processed in a single query. This mode divides the dataset into smaller slices, improving query execution performance and reducing overall processing time.

To delete a parameter, click on **Delete** next to the respective parameter.

5. Click **Save** to add the new task to task summary in the **Tasks** page.

> **Note**
>
> Sync task will remain active if execution time is more than 15 minutes at target service and till acknowledge status is generated from target API after the execution.

7.1.5.2 Modifying a Task

Modify details such as Task Description and Task Type in existing tasks.

You can also add a new task parameter and enable or disable existing task parameters.

To modify a task:

1. From the **Tasks** page, select the Batch to modify the task details from the drop-down list.
2. Click **Edit** corresponding to the Task you want to modify.
3. Modify the required Task Details, in the **Edit Task** page.
4. Click **Save** to update the changes.

   The modified task is added to the **Tasks** page.

7.1.5.3 Define Task Precedence

Task Precedence indicates the execution-flow of a batch. Task Precedence Value helps to determine the order in which the specific tasks of a batch are executed.

For example, consider a Batch consisting of four tasks. The first three tasks lack define precedence and hence will be executed simultaneously during batch execution. However, Task 4 has a precedence value as Task 1, indicating that Task 4 is executed only after the successful completion of Task 1.

You can set Task Precedence between Tasks or define to run a Task after a set of other tasks. While, multiple tasks can be executed simultaneously, cyclical execution is not permitted. Tasks without defined precedence execute immediately upon Batch Execution.

> **Note**
>
> The **Task Precedence** option is disabled if a batch has only one associated task.

To define task precedence:

1. Click **Add or Remove Precedence** corresponding to the task requiring precedence, to access the **Precedence Mapping** list.

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a. Select a batch to execute before the current task, from the **Available Tasks** pane and click **Move Selected**.
   - To move all the batches, click **Move All**.
   - From the **Precedence Mapping** list, hover over a task to view the full task name and its corresponding Parent Task Code.

b. To remove a batch from the task precedence sequence, select the task from the **Selected Tasks** pane and click **Remove**.

   To remove all the selected batches, click **Remove All**.

2. Click **Save** to update Task Precedence in the batches.
3. Click **Preview** to view the precedence information.

7.1.5.4 Deleting a Task

Remove any tasks that are no longer required in the system, from a Batch Definition.

To delete a task:

1. From the **Tasks** page, select the Batch from the drop-down list.
2. Click **Delete** corresponding to the Task you want to delete.
3. Click **OK** in the confirmation dialog to confirm deletion.

7.1.6 Schedule Batch

Schedule Batch enables users to manage batch/batch group executions.

All the batch/batch group schedules are listed. You can sort this list based on code, name, Pinned, Task Precedence, Components, and dates, to access a specific schedule.

On the **Schedule Batch** page, select the required batch or batch group and proceed as needed. When you execute/restart/rerun a batch/batch group, a dialog box appears providing you an option to navigate to the **Monitor Batch** screen.

From the **Schedule Batch** page, you can perform the following operations related to the execution and scheduling of batches/batch groups

- Execute batch/batch groups instantaneously
- Edit dynamic parameters
- Automate batch/batch group executions using the various scheduling options
- Re-run a batch/batch group execution
- Re-start a batch/batch group execution
- Execute Batch/Batch Group
  Use the Execute Batch to run a batch/batch group instantaneously.
- Adding Pre-Conditions For Batch Group Execution
  Pre-conditions help to execute batches associated with a batch group, on specific days, based on the set frequency and selected days.
- Edit Dynamic Parameters
  Modify the dynamic parameters set for a batch/batch group.
- Scheduling and Automating Batch/Batch Group Execution
  Automate batch/batch group execution.

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- Re-run Batch/Batch Group
  Re-running a batch/batch group facilitates you to run the batch/batch group irrespective of the previous execution state.
- Re-start Batch/Batch Group
  Re-start a batch/batch group that has not executed successfully or has been explicitly interrupted, canceled, or put on hold during the execution process.
- System Pause on Batch Failure

7.1.6.1 Execute Batch/Batch Group

Use the Execute Batch to run a batch/batch group instantaneously.

To execute a Batch/Batch Group:

1. In the **Schedule Batch** page, select **Batch** or **Batch Group** to execute from the drop-down list.
2. Select the **Batch /Batch Group** for execution.
3. Click **Execute** to access the **Execution Schedule** page.
4. Click **Exclude Tasks** to add/remove tasks from the execution list.
5. Click **Hold Tasks** to pause/release tasks during execution.
6. Click **Edit Dynamic Parameters** to modify the dynamic parameters.
7. Click **Execute**.

   The Batch is executed, and the associated unique Run ID is displayed in the format `<BATCH_CODE>_<MIS_DATE>_<ITERATION-COUNT>`.
   You can always click preview to view the PMF process sequence used to execute the selected batch/batchgroup.

7.1.6.2 Adding Pre-Conditions For Batch Group Execution

Pre-conditions help to execute batches associated with a batch group, on specific days, based on the set frequency and selected days.

You can set pre-conditions for a batch group, to execute specific batches on selected days based on the set frequency interval. This enables to wisely use the available resources for execution.

To set pre-conditions for batch group execution:

1. Click **Schedule** from the Header panel.
2. In the **Schedule Batch** page, select **Batch Group** and the **Batch Group Name**.
3. Click **Pre-Conditions** to set the pre-conditions for task execution.
4. Select the **Batch** to set the pre-condition.
5. Set the execution frequency to Weekly, Monthly, or specific interval and set one of the following conditions:
   - **Weekly** - Select the weekdays to execute the batch. You can select multiple days.
   - **Monthly** - Select the days of the month to execute the batch. You can select multiple days.
   - **Interval** - Select the recurrence frequency to execute the batch.
6. Click **Add** to add another pre-condition.

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7. After adding all the required pre-conditions, Click **Save**.

   The pre-conditions are saved and the batch group will be executed based on the set pre-conditions.

> **Note**
>
> The batch group is always get executed based on the pre-condition and any schedule associated with the batch group will not be considered for processing.

7.1.6.3 Edit Dynamic Parameters

Modify the dynamic parameters set for a batch/batch group.

You can modify the batch parameters, batch header parameters, task parameters, and the task header parameters associated with a batch/batch group.

You can save your custom settings for future use by checking the "Remember my saved preference" option. When you execute a batch, your saved preferences will be used for that batch and its tasks. When you migrate a batch, your preferences will also be migrated. When you save your preferences:

- Copying a batch or task will also copy the preferences.
- Deleting a batch or task will also delete the preferences.

To edit the dynamic parameters from the **Schedule Batch** page:

1. Select **Batch/Batch group** and then select the specific batch/batch group.
2. Click **Edit Parameters** to access the **Edit Dynamic Params** page.

   You can also edit the dynamic parameters while configuring the scheduling options.
3. Click the batch/batch group name to access all the parameters.
4. Set the **$BatchDate$** to set the batch execution date: :
   - Set the batch date to SYSDATE (system date). The batch execution date is set to SYSDATE by default.
   - Toggle and select **MISDATE** to select a particular batch execution date.

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> **Note**
>
> All dates used in scheduling logic, including the MISDATE field, are consistently stored and processed in UTC (Coordinated Universal Time). This design ensures that scheduled batch executions and system date calculations remain standardized across all regions, eliminating discrepancies caused by local time zones. The MISDATE represents the scheduled date of a batch as stored in UTC. It does not adjust based on the user's local time zone. The SYSDATE function always reflects the current date and time in UTC when used for scheduling logic.
>
> **Example**: If a customer in Singapore (UTC+8) schedules a batch for March 16th at 02:00 AM local time, the system automatically converts and stores it as March 15th, 18:00 UTC. When any user views the MISDATE field for this batch, it will display 2024-03-15 (the UTC date stored).
>
> Similarly, the SYSDATE value is based on the current UTC date and time, ensuring all scheduling logic is aligned with the UTC standard. As a result, while the user schedules the batch for March 16th in their local time zone, the system consistently operates on the equivalent UTC date, maintaining uniformity across all locations.

5. Enter **$BATCHRUNID$** to set the batch run ID in the format: `<BATCH_CODE>_<MIS_DATE>_<ITERATION-COUNT>`.
6. Edit the batch header parameters and the task parameters.
7. Click **Save** to update the batch/batch group parameter values.
8. After updating the changes, execute the batch/batch group or configure the scheduling settings.

7.1.6.4 Scheduling and Automating Batch/Batch Group Execution

Automate batch/batch group execution.

Using the various scheduling options, you can automate batch/batch group execution to run based on the specified scheduling parameters.

To automate batch/batch execution:

1. Click **Schedule** from the Header panel.
2. In the **Schedule Batch** page, select from the following options:
   - **Once** - Run only once.
   - **Daily** - Run daily.
   - **Weekly** - Run weekly on selected days and time.
   - **Monthly** - Run monthly on selected days and time.
   - **Quarter** -Run every quarter on selected days and time.
   - **Cron Expression** - A Cron Expression is a string comprising of six or seven fields separated by white space. Fields can contain any of the allowed values, along with various combinations of the allowed special characters for that field.
     To execute a batch/batch group using a Cron expression, enter the Cron Expression for your schedule. For more information about the Cron Expression, click **Information** next to the Cron Expression field.
   - **Custom Schedule** - Create a custom schedule to execute a batch based on predefined rules. To create a custom schedule:

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a. Click Add (green plus sign). The **Custom Schedule** dialog appears providing a summary of existing custom schedules.

b. Click **Add** and provide the following details.

c. **Batch/Batch Group** - Batch/batch group for execution.

d. **Name** - The specific batch/batch group to be executed.

e. **Rule Name** - The rule to run on this batch/batch group.

f. **Priority**- The priority to be associated with the execution.

g. **Exception Policy** - The exception (Prepone, Postpone, None).

h. Click the green + icon to create the custom schedule.

You can perform the following actions on each custom schedule:

– Edit Parameter: Edit the dynamic parameters.

– Exclude Jobs: Exclude the job during execution.

– Hold Jobs: Hold the job during execution.

– Preview: Preview the job.

– Delete: Delete the selected batch/batch group during the schedule creation.

> **Note**
>
> You cannot import/export custom schedules.

3. Enter the following generic information and the parameters:
   - **Batch/Batch Group** - Batch/batch group for execution.
   - **Batch/Batch Group Name** - The specific batch/batch group to be executed.
   - **Schedule Name** - The unique schedule name.
4. Provide the following scheduling parameters based on the selected schedule option.

   For Cron Expression based scheduling, enter the required Cron expression.

Table 7-2 Scheduling Options

Details	Once	Daily	Weekly	Monthly	Quarter
Start Date to begin execution.	Yes	Yes	Yes	Yes	Yes
End Date to stop the execution	No	Yes	Yes	Yes	Yes
Run Time to execute the batch/ batch group	Yes	Yes	Yes	Yes	Yes
Days of the week you want to execute the batch/batch group. You can select multiple days.			Yes	Yes	Yes
Months of the Year you want to execute the batch/batch group. You can select multiple months.				Yes	Yes
Day of the Month to execute batch/batch group				Yes	Yes

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Table 7-2 (Cont.) Scheduling Options

Details	Once	Daily	Weekly	Monthly	Quarter
First Months of the Year to calculate the year beginning and each quarter beginning.					Yes
Select Quarters to execute batch/batch group You can select multiple quarters.					Yes
Days of Quarter - Select the days to execute the batch/batch group. You can select first day, mid day, last day, First N days, or last N days					Yes
No. of Days - If you select first N days or last N days, select the number of days to execute the batch/batch group at the beginning or end of the selected quarter					Yes

> **Note**
>
> All dates used in scheduling logic, including the MISDATE field, are consistently stored and processed in UTC (Coordinated Universal Time). This design ensures that scheduled batch executions and system date calculations remain standardized across all regions, eliminating discrepancies caused by local time zones. The MISDATE represents the scheduled date of a batch as stored in UTC. It does not adjust based on the user's local time zone. The SYSDATE function always reflects the current date and time in UTC when used for scheduling logic.
>
> **Example**: If a customer in Singapore (UTC+8) schedules a batch for March 16th at 02:00 AM local time, the system automatically converts and stores it as March 15th, 18:00 UTC. When any user views the MISDATE field for this batch, it will display 2024-03-15 (the UTC date stored).
>
> Similarly, the SYSDATE value is based on the current UTC date and time, ensuring all scheduling logic is aligned with the UTC standard. As a result, while the user schedules the batch for March 16th in their local time zone, the system consistently operates on the equivalent UTC date, maintaining uniformity across all locations.

5. **Exclude Tasks** to add/remove tasks from the execution list.
6. **Hold Tasks** to pause/release tasks during execution.
7. Click **Edit Dynamic Parameters** to modify the dynamic parameters.
8. Click **Schedule** to add the new schedule for execution.

   You can set pre-conditions to process batch groups. When a batch group has an associated pre-condition, the execution schedule will not be considered for processing.
9. To manage schedules associated with a specific batch:
   a. In the **Select Batch** page, select **Batch** and select the **Batch Name** to view the associated schedules.
   b. Click **View Schedule** to access the list of all the schedules associated with the batch.

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You can perform the following tasks:

- Click **Edit** to modify the schedule.
- Click **Pause** and enter the **Start Date** and **End Date** to pause the schedule from execution. Click **Add** to apply the pause.
  To remove the pause, click **Delete** next to the specific pause.

7.1.6.5 Re-run Batch/Batch Group

Re-running a batch/batch group facilitates you to run the batch/batch group irrespective of the previous execution state.

When you re-run a batch/batch group that has been previously executed, a new Run ID is generated, and the batch/batch group is executed as if it were a new run.

To re-run a batch::

1. Click **Schedule Batch** from the Header panel.
2. In the **Schedule Batch** page, select the **Re-run** tab.
3. Select **Batch/Batch Group**.
4. Select the **Batch or Batch group Name** you want to re-run.
5. Select the **Batch Run ID**.
6. Click **Re-run**.

7.1.6.6 Re-start Batch/Batch Group

Re-start a batch/batch group that has not executed successfully or has been explicitly interrupted, canceled, or put on hold during the execution process.

Restarting a batch/batch group enables you to continue execution directly from the point of interruption or failure, allowing you to complete executing the remaining tasks.

> **Note**
>
> Before restarting a batch/batch group, ensure to provide the complete cleanup URL and also to enable invoking the cleanup URL before restarting the execution.

To re-start a batch/batch group:

1. Click **Schedule Batch** from the Header panel.
2. From the **Schedule Batch** page, select the **Re-start** tab.
3. Select **Batch/Batch Group**.
4. Select the **Batch or Batch group** you want to schedule daily from the drop-down list.
5. Select the **Batch Run ID**.
6. Click **Re-start**.

7.1.6.7 System Pause on Batch Failure

The **System Pause on Batch Failure** feature helps prevent repeated failures and downstream impact when a scheduled batch fails.

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The Scheduler automatically pauses the failed schedule and prevents dependent schedules from continuing. This gives you time to investigate and resolve the issue before the next scheduled execution.

Prerequisites

Enable the following configuration before using this feature:

General Configuration -> **System pause on batch failure**.

- When enabled: Scheduler automatically creates a system pause when a scheduled batch execution fails.
- When disabled: Scheduler does not automatically pause the schedule after a failure.

Configure Dependent Schedules

Perform the following steps:

1. Open **Scheduler Service**.
2. Create or edit the parent schedule.
3. Go to the **Failure Handling or Dependent Schedule** section.
4. Under **Select dependent schedules to skip on execution failure**, select the dependent schedules.
5. Save the schedule.
   The selected schedules do not run if the parent batch fails. The following table provides an example of parent and dependent schedules.

Parent schedule	Data Load
Dependent schedules	• Data Validation • Adjustment Processing • Report Generation

   If Data Load fails, Data Validation, Adjustment Processing, and Report Generation do not continue.

What Happens When the Parent Schedule Fails

- Scheduler creates a system pause for the parent schedule.
- Configured dependent schedules are skipped.
- Dependent schedules do not start their next execution while the parent failure remains unresolved.
- A pause entry appears in Manage Pause.
- Users receive a Schedule Pause Notification.

The pause notification includes:

- Batch name
- Failed run ID
- Schedule ID
- Action Source: System

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- Activity Type: Pause
- Dependent schedule details

Removing the System Pause

After resolving the cause of the failure:

1. Open the **Scheduler Service**.
2. Go to **Manage Pause**.
3. Search for the affected schedule.
4. Locate the system pause entry.
5. Remove the system pause.
6. Review the confirmation message.
7. Click **Yes** to remove the system pause.

What Happens After Removing the System Pause

If no other active pauses exist, the parent schedule and affected dependent schedules become eligible for future execution.

- Removing the system pause does not rerun the failed batch.
- Future scheduled executions continue only if no other active pauses exist.
- If another active pause exists, the schedule remains paused until all active pauses are removed.

Email Notifications

Schedule Pause Notifications

A Schedule Pause Notification is sent when a parent batch failure causes a system pause. The email includes:

- Confirmation that the parent schedule was paused by the system.
- The batch failure that caused the pause.
- Dependent schedule details, if configured.

Schedule Resume Notifications

A Schedule Resume Notification is sent when the system pause is removed or the schedule is resumed. The email confirms that the pause was removed and that future scheduled executions can continue if no other active pauses exist.

7.1.7 Monitor Batch/Batch Group

Using Monitor Batch/Batch Group, you can view the status of executed batches/batch groups, along with the tasks details.

Monitoring enables users to track and identify issues at regular intervals, ensuring smoother batch execution. Both a visual representation and a tabular view of the status of each task in the batch are available.

On the **Monitor Batch** screen, select the required batch or batch group and proceed as needed. From the **Actions** menu, you can select **Restart/Rerun** to navigate to the **Schedule Batch** screen with pre-populated data related to the selected batch/batch group.

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To monitor a batch/batch group:

1. Click **Monitor Batch** from the Header panel.
2. Select the **Batch/Batch Group** and the **Batch/Batch Group Name** to monitor the execution.
3. **Set Refresh Frequency Time Interval and duration** in seconds.

   By default, the refresh interval is set to **5 seconds** and duration is set to **5 minutes**. This indicates that the monitor progress will be refreshed every 5 seconds for the next 5 minutes.

   The refresh interval ranges between 5 to 60 seconds and the duration ranges between 5 to 180 seconds.
4. Select the **MISDATE** to view the list of Batch Run IDs executed on a specific date.
5. Select the **Batch Run ID** you want to monitor.
6. Click **Start Monitor** to view the results in **Visualization** and **List View** tabs.

   The **Visualization** tab displays execution status graphically, while the **List View** tab provides the details in a tabular form, including:

   - **Status**: Task execution status - **Not-Started**, **On-going**, **Aborted**, **Successful**, **Failed**, **Interrupted**, **Excluded** and **Undefined**.

     > **Note**
     >
     > When the task execution status is **Aborted**, the batch execution will still be **On-going**. The task status will be set to **Ongoing**, when it is triggered again.

     To download the Orchestrator LogViewer PDF:

     a. Click **View Execution Logs**.
     b. In the page that opens, locate the log you want to download and click the **Log Viewer** icon under **Actions**.
     c. In the Log Viewer page, click the **Details** tab.
     d. Click the **Download** icon to download the Orchestrator LogViewer PDF.
   - **Start Time**: Task execution start time.
   - **End Time**: Task execution end time.

     > **Note**
     >
     > All timestamps displayed in the Log Viewer UI now reflect the timezone configured in the user preferences.
   - **Task Details**: Mouse-over the task to display its status and details.
7. At any point, select **Stop Monitor**, to stop monitoring.

   You can download the task execution summary in PDF or Excel, with or without the task logs, from the **Monitor Task** page.

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> **Note**
>
> You can download the task execution summary only if the **BATCH_OPER** role is mapped to the **LOGVIEW** function.

8. (Optional). To rerun, restart, or interrupt execution, click **Actions** and select the required option.

   You can also reset the search criteria using **Actions**.

9. (Optional). Click **View Execution Parameters** adjacent to a batch/batch group, to access the list of tasks and task parameters such as **Runskey ID**, **Misdate**, associated with that batch/batch group.

7.1.8 Scheduler Configuration

Scheduler Configuration UI allows you to manage the scheduler service configuration parameters.It also allows you to map specific user to batch and batchgroups for email notifications.

To access the Scheduler Configuration UI in the Scheduler Service page, follow these steps:

1. Go to the Home page of the application.
2. Navigate to **Batch Administration** in the left Navigation pane.
3. Under **Batch Administration**, click on **Scheduler Configuration**.

> **Note**
>
> Ensure you have the BATCH_ADMIN function code to access the Scheduler Configuration page.

- Batch to User Configuration
- General Configuration
- Schedule Rule
  Use the **Schedule Rule** UI to configure rules that trigger batch execution based on defined conditions.

7.1.8.1 Batch to User Configuration

Batch to User Configuration menu allows you to map users to specific batch/batch group processes.This assignment ensures that emails are sent only to the specific users associated with each batch.

To access the Batch to User Configuration page, select **Batch to User Configuration** in the Scheduler Configuration UI.

> **Note**
>
> Click the **eye** icon on the **Batch to User Configuration** tile to view the page.

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To search for a specific batch/batch group, enter the keywords in the Search field and click **Search**. You can search based on Batch Name, Batch Code, and Batch type.

> **Note**
>
> The system automatically sends an email to all users mapped to the BATCH_NOTIFY_FUNT function and BATCH_NOTIFY_ROLE role. If a batch/batch group is mapped to a user (and their email ID), the batch email notifications will be sent only to that configured batch user. If no batch-to-user configuration is provided or updated, email notifications will be sent to users with the above function and role.

Perform the following steps to add specific user(s) to the batch/batch group:

1. In Batch to User Configuration menu, click **Add** to add new batch/batch groups.
2. Select the batch type from the dropdown menu.
3. Select the required batch/batch group from the dropdown menu.
4. Select the required users from the dropdown menu.
5. Click **Create**, the *Batch User mapping is created successfully* message is displayed.

Action menu

Batch to user mapping configuration page lists all the batch/batch groups which are mapped to specific user(s).

1. Select the desired batch/batch group from the Batch to user mapping configuration page. Click **Action Menu** to view, modify, or delete batch/batch groups.
   a. **View**
   Clicking **View** allows users to see detailed information on the batch/batch group user mapping.
   b. **Edit**
   Edit the batch/batch group to user mapping configuration.You can either update the user details or remove the user.
   c. **Delete**
   The **Delete** option allows you to remove the user to batch/batch group mapping from the system.

7.1.8.2 General Configuration

The **General Configuration menu** allows you to configure the parameters related to a scheduler service.

1. Under **Scheduler Configuration** menu, click **Configure** corresponding to **Global Scheduler Configuration** option.
2. Click **Edit** to modify the configuration settings.
3. Modify the required details, refer to the **General configuration parameters** table below.

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Table 7-3 General configuration parameters

Parameter	Description	Default Value
Enable/disable general email notification	Enable/disable general email notifications to automatically alert users when a batch job is successful, failed, or is interrupted.	Enable
Enable/disable in-app notification	Enable/disable in-app notifications to alert users within the application when a batch job is successful, failed, or is interrupted.	Enable
Enable/disable notification for threshold email	Enable/disable email notifications triggered when a batch execution exceeds its expected execution time threshold. For example, if a batch typically completes in 1 hour but now takes longer, an email is sent as its taking longer than expected time to complete.	Enable
Threshold email time notification percentage criteria	Defines the additional execution time (in percentage) allowed beyond the last successful batch completion time before sending a threshold notification email. For example: If a batch previously completed successfully in 1 hour and the threshold is set to 20%, a threshold notification will be triggered if the batch exceeds 1 hour and 12 minutes (i.e., 60 minutes + 20%). If multiple notifications are allowed (as per the Threshold email Notify Limit), the time for subsequent notifications will be calculated from the last notification time, adding the same threshold percentage again. For instance, the next notification would be triggered after 20% of 72 minutes (i.e., 86.4 minutes), and so on.	20

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Table 7-3 (Cont.) General configuration parameters

Parameter	Description	Default Value
Threshold email Notify Limit	Defines the maximum number of email notifications that can be sent when a batch exceeds its execution time threshold during a single run. **Note** If general email notification is disabled and only if the threshold email notification is enabled, scheduler sends only the threshold email.	5
Batch to User mapping upper limit	Specifies the maximum number of users that can be mapped to a batch/batch group. You can configure a maximum of five user mappings per batch or batch group.	10
System pause on batch failure	Controls system pause and dependent schedule skip behavior on batch failure.	Enable

4. Click **Save** to save the modified configurations.
   OR

   Click **Cancel** to discard the changes and revert to the previous settings.

7.1.8.3 Schedule Rule

Use the **Schedule Rule** UI to configure rules that trigger batch execution based on defined conditions.

To schedule a rule:

1. Under **Scheduler Configuration** menu, select **Rule Detail**. The **Schedule Rule** UI appears.
2. Click **Create**. The **Create Rule** dialog appears.
3. Provide rule name and description.
4. Select the execution type:
   - **Every Day**: Executes the batch every day except holidays. Weekends are by default considered holidays.
   - **Specific day/s of the week**: Select the specific day(s) on which the batch should be executed. Also select the recurrence from the **Recur every** drop-down list.

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> **Note**
>
> Enable the **Slide Week** option to reorder the weeks if the number of working days in a week is less than or equal to 1 (excluding weekends).

- **Specific day/s of the month**: Select the specific date(s) on which the batch should be executed.
- **Last day of the month**: Executes the batch on the last working day of the month.

5. Click **Save**.

To edit a rule:

1. Under Scheduler Configuration menu, select Rule Detail. The Schedule Rule UI appears displaying a list of scheduled rules.
2. Click the Action menu corresponding to the rule you want to edit and select Edit. The Edit Rule dialog appears.
3. Make the required changes and click Update.

To delete a rule:

1. Under **Scheduler Configuration** menu, select **Rule Detail**. The **Schedule Rule** UI appears displaying a list of scheduled rules.
2. Click the Action menu corresponding to the rule you want to delete, select **Delete** and click **Yes** to confirm the deletion.

7.1.9 Appendix A: Understanding Batch Job Scheduling and Daylight Saving Time (DST)

This documentation outlines how Daylight Saving Time (DST) may affect your scheduled batch jobs when using the Europe/London time zone.

Batch Job Scheduling Behavior

When you schedule a batch job in the application interface, you select a Run Time (example: 4:00 AM) in the Europe/London time zone.

- The batch scheduler internally converts this time to UTC behind the scenes at the time of schedule creation.
- Once this UTC time is set, it remains fixed in the schedule.

Observed Impact During DST Transitions

The Europe/London region transitions between standard time and Daylight Saving Time (clocks go forward in March and back in October). Because the job schedule uses a fixed UTC time, the expected local execution time will shift:

- **During standard time (non-DST)**: Your job runs at the expected local time (e.g., 4:00 AM local).
- **After DST ends (clocks go back one hour, usually in October)**: The same fixed UTC schedule will trigger one hour earlier in local time.

Examples:

Case 1: Batch scheduled in non-DST range

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Table 7-4 Scheduling in non-DST range

Phase	Europe/ London Time Zone Status	User Expected Schedule Time	Stored UTC Time	Actual Trigger Time (Europe/ London)	Result
Non-DST	UTC+0	8:30 AM	8:30 AM	8:30 AM	Correct
DST starts	UTC+1	8:30 AM	8:30 AM	9:30 AM (8:30 AM UTC + 1 hr)	1 hour delay

Case 2: Batch scheduled in DST range

Table 7-5 Scheduling in DST range

Phase	Europe/ London Time Zone Status	User Expected Schedule Time	Stored UTC Time	Actual Trigger Time (Europe/ London)	Result
DST	UTC+1	8:30 AM	7:30 AM	8:30 AM	Correct
Non-DST starts	UTC+0	8:30 AM	7:30 AM	7:30 AM (7:30 AM UTC + 0 hr)	1 hour early

Customer Impact and Action Required

This behavior may cause scheduled operations, reporting, or data integrations to run at unintended times, particularly for UK users.

The current system does not actively recompute and adjust the UTC time when DST changes. Review and adjust your scheduled jobs around DST changes to ensure they continue to run at your desired local time.

7.2 Object Migration

Object Migration is the process to define, export and import objects across environments (prod and non-prod)/instances. This feature also facilitates to migrate within the same setup or different setups.

Objects refer to the various metadata definitions defined for various domains. You may want to migrate objects for several reasons such as manage global deployments on multiple environments or to create multiple environments so that you can separate the development, testing, and production processes.

For example, you can use the object migration feature to define PMF process object such as balance computation on your testing environment. After successful testing, you can use this feature to export the object to production/non-production environment.

You can migrate the following object types:

- **Schedule** - Schedule provides the instruction to schedule the execution of defined processes. When a schedule is migrated, the associated batch is also migrated.
- **Batch** - Batch is a group of jobs. When a batch is migrated, the batch and the associated pipeline information are also migrated. Note that the dependent objects used in the batch are not exported. All the objects used in the batch must be present in the target environment before the batch definition is imported.

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- **Batch_Group** - A set of individual batches are consolidated to form a single Batch_Group. When we migrate a Batch_Group all the batches, tasks and pipeline information associated with that Batch_Group are also migrated.
- **Roles** - Roles are used to map functions to a defined set of groups to ensure user access system security.
- **Groups** - Groups are used to map Roles. Specific User Groups can perform only set of functions associated with that group.

> **Note**
>
> System can successfully import any object if both Code/Name do not exist in the target. If either code or name of the object being migrated is already available in target, import will fail. Even if overwrite option is selected, object will only be overwritten in target if both object code/name matches in target environment. For example, if an interest rate curve is being migrated, and either code or name is already available in target environment, import will fail.

- Accessing Object Export and Object Import Features
  Using the Object Export and Import features, you can create Export and Import Object definitions.
- Export Object
  Object Export Definition is a collection of objects that can be exported across environments.
- Import Object
  Object Import Definitions is a collection of objects that can be imported across environments.

7.2.1 Accessing Object Export and Object Import Features

Using the Object Export and Import features, you can create Export and Import Object definitions.

Business Objects - To access Object Export and Import feature for Business Objects: From the left navigation pane in the PBSM applications console, click **Operations and Processes > Object Administration** and:

- To access Object Export feature, click **Export Object**.
- To access Object Import feature, click **Import Object**.

Identity Management Objects - To access Object Export and Import feature for Identity Management Objects: From the Admin Console, click **Identity Management** and

- To access Object Export feature, click **Object Migration (Export)** tile.
- To access Object Import feature, click **Object Migration (Import)** tile.

7.2.2 Export Object

Object Export Definition is a collection of objects that can be exported across environments.

You can view the list of object export definitions that are already created in the **Object Export Summary**. You can also view the following details about each object definition.

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- **Name** - The unique name assigned to the collection when the export definition was created.
- **Object Migration Status** - The export status of a specific object definition.
  - **Success** - Indicates that the export is completed successfully.
  - **Failed** - Indicates that the export was not successful. You can reintiate the migration of the specific object definition.
  - **Saved** - Indicates that the object definition is created successfully and is yet to be exported.
  - **In Progress** -Indicates that the export is in progress. Once the export is complete, the status will change to Success/Failed.
- **Last Modified By** - The ID of the Last Modified by user who has modified the definition. On mouse over, the Last Modified Time and Date are displayed.

To filter the list and view specific Object Definition, use one of the following search options:

- To search for a specific Export Object Definition, type the first few letters of the export definition that you want to search in the Search Box and click **Search**. The search results display the names that consist of your search string in the list of available definitions.
- Enter the number of records to be viewed in a single page, in the **Records** box, at the bottom of the page. You can increase or decrease the number of entries that are displayed using the up and down arrows.
- You can navigate between pages in the **View** bar, use the navigation buttons present at the bottom of the page.
- Creating Export Definitions
  You can create export Meta data objects using the System Configuration tab in Admin Console.
- Editing Export Object Definitions
  You can edit the Export Object definitions that are not exported and their status is **Saved** or **Failed**.
- Exporting Object Definition
  After creating the object definitions, you can export them for migrating between environments, using Object Migration (Export) feature.
- Viewing Export Object Details
  Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.
- Re-exporting Object Definitions
  If the underlying metadata of an exported object definition has changed, you can re-export the same using Object Migration Re-Export feature.
- View Object Definition Export Log Details
  View log facilitates you to view the export log information of the object definition with the migration status.
- Downloading Dump File
  You can download the export dump file for exported definitions to a local directory, using Download Dump file option.
- Deleting Export Object Definition
  You can delete only definitions that are set to **Saved** or **Failed** status.

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7.2.2.1 Creating Export Definitions

You can create export Meta data objects using the System Configuration tab in Admin Console.

For more information about the supported object types, refer to Migration Object Types. Refer to the following steps, to create a migration export object.

1. Click **Add** in the **Object Export Summary** Page to view the **Migration Definition** page.
2. Enter the following details, in the **Migration Definition** page.
   - **Migration Name**: Enter the code of the export of objects to be migrated definition. This is a unique identifier.
   - **File Name**: The system auto-creates the file name of the objects that can be used to export the definition in the following format:
     - **For Business Objects**: Migration Name_BO_Time Stamp_Tenant_Release Version (time stamp format: MMDDYYY HHMMSS)
       Example: EXP_DQRULE_BO_07312025_162240_zqvzly-prd_25_09_01.DMP
     - **For Identity Objects:** Migration Name_IDM_Time Stamp_Tenant_Release Version (time stamp format: MMDDYYY HHMMSS)
       Example: EXP_DQRULE_IDM_07312025_162240_zqvzly-prd_25_09_01.DMP
3. Click **Apply** to save the details and view the **Object Selection** Page.
4. Click **Add** to include Migration objects to the definition.
5. Select the required **Object Type** from the Object Types drop-down list.
6. Select the objects to be added to the Migrate Definition and click **Save**, to create a new migration object. To select all objects, click the check box adjacent to **Code**. The selected objects appear under **Selected Objects** on the right.

   A confirmation message is displayed, when the definition is saved successfully. The new migration definition is listed in the Object Export Summary Page and the status is set to **Saved**.

   You can also click **Export**, to export the object.

7.2.2.2 Editing Export Object Definitions

You can edit the Export Object definitions that are not exported and their status is **Saved** or **Failed**.

If the definitions is already exported and the status is set to **Success**, you cannot edit that definition.

To edit an Export Object definition, follow these steps.

1. In the Object Export Summary page, highlight the definition and click **Menu**, and select **Edit**.

   The **Object Selection** page is displayed.
2. Modify the following details, if required, and click **Save** to changes.
   - Select the required **Object Type** from the Object Types drop-down list.
   - Select the objects to be added to/deleted from the definition.
3. After adding/deleting all the required objects, click **Save**.

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The Export definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Export Summary page and the status is set to **Saved**.

4. If you want to Save and Export the Definition, click **Export**.

7.2.2.3 Exporting Object Definition

After creating the object definitions, you can export them for migrating between environments, using Object Migration (Export) feature.

You can export object definitions in **Saved** or **Failed** state from the object Summary page.Refer to the following steps, to export definitions.

1. In the Object Summary Page, highlight the migration definition and click **Menu**.
2. Select **Export** from the menu.

   After you export, the following Export status types are displayed:

   - **Success** - Indicates that the definition is exported successfully.
   - **Failed** - Indicates that the definition was not exported. Right-click and select **Export**, to reintiate the export process.
   - **In Progress** -Indicates that the export is in progress. Once the export is completed, the status will change to Success/Failed.

7.2.2.4 Viewing Export Object Details

Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.

1. Highlight the Export definition and click **Menu**.
2. Select **View**. The object types, list of objects and the dependent objects added to the export definition are listed in the left pane.
3. Double-click an object to view the object attribute details.

7.2.2.5 Re-exporting Object Definitions

If the underlying metadata of an exported object definition has changed, you can re-export the same using Object Migration Re-Export feature.

This feature is enabled only for definitions that are successfully exported.

Refer to the following steps to re-export object definitions.

1. In the Object Export Summary page, highlight the migration definition you need to re-export and click **Menu**.
2. Select **Re-Export** from the menu.

   The **Migration definition** screen appears.
3. Specify a unique name for the re-export.

   The file name is displayed automatically.
4. Click **Export**.

   After you re-export, the following status types are displayed:

   - **Success** - Indicates that the definition is re-exported successfully.
   - **Failed** - Indicates that the definition was not re-exported.

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- **In Progress** - Indicates that the re-export is in progress. Once the re-export is completed, the status will change to Success/Failed.

7.2.2.6 View Object Definition Export Log Details

View log facilitates you to view the export log information of the object definition with the migration status.

> **Note**
>
> The View Log page for an object definition with status **Saved** will be empty.

To view the log details of object with migration status **Success** or **Failed**, follow these steps.

1. In the Object Export Summary page, mouseover the object definition and click **Menu**.
2. Select **View Log** from the drop-down menu, to access the **View Log** page.

   The migration status of the objects with following details is displayed.

   - **Object Migration ID** - The migration ID associated with the definition.
   - **Object Type** - The object type of the definition.
   - **Object Code** - The object code associated with the definition.
   - **Creation Date** - The date of creation of the definition.
   - **Created By** - The User Id of the User who created the definition.
   - **Status** - The migration status of the definition.
     - **Success** - Indicates that the export migration was completed successfully.
     - **Failed** - Indicates that the export migration did not complete.
     - **Export Status Message** - The complete export status message.

     > **Note**
     >
     > Export status message currently not supported for GL reconcilation.

3. Click **OK** to close the page, after viewing the log details.

7.2.2.7 Downloading Dump File

You can download the export dump file for exported definitions to a local directory, using Download Dump file option.

The downloaded export dump file can be used to upload objects to a different environment.

> **Note**
>
> This option is enabled, only if the definition is exported successfully and the **Migration Status** is set to **Success**.

To download a export dump file, refer to the following procedure.

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1. Mouseover a migrated object and select **Menu**.
2. Select **Download Dump File** from the drop-down menu, to download the associated dump file and store it to the local directory.

7.2.2.8 Deleting Export Object Definition

You can delete only definitions that are set to **Saved** or **Failed** status.

To delete a export object definition, follow these steps.

1. In the Object Export Summary page, mouseover the definition to be deleted and click **Delete** .
2. Click **Yes** to confirm and proceed with the deletion.

7.2.3 Import Object

Object Import Definitions is a collection of objects that can be imported across environments.

You can view the list of Object Import Definitions that are already created in the **Object Import Summary**. You can also view the following details about each Object definition.

- **Name** - The unique name assigned to the collection when the Import definition was created.

  > **Note**
  >
  > Up to Release 26A, Object Migration performed duplicate checks in the target environment by considering both the **Code** and **Name** of the object definition. From Release 26A onwards, the duplicate check is performed only based on the Code of the object definition. This enhancement is not applicable to duplicate name checks for **IRC** and **IRC Loader** objects.

- **Object Migration Status** - The import status of a specific Object definition.
  - **Success** - Indicates that the import is completed successfully.
  - **Failed** - Indicates that the import was not successful. You can reintiate the migration of theSpecific Object Definition.
  - **Skipped:** - Indicates that during object migration, if the overwrite flag is set to **No** and the same code, name, or both already exist in the target environment. p

    > **Note**
    >
    > If the overwrite flag is set to **Yes**:
    >
    > And both the code and name match, the object is migrated. However, if either the code or name does not match, the system marks the object as **Skipped**.

  - **Saved** - Indicates that the Object Definition is created successfully and is yet to be imported.
  - **In Progress** -Indicates that the import is in progress. Once the import is complete, the status will change to Success/Failed.
- **Last Modified By** - The ID of the Last Modified by user who has modified the definition.

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On mouse over, the Last Modified Time and Date are displayed.

To filter the list and view Specific Object Definition, use one of the following search options.

- To search for a Specific Import Object definition, type the first few letters of the Import definition that you want to search in the Search box and click **Search**. The search results display the names that consist of your search string in the list of available definitions.
- Enter the number of records to be viewed in a single page, in the **Records** box, at the bottom of the page. You can increase or decrease the number of entries that are displayed using the up and down arrows.
- You can navigate between pages in the **View** bar, use the navigation buttons present at the bottom of the page.
- Creating Object Import Definitions
  You can create Import definitions and add Import Objects using the Object Migration (Import) feature.
- Editing Import Definitions
  You can edit the Import definitions that are not imported and their status is **Saved** or **Failed**.
- Importing Object Definitions
  After creating the object definitions, you can export them for migrating between environments, using Object Migration (Import) feature.
- Re-importing Object Definitions
  If the underlying metadata of an imported object definition has changed, you can re-import the same using Object Migration Re-Import feature.
- Viewing Import Object Details
  Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.
- Viewing Object Import Log Details
  View log facilitates you to view the log information of the object definition with the migration status.
- Deleting Import Definition
  You can delete only definitions that are set to **Saved** or **Failed** status.

7.2.3.1 Creating Object Import Definitions

You can create Import definitions and add Import Objects using the Object Migration (Import) feature.

1. Click **Add** in the **Object Import Summary** page to view the **Migration Definition** page.
2. Enter the following details, in the **Migration Definition** page.
   - **Migration Name** - The Unique Name for the New Import Object definition.
     The migration name should not contain any space and exceed 30 characters. Underscore (_) and hyphen (-) are allowed.
   - **Dump File** -Select the .DMP file to be uploaded for creating the Import definition.
     You can select the dump file using one of the following options:
     - Select the option **Object Store**, to select the dump file (.DMP file) from the list of dump files available in the same environment.
     - Select the option **Local Machine** and click **Drag and Drop**, to add a .DMP file, from the local directory. You can only Add Dump file that are downloaded using Download Dump file option.

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> **Note**
>
> – Uploading a dmp file either created or edited locally will generate an error.
>
> – You can rename the .DMP file, if required. Ensure to follow the naming convention. For more information, refer toFile Naming Conventions for Migrate Objects.

- **Import All** - Select an option to import the objects that are associated with the selected object type. You can edit this option if required, in the **Object Selection** page.
  - **Yes** - Imports all the objects that are included in the dump file.
  - **No** - Imports only those objects that you can select in the **Object Selection** page.
- **Fail on Error** - Select an option to proceed with the definition creation in case of an error. You can edit this option if required, in the **Object Selection** page.
  - **Yes** - Stops the creation process, if error is generated.
  - **No** - Creates the import definition even when error is generated. The object with the error is not included in the object creation.
- **Overwrite** - Select an option to overwrite the existing definition. You can edit this option if required, in the **Object Selection** page.
  - **Yes** - Replaces the existing Import definition.
  - **No** - Creates a new Import definition.

3. Click **Save** to save the details.

   The Import definition is created and **Object Selection** page is displayed. You can add objects to this import definition.
4. Click **Add** to include objects to the definition.
5. Select the required **Object Type** from the Object Types drop-down list.

   Objects that are defined in the environment with respect to the selected object type are are listed. For example, if Schedule is selected as the Object Type, all the Objects defined with respect to Schedule, in the environment are only listed.

   You can also enter the first few letters of the object name in the Search Field, to narrow down the search.
6. Click the check box adjacent to each object, to include the objects associated with a specific object type, to the import definition. To select all objects, click the check box adjacent to **Code**. The selected objects appear under **Selected Objects** on the right.
7. Repeat steps 4, 5 and 6, to include objects associated with various object types.
8. After adding all the required objects, click **Save**.

   The Import definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Import Summary page and the status is set to **Saved**.
9. If you want to Save and Export the Definition, click **Import**.

7.2.3.2 Editing Import Definitions

You can edit the Import definitions that are not imported and their status is **Saved** or **Failed**.

If the definitions is already imported and the status is set to **Success**, you cannot edit that definition.

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To edit an Import definition, follow these steps.

1. In the Object Import Summary page, highlight the definition and click **Menu**, and select **Edit**.

   The **Object Selection** page is displayed.

2. Edit the following details, if required, and click **Save** to changes.
   - Select the required **Object Type** from the Object Types drop-down list.
   - Select the objects to be added to/deleted from the definition.
3. After adding/deleting all the required objects, click **Save**.

   The import definition is saved successfully and a confirmation message is displayed. The new definition is listed in the Object Import Summary page and the status is set to **Saved**.
4. Click **Save** to update the changes.
5. If you want to Save and import the Definition, click **Import**.

7.2.3.3 Importing Object Definitions

After creating the object definitions, you can export them for migrating between environments, using Object Migration (Import) feature.

You can import object definitions in **Edited** state from the object Summary page. Refer to the following steps to import Object definitions.

> **Note**
>
> Comments and Documents attached to an Issue/Action will not be migrated.

1. In the Object Summary Page, mouse-over the definition and click **Menu**.
2. Select **Import** from the drop-down menu.

   After you import, the following Import status types are displayed:
   - **Success** - Indicates that the definition is imported successfully.
   - **Failed** - Indicates that the definition was not imported. Right-click and select **Import**, to restart the import process.

     > **Note**
     >
     > If the Process code is not unique and if the **Overwrite** flag is set as **No** while importing the object definition, the migration request fails and when you view the logs, the following error is displayed "**Process code is not unique, Migration Request Failed**"

   - **Skipped:** - Indicates that during object migration, if the overwrite flag is set to **No** and the same code, name, or both already exist in the target environment.

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> **Note**
>
> If the overwrite flag is set to **Yes**:
>
> And both the code and name match, the object is migrated. However, if either the code or name does not match, the system marks the object as **Skipped**.

- **In Progress** -Indicates that the import is in progress. Once the import is completed, the status will change to Success/Failed.

7.2.3.4 Re-importing Object Definitions

If the underlying metadata of an imported object definition has changed, you can re-import the same using Object Migration Re-Import feature.

This feature is enabled only for definitions that are successfully imported.

Refer to the following steps to re-import object definitions.

1. In the Object Imports Summary page, highlight the migration definition you need to re-import and click **Menu**.
2. Select **Re-Import** from the menu.

   The **Migration definition** screen appears.
3. Specify a unique name for the re-import.
4. **Overwrite**: Select an option to overwrite the existing definition. You can edit this option if required, in the Object Selection page.
   - **Yes** - Replaces the existing Import definition.
   - **No** - Creates a new Import definition.
5. Click **Import**.

   After you re-export, the following status types are displayed:
   - **Success** - Indicates that the definition is re-imported successfully.
   - **Failed** - Indicates that the definition was not re-imported.
   - **In Progress** - Indicates that the re-imported is in progress. Once the re-imported is completed, the status will change to Success/Failed.

7.2.3.5 Viewing Import Object Details

Using the **View** option, you can view the list of objects and the dependancies added to an Object definition. You can also view the object details.

1. Mouseover the migration definition and click **Menu**.
2. Select **View**. The object types, list of objects and the dependent objects added to the export definition are listed in the left pane.
3. Double-click an object to view the object attribute details.

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7.2.3.6 Viewing Object Import Log Details

View log facilitates you to view the log information of the object definition with the migration status.

> **Note**
>
> The View Log page for a definition with migration status **Saved** will be empty.

To view the log details of definition with migration status **Success**, **Failed**, or **Skipped**, follow these steps.

1. In the Object Import Summary window, mouseover the migration definition and click **Menu**.
2. Select **View Log** from the drop-down menu, to access the **View Log** page.

   The migration status with following details is displayed.

   - **Object Migration ID** - The migration ID associated with the import object.
   - **Object Type** - The object type of the import object.
   - **Object Code** - The object code associated with the import object.
   - **Creation Date** - The date of creation of the import object.
   - **Created By** - The User Id of the User who created the import object.
   - **Status** - The import status of the specific object.
     - **Success** - Indicates that the specific object was imported successfully.
     - **Failed** - Indicates that the specific object was not imported.
     - **Skipped** - Indicates that the specific object was skipped.
   - **Import Status Message** - The complete import status message.

     > **Note**
     >
     > Import status message currently not supported for GL reconcilation.

3. Click **OK** to close the page, after viewing the log details.

7.2.3.7 Deleting Import Definition

You can delete only definitions that are set to **Saved** or **Failed** status.

To delete an import definition, follow these steps.

1. In the Object Import Summary page, mouseover the definition to be deleted and click **Delete** .
2. Click **Yes** to confirm and proceed with the deletion.

7.3 Changing Object Ownership

Access Type for most objects can be defined as ‘Read Only’ and ‘Read/Write’. When it is defined as ‘Read Only’ the user who created owns it i.e., another user will be able to only view

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it. For any reason if the owner of object is not available then no one else will be able to modify it.

This functionality helps you to change the ownership of objects from one user to another user(s).

Changing the ownership of object is generally required when the users of the application move across different teams or leave the organization. In this case, the ownership of the objects created by a particular user remain on that user's name and they need to be transferred to different user to enable them to operate on them.

To change the ownership of objects, you must raise a Service Request with the Oracle Support Team with the following information. Oracle Support Team will coordinate with the Operations team to change the ownership.

- The existing username who created the object.
- The new username to which the ownership must be transferred.

7.4 Viewing Logs

This section describes the Cash Flow Engine log details.

- Cash Flow Process
- Cash Flow Edits Process
- Cash Flow Process
- Cash Flow Edits Process
- Instrument Data Loader (File to Stage)
- Instrument Data Loader (Stage to Processing)
- Dimension Loader (File to Stage to Dimension)

7.4.1 Cash Flow Process

To open the log for the latest execution, follow these steps:

1. Navigate to the **Cash Flow Process Summary** page.
2. Search for the Cash Flow Process.
3. Click the process status to open the log for the latest execution.

To view the log for an earlier execution, follow these steps:

1. On the **Cash Flow Process Summary** page, locate the process.
2. Click the **Action** icon and select **Execution Details**.
3. Click the required **Execution ID** to open its log.

For more information, see View Cash Flow Process Log.

To monitor a batch through Scheduler, follow these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
2. Select **Batch** and **Run Id**.
3. Click **Start Monitor**.

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4. Click **View Log** for the required task.

To review account-level error messages, query `FSI_O_CFE_MESSAGES_HIST` in the data schema for the Process Id, Execution Run Id, and Account Number.

LOG4J logs to debug the execution flow can be seen in Kubernetes session log for each POD. The LOG4J level can be controlled by setting the debugging level in Application Preferences. Default logging level is set to "Info".

- Kubectl Commands

7.4.1.1 Kubectl Commands

- kubectl -n fsgbu-pbsm--cfe-<tenant id>-prd : Get pods for CFE services.
- kubectl -n fsgbu-pbsm--fsafnd-<tenant id>-prd : Get pods for fsafnd services.

Example:

kubectl -n fsgbu-pbsm--cfe-cfeqa31052203-prd

- kubectl get pods -n fsgbu-pbsm--fsafnd-cfeqa31052203-prd -o wide

This is to get the IP-address of the pods and nod level details

- kubectl logs <service name> -c < cfe-processor-service>-n fsgbu-pbsm--cfe-<tenant id> -f – processor services logs

Example:

kubectl logs cfe-execution-processor-service-787c8469c7-bq557 -c cfe-processor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f

- kubectl logs <service name> -c < cfe-executor-service>-n fsgbu-pbsm--cfe-<tenant id> -f – executor services.

Example:

kubectl logs cfe-execution-executor-service-d5cb4c89c-zwlst -c cfe-executor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f

- kubectl delete <> -n fsgbu-pbsm--cfe-<tenant id> – Deleting the pods

Example:

kubectl delete pod cash-flow-engine-ui-service-74cd7c764-6mzdq -n fsgbu-pbsm--cfe-cfeqa31052203-prd

- Scaling up and down.
- kubectl scale --replicas 0 deployment <service name> -n fsgbu-pbsm-- cfe -<tenant id> – Scale down
- kubectl scale --replicas 3 deployment <service name> -n fsgbu-pbsm--cfe-<tenant id> – Scale up

Example:

- kubectl scale --replicas 3 deployment cfe-execution-executor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd

7.4.2 Cash Flow Edits Process

To open the log for the latest execution, follow these steps:

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1. Navigate to the **Cash Flow Edits Processes Summary** page.
2. Search for the Cash Flow Edits Process.
3. Click the process status to open the log for the latest execution.

To view the log for an earlier execution, follow these steps:

1. On the **Cash Flow Edits Processes Summary** page, locate the process.
2. Click the **Action** icon and select **Execution Details**.
3. Click the required **Execution ID** to open its log.

For more information, see Viewing Execution Details of Cash Flow Edits Process.

To monitor a batch through Scheduler, follow these steps:

1. Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
2. Select **Batch** and **Run Id**.
3. Click **Start Monitor**.
4. Click **View Log** for the required task.

To review account-level error messages, query `FSI_O_CFE_EDITS_MESSAGES_HIST` in the data schema for the Process Id, Execution Run Id, and Account Number.

LOG4J logs to debug the execution flow can be seen in Kubernetes session log for each POD. The LOG4J level can be controlled by setting the debugging level in Application Preferences. Default logging level is set to "Info".

- Kubectl Commands

7.4.2.1 Kubectl Commands

```
kubectl logs <> -n fsgbu-pbsm--cfe-<tenanted> -f
kubectl logs cash-flow-edits-executor-service-79d598fff5-9cdqr -n fsgbu-pbsm--
cfe-cfeqa31052203-prd -f – executor service
kubectl logs cfe-execution-processor-service-787c8469c7-tsmwx -c cash-flow-
edits-processor-service -n fsgbu-pbsm--cfe-cfeqa31052203-prd -f -----
Processor
```

7.4.3 Instrument Data Loader (File to Stage)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
- Select **Batch** and **Run Id**.
- Click **Start Monitor**.

7.4.4 Instrument Data Loader (Stage to Processing)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.

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- Select **Batch** and **Run Id**.
- Click **Start Monitor**.

Additional information is available in table FSI_DATA_LDR_MESSAGE_LOG of data schema.

7.4.5 Dimension Loader (File to Stage to Dimension)

You can see the messages from User Interface. To view messages, follow these steps:

- Navigate to **Operations and Processes**, select **Scheduler**, and then select **Monitor Batch**.
- Select Batch and Run Id.
- Click **Start Monitor**.

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8

Reports & Analytics

This section covers the following topics:

- Cash Flow Engine Cloud Reports & Analytics: Oracle Analytics is a scalable and secure Oracle Cloud Service that provides a full set of capabilities to explore and perform collaborative analytics for you, your workgroup, and your enterprise.
- Cash Flow Engine Cloud Reports & Analytics

8.1 Cash Flow Engine Cloud Reports & Analytics

Cash Flow Engine Cloud Service (CFE) Analytics User Guide describes the features and functions of CFE's Analytics is intended for the use of Administrators, Analysts, Reporting Analysts, and Administrators.

Cash Flow Engine (CFE) Could Service utilizes the power of Oracle Analytics to generate the Business Intelligence Reports.

Oracle Analytics is a scalable and secure Oracle Cloud Service that provides a full set of capabilities to explore and perform collaborative analytics for you, your workgroup, and your enterprise.

With Oracle Analytics Cloud, you also get flexible Service Management capabilities, including fast setup, easy scaling and patching, and automated lifecycle management.

For more information, see the Oracle Analytics Cloud documentation.

- Cash Flow Report
- Cash Flow Generation Insights Summary

8.1.1 Cash Flow Report

This module discusses the procedure for viewing the Input and Output Data for an instrument.

Topics:

- Overview of Cash Flow Report
- Viewing Cash Flow Report
- Downloading Cash Flow Report
- Overview of Cash Flow Report
- Cash Flow Report AI Agent
- Viewing Cash Flow Report
- Downloading the Report

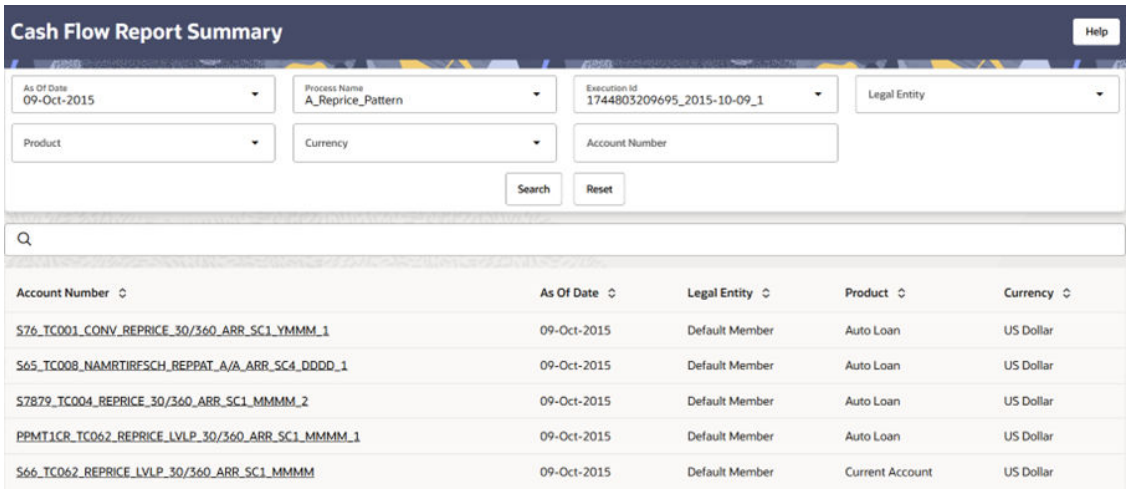
8.1.1.1 Overview of Cash Flow Report

The Cash Flow Report UI allows you to view the reports with the following information:

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1. View the report for following input information about the selected instrument as follows:
   - Instrument Attributes
   - Payment Schedule, if applicable
   - Rate Tiers, if applicable
   - Embedded Options Schedule, if applicable
   - Index History, if applicable
2. View the report for the following output information about the selected instrument as follows:
   - Cash Flow
   - Forecast Interest Rate Curve, if applicable
   - Forecast Economic Indicator, if applicable
   - Messages logged during processing

Figure 8-1 Cash Flow Report Summary



The account number based on the search criteria are listed here. This is the search section that contains multiple parameters. You can specify one or multiple search criteria in this section. It is mandatory to select a Process and Execution ID to view the report. When you click Search, depending upon the search criteria, this filters and displays the relevant search combination parameters under the Cash Flow Report Summary as a list. You can perform search on the following search criteria:

- As of Date
- Process Name
- Execution ID
- Legal Entity
- Products
- Currency
- Account Number

The Cash Flow Report Summary Page displays the following columns:

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Table 8-1 Cash Flow Process rule – Fields and Descriptions

Column	Description
Account Number	Displays the Account Number of Cash Flow Report
As of Date	Displays the As of Date of the Instrument
Legal Entity	Displays the Legal Entity of the Instrument
Product	Displays the Product
Currency	Displays the Currency of the Instrument

The Cash Flow Report Summary page allows you to do the following:

- Viewing Cash Flow Report. For more information, see the Viewing Cash Flow Report section.
- Downloading the report in CSV or Excel. For more information, see the Downloading Cash Flow Report section.

8.1.1.2 Cash Flow Report AI Agent

The **Cash Flow Report AI Agent** screen provides a chat-based interface for managing cash flow reports and exploring cash flow insights.

Window controls appear in the upper-right corner for minimizing, resizing, entering full-screen mode, and closing the window. A quick action option, **Manage cash flow process**, is presented to help users initiate common tasks.

The AI agent prompts the user to select an action for the Cash Flow Report and requests a process selection for exploring insights.

You can switch between Chat, Voice, and History modes, enabling different ways to interact with the agent or review past conversations. A text input field is provided for entering queries, along with a send button to submit requests, making the interface intuitive and easy to use.

8.1.1.3 Viewing Cash Flow Report

To view Cash Flow Report of an account, perform the following steps:

1. Navigate to the **Cash Flow Report Summary** Page.
2. Apply search criteria to get list of account numbers that are available. It is mandatory to select a Process and Execution ID to view the report. Click on an account number to view report.
   The Cash Flow Report is displayed.
3. Select **Input** Section. Here, you can view the Input information for the following fields:
   - **Instrument Attributes:** Displays the Input Data from Instrument Tables for selected ACCOUNT_NUMBER and AS_OF_DATE. Attributes have been grouped into multiple categories to simplify viewing. Select the Category, Version, and Leg Type. Leg Type drop-down list is applicable for Derivative Accounts.
   - **Payment Schedule:** Displays the Input Data from FSI_D_PAYMENT_SCHEDULE (order by PAYMENT_DATE) for selected ACCOUNT_NUMBER and AS_OF_DATE in Table format. This is applicable if the Amortization type is Payment Schedule (800, 801, 802).

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- **Rate Tiers:** Displays the Input Data from FSI_D_ACCOUNT_RATE_TIERS (order by rank) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if the Adjustable type is Tiered Rate (300)
- **Embedded Options Schedule:** Displays the Input Data from FSI_D_EMBEDDED_OPTIONS_SCH (order by option_expiry_date) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if Embedded Options Flag is Yes and the Option Exercise Type is Bermudan.
- **Index History:** Displays the Input Data from FSI_D_ACCOUNT_INDEX_HIST (order by INDEX_START_DATE) for selected ACCOUNT_NUMBER and AS_OF_DATE in table format. This is applicable if Index Adjustment Type is not 'Not Applicable' and Index ID is null or zero.

> **Note**
>
> You can download the data in CSV or Excel format.

4. Select **Output** section. Here, you can view the Output information for the following fields:
   - **Cash Flow:** Displays the Output from FSI_O_CFE_OUTPUT_HIST for selected ACCOUNT_NUMBER, AS_OF_DATE, and EXECUTION_RUN_ID in table format. Here, you can Order by data of the SCENARIO_NUM, LEG_TYPE, SPLIT_ID, RECORD_SEQUENCE.
   - **Forecast Interest Rate:** Displays the Output from FSI_O_FCAST_IRC_RATES_HIST for selected PROCESS_ID and EXECUTION_RUN_ID. Here, you can Order by data of the SCENARIO_NUMBER, INTEREST_RATE_TERM_DAYS. You can compare the Forecast Rates across the scenario. You can select interest rate from INTEREST_RATE_CD drop-down list. Data appears here if Forecast Rates has been selected in Cash Flow Process and Interest Rate Curve(s) have been selected under Calculation Elements.
   - **Forecast Economic Indicator:** Displays the Output from FSI_O_FCAST_ECO_IND_RATES_HIST for selected PROCESS_ID and EXECUTION_RUN_ID. You can filter Economic Indicator from Economic Indicator Name drop-down list to display data. You can compare the Forecast Economic Indicator across the scenario. Here, you can Order by data of the SCENARIO_NUMBER, RATE PERIOD. Data appears here if Forecast Rates has been selected in Cash Flow Process and Economic Indicator(s) have been selected under Calculation Elements.
   - **Message Log:** Displays the Output from FSI_O_CFE_MESSAGES_HIST for selected ACCOUNT_NUMBER, and EXECUTION_RUN_ID in table format.

Here, you can rationalize number of output columns in report using the **Add Columns** field. Select the column(s) you want to include in the output. You will have choice to select more measures if needed.

8.1.1.4 Downloading the Report

You can download the Cash Flow Report in CSV or Excel format.

To download the report, follow these steps:

1. Navigate to **Cash Flow Report** and select the **Input** or **Output** Section.
2. Click the **Download** link. The report will be downloaded.

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8.1.2 Cash Flow Generation Insights Summary

Use the Cash Flow Generation Insights Summary to find an execution and review its summary, account details, calculation steps, and instrument and cash-flow lifecycles.

Before you review insights, ask your administrator to map the following role to your user group. Obtain execution permissions separately to run a Cash Flow Process.

Table 8-2 Cash Flow Generation Insights Access

Role	Role Code	Access Code	Access
Cash Flow Generation Insights Role	CFGIROLE	CFGIVIEW	View cash flow generation insights.

Generate insights for the execution that you want to review. Select **Generate Cash Flow Generation Insights** when you execute the Cash Flow Process. For the execution procedure, see Using Cash Flow Process UI.

To review the generated insights, follow these steps:

1. Navigate to the **Cash Flow Generation Insights Summary** page.
2. Enter the **As Of Date**, **Process Name**, and **Execution Id** for the execution that you want to review.
3. Enter additional search criteria as required. Use the parameter descriptions in the following table to select the required filters.
4. Click **Search** to view the matching records in the summary.
5. Select the required account and review its details.
6. Review the calculation steps for the selected account.
7. Review the instrument lifecycle and the cash-flow lifecycle details.

Table 8-3 Cash Flow Generation Insight Parameters

Fields	Description
As Of Date	Enter the As of Date of the cash flow instrument. This is a required field.
Process Name	Enter the Cash Flow Process Name. This is a required field.
Execution Id	Enter the process execution ID. This is a required field.
Legal Entity	Enter the Legal Entity associated with the cash flow instrument.
Product	Enter the product type.
Account Number	Enter the Account Number associated with the cash flow instrument.
Currency	Enter the currency type.

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9 Technical Documents

This chapter covers the following topics:

- **Data Requirements**: Profitability Management Data Requirements are available at the MOS page Doc ID: 2869409.1. This document contains detail of account, ledger, reference, and market data needed to deliver business functionality. They are required at a pre-defined granularity / format and can come from your source systems and external data providers.

Table 9-1 STAGE and INSTRUMENT Tables

STAGE_TABLE_NAME	INSTRUMENT_TABLE_NAME	INSTRUMENT_TYPE_CODE	NAME
STG_ASSET	FSI_D_ASSET	COMMLOANS	Commercial Loans
		CONSLOANS	Consumer Loans
		MORTGAGES	Mortgages
		INVESTMENT	Investments
		ABS	Asset Backed Securities
		CCARDS	Credit Cards
		CREDITLINES	Credit Lines
		LEASES	Leases
		LOANCONTRACTS	Loan Contracts
STG_ASSET, STG_LIABILITY	FSI_D_ASSET,FSI_D_LIABILITY	MMCONTRACTS	Money Market Contracts
STG_LIABILITY	FSI_D_LIABILITY	ANNUITYCONTRACTS	Annuity Contracts
		BORROWINGS	Borrowings
		DEPOSITS	Deposits
		CASA	Checking and Savings
		WHOLESALEFUNDING	Wholesale Funding
		TD	Term Deposits
		RETIREMENTACCOUNTS	Retirement Accounts
STG_LEDGER_INSTRUMENT	FSI_D_LEDGER_INSTRUMENT	LEDGERINSTRUMENTS	Ledger Instruments
STG_FEE_BASED_SERVICE	FSI_D_FEE_BASED_SERVICE	MERCHANTCARDS	Merchant Cards
		MUTUALFUNDS	Mutual Funds
		OTHERSERVICES	Other Services
		TRUSTS	Trusts
STG_DERIVATIVE	FSI_D_DERIVATIVE	DERIVATIVES	Derivatives
		FRA	Forward Rate Agreements
		FUTURES	Futures
		FXCONTRACTS	Foreign Exchange Contracts

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Table 9-1 (Cont.) STAGE and INSTRUMENT Tables

		OPTIONS	Caps, Floors, Collars
		SWAPS	Interest Rate Swap
		FXSWAP	Foreign Exchange Swap
STG_OFF_BALANCE_SHEET	FSI_D_OFF_BALANCE_SHEET	GUARANTEES	Guarantees
STG_LOAN_COMMITMENTS	FSI_D_LOAN_COMMITMENTS	RATELOCK	Rate Lock Commitments

While loading data into Instrument tables, we need to remember:

1. If the user is providing a valid `Instrument_type_code` value in the loaded Instrument data file, the record gets loaded into Stage Instrument table, and also in the Processing Instrument table with the corresponding `Instrument_type_cd` value. The list of valid `Instrument_type_code` values. is specified in STAGE and INSTRUMENT Tables.
2. If the user is providing an invalid `Instrument_type_code` value in the loaded Instrument data file, the record gets loaded into Stage Instrument table with the invalid `Instrument_type_code`, but the record gets rejected when the data loading happens from Stage table into Processing Instrument table. Thus, users need to take care that they use only valid values for `Instrument_type_code`, as specified in STAGE and INSTRUMENT Tables.

> **Note**
>
> STAGE and INSTRUMENT Tables is a limited set and extension beyond this list is not allowed.

3. If column `Instrument_type_code` is included in Instrument data file but the user is not providing value for it, the concerned records will get rejected as it is a not null column. If column `Instrument_type_code` is not included in Instrument data file, the value of `Instrument_type_code` is defaulted as 'NA' in Stage table. When this record gets loaded into the Processing table, the value for `Instrument_type_cd` will be inserted as -1 (Default).

> **Note**
>
> PFTCS engine execution uses valid `Instrument_type_code` values to partition the Instrument dataset and thereby improves execution performance for rules that use `Instrument_type_code` as a filter. If customer is not providing the value for `Instrument_type_code`, the engine will scan all Instrument records as the execution would be based out of the default partition alone, that is, -1.

4. Refer to PBSM Data Requirements file to know mandatory and optional entity-attributes for your cloud service. When mandatory attributes like `ISO_CURRENCY_CD` are not given in input data file, the records will get rejected by the respective loader programs while moving from Stage to Processing tables. The records will normally not get rejected during data movement from File to Stage tables.

- **Reporting Data Model**: Refer to the Doc ID: 2869409.1 to retrieve the Profitability and Balance Sheet Management Cloud Service Glossary of the Reporting Data Model (RPD Subject Areas).

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- **FRC Analytics - Exporting Files from Oracle Analytics**: Please refer to the doc FRC Analytics - Exporting Files from Oracle Analytics: This document helps you to use Oracle Analytics Server (OAS) to aggregate the data to required level and downloading it from Object Storage.
- Oracle® Profitability and Balance Sheet Management Cloud Service Scheduler Service Component Reference Guide: This document provides a consolidated reference for all batch components available in the Scheduler Service. It helps you understand the components used while defining batch tasks and the processing logic executed at runtime.

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