Oracle Financial Services Accounting Foundation Cloud Service
Data Catalog

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Data Catalog Overview

Data Catalog is the logical representation of the underlying Data Model, which is contextualized by the Metadata to enable a better understanding of the Data Model and the enterprise-wide data. For example, understanding the End of Period Book Balance in the context of Loans and Securities may require two definitions of the term in discovering. A further analysis of the Metadata helps discovering, the sources, current business uses of the element, validation checks, and any privacy aspects.

The Data Catalog comprises of elements called Business Terms supporting business needs of the Banking and Financial Services Industry across the Finance, Risk, and Regulatory Compliance Functions. Data Catalog includes sourced, calculated, and master elements. Elements that require conformation to the standards will have a list of expected values. A combination of Business Terms and Entities form the underlying Data Model. The search capability allows you to explore data by different dimensions.

The Data Catalog helps you understand the business relevance of an Element and the associated Data Definition, grain through Entities and Subject Areas. You can group the Data Catalog by Subject Area and this subset is narrowed down to a business use case (For example, Basel Credit Risk).

In a multi-domain Data Catalog environment, you need to select the required Financial Domain that filters the Subject Areas relevant to the selected Domain or Service, Entities under the Subject Area, and Elements mapped to the Entities.

The Data Catalog is the gateway to create, view, or manage the physical instance of the Data Model.

You can use out-of-the-box define Pipelines (table to table process, Connector) to load data into the Entity, and execute and manage the Process.

The fundamental objectives of the Data Catalog are as follows:

- To provide a unified logical view of the Enterprise Data Model.
- To enable data discovery using predefined Metadata that is modifiable by Users.
- To support end-to-end data lineage as it connects data sources and uses.

1.1 Data Catalog Key Capabilities

This section provides information about the key capabilities of the Data Catalog.

Figure 1-1   Data Catalog Key Capabilities

Catalog of comprehensive Business Terms (elements) across the Lines of Business and functional uses	Catalog Extension	Predefined Physical Structure that can be managed locally
Catalog Browser / Model Deployment Strategies	Data Quality Checks	Inbuilt Data Modeling Capability

Data Catalog provides the Data Model for the Financial Services Industry. The key capabilities of the Data Catalog are as follows:

*   Catalog Browser: Data Catalog consists of a Viewing Framework. The Data Catalog Browser API-based Interface allows you to view the Data Catalog Components. The Catalog Browser enables the Users to go through the Data Catalog Contents and view the Business Terms by Domain, Subject Areas, and Entity. The Catalog Browser also shows the Properties of Business Terms, Contextual Definition in a User-friendly language, List of Vaues, Data Sourcing Components, and Data Quality Rules.

*   In-built Data Modeling Capabilities: Data Catalog contains all the required information to establish services underlying the Data Model, which is Entities, Attributes, and the relationship between Entities and Attributes. Similar to any Entity Relationship Modeling Tool used for this purpose, the Data Catalog can build, manage and hold Data Model for the deployment purpose.

*   Data Quality Checks Rule: Data Catalog Contents include Data Quality Checks Rule so the system incoming data can be verified and validated.

*   Catalog Extension: Data Catalog supports a Framework to extend the Data Catalog called as the Data Catalog Extension or catalog Extension. The Catalog Extension allows user to extend the Seeded Catalog Contents to support a new or client-specific business use cases. You can add new Business Terms or customize the existing definitions when the Business Term is enforced by the external entities.

*   Comprehensive Coverage: Data Catalog provides a collection of comprehensive Business Terms across the Business Lines and Use Cases.

*   Data Movement: Data Catalog provides the mechanism of 'Stage to Standardize to Process' to move the Data along to the Result for analytical consumption. The Catalog Services are accessed through API calls used by the Data Services Module to move data.

2
Data Catalog Architecture

Data Catalog is at the center of sources and uses of data. Along with providing comprehensive understanding of data through the available metadata about sources and uses, it is necessary to be able to enrich or modify as required. In this direcrion OFS Data Catalog is designed to support integration with Data Sources and downstream uses, which means predefined for known uses and extendable for the unknown. The Data Catalog by Subject Area can be further segregated as Sources, Results (calculated), and Master Data that are sourced and seeded, which helps to plan the sourcing and supplying of data based on the Enterprise needs. Considering the need to serve a conglomerate of Users, the Data Catalog is embedded with a sound Governance Framework assuring the security and privacy.

Figure 2-1   Data Catalog Architecture Diagram
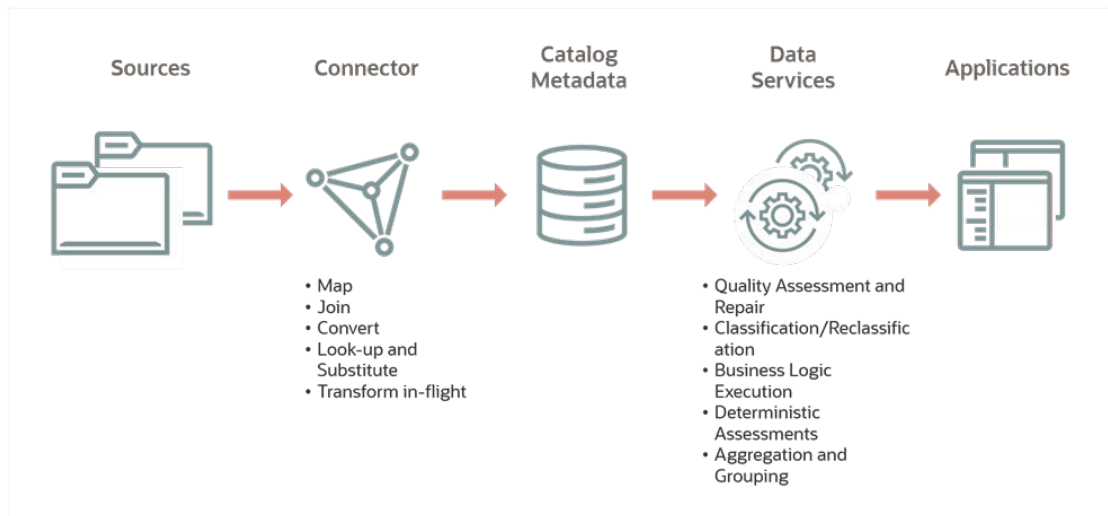
3

Data Catalog Deployment

In the OFS Cloud Services, the Service-specific Functions (For example, Accounting Integration, Balance Computation, Reconciliation, and so on) and their relevant Business Terms are deployed.

The Deployment Process includes the Data Model upload, metadata deployments and creation of synonyms, and SLA (Sub-ledger Application) related ADI refresh tasks. The Data Catalog is the Data Model, which is grouped into Domain and Subject Areas. All the necessary Entities are mapped to the Subject Areas for the selected Domain.

3.1 Levels to Deployment

You can select the Domain during this Deployment Process. Based on the Entity to Subject Area mapping, the Entities are picked, and the Data Model upload takes place in the Domain. The deployment level is as follows:

- Domain Level Deployment

4

Data Catalog Components

A well-defined structure is followed to seed and organize the Data Catalog Contents for efficient discovery and management. The structure starts with a Domain, which for example, in the OFSAA context can be either Banking or Insurance, and for this Domain, the Contents are created. Each Domain can have multiple Subject Areas, and a collection of Entities and Business Terms associated with those Subject Areas.

Figure 4-1   Data Catalog Components
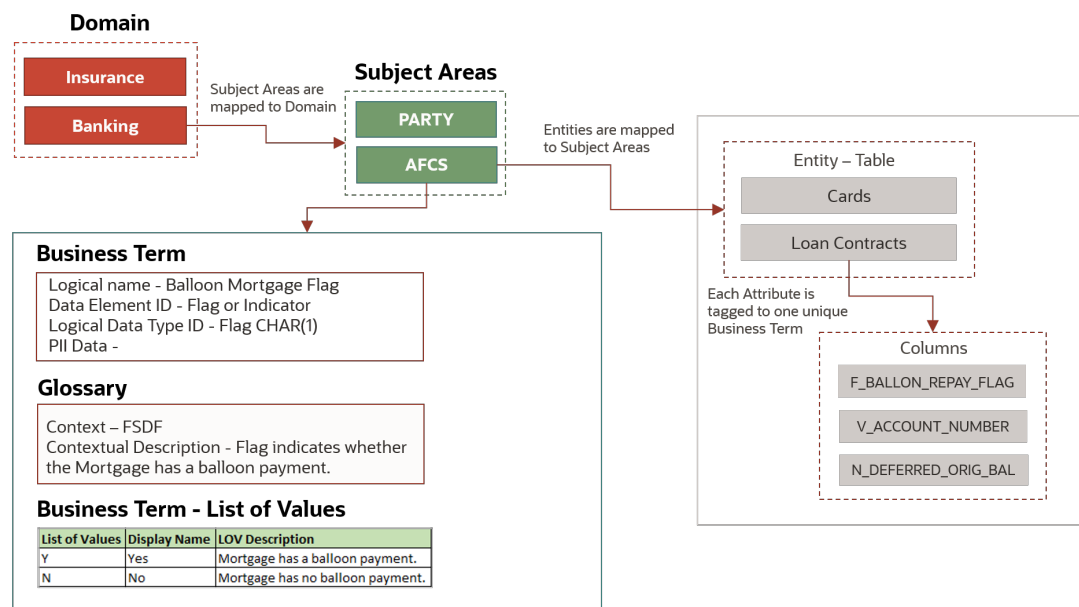
The Data Catalog consists of the following Components:

- Domain
- Subject Area
- Entity
- Business Term
- Glossary
- Data Quality Check Rules

4.1 Domain

A Domain represents the category of the Business in the Finance Industry.

Data Catalog consists of the Data Catalog Framework and Seeded with Contents related to a specific Line of Business or Industry, which is referred to as a Domain.

In OFSAA, you can select the required Domain. For example, Banking, Insurance, and so on.

By selecting the Domain Name, you can restrict viewing the Catalog Components only to the intended Domains and deploy the Data Model also selectively.

4.2 Subject Area

A Subject Area represents a high-level data organization, which belongs to a group of related areas within a specific functional area of a Finance Organization.

Entities are grouped together into distinct Subject Areas based on the business functions or processing supported for a better identification and usage.

The relationship type between Domain and Subject Area is Many-to-Many.

The following are a few examples of Subject Areas in the Data Catalog:

- Accounting Foundation Cloud Service
- Party
- Product Processor
- Transaction
- Product

4.2.1 Relationship Between Subject Areas

Data Catalog has a provision to define the Parent-Child Relationship between the Subject Areas. Therefore, you can define the Parent-Child Relationship as follows if there is a business need:

- Domain to Subject Area Relationship

4.3 Entities

Catalog has a comprehensive list of entities to support a very wide range of analytical business use cases across Banking and Insurance domains. These entities are mapped to the subject area and the domain which helps in deploying the model, either completely or selectively, based on the services the user has subscribed.

Users can navigate through the logical layer comprising of entities using the Catalog Viewer. The physical layer comprising of table and column names are inconsequential to the user, and therefore, it is hidden from them.

4.3.1 Entity Type

Entities in the model are grouped into the following types based on data layers they are tied to:

- Download or Staging
- Result
- Dimension
- Preparation

- Integration

Preparation and Integration Entities or layers are internal to a product. A Preparation layer contains entities used for processing while an Integration layer contains placeholders for other engines or applications to publish their processed output.

4.3.1.1 Stage Entity

Stage Entities are a part of the Unified Data-Sourcing layer for data for a wide variety of analytical needs. The Staging layer faces the operational (OLTP) and Front Office Systems of a bank. It consists of entities to capture key business and operational data from these systems, which is then processed by one or more Analytical Engines.

Since these entities are designed to facilitate loading efficiency, they are denormalized. Typically, this data is extracted from source systems and placed in the object store and then loaded to Staging Entities using data services.

4.3.1.2 Result Entity

It is a Unified Reporting or a Consumption layer. Analytical results can be simple to complex, contain quantitative and qualitative measures of a bank's Risk, Compliance, Customer and Financial Performance. The Reporting layer is a Dimensional Data Model spanning these key analytical functions. It forms the foundation of OFSAA Business Intelligence Applications but can clearly be used as the result data store for any equivalent engines and processes provided by other vendors, or custom built solutions. By providing a Single Data Repository for reporting needs, this layer provides a foundation for departmental as well as Cross-Departmental and Cross-Functional Reporting. Additionally, the schema of the reporting area is specifically built for Financial Services Analytics. As an illustration, the reporting area has a 'Run Dimension' that is shared across all BI/reporting use cases. Similarly, the aggregation of shared measures/reporting into a common set of output structures (Account Summary) allows for Cross-Functional Reporting, which is increasingly the norm in Financial Institutions.

It is also the layer where all the input data sourced by the user through Staging Entities are persisted and available for reporting and consumption.

Along with the definition or structure of these entities, the catalog also provides mapping metadata to populate these entities from sourcing to PMF Data Pipeline.

Currently, this layer has entities to persist Journal, General Ledger Account, Transactions and Contract Data to cater to the needs of the AFCS solution.

> **Note:**
>
> For any existing extractions defined on Journal, Journal Header, and General Ledger Account Data, re-select the grain, entity, and attributes and save. This will enable extraction from the Persistence layer.

The user must manually execute a PMF Pipeline **Result Area Entities Data Population** to retrieve the data in the Result Area tables. Thefollowing Target tables Accounting Entries, Accounting Entries Header, Currency Exchange Rates, and General Ledger Data are used for data population in the result area.

> **Note:**
>
> Common Account Summary and Transaction Summary result area tables will
> be enhanced in future releases for data population.

4.3.1.2.1 Execute Result Area Entities Run Pipeline

The steps to execute the Result Area Entities Run Pipeline are as follows:

1. Execute the Run Pipeline after data is loaded in the Stage tables and processed

2. Use the Run Execution Parameter "As of Date" to execute for each date, to get the data in the result tables.

3. If you execute multiple times within a day, the data is loaded with different Run Execution Skey.

   For example, if the execution is done thrice a day, the data is loaded thrice into the Target table.

4. If the execution is repeated with the new Run Skey, the entire data available in the Stage table will be loaded to the Target table.

   For more information on PMF Pipeline creation and execution, see Designing and Executing Pipelines.

4.3.2 Properties

Entity consists of a set of Attributes. Each Attribute is mapped to a unique Business Term. Each Attribute derives its characteristics such as Data Type, Constraints, and so on from the Business Definitions.

4.3.3 Granularity

Data Catalog defines granularity of each of the Entity it holds.

Table 4-1   Granularity Level in the Data Catalog

V_GRAIN_ID	V_GRAIN_NAME
DATE	Date
ACCT	Customer Account
ACCT_TXN	Customer Account Transactions
ACCT_ENT	Accounting Entries
GL_DATA	General Ledger Data
EXCHANGE_RATE	Exchange Rates
PARTY_CONSENT	Party Consent

For example, as the Loan Contracts Entity contains information at the Account Level, the grains of Loan Entity is defined as ACCT.

4.4 Business Term

A Business Term is a Functional Keyword that represents a unique functional aspect of the Financial Artefacts (Entities and Attributes). There is a business meaning to each Financial Artefact, and therefore, a business name is created in the form of a Business Term. Then the Business Term is used to find and fit into a purpose of different contexts. Therefore, Business Terms are expressions of the Participants/Actors, their Activities, and requirements conveyed in common business.

The approach to arrive at the Logical View of the Physical Model has inverted in the Data Catalog. Contrary to the previous practices, first the Functional Keyword or Artefacts are identified, collated, and then expressed in common business language, and then the corresponding Physical Model is developed.

Multiple Business Terms are a part of each Subject Area. A Business Term is a singular term irrespective of multiple places it appears in and the Business Term will have a recognizable naming pattern.

Metadata is attached to the Business Terms.

The Content Structure allows you to define relationship between related Business Terms for better discovery and usage in the aspect of sourcing.

Table 4-2   Example of Relationship between Business Terms

Business Term	Related Business Term	Relationship Type
Current Write Off Amount	Write Off General Ledger Code	MEASURE_GL

To create or update a Business term, see the Manage Business Terms.

4.4.1 Business Term Properties

In the process of creating a Business Term, certain characteristics are also defined that serves as input when arriving to a Physical Model Structure. These characteristics include origin, classification, logical data type, PII term indicator, list of accepted values, and data quality check applicable for a Business Term.

To create or update a Business term, see the Manage Business Terms section.

The Business Term Properties are as follows:

- Term ID
- Logical name
- Origin
- Data Element ID
- Language
- Logical Data Type ID
- PII Flag
- LOV Code
- Display Name

- LOV Description

> **Note:**
>
> The Business Terms for which PII Flag is set and for those Business Terms that are used in Entities, the underlying attributes of those Entities will be redacted by applying the appropriate redaction policies. A normal user cannot query or view the redacted data. Only users with exempt redaction policy role can view or query the data.

4.4.2 Business Term Glossary

For each Business Term, there is a corresponding Glossary. The Glossary explains the meaning and purpose of each Business Term, which is the context. The Glossary consists of the information such as description, usage, sample values, and usage examples of the Business Terms.

4.4.3 Business Term List of Values

Data Catalog defines and seeds the List of Values for all the Business Terms that are Flags. The List of Values help you with data sourcing and creating Data Quality Checks.

Table 4-3   Example of Business Term List of Values

List of Values	Display Name	List of Values Description
Y	Yes	Mortgage has a balloon payment.
N	No	Mortgage has no balloon payment.

4.4.4 Related Business Terms

Catalog has a provision to store the metadata to represent the relationship between two Business Terms along with the type of relationship.

Some information is later used for specific purpose. For example, In the case of SHARED_DEFINTION relationship type, Data Quality rules are automatically replicated for the related Business Term if there are rules existing for the Business Terms.

MEASURE_GL is another relationship type where the Business Term is a reconciliation measure and the related Business Term is corresponding to a GL account.

Table 4-4   Example of Related Business Terms

Business Term	Related Business Term	Relationship Type
Account or Contract Number	Parent Account Number	SHARED_DEFINITION
End of Period Balance	General Ledger Account Code	MEASURE_GL

Table 4-4   (Cont.) Example of Related Business Terms

Business Term	Related Business Term	Relationship Type
Maturity Amount	Maturity Date	VALUE_AS_OF_DATE
End of Period Balance	End of Period Balance in Local Currency	CURRENCY_EQUIVALENT
Account Tenor	Tenor Unit	MULTIPLIER_UNIT

4.5 Data Quality Checks

Data Catalog Contents include Data Quality Check Rules. These Rules are defined at the Business Term and Entity Level, and seeded as a part of the Data Catalog Content.

4.5.1 Types of Data Quality Checks

The following are the types of Data Quality Checks and their definitions:

Table 4-5   Data Quality Checks

Data Quality Check	Definition
Blank Value Check	Identifies if the base column is empty considering the blank space.
Column Reference/Specific Value Check	Compares the base column data with another column of the base table or with a specified direct value by using a list of pre-defined operators.
Data Length Check	Checks for the length of the base column data by using a minimum and maximum value, and identifies if it falls outside the specified range.
Duplicate Check	Is used when a combination of the column is unique and identifies all duplicate data of a base table in terms of the columns selected for the duplicate check.
List of Value Check	It can be used to verify values where a dimension/master table is not present. This check identifies if the base column data does not match with a value or specified code in a list of values.
NULL Value Check	Identifies if NULL is specified in the base column.
Referential Integrity Check	Identifies all the base column data that has not been referenced by the selected column of the referenced table. Here, the user specifies the reference table and columns.
Range Check	Identifies if the base column data falls outside a specified range of a Minimum and Maximum value. Value Needs to be between 0 and 100.

The controls are specific to reports.

4.5.2 Use and Execute the Source Data Quality Check Process

Use this Run Pipeline (Process) to perform the Data Quality Checks on source records for various data elements.

To use and execute the Source Data Quality Check Process in the Process Orchestration, do the following:

1. To access the Source Data Quality Check Process Pipeline, on the Home Page, select the **Process Orchestration**. The **Process Modeller** Page is displayed.

2. On the **Process Modeller** Page, search and select the Source Data Quality Check Process. The **Process Flow** Page is displayed. This Process Flow is designed on the Drawing Canvas using the Transition, Activity, and Widgets Components available in the floating toolbar. RUN DQ RULE Widgets representing Data Quality Groups are set up in parallel to each other. A Data Service Widget called as Data Quality Reporting Engine is added at the end meant for reporting Data Quality Checks.

3. To view the details of any Widget, double-click on the Widget and the details related to its Activity, Transition, and Notification are displayed. On the drawing canvas, you can select and see the Definition, Data Fields, and Application Rule details.

4. To execute the Run, you can select the Run Parameter Values using the **Execution** Button on the Process Flow Page or on the Process Modeller Page.

   Go to the **Process Modeller** Page to execute the Run. Click the **Menu** Button corresponding to the Source Data Quality Check Process that needs to be executed. Click **Execute Run**. The **Execution** Page is displayed.

5. On the **Execution** Page, to execute the Run with parameters, select **With Parameters** in the **Execution Type List**. Select the required **As of Date** for which the Data Quality Checks need to be processed. Click the **Apply** Button to initiate the Run Pipeline execution.

   > **Note:**
   >
   > The execution of the Run Pipeline is triggered using the selected Extraction Date.
   > See the Process Orchestration Section for more details about the Process Orchestration Framework.

6. To verify the Run Execution of the Source Data Quality Check Process, do the following:

   a. To open the **Process Monitor** Page, on the **Process Modeller** Page, click the **Process Monitor** Button or select **Process Flow Monitor** on the Process Modeller Menu.

   b. The **Process Monitor** Page is displayed, which lists all the Run Instances corresponding to the Source Data Quality Check Process. On the **Process Monitor** Page, search by the Process ID, or by the **Process Name Source Data Quality Check Process**, and select the Process Instance for the required Run Pipeline (Process) that was executed

7. The **Process Flow** Page is displayed with the Run Execution Status on each Node of the Source Data Quality Check Process.

8. To verify the Run Execution Logs, do the following:

   a. On the **Process Monitor** Page, click the required Process Instance for which you need to verify the Execution Logs. The Process Flow Page is displayed with the Run Execution Status on each Node.

   b. To see the Execution Status details of a Node, double-click on that Node. The Execution Status details Page is displayed. Click **Execution Logs**. The Log Viewer Page is displayed, which lists all the Logs related to the Process Instance. To see the details of a log entry, click the **Show More** Button. Click outside the Log Viewer Page to close it.

4.6 Slowly Changing Dimensions

A Slowly Changing Dimension (SCD) is a dimension that stores and manages both current and historical data over time in a Data Warehouse

4.6.1 Types of SCDs

The type of SCD Catalog supports is:

- Type 2 SCDs - Creating another dimension record: A Type 2 SCD retains the full history of values. When the value of a chosen attribute changes, the current record is closed. A new record is created with the changed data values and this new record becomes the current record. Each record contains the effective time and expiration time to identify the time period between which the record was active.

The Dimension Population Process in the Process Orchestration displays the available SCDs with details such as Map Reference Number and Entity Name.

4.6.2 Hierarchy Data Loading

A Business Hierarchy refers to organizing data into logical tree structure to represent the groups and relations among various levels at which measure can be viewed. A measure can be viewed at different levels depending upon the hierarchy breakdown of the dimension category.

Data Catalog supports data loading using the following Hierarchies:

- Account Hierarchy Dimension
- Cash Flow Type Hierarchy Dimension
- Employee Hierarchy Dimension
- General Ledger Hierarchy Dimension
- Legal Entity Hierarchy Dimension
- Line Of Business Hierarchy Dimension
- Organization Unit Hierarchy Dimension
- Party Hierarchy Dimension
- Product Hierarchy Dimension
- Project Hierarchy Dimension

- Ledger Hierarchy Dimension

- Business Unit Hierarchy Dimension

- Channel Hierarchy Dimension

- Branch Hierarchy Dimension

- Location Hierarchy Dimension

- Instrument Contract Hierarchy Dimension

- Business Segment Hierarchy Dimension

> **Note:**
>
> You must provide the snapshot for the Hierarchy code that has been corrected or modified when you reload the Hierarchy data.

Hierarchy data loading is a part of the Dimension Population Process.

4.6.3 Use and Execute the Dimension Population Process

Use this Run Pipeline (Process) to manage past and historical data for various Dimensions.

To use and execute the Dimension Population Process in the Process Orchestration, do the following:

1. To access the Dimension Population Process Pipeline, on the Home Page, select the **Process Orchestration**. The **Process Modeller** Page is displayed.

2. On the **Process Modeller** Page, search and select the Dimension Population Process. The **Process Flow** Page is displayed. This Process Flow is designed on the Drawing Canvas using the Transition, Activity, and Widgets Components available in the floating tool bar. SCD Widgets representing individual SCDs are set up in parallel to each other. At the end of this process, the Connectors representing Hierarchies are set in parallel.

3. To view the details of any Node, double-click on the Node and the details related to its Activity, Transition, and Notification are displayed. On the drawing canvas, you can select and see the Definition, Data Fields, and Application Rule details

4. To execute the Run, you can select the Run Parameter Values using the **Execution** Button on the Process Flow Page or on the Process Modeller Page.

   Go to the **Process Modeller** Page to execute the Run. Click the **Menu** Button corresponding to the Dimension Population Process that needs to be executed. Click **Execute Run**. The **Execution** Page is displayed.

5. On the **Execution** Page, to execute the Run with parameters, select **With Parameters** in the **Execution Type List**. Select the required **As of Date** for which the SCDs need to be processed. Click the **Apply** Button to initiate the Run Pipeline execution.

> **Note:**
>
> The execution of the Run Pipeline is triggered using the selected Extraction Date. See the Process Orchestration Section for more details about the Process Orchestration.

6. To verify the Run Execution of the Dimension Population Process, do the following:

   a. To open the **Process Monitor** Page, on the **Process Modeller** Page, click the **Process Monitor** Button or select **Process Flow Monitor** on the Process Modeller Menu.

   b. The **Process Monitor** Page is displayed, which lists all the Run Instances corresponding to the Dimension Population Process. On the **Process Monitor** Page, search by the Process ID, or by the Process Name **Dimension Population Process**, and select the Process Instance for the required Run Pipeline (Process) that was executed.

7. The **Process Flow** Page is displayed with the Run Execution Status on each Node of the Dimension Population Process

8. To verify the Run Execution Logs, do the following:

   a. On the **Process Monitor** Page, click the required Process Instance for which you need to verify the Execution Logs. The **Process Flow** Page is displayed with the Run Execution Status on each Node

   b. To see the Execution Status details of a Node, double-click on that Node. The Execution Status details Page is displayed. Click **Execution Logs**. The Log Viewer Page is displayed, which lists all the Logs related to the Process Instance. To see the details of a log entry, click the **Show More** Button. Click outside the Log Viewer Page to close it.

5

Catalog Viewer

Catalog Viewer is the Viewing Framework of the Data Catalog.

Use the Catalog Viewer User Interface to see and understand the Catalog Components equivalent to the Data Model granularity.

5.1 View the Catalog

To use the Catalog Viewer User Interface, do the following

1. To navigate to the Catalog Viewer, on the Home Page, select **Browse Data Catalog**. The **Catalog Viewer** Page is displayed. The deployed Domain, its corresponding Subject Areas, and all the relevant Entities are listed on the Catalog Viewer Page by default. Click the Previous or Next Arrow Buttons to navigate through the full list of Entities.

2. Use the Checkboxes to filter and display the required list of Entities and their details:

    a. On the **Domains** List, select the Checkbox to filter the Entities List by the Domain Name

    b. On the **Subject Areas** List, select one or more Checkboxes associated with the Subject Areas to filter the Entities List by those Subject Areas

3. Select the required Entity to view its **Relationships**, **Attributes**, **Sourcing**, **Process Info**, and **Governance** details in the Tabs.

    • On the **Relationships** Tab, the Entity relationship details are displayed.

    • On the **Attributes** Tab, you can search and see the list of Attributes of the Entity. Select the required Attribute to see its Details and List of Values. The Details List displays the Data Type and Description of the selected Attribute. In the List of Values Section, you can sort the **Value** and **Description** information by ascending or descending order. The Attribute, which is a PII (Personally Identifiable Information), is marked with a Red colored symbol.

    • On the **Sourcing** Tab, the Entity Source Details are listed, which are Connectors. In the Connector Section, you can do the following:

        – To see the details of any Connector, click that Connector. The Connector Page displays the details.

        – To add a Connector to the Entity, click Add. For information about creating a Connector, see the Ingesting Data into AFCS Section in the OFS Accounting Foundation Cloud Service Core Functions Release 22D.

        – To delete a Connector, click the Delete Button associated with it.

    • On the **Process** Info Tab, the Data Flow Information in the Entity from the Source to the Target is displayed.

    • On the **Governance** Tab, the Data Quality Details of the Entity Attributes are listed.

4. To log an Issue for any Entity, click **Log Issue**. For information about logging an Issue, see the Issues Section in the OFS Accounting Foundation Cloud Service Core Functions Release 22D.

5. To go back to the Home Page, click the **Previous** Button.

6

Catalog Extension

With Catalog Extension, you can extend the seeded Catalog data model to support new or client-specific business use cases. You can create new entity definitions or customize the existing entity definitions based on the use case.

Table 6-1   Enabled Data Model Extensions in Catalog

Catalog Object Type	Create	Modify	Extend	Delete
Business Term	Yes	No	No	No
Dimension Entity	Yes	No	No	No
Extend Fact Entities	No	No	Yes	No

All the points mentioned above are applicable to both Seeded and Custom Objects

- New Business Terms added to fact entities can be dimension references, measures, flag or indicators and alphanumeric attributes without dimensional reference.

- Fact logical entities that are allowed for extensions are product processors, account transactions, accounting entries, Accounting Entries Header and Transaction Header.

- Extensions are allowed to logical entities and physical model modification is controlled by the service.

- Required data flow for the extended entities are auto generated by the system.

- Completes basic data quality checks required for extended entities.

You must identify the additional data requirements to implement in the application through system and business use case analysis. Data model gaps need to be captured in Issues and Action governance framework.

Data model extensions must be designed based on the guidelines provided for each area.

Catalog Result layer is designed as a Star Schema for better performance of Analytical and Reporting queries. Hence it is highly recommended that Dimensional Entities must be created for a pre-defined list of values before adding to the Fact Entities. Adding of alphanumeric attributes for Fact Entities must be avoided wherever possible.

6.1 Catalog Extension Process Workflow

The catalog extension process workflow is as follows:

Figure 6-1   Catalog Extension Process Workflow
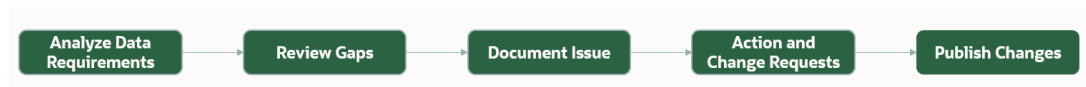
- Analyze

  – Analyze the requirements based on the existing details in Data Catalog.

  – Use the Catalog Viewer to understand existing Business Terms, logical entities and their properties.

- Review

  – Prepare the list of Gaps – additional business terms, dimensions, fact extensions and other associated properties.

  – Document the list of Gaps – group based on type and purpose of extensions.

  – Review the list of Gaps to ensure if the proposed additions are consistent and conformance according to the Data Catalog Extension Principles and Naming Standards.

- Document

  – An Issue Administrator will Log an Issue (Category as Catalog Extensions) based on the purpose of the extension. To know how to log an Issue, see the Issues Section.

  – Document the details of the extension requirements in the Issue. Upload the analysis and requirement documents.

  – Assign to the Issue Owner.

- Action

  – Issue Owners create Action (Type as Catalog Extension) for the issue. It is recommended to define an action for each type of change. To learn how to create an Action, see the Actions Section in the *OFS Accounting Foundation Cloud Service Core Functions Release 22D*.

  – Upload the document containing the list of changes in Action details.

  – Action Owners create or extend the catalog objects based on the type of Change Request.

  – Action Owners submits the action for approval.

- Publish

  – Issue Owner reviews submitted actions and approves or rejects along with appropriate comments.

  – After approval no modification is allowed to object definitions.

  – Issue Administrator publishes the approved Action to approve the changes in the Catalog data model.

  – Actions need to be published sequentially and in the logical sequence that would be reflected in schema. To use a Custom BT in a new Dimension Entity or while Extending the Fact, first create and publish the Business Term. Once the BT is published, it will available in the list of Available Business Terms during creation of Dimension Entity and while extending a Fact.

  – You can verify the published Actions from Catalog Viewer for Dimension Entity and Extend Fact Entity.

  – Please note that extensions will be reflected in master repository of objects only on Publish and it is mandatory to publish before users can view or consume the object for further extensions.

– If a Publish action is successful, the action is displayed under Publish tab. If a Publish action is unsuccessful, the action is displayed under Approved tab.

– Publish action is an asynchronous process which may take few minutes to complete, User may leave the UI and comeback later to check the status of the event.

6.2 Manage Business Terms

Based on the Action created, follow the steps below to create a Business Term.

To create a Business Term for an Action, do the following:

1. Go to the **Inbox** by clicking the **Inbox** Button on the Home Page

   The Inbox Page is displayed.

2. To create a Business Term for an Action, do the following:

   a. Select the required Action for which you need to create a Business Term.

      The Action Details Page is displayed.

   b. On the **Extension** Tab, click **Create Business Term**.

      The **New Business Term** Page is displayed.

   c. On the **Definition** Tab, set the following values.

Table 6-2   Business Terms Field Names and Description on the Definition Tab

Field Name	Description
Business Term Logical Name	Type a unique name for the Business Term Logical Name. • The Business Term needs to be long and meaningful. Short meaningless Abbreviations cannot be used. • The Business Term must always be in Camel case. • Logical names must have A to Z and 0 to 9 characters only • The Business Term can consist of alphanumeric without special characters. Maximum allowed length is 150 characters. A single space can be used as a Delimiter to separate the words.
Classification	Select one of the following categories for the Business Term: • Date and Timestamp • Flag or Indicator • List of Values • Monetary Amount • Numerical Non-Monetary • Text Description • Identifiers
Logical Data Type	Select the required Logical Data Type that defines the Data Type and Length of the Business Term. For more information, see the **Logical Data Type and Data Length** Table.

Table 6-2   (Cont.) Business Terms Field Names and Description on the Definition Tab

Field Name	Description
Personally Identifiable Information	Select if the Business Term is personal information. The value can be a Yes or No (Enable the Toggle Switch for Yes and disable for No). > **Note:** > All the PII attributes created by the User is enabled for data masking while creating a cloned environment in the system.
Add	Click this button to add this Business Term in the Glossary List
Glossary Name	It is auto-populated based on the logical name of the Business Term.
Glossary Context	It is auto-populated with a pre-defined value (FSDF).
Business Term Description	Double-click on the blank space corresponding to this field and type a proper Description for the Business Term: • It must be a complete sentence with possible indication of data domain and list of values it contains along with business context. • Business term description shall be without special characters. Maximum allowed length is 4000 characters.
Delete	To delete a Glossary item, select the Glossary and click **Delete**.

Logical Data Type and Data Length
This section provides the list of the logical data type and its data length.

Table 6-3   Logical Data Type and Data Length

Logical Data Type	Data Length
Amount	NUMBER(22,3)
Amount_Long	NUMBER(38,6)
Amount_Medium	NUMBER(30,11)
Clob	CLOB
Blob	BLOB
Code_Alphanumeric	VARCHAR2(20)
Code_Alphanumeric_Long	VARCHAR2(60)
Code_Numeric	NUMBER(14)
Currency	VARCHAR2(3)
Date	DATE
Description_Short	VARCHAR2(100)
Description	VARCHAR2(255)
Description_Medium	VARCHAR2(1000)
Description_Long	VARCHAR2(4000)

Table 6-3   (Cont.) Logical Data Type and Data Length

Logical Data Type	Data Length
Flag	CHAR(1)
Indicator	VARCHAR2(1)
Number_Factor	NUMBER(10,6)
Number_Factor_Long	NUMBER(38,15)
Numeric	NUMBER(10)
Numeric_Long	NUMBER(30)
Rate_Percent	NUMBER(11,6)
Rate_Percent_Medium	NUMBER(15,11)
Rate_Percent_Long	NUMBER(30,11)
SurrogateKey	NUMBER(10)
SurrogateKey_Long	NUMBER(15)
Timestamp	TIMESTAMP
Amount_Currency	NUMBER(22,3)
Amount_Currency_Long	NUMBER(38,6)
Amount_Currency_Date	NUMBER(22,3)
Amount_Currency_Date_Long	NUMBER(38,6)

   d. On the **Relationships** Tab, set the following values.

Table 6-4   Business Terms Field Names and Description on the Relationships Tab

Field Name	Description
Add	Click this button to add the Business Term in the Glossary List.
Group Code	Enter an identifier that represents that one Business Term is related to another Business Term.
	Group Code shall be alphanumeric with maximum 10 characters in length.
	An existing group code can be mentioned if the new relationship falls into existing group.
Relationship Type	Enter the relationship type that occurs between Business Terms. For more information, see the Related Business Terms.
Related Business Term	Double-click on the blank space corresponding to this field and type a proper Description.
Delete	To delete a Relationship item, select the Relationship and click **Delete**.

   e. Click **Save**.

      A confirmation message is displayed. Click **OK**.

   f. On the **Extension** Tab, in the **Business Term Extensions** Section, the new Business Terms are listed.

   g. Click **Submit** to submit the Action for approval.

      A confirmation message is displayed.

   h. Click **Yes** to confirm.

Your confirmation is acknowledged.

> **✎ Note:**
>
> Once a Business Term has been Approved or Published, it cannot be modified or removed from the Extension. The properties of an existing Out-of-box Business terms cannot be modified, but any new custom Business Terms which are in only **Draft** status can be modified

> **✎ Note:**
>
> If you create any custom Business Term and want to use the same in any of the custom Dimension or in extending a Fact entity, the Business Term alone must be initially published.

3. To update a draft Business Term for an Action, do the following:

   a. Click the required Action for which you need to update a Business Term. The Action Details Page is displayed.

   b. On the **Extension** Tab, click the Business Term that you need to update

      The Business Term Details Page is displayed.

   c. You can update any Field and Click **Save**.

      A confirmation message is displayed. Click OK to confirm.

   d. On the **Extension** Tab, in the **Business Term Extensions** Section, the new Business Terms are listed. Click outside the Action Details Page to close it.

   For information about Approval of Action (for Business Term), see the Approval workflow for Issues and Actions Section in the OFS Accounting Foundation Cloud Service Core Functions Release 22D.

6.3 Manage Dimension Entity

Based on the Action created, follow the steps below to create a Dimension Entity.

6.3.1 Create a Dimension Entity

To create a Dimension Entity for an Action, do the following:

1. Go to the **Inbox** by clicking the **Inbox** Button on the Home Page. The **Inbox** Page is displayed.

2. To create an Entity for an Action, do the following:

   a. Select the required Action for which you need to create a Dimension. The Action Details Page is displayed.

   b. On the **Extension** Tab, click **Create Dimension**. The **Create Dimension Entity** Page is displayed.

   c. On the **Definition** Tab, set the following values.

Table 6-5   Dimension Entity Field Names and Description on the Definition Tab

Field Name	Description
Entity Name	Type a unique name for the Entity. • Entity logical name must be in Camel case. • It must have A to Z and 0 to 9 characters only. • It must be alphanumeric with maximum length 120 characters.
Entity Description	Enter a description for the Entity. • It must be a complete sentence with possible indication of data domain and list of values it contains along with business context. • It must be alphanumeric with maximum length 4000 characters.
Is data sourced to this entity from an external system	Select if the Dimension Entity has data sourced from external system. The value can be a Yes or No (Enable the Toggle Switch for Yes and disable for No). It is recommended to always enable this switch to source data from external systems as seeded dimension data flow is not supported.
Should this Entity contain hierarchical data	Select if the Dimension Entity contains hierarchical data. The value can be a Yes or No (Enable the Toggle Switch for Yes and disable for No). Keep this switch enabled if not absolutely sure if the new dimension will not contain hierarchical data as modification to published dimensions are not supported and required physical structure and data flow for hierarchical data cannot be enabled later.

Table 6-5   (Cont.) Dimension Entity Field Names and Description on the Definition Tab

Field Name	Description
Available Business Terms	Based on the Logical Data Type selected during Business Term creation, select the required Business Term to be added to the Dimension entity. **Note:** You must add a minimum of two business terms such that at least one is a business key (i.e., natural key of the dimension) with an alphanumeric code column, and one is a numerical identifier (its unique numerical value for the corresponding business key). • A Business Term is displayed in the Business Terms selection column only after it is published. You can then add the relevant Business Term while creating the Dimension Entity. • Add only slowly changing attributes to dimension entity, don't add numerical measures, surrogate key(s). • Only add functional business terms, standard technical business terms required for a dimension entity e.g. Start Date, End Date, Latest Record Indicator and surrogate key will be added by extension service by default. • Flag the BTs which are nullable, by default all new additions and Not Null. • Avoid adding alphanumeric business terms to fact entity(s) which does not have an associated dimension. It is recommended to add a Business Term with logical name that contains the key word name, which defines the business key of the dimension. This will be used to define the child name in hierarchical data.
Add Attribute	Click this button to add the Attribute (Business Term) in the Business Terms List.
Remove Attribute	Click this button to remove the Attribute (Business Term) from the Business Terms List.

d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the **Entity Extensions** Section, the new Dimension Entity is listed.

Logical dimension entity definition creates all the required physical structures. The Data flow(SCD) is created by the extension service along with entity definition. You must create a pipeline to add the SCDs created by the extension service.

When the Hierarchical data toggle button is enabled, a data Flow (Connector) is created by the extension service along with Stage Hierarchy and Dimension Hierarchy. You must create a pipeline to add the Connectors created by the extension service.

Create a new pipeline and the Data Quality group created for new entity (if any). A single pipeline can be created to add all the newly created Data Quality groups for catalog extensions.

> **✎ Note:**
>
> Once a Dimension Entity has been Approved it cannot be modified or removed from the Extension.

3. If you want to update a draft Entity for an Action, do the following:

    a. Click the required Action for which you need to update a Dimension Entity.

    The Action Details Page is displayed.

    b. On the **Extension** Tab, click the Dimension Entity that you need to update which is in **Draft** Status.

    c. The Entity Details Page is displayed. You can update any Field.

    d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the **Entity Extensions** Section, the new Dimension Entities are listed. Click outside the Action Details page to close it.

6.3.2 Extend Dimension Entity

To extend a Dimension Entity for an Action, do the following:

1. Go to the **Inbox** by clicking the **Inbox** button on the Home Page. The **Inbox** page is displayed.

2. To extend an Entity for an Action, do the following:

    a. Select the required Action for which you need to extend a Dimension. The Action Details page is displayed.

    b. On the **Extension** Tab, click **Extend Dimension**. The **Extend Dimension Entity** page is displayed.

    c. On the **Definition** Tab, set the following values

    Table 6-6   Dimension Entity Field Names and Description on the Definition Tab

Field Name	Description
Dimension	Select the appropriate dimension from the dropdown list.
Available Business Terms	Based on the Logical Data Type selected during Business Term creation, select the required Business Term to be added to the Dimension entity.

Table 6-6   (Cont.) Dimension Entity Field Names and Description on the Definition Tab

Field Name	Description
Selected Business Terms	This field displays the selected business terms for the extended dimension entity. • You must add a minimum of one business term. • The default value cannot be empty when nullable is disabled. • The maximum size allowed for the default value is 10.
Add Attribute	Click this button to add the Attribute (Business Term) in the Business Terms List. Note: You cannot add an Amount column as an attribute in the dimension.
Remove Attribute	Click this button to remove the Attribute (Business Term) from the Business Terms List.

d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the **Entity Extensions** Section, the new extended Dimension Entity is listed.

> **Note:**
>
> Once an extended Dimension Entity has been Approved, the extension request cannot be modified

3. If you want to update a draft Entity for an Action, do the following:

a. Click the required Action for which you need to update a Dimension Entity. The Action Details Page is displayed.

b. On the **Extension** Tab, click the Extend Dimension Entity that you need to update which is in **Draft** Status.

c. The Entity Details Page is displayed. You can update the existing values in the available fields.

d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the **Entity Extensions** Section, the new extended Dimension Entities are listed. Click outside the Action Details page to close it.

• Only sourced or custom dimensions (Not seeded) can be extended.

• Once the publish action is complete, the Dimensions will be added with new attributes and also their corresponding SCDs will be modified.

• Also if the added attribute has a DQ associated with it, it will be added to the DQ Group.

- You can view the modified changes to the Dimension using Catalog Viewer Section in the *OFS Data Catalog User Guide*.

6.4 Extend Fact Entity

Based on the Action created, follow the steps below to create an Extend Fact Entity.

6.4.1 Create an Extend Fact Entity

To create an Extend Fact Entity for an Action, do the following:

1. Go to the **Inbox** by clicking the **Inbox** Button on the Home Page. The Inbox Page is displayed.

2. To create a Extend Fact Entity for an Action, do the following:

   a. Select the required Action for which you need to Extend Fact Entity. The Action Details Page is displayed.

   b. On the **Extension** Tab, click **Extend Fact**. The **Extend Fact Entity** Page is displayed.

   c. On the **Definition** Tab, set the following values.

Table 6-7   Extend Fact Field Names and Description on the Definition Tab

Field Name	Description
Grain/Grain Group	Select one of the following categories for the Entity: • Customer Account Transactions • Accounting Entries • Customer Account • Others Select the appropriate grain for the entities to be extended
Include Entities	Select an Entity from the list of available entities. ✎ **Note:** The list of unsupported entities for extension are Dimension, Stage Master and Stage Hierarchy Tables.
Add Entity	Click this button to add this Entity in the Entities List.
Remove Entity	Select the entity, and click this button to remove an entity from the added list of Entities.

Table 6-7   (Cont.) Extend Fact Field Names and Description on the Definition Tab

Field Name	Description
Available Business Terms	Select one or more Business Terms to the Fact Entity: • Nullable: If a Business Term has Null value or not • Default Value: The Default value for the Business Term • Reference Entity: The list of dimensions for which Business Terms is a Business Key. **✎ Note:** If you disable the Nullable option for an added Business term, then it is mandatory to add a default value for the same business term. • Verify the Business Terms that are not already part of the entity(s) to be extended. • Mark the business terms as not null only when absolutely necessary. • In case of a BT marked as not null, system mandates to provide a default value as per the data type and data length of BT definition. • Avoid adding alphanumeric business terms to fact entity(s) which does not have an associated dimension. • The system populates the dimension list referenced by a Business Term and allows you to select the referenced dimension entity in case of multiple references. In case of single reference entity, the reference entity is auto-populated.
Add Attribute	Click this button to add this Attribute in the Business Terms List.
Remove Attribute	Click this button to remove an attribute from the added list of Business Terms.

d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the **Entity Extensions** Section, the new Fact Entity is listed.

You must select the appropriate grain or group for the entities to be extended and verify if the Business Terms are not already part of the entity(s) to be extended. The Best practice is to add a referenced dimension before adding an alphanumeric Business Terms to the fact entities.

You must limit the number of extensions to 50 Business Terms for each Fact Entity.

You can create the Data Quality pipeline for the extension generated Data Quality checks for the extended entity.

✎ Note:

Once a Fact Extension has been Approved it cannot be modified or removed from the Extension.

3. If you want to update a draft Extend Fact Entity for an Action, do the following:

   a. Click the required Action for which you need to update an Extend Fact Entity. The Action Details Page is displayed.

   b. On the **Extension** Tab, click the Extend Fact Entity that you need to update.

   c. The Entity Details Page is displayed. You can update any Field.

   d. Click **Save**. A confirmation message is displayed. Click **OK**. On the **Extension** Tab, in the Entity Extensions Section, the new Extend Fact Entities are listed. Click outside the Action Details Page to close it.

6.5 Publish Change Request

Approved change requests for Catalog extensions must be published by Administrators to persist the extensions and generate associated configuration.

6.5.1 Publish Change Request Process Workflow

Publish change request process spans across multiple components involving automation of complex configurations as explained below:

Figure 6-2   Publish Change Request Process Workflow

- Model Upload

  – The Data catalog extension generates a model artifact in the Object store.

  – The Physicalization of the above model and the object registration will be performed in the system.

- Slowly Changing Dimensions Publish

  – The Slowly Changing Dimensions (SCD) definition of new entities that are part of the model are registered with the system.

- Data Quality Publish

  – The Data Quality definition of new entities that are part of the model are registered with the system.

- Data Redaction for GDPR

  – Any PII attribute part of the Data catalog extension model is implicitly eligible for the redaction which safe guards the data against any unauthorized access and the data theft.

- Connector Metadata Refresh (ADI Refresh)

  – This reads the data catalog extension model uploaded in the system and creates ADIs.

– This is a mandatory activity for any model change.

> **✏ Note:**
>
> Steps are automated and internal while triggering publish process.

6.5.2 System Restrictions during Publish Change Request Operations

This section provides information on the operations that can be performed and the system restrictions during a Publish Change Request.

6.5.2.1 Operations which can be performed during Publish Change Request

The following activities are allowed by the system during a Publish Change Request operation.

- Browse Data Catalog
- Balance Reconciliation
- Catalog Extension
- Issues and Actions
- Upload and Download files
- Legal Entity
- Report Analysis
- Access Data Visualization
- Revaluation Settings
- System Administration - creating users and modifying user access

6.5.2.2 Operations which cannot be performed during Publish Change Request

The following activities are restricted by the system during a Publish Change Request operation.

- SLA Configuration or modifications
- Data Ingestion Connector creation or modification or copy
- Data Extraction
- Process Pipeline Executions
- CoA Segment Mapping

6.5.3 Publish an Action

To publish an Action, do the following:

1. Go to **My Profile** by clicking the **My Profile** Button on the Home Page.

2. Select **Administration**. The Administration Page is displayed.

3. Navigate to the **Publish Change Request** Tab. The list of Actions in **Approved** status is displayed.

4. To publish an Action, do the following:

   a. Select the required Action and click **Publish**.

   A confirmation message is displayed. Click **OK** to acknowledge the message.

   b. To view the list of "Fail to publish" actions, click the **Approved** button. The list of actions to be published are displayed.

   > **Note:**
   >
   > If a Publish action is unsuccessful, the action is displayed under **Approved** button. You can publish this action again or contact My Oracle Support (MOS) for further assistance.

   c. To view the list of ongoing publish operations, click the Ongoing button. The list of ongoing publish operations is displayed.

   > **Note:**
   >
   > The publish operation might take upto 2 hours to complete and the User can navigate out of the User Interface and comeback later to check the status of the event. If the publish operation is still **Ongoing** after 2 hours, contact My Oracle Support (MOS) for further assistance.
   > Publish action cannot be performed during an ongoing Process Pipeline execution. The user can perform the Publish action once all the PMF executions are complete.
   >
   > Similarly, Process Pipeline execution should not be performed during an ongoing Publish operation of a Change Request. If a process is triggered during an ongoing Publish, the process will be cancelled automatically and the status is displayed as "CANCELLED" in the Process Monitor Summary page with an error message " Auto-cancellation could be due to Catalog Publish running in parallel".

   d. To view the list of published actions, click the **Published** button. The list of published actions is displayed.

   After a Publish action is successful, the User can perform Data Ingestion, view the Catalog Framework and Design pipeline.
   For more information on the Data Ingestion, see Ingesting Data into AFCS Section in the OFS Accounting Foundation Cloud Service Core Functions Release 22D.

   For more information on Catalog Viewer, see Catalog Viewer Section in the *OFS Data Catalog User Guide*.

   For information on designing and execution of a pipeline, see Designing and Executing Pipelines Section in the *OFS Accounting Foundation Cloud Service Core Functions Release 22D*.

Part I
OFSAA Support

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

Part II

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

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